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Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants, and Extension Personnel

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What's behind the mysterious itchy bites in the Midwest?

The first media report on an outbreak of mysterious bites on people occurred about three weeks ago when football players from a Colorado college went home covered with these bites after playing against the Gorillas of Pittsburg State University in Pittsburg, Kansas. Immediately after, the Crawford County Health Department was inundated with calls from Pittsburg residents complaining of these “itchy bites”. Typical bites were quarter-size reddened welts with a pimple on their middle, and were most commonly distributed over the neck and shoulders, and on areas of the torso where clothing fitted loosely. The most striking characteristic of these bites was that no one had felt the bite nor had anyone seen an insect biting. In collaboration with the Crawford County Health Department, Pittsburg State University, a team of epidemiologists from the Center for Disease Control and Prevention (Atlanta, GA), and the Kansas Department of Health and Environment, we made insect collections with light traps (CDC traps baited with dry ice) which yielded some biting midges (no-see-ums, punkies), but not in numbers to account for the high incidence of bites on people. In addition, biting midges produce an irritating and noticeable bite during feeding. Chiggers were eliminated as suspects for the low incidence of bites on the legs and on areas where clothing fits tightly against the skin (under socks, belt and bra). During our stay in Pittsburg, our efforts to collect live specimens of insects feeding upon our bodies yielded negative results but by next morning, five to eight bites were found on our neck and shoulders.



Pin Oak with galls



Red Oak with gall

By then, bites were reported from other localities, especially from Lincoln, Nebraska and Joplin, Missouri. The first lead in solving this puzzle was found in Extension Newsletters written in 1994 by Dr. Don Mock, retired K-State Extension Professor, describing various cases of bites on people that occurred during 1992-94 in the state. In all these cases, a mite commonly called straw itch mite, or grain itch mite, was suspected to be involved. Dr. Mock suggested this mite might be associated with gall insects on oak trees. This information was shared with personnel of the Department of Entomology, University of Nebraska, which were successful in finding a great incidence of marginal leaf roll galls infested with this mite feeding on the midge causing these galls. Our examination of galls on oak leaves from Pittsburg area has yielded large number of straw itch mites as well.



Gravid Female



Another Gravid Female

Itch mites (*Pyemotes* spp.) are very small mites (1/125 inch) which prey/parasitize a broad variety of insects. Common to all these hosts is that they are found in protected habitats such as galls and stems (a trait aimed at protecting the immobile, gravid female). Newly emerged and mated females inject a venom containing saliva into their hosts. This paralyzing toxin is so potent that a single mite can paralyze and kill a host larva 166,000 times its own size. The female abdomen enlarges as its progeny develops inside and within a few days about 200 adult mites emerge from the gravid females. Newly emerged males position themselves around the genital opening of the mothers and mate with emerging females. This is the stage at which these mites disperse to colonize new habitats invaded by insect larvae. They are dispersed by wind and if they land on vertebrate hosts, they attempt to feed on them with the resulting itchy bites.



Reaction after 18 hours

Spraying insecticides in the environment is not recommended because mites are hidden and protected inside of the galls. Repellents based on DEET should provide adequate protection.

Change of clothing and hot soap shower is recommended after being outdoors, especially in areas with oak trees.

Alberto Broce, Ludek Zurek, Bobby Brown

Branches On The Ground:

This is the time of year that people report a scattered branches littering the ground (Figure 1) beneath their favorite tree. The first thought is that those pesky squirrels are having a hay day. However, upon closer examination, the “cut” at the end of the branch is very neat/clean (Figure 2). [This, then, exonerates our bushy-tailed friends who leave ragged cuts.] Rather, what people are seeing is the after effects of *Oncideres cingulata*, the **twig girdler**.



