The gloworm

Mississippi State University Extension Service

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Attention Teachers and Educators...

Collect Butterflies and Moths with the Lepidopterist Society and Work on Project Bug

The Lepidopterist Society will hold their 2008 meeting on the Mississippi State University campus **June 23 - 27, 2008**. **A teacher workshop will be held concurrently and teachers will have the opportunity to participate in sessions as well as collect butterflies during the day field trips and moths during the evenings.** A number of outstanding lepidopterists will be in attendance and several will be assisting with the teacher workshop. This is an incredible opportunity to collect and learn with, and from, the experts.

After years of managing Bug Camps, Drs. Mike Williams, John Guyton and David Held have begun developing Project Bug, patterned on the highly acclaimed Project Learning Tree. They will assist you in learning how to collect and preserve moths and butterflies before the field trips and work with you during and between the sessions to develop classroom activities from the presentations. They will add your lesson plans to those being compiled for Project Bug and you will be credited as a developer of Project Bug. Your nets, kill jars and spreading boards will be provided.

After the meeting a black light, and other resources, will be made available for you to use when you host night collecting outings for your students. We will also add you to the Gloworm entomology newsletter and continue to provide additional opportunities.

Registration is $85. Local accommodations include the Comfort Inn (662-324-9595), Hampton Inn (662-324-1333), Holiday Inn Express (662-324-0076), University Inn (662-323-9550) and Microtel (662-615-0700). Rooms are also available in newly constructed or recently renovated dormitories including private bathrooms are available for $30/night single or $40/night double. The MSU Butler Guest House (662-325-4140) also has a few rooms at $75/night.

Collecting field trips are planned for the Noxubee National Wildlife Refuge during the day on June 24 (box lunch provided for $7) and a night field trip is planed for the Osborn Prairie, a remnant of the Black Belt Prairie, on June 24. Another collecting opportunity at the Noxubee National Wildlife Refuge will follow the BBQ picnic on June 25.

For more information or to register contact John Guyton at jguyton@cfr.msstate.edu or 662-325-3482.

Entomology Camps, 2008

It is almost time to collect bugs. The Entomology and Wildlife and Fisheries Departments will be offering Bug Camps again this summer. First camp will be at Crows Neck in Tishomingo County, June 15 - 19, 2008 and the second one will be offered at a place yet to be determined on July 13 - 17, 2008. We offer CEUs for all of our camps and have had teachers, museum educators and naturalists, who want to build entomology programs for their centers camp with us. Check our bugcamp.org for some pictures from lat summer. Expect to have a blast with a tour of a working bee hive, day and night collecting, insect – plant interaction hikes, insect photography, tree beetles, learning how to pin and identify insects, dissecting carnivorous plants, etc. Camp costs $225 plus the cost of CEUs (possibly 4). We also have a lot of parents who come to camp with their young entomologists. Campers must be at least 10 years of age. Contact Dr. John Guyton at jguyton@cfr.msstate.edu or 662-325-3482 or Dr. David Held at dwh56@msstate.edu or 228-388-4710.

Wildlife and Fisheries Camp, 2008

If you are seeking an exciting intensive outdoor experience this is the camp for you! Also an intergenerational camp we have many parents and teachers who participate. We do wildlife and fisheries camp on campus and at the Noxubee National Wildlife Refuge. Pictures from last summer can be viewed at http://msucares.com/wildfish/education/camp-photos.html. Some of the more popular options include an introduction to bowfishing, fly tying, instruction in tomahawk throwing, wildlife briefing on various wildlife species (turtles, turkeys, deer, skulls and bones, snakes, fish, waterfowl, pine beetles, etc.), a wildlife CSI, shooting muzzle loaders and clays, hunter ed and boater safety, blacklighting for insects, weather forecasting, rocks and minerals, stream ecology in the Noxubee River, an electroshock boat demonstration, and a wildlife luncheon. Consider making this a family vacation or bring your children and teaching partners. Camp is for ages 10 and up and costs $225 plus the cost of CEUs (possibly 4) for teachers. Contact Diane Weeks at for more information or to register contact Diane Weeks 662-325-3174 or dweeks@ext.msstate.edu. For other questions contact:
Dr. John Guyton 662-325-3482 or jguyton@cfr.msstate.edu or Dr. Bronson Strickland 662-325-8141 or bstrickland@cfr.msstate.edu.

