Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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Emerald Ash Borer In Kansas: Another Quarantined County

If you have not heard, on September 30, 2015 an Emerald ash borer (*Agrilius planipennis*) larva was found in a girdled trap tree in Eudora, KS (Douglas County) by the Kansas Department of Agriculture. This means that Kansas has four counties in which Emerald ash borer has been detected, and subsequently quarantined, including Wyandotte, Johnson, Leavenworth, and Douglas. First detected in 2002 in Michigan, the Emerald ash borer has been found in 23 states throughout the USA (**Figure 1**), and is responsible for causing the death of over 30 million ash trees. For more information regarding Emerald ash borer, contact the Kansas Department of Agriculture or the Department of Entomology at Kanas State University (Manhattan, KS).

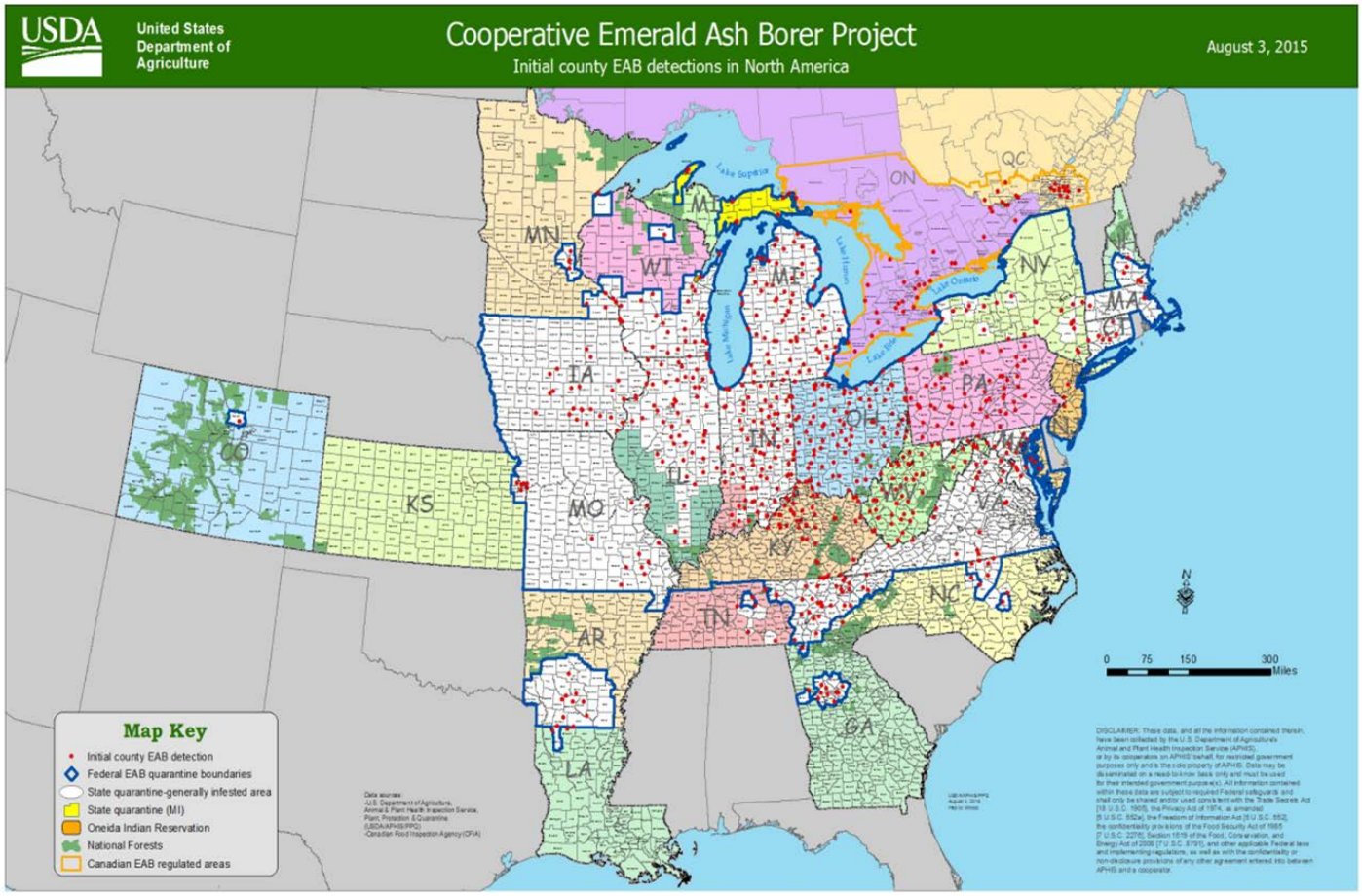

Figure 1: Distribution May of Emerald Ash Borer August 3, 2015

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Euonymus Scale: What Can You Do?

This is the time of year when euonymus scale (*Unaspis euonymi*) becomes noticeable in landscapes on evergreen euonymus (*Euonymus japonica*) and Japanese pachysandra (*Pachysandra terminalis*). Euonymus scale typically overwinters as a mated female, primarily on plant stems. Eggs develop and mature underneath