Figure 1

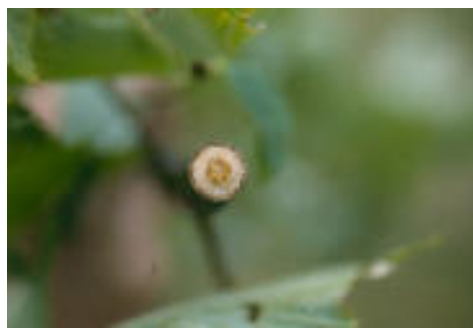


Figure 2

Twig girdlers are beetles with long antennae (hence their categorization as a “longhorned beetle”). The larvae of longhorned beetles are referred to as roundheaded borers. Roundheaded borers develop/feed in the sapwood of tree trunks and branches (as opposed to flatheaded borers which dwell and feed on cambial tissues just beneath the bark).

Although adult twig borer activities have not been determined for Kansas, they probably begin in late July,

peak in August and extend into September. After mating, the female targets branches in the range of 6-13 mm in diameter for depositing eggs. She uses her mandibles to cut a small slit (usually) at the base of a leaf bud (Figure 3). Reversing her position, she uses her ovipositor to insert an individual egg beneath the bark. The egg is then sealed in with a secreted substance. A glistened appearance denotes the presence of an egg (Figure 4). In one study, the number of eggs per cut twig ranged from 0 - 17 with 60% of the twigs containing 3 to 6.



Figure 3



Figure 4

Between actual deposition of eggs, the female will cut a V-notch completely around the twig (Figure 5) (the pinned beetle is shown for dramatic effect — in fact, it may not be a twig girdler per se). A central core is left in tact (refer back to Figure 1), and thus the girdled branch (Figure 6) remains in the tree canopy. With the vascular system destroyed, the entire branch eventually dies. Winds then cause dead brittle branches to snap off and drop to the ground.



Figure 5



Figure 6

Larvae develop in the fallen twigs. While larval activities begin in the fall and is “on hold” during the winter, most of their growth occurs during the ensuing spring and summer months. After pupation, adult beetles emerge from the fallen branches. **THUS THE REMOVAL AND DISPOSAL OF FALLEN TWIGS IS THE MAIN CONTROL TACTIC AGAINST THE NEXT GENERATION OF TWIG BORERS.** Insecticide applications are not considered practical against twig girdler beetles.

Other than the unsightliness of branches littering the ground, twig girdler damage to established trees is negligible. While a wide range of tree species serve as hosts for twig girdler activities/development, most reports indicate that elm is a preferred host in Kansas.

Bob Bauernfeind

Weekly Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from September 10 through September 23, 2004:

- 9-10-2004, Riley County: Oystershell Scale on Lilac.
- 9-13-2004, Riley County: Termites in wooden sign.
- 9-13-2004, McPherson County: Minute Pirate Bugs biting person.
- 9-13-2004, Sherman County: Aphids on Crab Apple.
- 9-13-2004, Kingman County: Oak Lace Bugs on trees.
- 9-16-2004, Riley County: Wolf Spider in home.
- 9-16-2004, Shawnee County: Midges in yard.
- 9-16-2004, Wabaunsee County: Drugstore Beetles in home.
- 9-16-2004, Clay County: Blow Fly, Moth Larvae in building.
- 9-17-2004, Shawnee County: Leafhoppers at light.
- 9-20-2004, Norton County: Blow Fly larvae from yard.
- 9-21-2004, Riley County: Moths and beetles at light.
- 9-21-2004, Saline County: Scarab Beetle larvae in rotten limb of tree.
- 9-21-2004, Sedgwick County: Drain Flies from home.
- 9-22-2004, Johnson County: Yellow Jackets from garden.
- 9-22-2004, Harvey County: True Bug nymphs from home.
- 9-22-2004, Meade County: Wolf Spider in home.
- 9-23-2004, Lyon County: Oak Leaf Miners in tree.

If there are any questions regarding these samples or about the identification of any arthropod please contact the Insect Diagnostician at 785-532-4739 or at bbrown@oznet.ksu.edu.

Bobby Brown

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Sincerely,

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