

## Mites & Ticks: the good, the bad, and those just hitching a ride



For the Kansas naturalist, the warm days of summer bring with them those biting scourges of the tallgrass: ticks and chiggers. Everyone who ventures into the bush is familiar with the ritual of checking their clothing for the presence of these blood-

feeding parasites, or of the itching sensation around cuffs and waistbands that signifies a successful chigger attack.

Common hard ticks on the Konza are the Blacklegged Ticks (*Ixodes scapularis*), the Lone Star Tick (*Amblyomma americanum*) and the Dog Ticks (*Dermacentor variabilis* and *Rhipicephalus sanguineus*). These species are all vectors of human disease.

Each of these species goes through three life stages after hatching - from larva through nymph to adult - partaking of only a single blood meal in each stage. The younger ticks feed on rodents, lizards and birds, while usually only the adult stages feed on large animals (including humans).



Hard ticks find their hosts through a behavior known as questing - the hungry tick climbs to the top of a grass blade or the edge of a leaf and waves its legs in the air as it waits for an animal to pass by.

Unlike the hard ticks, soft ticks prefer to live in the burrows, nests, or roosts of their hosts, although some species will take up residence in their hosts ears. Soft ticks feed multiple times within each life stage, yet are rarely carriers of human disease.

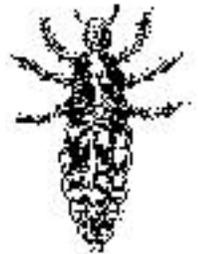
Chiggers are not ticks, but rather mites in the family Trombiculidae. Only the larval stage of the chigger is parasitic. In Kansas, the adult form of our most common chigger is that of a large red mite covered in velvety hairs. In this form the chigger is a useful predator, feeding on other mites, small insects and insect eggs.

Although parasitic species represent a significant proportion of the 40,000 or so described species of mites in the world, very few mites are parasitic for their entire lifespan and most do not target humans. A large proportion of mites, including giant water mites and red velvet mites are larval



parasites of insects, hiding in the tracheal tubes, under the wing cases of beetles, or near the wing bases where the insect cannot remove them. Others prefer to parasitize snakes, lizards, birds, and rodents.

Not all mites found on animals are parasites - some are just hitching a ride. Close examination of any caddisfly, dragonfly or water beetle is sure to reveal water mites that are hitch-hiking to a new pond or stream. Nectar and pollen feeding mites take advantage of pollinating insects to move from flower to flower, becoming in their way the STD's of the plant world. The underside of most predatory beetles shelters small mites that will come out to feed on 'kills' of their host. In an extreme form of this mite-insect relationship, the giant carrion beetles of the genus *Nicrophorus* carry large mites under their wing cases that will swarm onto carrion, searching out and destroying fly eggs. In this way the beetles larva can develop on the dead animal without competition from maggots.



Free living mites can be found in almost any environment, given a bit of effort. Sifting through soil will turn up the ubiquitous helmet-shaped oribatid mites. These armored mites primarily feed on detritus and fungus in the soil litter, but species can be found in lichens, mosses, and even in our coastal rainforest canopies. In fact, a large variety of predatory mites inhabit the soil layer, feeding on other mites, small insects, and nematodes. Careful examination of the underside of leaves will turn up colonies of spider mites and Phytoseiid mites, while the minute four-legged mites of the family Eriophyidae can be found inside galls on the leaf surface. As mentioned, flowers are also a good mite habitat.

Despite a level of diversity rivaling that of insects, mites remain an unappreciated group known by many only as disease carriers or parasites. Without a microscope, its admittedly hard to appreciate the elegance of an animal order that averages less than a millimeter in length. However, once they are finally observed, the beauty of these tiny arthropods can be realized.



# Prairie Patter

Dr. Valerie Wright  
Education Coordinator



Spring is a busy time for everyone and the Konza Environmental Education Program is no exception. With docent training, school groups and many other visitors, our days are full and fun. This year we also have the Hokanson Homestead renovation with a couple of workdays each month. Our volunteers have been exceptional this year in dedicating time and effort to all of our programs.

The Hokanson renovation project is coming along well. **The Walker family, Connie, Duane, Wade and Troy**, have not only helped but have been lynch pins for the project. Scouts and their families, like the **Schapaugh's, Bill, Jesse and Adam**, have hardly

missed a workday. Docents **Jan Olewnik, Nancy McClanathan and Midge Jones** have recently proved themselves with muscle power. **Franz Samelson** liked to rest in his wheelbarrow after about 50 trips uphill with loads of woodchips. We cleaned the hay out of the barn loft (more than anyone thought was there), moved rocks and rebuilt a part of the rock wall in front of the barn. To date this year over 200 hours of volunteer time have been put into Hokanson. This week **TK Construction** will finish the floors. On May 30, **Mel Borst** and his team began to repoint the barn walls. A large hackberry between the barn and the shed, which was split, threatened to come down on the barn roof. **Jim Larkins** bravely cabled and landed it right in



the center of the driveway circle. We now have several chunks of logs to use as seats along the Homestead Trail.

Westmorland Elementary came out on May 12 as part of their pioneer studies. Five docents had a unique experience talking to students about a specific subject: fire, water, limestone, useful plants or topography. **Gary Jeffery** spun a tale about cowboys learning about fire; **Verlyn Richards** spent most of his time on his knees on the cottonwood limestone (ouch); **Brock Dale** looked the part of a thirsty pioneer; **Doris Burnett** was the pioneer wife utilizing the prairie to provide supper for her family and **Jan Evans** had the spot with the view (top of Butterfly Hill) where flint and topography mingled. Kids and docents were in costume for some fine photos!

