

# CLEMSON UNIVERSITY

## ~ URBAN ENTOMOLOGY EXTENSION & RESEARCH ~

### Palmetto Pestalk March 2004 Newsletter<sup>1</sup>

*Dr. Eric P. Benson  
Urban Extension Entomologist  
Department of Entomology  
Clemson University  
(864) 656-3111  
fax: 656-5065  
e-mail: ebenson@clemson.edu*

On evening of February 25, a fire swept through a housing complex in Clemson, displacing more than 100 university students. What started as a small accidental fire in a bathroom, quickly spread through the entire structure when flames licked up a wooden pipe chase to the roof. Once in the attic, the fire was fanned by strong winds, ravaging the building. Amazingly, everyone was evacuated with only minor injuries reported, but students watched their college home burn to the ground, left with only the clothes on their back and items in their pockets.

That evening, temporary housing was found for all of the students in local hotels, college dorms and with Clemson residents. By the next day, relief workers from the American Red Cross, Clemson University, and the Fellowship of Christian Athletes asked for donations for clothing, food, bedding and toiletries for over a hundred students. By the end the day, they had collected enough clothing, food, bedding and toiletries for over six hundred individuals.

Almeda Jacks, Clemson Vice President for Student Affairs stated: "The outpouring of support in the way of clothes, food, toiletries, assorted items

and housing accommodations from the university's students and employees, community residents and area businesses has been overwhelming." Jacks continued: "We are so grateful to everyone who has stepped forward to help these students and other residents of University Ridge. Offers of assistance have come in from all over the state. Once again, the far-reaching Clemson Family has shown its strength and compassion in the face of tragedy."

The "Clemson Family" and the "Clemson Experience" is often referred to on campus and around the state when discussing the special bond many folks have with the University. Fortunately, Clemson does not have a monopoly on human kindness.

The South Carolina Pest Control Association also has a special bond for its members. Those fortunate enough to attend the Awards Luncheon at the annual winter meeting, know that the SCPCA provides numerous, wonderful scholarships for students allied with the pest control industry to attend college. Every year, through the organizing efforts of Wheeler Buff and SCPCA volunteers across the state, funds are raised through the sale of advertisements and a horse show for Camp Kemo, Camp Courage and Camp Happy Days. These camps help children suffering from cancer and their families in SC. This past year an amazing \$42,000 was raised for the camps!

You receive Palmetto Pestalk because you are a member of the South Carolina Pest Control Association. It is not a requirement for you to belong to the SCPCA to do pest control in South Carolina. It is a choice. And that choice brings you together with other like-minded individuals who not only want to raise the standard of pest control in our state, but also want to raise the standard of the human condition. I hope you are proud of the SCPCA, your membership and the knowledge of what we do is secondary to who we are.

#### **Winter Meeting A Hit With Courage, Character And Curve Balls**

The 45st Annual South Carolina Pest Control School was a hit. Over 550 owners, managers, exhibitors, speakers and invited guests attended. Overall, the evaluations of the program were very positive. Some of evaluations included comments such as: "Good overall program," "Great organization," and "The speakers were excellent!" Many of you especially enjoyed the motivational talk by Jose Alvarez titled: "Winning: A Champion's Vision."

Every year, we review the evaluations. Most questions on the program evaluation were on a scale of 1 to 5 with 1=strongly disagree, 2=disagree, 3=neither, 4=agree and 5=strongly agree. When asked "I am pleased that I participated in this School" participants gave an average response of 4.7. When

asked “I plan to come to future winter meetings”, the participants gave an average response of 4.6.

We have gotten some good suggestions for program improvements and speakers for next year. Many of you would like to see more business topics including information on insurance and regulatory issues. Others would like to have more information on Formosan termites and nuisance wildlife control. The roundtable discussions were especially liked by the participants. Some individuals felt that some of the best information they received at the meeting was from these casual discussions. Unfortunately, only about 100 attendees stayed for the roundtables, so we’ll need to assess whether or not we have them next year.

As always, we will take all suggestions and comments into account as we plan next year’s meeting. Please feel free to share any additional comments you may have with me and please take a moment to scan and enjoy some of the candid pictures from the meeting in this issue of Pestalk.

### **Pondering Psocids**

The insect order Psocoptera is a large group of small to medium sized insects. Abbreviated as psocids by many pest control professionals, they are also known as booklice or barklice. Though booklice may have a body shape similar to a louse, that is the only thing they share in common.

Psocids are widely distributed throughout the United States, with approximately 280 species in the U.S. Psocids are small, up

to 1/4 inch long, soft-bodied insects that vary in color from yellowish white to pale grey to a dark, drab color. Psocids found indoors are referred to as booklice and species found living on plants are known as barklice. Most psocids, or barklice, that are found outdoors are darker in color and winged. Winged adults are able to fly from plant to plant to feed and lay eggs. Their darker coloration allows them to blend in with the bark of trees and plants keeping them safe from predators. Indoor species of psocids, or booklice, typically are wingless and lighter in color.

The psocid life cycle begins with the male and female mating and producing eggs. Female psocids mate only once while males may mate with several females. Eggs can be laid singly or in clusters and may or may not be covered in a webbing. Barklice lay their eggs on branches and trunks of trees or shrubs. When eggs of the barklice hatch the young look like smaller wingless versions of the adults. The young will pass through 4-6 immature stages before becoming an adult. It is generally thought that barklice survive during the winter as eggs. Barklice are often found in great numbers feeding on trees and shrubs.