the scale, and then hatch over a two to three week period. The newly hatched crawlers migrate along the stem and start feeding near the base of host plants. Crawlers can also infect adjacent plants by being blown around on air currents, resulting in infestations often not being detected until populations are extensive and damage is noticeable—like right now. Leaves eventually become spotted with yellow or white areas. Plants located near structures such as foundations **(Figure 1)**, walls or in parking areas are more susceptible to euonymus scale than plants growing in open areas that receive sunlight and air movement. In addition, the variegated forms of euonymus are more susceptible to euonymus scale than the green forms.

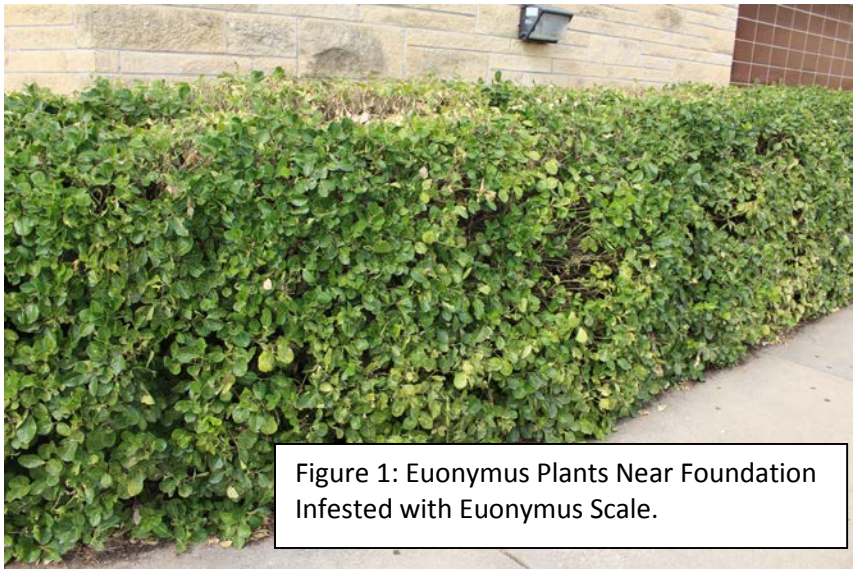

Figure 1: Euonymus Plants Near Foundation Infested with Euonymus Scale.

Heavy infestations of euonymus scale can ruin the aesthetic appearance of plants, causing complete defoliation or even plant death. Females are dark brown, flattened, and resemble an oyster shell. Males, however, are elongated, ridged, and white in color (**Figure 2**). Males tend to be located on leaves along leaf veins whereas females reside on the stems. There may be up to three generations per year.

Figure 2: Close up of Euonymus Scale Females and Males.