**Jan Evans** also did her first solo program on May 3 when she lead a stream macroinvertebrate SLTER for Harveyville Elementary with the help of **Ted Hopkins, Sue Dwyer, Dru Clarke** and others. Thanks, Jan, for taking over when I couldn't be there.

One of our most organized docents, **Verlyn Richards**, is helping me to organize the hundreds of digital photos we have from the past two years by generously donating a zip drive for the KEEP computer. Now all that needs to be done is the organizing itself!

Many thanks to the experienced docents who are leading the make-up sessions for docents-in-training: **Jan Olewnik, Charlie Given, and Jocelyn Baker**.

## Did you know?

- No surface on poison ivy is toxic- not the leaves, stem or anything else.
- Poison ivy's clear sap contains an oily toxicant that causes the itchy, inflamed rash.
- When someone uses a power mower or weed eater on poison ivy, both sap and sap-covered plant pieces can become airborne. Air-traveling sap also results when poison ivy is exposed to fire during a springtime pasture burning or rural fall cleanup that includes poison ivy's brilliant red leaves.



- When a reaction to poison ivy worsens, the culprit tends to be the victim. The oily toxin can better penetrate skin washed with warm or hot water (even with soap). In turn, the rash can seem to spread quickly. Use lots of cold, soapy water instead.
- Unless worn or washed away, the toxin can stay active for years....on clothing and objects.
- Humans seem to be the only animal that reacts to poison ivy's toxic sap. Deer like the plant so well that they browse on it. Birds love the berries.

# Cowbirds' 'lay and run behavior' affects songbirds

Imagine having a child, dropping her off at an unsuspecting neighbors' house and leaving them to raise her. Sound cruel?

Not to the brown-headed cowbird. The cowbird, a common sight on the Konza, builds no nest of its own. It is notorious for laying eggs in other birds' nests so that the foster parents use their energy to raise the cowbird chicks. This type of behavior, called obligate interspecific brood-parasitism, is the subject of a couple research projects at Konza.

"The northern Flint Hills have some of the highest frequencies of parasitism. Few nests of many songbird species go unparasitized," said Bill Jensen, K-State PhD student in biology. "It reduces the success of host songbirds."

Jensen's study, which began this spring, focuses on cowbird density and distribution of parasitism among three different habitats: gallery forests, open grassland burned annually or bi-annually and shrub encroached grassland burned every 20 years.

Within the three habitats different host songbirds are found. Forests tend to have the highest diversity of species, but less abundance of each individual species. Grasslands on the other hand have a lower diversity of species but greater representation within each species there.

Jensen is often in the field from sunrise to mid-afternoon, taking count of songbirds and cowbirds through

Each season, a female cowbird may lay up to forty white eggs speckled with brown, in clutches of two to five eggs. More than 200 species of North American birds, generally belonging to four families - wood warblers, vireos, finches, and tyrant flycatchers - fall victim to the brown-headed cowbird. There are cases of multiple parasitism in which several female cowbirds lay their eggs in a nest.

Several songbirds have developed defense mechanisms against parasitism. Brown thrashers and catbirds take the unwelcome eggs and toss them out of the nest. Other birds



such as the Bell's vireo and field sparrow usually re-nest after parasitism.

The brown-headed cowbird, a member of the black-bird family, is found throughout most of North America. To its credit, it eats many insects such as beetles, weevils, caterpillars, wasps, and ants, and it is especially fond of grasshoppers. Unfortunately for farmers, it also devours plenty of corn and wheat. Conditioned to feed on insects disturbed by grazing animals, the cowbird was originally associated with the roaming herds of bison; cattle have now filled that role.

Rena Schmitt, participating in the Research Experience for Undergraduates program, is studying the association of cowbirds and their foraging flocks with cattle vs. bison. Shouldn't it be called the 'bison' bird?

**The cowbird isn't alone in its 'lay and run' behavior, more than 80 species of birds representing seven distinct groups exhibit similar behavior..**

a point count census within a specified radius for 10 minutes at a time. He also seeks out songbird nests to determine acts of parasitism.

An undergraduate in biology at KSU, Colleen Truman, is collaborating with Jensen to study the affect perches have on cowbird parasitism. Cowbirds are thoughts to use elevated perches such as trees and shrubs to help survey for grassland-nesting hosts. Truman and Jensen are testing this experimentally by placing common sunflower stems (6-9 feet tall) in perchless areas to compare parasitism rates there with those in perchless control plots.

Chief Editors: Susan Bale and Tawnya Ernst

We encourage our readers to contribute articles, photos, snippets or ideas for future issues. You may contact us at: [sbale@oz.oznet.ksu.edu](mailto:sbale@oz.oznet.ksu.edu) or [ternst@oz.oznet.ksu.edu](mailto:ternst@oz.oznet.ksu.edu)

# Belated BBQ Thank you!

Jean says it is hard to thank everyone because so many pitched in as needed.

A big thank you to the 70-plus folks who came and made it a success. Special thanks goes out to the following people for their help with:

**Burgers:** Supplied by Tom Van Slyke; cooked by Glen Bussett and Franz Samelson.

**Setting up:** Jim Sharow and Glen Bussett

**Kitchen:** Rosemary Bussett, Ted Campbell, Bonnie Lynn-Sharow, and Cindy Quinlan.

**Clean Up:** Glen and Rosemary Bussett, Gordon and Annie Cunningham, Ted Campbell.



# Annual Wildflower Walk



*Top: Group pauses to check out vegetation in the Hulbert plots during the annual wildflower walk.*

*Right: Echinacea angustifolia in bloom below Butterfly Hill. Photos by T. Ernst*



The annual wildflower walk brought out about 30 people from Friends of the Konza Prairie, Kansas Wildflower Society and several of our docents.



# Tallgrass Gazette

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