If it Stings and Smells like Bananas it is Time to Go!

Bees don't have large fuel tanks and are really task oriented. They need to find the nectar or pollen and get back to the hive. They don't come looking for humans that need to be stung. In fact when they feel threatened they will sometimes bluff. They will fly around you in circles, raise their front legs in a defensive posture likely developed long ago to bluff other insects, they

may land on you and even pull one of your hairs and they will even lower their wing beat frequency to make a more threatening sound. Now, would not be a good time to swat at them. If they feel further threatened, they think the hive is threatened and they will not only sting you they will put on perfume, to make you attractive to their friends.

Now, it is a little misleading to say they think. As modern jet fighter pilots will tell you there are times their jets needs to make their own decisions. This is called flying-by-wire. When a sensor

detects an unexpected wind shifts it immediately sends a signal to the appropriate control surface and the plane flies itself. Bees' neural networks have sensing hairs that are hardwired to flight muscles enabling them to respond to various stimuli in less than 1/300 second without any additional mental activity! So, when you swat the odds are you will miss. And, they will know your intent and even though they only have one shot and that they will die after they sting you, her body is going to respond and you are going to get stung. Oh yes, only the female stings...

The sting itself is almost painless giving the bee time to rev up its wings and take off leaving its barbed stinger and stinging module, from its abdomen, behind. Automatically the pump comes up to speed and the muscles begin to pump venom into your arm. Now, these few milligrams of venom are mostly water and only about 1% of it is volume is histamine. This amount may be lethal for other insects, the bee's size, and for most of us it is briefly painful and annoying. This small amount of venom hurts so badly because it coops our immune system, turning it against us. About half of the venom is a protein that dissolves the cell walls of some of our white blood cells spilling their content of histamines. Our white blood cells contain a lot of histamine that is slowly released, as needed, when we are cut or have infection. *Our* histamines are therefore responsible for the swelling, itching and burning. Our second line of our defense, the rapid regrowth of connecting tissue to prevent further damage, is defeated by another chemical from the bees left-behind still pumping poison sacs. So, while our white blood cells are going ballistic and our tissue is held open, the remaining venom will be pumped in over the next 30 to 60 seconds as the stinging module finally runs down. But the attack may not be over.

Now, about that perfume… It is isopentyl acetate. It is released from another part of the stinging module that is torn open as the bee flies away to crash and die. It is a volatile gas that smells like bananas. This is not provided as a sadistic reward for serving as a pin cushion and it is not for your enjoyment. Since it is volatile it evaporates quickly and alerts other bees to your threat and they will follow it down to you and join in the assault.

Bee keepers who notice this smell back off and give the bees some time to calm down. The best practice when you are stung, is to immediate cover the sting site and slowly go inside or get in a car and close the door. The isoamyl acetate dissipate fairly quickly so after raking a card across the sting to remove the stinger, applying some ice and taking a Benadryl most people can resume their earlier activities. - Dr. John Guyton, MSU Wildlife and Fisheries

Anticipating the Arrival of the Africanized Honey Bee in Mississippi

In October 1990, the first swarm of Africanized honey bees to move naturally from Mexico into the United States was found and destroyed in southern Texas. Since then Africanized honey bees have been moving gradually westward (Texas, Arizona, New Mexico, southern California and southern Nevada) and most recently in the southeastern United States. Infestations now occur in the pan handle,

central and southern Florida and isolated infestations have also been found in New Orleans and along the western edges of Arkansas and Louisiana and southern Oklahoma. It is likely that Africanized honey bees will ultimately reach Mississippi.

Swarms of Africanized honey bees have been known to catch rides on boats and equipment transported on boats from South and Central America. No Africanized swarms have been trapped at Mississippi Gulf Coast ports during the last ten years in traps set by the United States Department of Agriculture and Mississippi Department of Agriculture and Commerce (MDAC). Traps set by MDAC at various Mississippi River ports (Natchez, Vicksburg, and Greenville) for the last three years have not collected any Africanized honey bee swarms either. These traps are set in early April to survey and monitor the population of honey bees near these ports to see if Africanized honey bee swarms might be inhabiting these areas after hitch-hiking on river traffic. No complaints of hostile bees have been reported to trigger this survey.

