



The glowworm



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Hurry, hurry, hurry! If you haven't yet submitted your entries for the Art exhibit and Photo salon there is still about a week left. We need your participation. See rules and entry details later in the Gloworm. This edition starts with part 1 of Dr. John's series called, "The 225 million yr. war" and challenges you to be a war correspondent! There are still opportunities for good insect collecting this fall. If you collect something interesting, you may want to check out the last article in this edition to learn about registering your find with zipcodezoo.com. Enjoy, Dr. Held

The 225 Million Year War (part 1 of 3) by Dr. John Guyton

Where the first attack occurred has been lost to history and may never be known but evidence may indicate who launched it. The floral world, although seemingly passive, has been fully engaged in the arms race matching insects' offensive weaponry with sophisticated chemical defenses and their own offensive strategies, alliances and chemicals.

*Ladybird ladybird fly away home,
Your house is on fire and your
children all gone.*

*All except one whose name is Anne
Who hid herself under the frying
pan.*

The First Aggressor- The ladybird beetle may have been the original aggressor when it developed a taste for aphids. Even their larvae enjoy munching on aphids and can eat over 300 before they pupate. These young larvae are so small that they may ride around on the back of large aphids, for a little

while... Lacewing larvae have become a side theater of the war and find ladybug larvae tasty. Ladybird beetles will resort to using alternative energy sources by eating mites, scales and insect eggs when aphids are in short supply. A few have even become pacifist vegetarians and some even feed on fungal growths.

These Coleopterans number over 6000 species worldwide, each with their specialized array of tactics and weapons uniquely adapted to aphids and other insects or plants in their area. So efficient are they that during the late 1800s US scientists began using ladybird beetles in biological control programs. In fact, a ladybird beetle was one of the first successful imported biological control agent. Adult ladybird beetles may be the most widely recognized insect in the world and must have been the inspiration for the Volkswagen beetle! They can be found in most gardens and their predatory behaviors are welcomed by gardeners. Their presence indicates a functioning natural biological control.

Birds did not waste any time checking out the polka-dotted beetles as a potential food source and the technique of playing possum is a euphemism for the ladybugs ancient tactic of falling to the ground and playing dead. Lady bugs can even appear wounded as a disagreeable amber fluid, containing alkaloid toxins, exudes, or reflex-bleeds, from their legs. Researchers have identified over 300 emitted odors (methoxypyrazines) indicating ladybirds have been using chemical warfare for a very long time. Incidentally these compounds are also found in plants and other animals. In spite of the bright coloration of the adults, which is a warning to predators of their toxicity (aposematism), there are parasitoids of ladybirds, the best known is a type of braconid wasp.

Mobilizing the troops... When ladybirds go to war, they go to war, homesteading, laying eggs and rearing alligator-like larvae on the very leaves where they forage for their energy



supply (aphids). Each female lays a platoon of 10 to 50 yellow eggs on plants where aphids are busy sucking plant fluids. The eggs, larvae, and pupae are also protected by toxins. The pupae have an ant biting appendage or clefts along the backs of their abdomens. Weather permitting; they can produce at least two generations per year. Ladybird larvae and adults can supplement their diet with flower nectar, water and honeydew (the sugary excrement of aphids). In the winter they retreat in large groups to high mountains hideouts or sometimes inside our homes. Those who abandon the campaign too late to find better cover overwinter in small groups in hedges, or leaf litter.

Become a War Correspondent

It is not easy to beat CNN's live coverage but you can actually bring a skirmish into your living room by collecting a leaf with aphids and a few ladybird beetles! With a dissecting scope you may be able to watch the young homopterans' developing inside the mom's translucent body and live birth. Make careful observations and write an article for the school newspaper or the *Gloworm* describing your observations.

- Dr. John Guyton (Note: Fall and spring are great times to be correspondents in this war as aphids are active at these times. Specifically check the war on butterfly weed (*Asclepias*) for some great action-D.W.H)

Entomology Camp Online...

Dr. Tim Groman has established a website for camps beginning with the 2006 camps. If you want to see what happened at the June 2007 camp visit, www.bugcamp.org.

ZipCodeZoo Needs You!

I recently stumbled across an interesting site that fits nicely with our biodiversity discussions and the GIS collecting tools used at Entomology Camp. The site is zipcodezoo.com and it contains data on plants and animals from around the world. A quick search for MS flora and fauna will provide enough reading for days! The

interesting part of the site is becoming a zipcodezoo ranger. This will provide page for you to upload pictures of animals for identification and submit collection records.

3rd Annual 4-H Art Exhibition and Photo Salon

October 25 – November 30, 2007

All Entries must be received by October 19, 2007

All submissions, photo, art and prose and poetry, will be exhibited at the Mississippi Entomological Association meeting October 25–26, 2007 and then in the foyer of Clay Lyle Entomology for the month of November.

**Adults are invited to submit entries to the 4-H Entomological Art Exhibition and Salon. Please indicate `Adult' in the age slot!
Please send or bring submissions to:**

**4-H Art Exhibition and Photo Salon
Clay Lyle Entomology Building
Box 9775
Mississippi State, MS 39762**

RULES

Rules for Exhibition Photos:

All photo exhibit entries must be submitted by October 19, 2007 to 4-H Entomology Art Exhibition, Clay Lyle Building, Box 9775, Miss State, MS 39762. Photos may be digital or traditional.

Combined Rules (digital and traditional)

- The 4-H member must photograph all entries submitted. The 4-H member does not have to be enrolled in the photography or the entomology project areas.
- No more than 5 entries per individual should be submitted. All entries must have an entomological theme.

Traditional 35 mm Camera –

- For traditional film camera: Mount the regular size print (3" x 5" or 4" x 6") on **8 x 10 inch** white poster board
- Do not mat or cover the front of the poster board or picture in any way.
- On the back of the poster board include title of print, photographer's name, address (including city, state and zip code), **4-H age, Under the address please print your county name.**

Digital Camera –

- You must submit an 8" x 10" (photographic) prints in a clear 8" x 10" or 8.5" x 11" page protector. In order to show the most detail in your final print. **Take your final edited image file to a film processor (such as Wal-Mart or Walgreens) to be printed, rather than printing the photo with an ink-jet printer.**
- On the back of the 8" x 10" prints, using a sticker or peel-off label, print or type: the title of print, photographer's name, address (including city, state and zip code), 4-H age. **Please print the county name under the address.** Do not write this information directly on the back of the prints as it will ruin the 8" x 10" prints.

Photographs will be returned to exhibitors when the public exhibition closes in December.

Rules for Art submissions:

All art should have an entomological theme but may take any form desired by artist.

- Paintings and drawings should be mounted on mat board for display.
- Each piece of art should be identified by a 'title' and the artist's name, address, including county, and age. Sculptures or other objects should have a tag attached with the above information.
- Submissions should be designed for display.

Art will be returned to exhibitors when the public exhibition closes in December.

Rules for Prose and Poetry Submissions:

All Prose or Poetry should have an entomological theme but may take any form desired by artist.

- Prose or poetry should be typewritten, double spaced, in at least a size 12 font.
- They submission should be included in a clear plastic folder and should have the title and author's name on the front.
- All submissions should have the author's name, address, and age.

Selected submissions will be reprinted in the *Gloworm* newsletter and possibly other locations. The submissions will not be returned.