Cultural practices such as pruning out heavily infested branches—without ruining the aesthetic quality of the plant—is extremely effective in quickly reducing euonymus scale populations; especially this time of year. Be sure to immediately discard pruned branches away from the area. If feasible, avoid planting *Euonymus japonica* in landscapes since this species is highly susceptible to euonymus scale. Winged euonymus (*Euonymus alata*) is less susceptible to euonymus scale, even when adjacent plants are infested. Applications of insecticides in May through June, which is when the crawlers are most active, will help to alleviate problems with euonymus scale later in the season. Insecticides recommended for suppression of euonymus scale populations, primarily targeting the crawlers, include acephate (Orthene); pyrethroid-based insecticides such as bifenthrin (Talstar), cyfluthrin (Tempo), and lambda-cyhalothrin (Scimitar); potassium salts of fatty acids (insecticidal soap); and horticultural (petroleum or mineral-based) and neem (clarified hydrophobic extract of neem oil) oils. Always regularly check plants for the presence of crawlers, which will help time insecticide applications. In general, three to four applications performed at seven to 10-day intervals may be required; however, this is dependent on the level of

the infestation. Euonymus scale is a hard or armored scale, so, in most cases, soil or drench applications of systemic insecticides such as imidacloprid (Merit) are not effective in suppressing euonymus scale populations; however, the systemic insecticide dinotefuran (Safari), due to its high-water solubility (39,000 ppm), may provide suppression of euonymus scale populations when applied as a drench to the soil. Dormant oil applications can be conducted in winter to kill the overwintering mated females on stems. However, thorough coverage of all plant parts is important in order to obtain sufficient mortality.

Euonymus scale is susceptible to a variety of natural enemies (e.g. parasitoids and predators). These include braconid and ichneumonid wasps, ladybird beetles, green lacewings, and minute pirate bugs. However, natural enemies may fail to provide enough mortality ('killing power') to significantly impact "high" populations of euonymus scale. Furthermore, insecticides such as acephate (Orthene), and many of the pyrethroid-based insecticides, including bifenthrin (Talstar), cyfluthrin (Tempo), and lambda-cyhalothrin (Scimitar) are very harmful to most natural enemies, so applications of these materials may disrupt any natural regulation or suppression.

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Parsleyworm Or Black Swallowtail Caterpillars

This is the time of year we start getting inquiries regarding the parsleyworm or black swallowtail (*Papilio polyxenes*) caterpillars. The caterpillars primarily feed on the leaves of dill, fennel, and parsley although they will sometimes feed on plants such as Queen Anne's lace, celery, and similar plants in the carrot family (Apiaceae or Umbelliferae). Young caterpillars are mottled black and white, which results in them resembling bird droppings. Mature caterpillars possess bands of green, yellow, white, and black. Furthermore, there are six yellow spots within each black band. Full-grown caterpillars can be up to 2.0 inches in length. Parsleyworm overwinters as a pupa or chrysalis attached to the bark of trees, sides of buildings, or other protected habitats. Adults typically emerge in May and June, and mated females deposit eggs on plants in the Apiaceae or Umbelliferae family; laying several eggs per location. After eggs hatch, caterpillars feed for 3 to 4 weeks during which time they undergo a series of color changes as they mature. Full-grown caterpillars eventually move off plants to find a place to pupate. The caterpillars form gray pupae, which blend in with the surrounding background. After about two weeks, adults emerge from the pupa or chrysalis. Adults are large black swallowtail butterflies with a wingspan of 2.0 to 3.5 inches. They are shiny black in color, occasionally with iridescent blue; and yellow bands or

Figure 1: Parsleyworm: October 2015

spots along the edge of the forewings and hindwings. The adults feed on the nectar of many different flower types. Females and males mate, and then females lay eggs that will result in the occurrence of the second generation sometime in August. There are usually two generations per year.