Booklice eggs are usually laid on paper or food products. As with barklice, the immature booklice look like miniature versions of the adults. However, booklice are typically wingless as adults so distinguishing between adults and young can be difficult. The average booklouse takes about one month to develop from egg to adult. Adults can live an additional three months.

Psocids depend on high temperatures and humidity to survive. Optimal temperatures and relative humidities for survival range from 75-82 F and 75-90% RH. Psocids are extremely susceptible to low relative humidity (50-60%) and can die within weeks if high humidity does not return.

Both booklice and barklice feed on molds, and a variety of animal and vegetable matter. Barklice feed on lichens molds, fungi, pollen, decaying organic matter, and dead insects. Booklice are often found feeding on dried insect, animal and plant specimens, flour, grains, cereals, and dried fruits.

In general, barklice are not considered as pests. Since they do not feed directly on trees or shrubs, they do not cause stress to the plants. Barklice are also not known to transmit any plant diseases. Barklice and their webbing are often found in large numbers on plants. This may give the appearance that they are harming the plant, but in reality no damage is being done.

Booklice can be a serious pest in stored food. In homes, booklice are often considered a pest because of the large numbers that can build up in a relatively short time. Booklice, as their name implies, are often found in damp books where they feed on the starchy glue. Booklice damage books by removing the glue and by feeding on the paper of the book, both of which support mold and fungi growth. Booklice also damage the paper if their bodies are crushed. Booklice can also build up to large numbers in newly constructed buildings. Newly applied plaster and drywall contain high amounts of

moisture that can support mold growth. Psocids can be found in wide a variety of habitats that support mold growth, these may include cardboard, paper, straw, closets, and cabinets.

Booklice control is best achieved by reducing the humidity within the building to a level below 50%. Lowering the humidity will prevent mold growth and directly kill the booklice. Any food items that may be supporting mold growth should be removed and the area thoroughly cleaned. Any leaks in pipes or areas with moisture problems should be corrected. *Source: Donny Oswalt, Clemson University Insect Information Series Fact Sheet.*

### **Social Larvae And Noisy Moths**

An interesting part of being an entomologist at a university is the ability to attend seminars where other entomologists visit and give seminars. Recently we've had two fascinating seminars at Clemson.

The first presentation was by Dr. Mike Strand from the University of Georgia. Mike used to be a faculty member at Clemson in the 1980s. Mike talked about polyembryonic parasitoid wasps in the Genus *Copidosoma*. That's a mouthful of terms to describe a group of small wasps that lay their eggs inside the eggs of moths. When a moth egg hatches producing a developing caterpillar, the wasp eggs multiply and produce numerous larvae that grow inside the caterpillar. Eventually the wasp larvae pupate within the caterpillar and produce new adult wasps.

Many wasps have a similar life cycle. What make some *Copidosoma* species super cool

is they actually develop social colonies of larvae within the bodies of caterpillars. Similar to other social insects like termites, *Copidosoma* larvae can develop castes, including larval soldiers and individuals destined to be reproductives. Only the reproductives will eventually become wasps. The larval soldiers never mature. Their role is to protect the future reproductives from other parasites that may also invade the caterpillar's body, trying to eat them!

A second seminar at Clemson was by Dr. William Conner from Wake Forest. Dr. Conner presented a talk titled Bats, Moths and Poetry: The Evolution of Acoustic Communication in Tiger Moths. The talk was about the "bat-moth arms race". Most folks know that bats use sound or echolocation to find moths at night. To avoid capture, most moths dive or loop erratically to avoid capture when they hear bats.

If you want to try an interesting experiment, go out to a street light this summer when a lot of moths are flying. Take out your car keys and start to jingle them. The jingle of multiple keys mimics the sound frequency that bats use to find moths. If your moths hear your keys, you should be able to cause them to drop, swoop and fly in erratic patterns. Of course if bats are around and you toss a rock the approximate size of a moth up in the air (not at the bat) the bat will momentarily follow the rock thinking it is a moth. Some will actually catch the rock for a moment before letting it fall.

Tiger moths have take the bat/moth war one step further.

Most tiger moths eat plants that make them noxious to bats. A bat only has to taste a few tiger moths to learn that they are not something they want to eat. Buy how does a bat know a tiger moth from a tasty moth at night?

Tiger moths make sounds. They have little structures called tymbal organs that produce a clicking sound. When tiger moths hear a bat they start clicking a message: "don't eat me unless you want to get sick!" Bats learn that clicking moths are not good to eat and avoid them during their hunts.

If you want to learn more about Dr. Strand's research at Georgia you can go to his web site at: <http://www.ent.uga.edu/personnel/faculty/strand/index.html>. To learn more about Dr. Conner's research including on how tiger moths use sound to attract mates you can go to: <http://www.wfu.edu/~conner/>. Both of these sites are a bit afield of pest control, but they will give you a greater appreciation and respect for the wonderful world of insects.

<sup>1</sup>Note: This newsletter is a regular submission to Palmetto Pestalk.

For information concerning this publication contact:

Tom Gochnaur  
9721 Dunbarton Drive  
Columbia, SC 29223  
Phone: 803-788-6699  
Fax: 803-788-9698  
Email: [teegee342@aol.com](mailto:teegee342@aol.com).