The MDAC plans to expand its trapping program in 2008 to set a 60 trap trapline along the Southwestern Mississippi-Louisiana border and the Southeastern Mississippi-Alabama border to hopefully detect Africanized honey bees when they migrate into Mississippi. Dr. Clarence H. Collison, Entomologist, Mississippi State University

The 225 Million Year War (part 3 of 3)

Aphids, invariable, pound some of the leaf tissue into the plant's circulatory system when they pierce it alerting the plant to their attack and stimulating it to begin supplying tannin glue to begin repairs. If the plant is healthy, the aphids will soon be sucking up enough tannin to seize up their proteins. The aphid's counter by assembling a larger group and thereby diluting what each may otherwise extract. The tannin does something else, it causes the plant to begin giving off its own chemical signal, ethylene gas. Ethylene gas can weaken a leaf's attachment so that it is shed, dropping the aphids on the ground below, and it warns other leaves and nearby trees of an impending attack providing them with advance warning and time to engage their chemical defenses.

As the tree counter attacks, the aphids begin firing out new messages and begin preparing to break camp. They decide to see if it is not so green on the other side of the tree using their infrared detectors to find slightly yellow leaves indicating a functioning but weak leaf! Now, breaking camp is a little complicated. When the first troops arrived and set up camp they began producing wingless warriors and now, a few generations later, they must produce a generation with wings to carry on. These new pilots face into the wind, rev up their wings, take a few steps and fly into the future.

Ladybird beetles leave a signature chemical on leaves where they find no aphids so they will not waste precious fuel landing and taking off from these leaves again. Almost needless to say, is that aphids have developed the ability to determine if the ladybird beetle has marked the leaf which would indicate it will not be returning soon, so they set up camp!

The trees have another strategy, the capability of supplying easily replaced leaves near the ends of limbs with aphid-attracting sugar water, where they can easily be picked off by ladybird beetles, wasp or other insects. The aphids counter by enlisting an ally, ants. Ants will jealously guard aphids in exchange for some of their sweet honeydew. Some plant wasps are specialized internal parasitoids of aphids and some aphids even have a symbiotic bacteria that kill these wasps' larvae!

The often quoted platitude that nature invented it first is certainly the case in warfare. In fact aphids and ladybird beetles have many adaptations we are eons from developing including an all-female army, the capability to develop wings and a chemical arsenal with a comprehensive range of uses from initial toxicity to communications and construction. Of course, they have been engaged in an arms race for at least 225 million years!

Past Entomology Camps are Online….

Beginning with the 2006 camp, Dr. Tim Groman has established a website to archive the activities from camp. If you want to see what happened at the 2006 and 2007 camps visit, www.bugcamp.org.

Calendar of Events for 2008

May-Camp registration deadline
June-Wildlife and Fisheries Camp
June-Entomology Camp
June-Lepidopterist Society Meeting and Project Bug
July-Wildlife and Fisheries Camp
July-Entomology Camp
October-Photo Salon and Art Exhibit

4-H Entomology Camp Registration Form

Entomology Camp
MSU Entomology Department
Box 9775
Mississippi State, MS 39762

An educational learning experience designed to introduce young people and interested adults to the world of insects.
Campers will receive rudimentary instruction in habitat identification, collecting , pinning and preserving specimens, and in plant and insect interactions,

Please indicate camp session you will attend:
_____first session June 15 - 19, 2008 _____2nd session July 13 - 17, 2008

Charges include room/board, t-shirt and miscellaneous supplies. Pins and insect boxes can be made available for an additional cost.
Please include a $75 Deposit with this application. Deposits are applied to camp costs. Deposit is not refundable after May 1, 2008.

Tshirt sizes: _____ Small _____Medium _____ Large _____ XL _____ Other
All shirt sizes are adult

Name: _____

Address: _____

City: _____

State:_____ Zip:_____ County:_____

Age:_____ Gender:_____

Telephone _____ email _____

I am interested in: CEUs or credit hours.

Please submit a **separate copy of this form for each camper** - be sure to indicate the session the camper will be attending.

Certification of health is required - so camp physicals are in order

Mail individual applications along with **75.00 deposit** to reserve your place to:

Enroll now!! Out of state campers are welcome!!!!!
Enrollment is limited and will be on a first come basis.