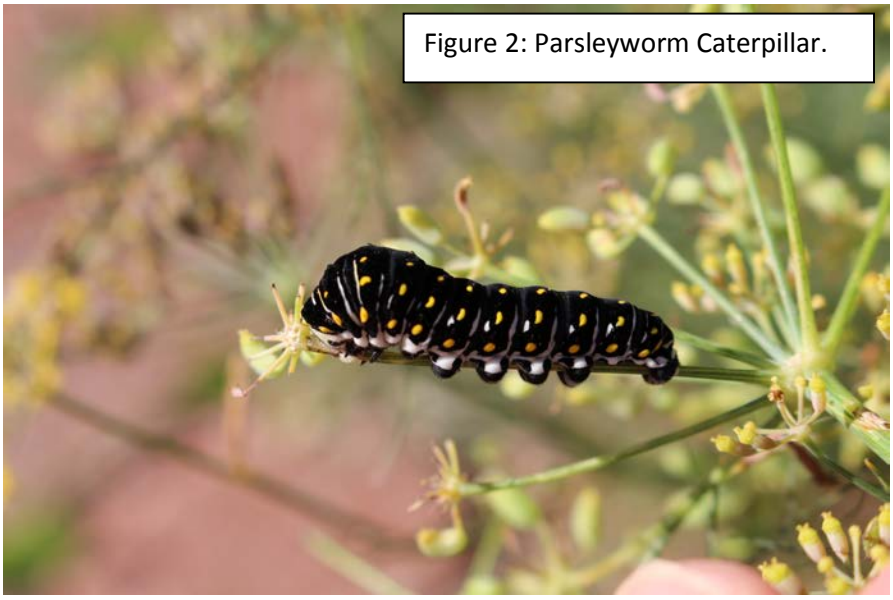

Figure 2: Parsleyworm Caterpillar.

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Wheel Bug: Be On The Look-Out For This Distinct "Bug"

Figure 1: Wheel Bugs Mating Male on Top of Female.

Figure 2: Wheel Bug with Crest or Wheel on Thorax.

If you have spent any time outdoors in the last month, you may have noticed a very distinct, grotesque looking insect on trees, shrubs, or near homes. This insect is the wheel bug (*Arilus cristatus*), which is common, and widely-distributed throughout Kansas and the USA. Wheel bugs, also referred to as assassin bugs, are predators that prey on insect pests. However, both the nymphs and adult can inflict a painful bite when handled by humans.

Adult wheel bugs are 1.0 to 1.25 inches long, robust with long legs and antennae, and have a stout beak and large eyes on a narrow head **(Figure 1)**. They are dark-brown to gray in color. The adults possess a wheel or crest with 8 to 12 protruding teeth-like structures (tubercles) on the thorax that looks like a cogwheel **(Figure 2)**. Wheel bugs have two long, slender antennae that are constantly moving or weaving around. Females

are typically larger than males. Females lay eggs that resemble miniature brown bottles with white stoppers **(Figure 3)**. The eggs are laid in clusters of 40 to 200, and are glued together and covered with gummy cement, which protects the eggs from weather extremes and natural enemies (e.g. parasitoids and predators). The egg clusters are primarily located on the trunk or branches of trees or shrubs. The eggs hatch into nymphs that are bright red in color with black markings. The nymphs do not have the wheel or crest. The life cycle, from egg to adult, may take 3 to 4 months to complete. Wheel bugs are active day and night. They are very shy and tend to hide under leaves. The wheel bug has one generation per year and overwinters as eggs.

Figure 3: Wheel Bug

Wheel bugs are voracious predators and feed on a wide-variety of insects, including caterpillars **(Figure 4)**, beetles, true bugs, sawflies, and aphids. Unfortunately, wheel bugs will feed on beneficial insects such as ladybird beetles and honey bees. The mouthparts are red-brown in color and resemble a tube or straw that is located underneath the head **(Figure 5)** and extends out when ready to "stab" prey. Wheel bugs paralyze prey with their saliva, which contains a toxic substance that immobilizes prey within 30 seconds. In addition to feeding on insects, wheel bugs are cannibalistic, and will feed on each other.

Figure 4: Wheel Bug Ready to Attack Caterpillar.

Figure 5: Wheel Bugs with Mouth Underneath Head.

HOME

Raymond Cloyd

Yikes! What's Biting Now? + Pepper-In-My-Paint = Minute Pirate Bugs (MPB)

Saturday afternoon as I was doing some house painting, I was feeling occasional "little irritations" on my arms and legs. Looking at the points of discomfort, I recognized my little visitors: minute pirate bugs - *Orius* spp. And, looking in my paint bucket, more were "stuck" on the surface of the paint.

Actually, this was nothing that I hadn't experienced in the past. I usually have a spring and summer list of projects. I seem to put painting (not my chore of choice) off until the heat-of-summer is past, and then gallop to complete the task trying to beat colder weather. Thus, mid- to late fall is when I am visited by MPB. What draws them? It's not the paint color. Whether ultra-bright white (for trim), or Coronado Tint Base 410-35 + B20C24F9 (a color for which there is no name) for the body of the house, they show up. I surmise that the attractant is the paint odor being carried in the air.

Those that land on me take-a-taste. This is not an unusual. One way an insect determines whether it has landed on a "choice" food source is to take-a-taste. While an insect with chewing mouthparts takes-a-bite/chomp, an insect with piercing/sucking mouthparts (such as a MPB) takes a "jab-and-sip". They must not get an instant result, because I have watched individuals lingering after their jab caught my attention. But eventually, because I didn't qualify as a satisfactory food source, they withdrew. The fate of those in the paint bucket? Given their small size, they are painted into and become a part of the coat of paint on my house.

Are MPBs pests or not-a-pest? While their bite (in my estimation) is but a minor

irritation, in their proper place, MPB's would be considered to be beneficial insects in their role as predators. Close-up, they are distinctively marked.

Given their small size (1 – 1 ½ mm), their natural prey are correspondingly small ---- preferably insect eggs, mites, scale crawlers, thrips, aphids, small stage caterpillars. Using their styet-like mouthparts, they impale their prey and withdraw the body fluids. They then abandon the spent carcass and search for their next victim.

MPBs mostly go unseen due to their small size. Yet, they are common and can be found on flowering shrubs and weeds where they subsist on plant juices in the absence of prey. However, in the presence of arthropod hosts, their true feeding preferences take over. Both nymphs and adults have been cited to consume 30 or more spider mites per day. And often times, adult MPBs are drawn to corn silks where they feed on/destroy eggs deposited by corn earworm moths. MPBs are commercially available and can be useful when released in enclosed facilities such as greenhouses. But for home gardeners, purchase-and-release tactics are impractical because released MPBs would likely take wing. Rather, rely on their natural abundance to allow them (on their own) to find their way into home landscapes and gardens.

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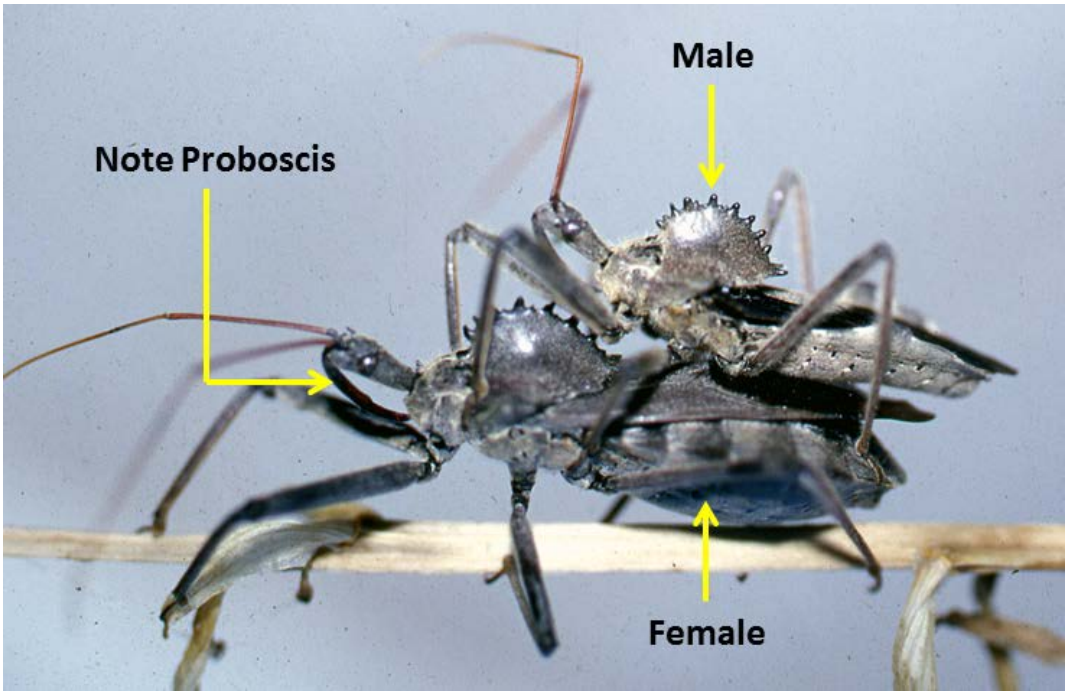
"The Wheels On The Bus Go Round And Round" --- A Rite Of The Fall Season

This common musical refrain comes to mind each fall as BIG YELLOWS roar back into action picking up and delivering kiddos to and from school. Another commonly encountered fall harbinger is a large assassin bug which possesses a distinct dorsal thoracic crest: **the wheel bug**.



Actually, wheel bugs are frequently first noted in the beginning of summer. However, they are not recognized as such due to their radically different appearance. Wheel bug nymphs hatching from overwintered eggs are small, possess a red abdomen which is held in an elevated position, rapidly move about on long "spidery" black legs, and lack the adult's characteristic "wheel". Wheel bug nymphs are the basis for reports of "small red biting spiders".

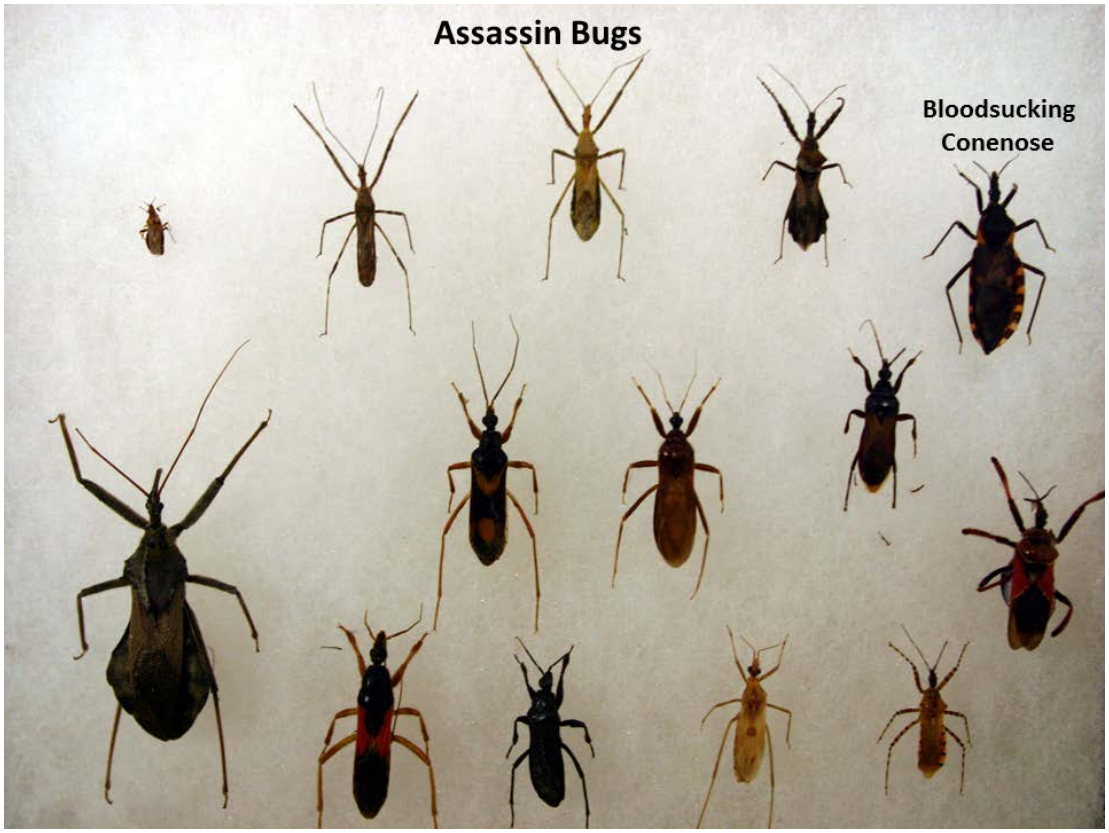
The proboscis is the "action end" of wheel bugs (both nymphs and adults). Like the earlier described minute pirate bugs, wheel bugs are predators. They use their piercing/sucking mouthpart to pierce through the integument of their prey. During this probing process, they introduce a bit of paralytic saliva which immobilizes their prey as well as aiding in the liquefaction of internal elements which then are withdrawn. Wheel bugs are opportunistic feeders and capable of rapid movement. However, given the slooooow movement of caterpillars which are a known "favorite food" of wheel bugs, speed-of-capture would seem irrelevant.

Despite their reputation for inflicting a painful bite, they can be carefully handled. It should be stated that wheel bugs are not aggressive in the sense of attacking people. If one offers a finger or a hand for a wheel bug to crawl onto, their first tendency is to shy away/hide. However they may choose to lazily climb aboard. Let them wander, and when tired of such, quickly flick them off. Do not grab/hold onto them for that will invite a bite (actually, not a bite/chomp per se, but rather a **defensive jab**).

Just as a person can safely handle a snapping turtle by properly grasping onto the base of its tail, if one wishes to get a closer look at a wheel bug, while it is on a hard surface, use your index finger and thumb to properly grasp the wheel bug on the sides of its hardened thorax. Use a toothpick or piece of straw to maneuver its proboscis forward, and you may see a small bubble produced at its tip ---- this is the saliva which it uses to paralyze its prey (and that which causes the pain/sting on the receiving end of a defensive poke).

Another interesting feature has to do with the female wheel bug. While in your finger-thumb grasp, as an expression of her annoyance, she may react by everting her reddish/orange anal glands which produce a substance with a distinctive odor. This may be a defensive tactic. It has also been suggested that it may act as a repellent offering protection to newly deposited egg masses.

While the wheel bug is the most widely recognized assassin bug, there are many other species.
They vary in size and body shape. While most are rather non-descript and dark-in-color (varying shades of brown or black), others can be brightly colored and patterned. Although most prey upon insects, several species require blood meals for development and egg production. The eastern bloodsucking conenose (*Triatoma sanguisuga*) is the representative species found in Kansas. Typically feeding on a wide variety of mammalian wildlife, they have been known to also seek a blood meal from humans. People may have heard about "kissing bugs" being responsible for transmitting Chagas Disease. This is of significance in tropical countries where other *Triatoma* spp. are the major vectors. Thus Kansans can be-at-ease.



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Current Status of Emerald Ash Borer in Kansas

Emerald ash borer surveillance activities began in 2008 when USDA APHIS PPQ in Topeka received purple prism traps from the US Forest Service (USFS). From 2008 through 2015, PPTs have been deployed throughout Kansas in a cooperative program between USDA APHIS PPQ and Kansas Department of Agriculture (KDA) personnel. This year, Lindgren traps were also utilized in trapping efforts. THERE WERE NO EAB BEETLES COLLECTED FROM TRAPS THIS YEAR! This was the final year of trapping efforts by USDA APHIS PPQ and Kansas Department of Agriculture (KDA) personnel because the US Forest Service will be contracting out trapping efforts.

Additionally, in an attempt to enhance the early detection on EAB presence, KDA workers initiated tree girdling activities in 2013 --- the premise being that removal of an 8-12 inch portion of bark and phloem tissues encircling the entire trunk disrupts the translocation of water and carbohydrates (tree nutrients) creating a stress which causes a change in the aromatic chemicals produced and released by the bark, leaves and wood. Also, tree foliage becomes more attractive to beetles due to altered coloration (reflected light wavelengths). Increased beetle presence equals increased egg laying which equals increased larval activities. Substantiation of the presence of EAB would be based on the recovery of larvae in the subsequent peeling of the bark from branches and trunks. On September 30, EAB larvae were recovered from a girdled tree in the town of Eudora. Thus the

intrastate quarantine in place for Wyandotte, Johnson and Leavenworth counties was expanded to include Douglas County.

In an interesting note, in 2014, no EAB larvae were recovered from a trap tree at the same site.

Note the Red Arrow ---- That was this year's girdled trap tree from which the current larvae were recovered. Old gallery patterns were indicative of the presence of EAB already in 2014. Obviously that tree was initially attacked by EAB without its having been girdled to attract beetles. Also, looking at the trees lining the street, EAB are likely present and responsible for their deterioration.

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Bob Bauernfeind

Insect Diagnostic Laboratory Report

http://entomology.k-state.edu/extension/diagnostician/recent-samples.html

Eva Zurek

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