



Konza Prairie Grasshoppers

When hiking the Konza Prairie in summer, grasshoppers are a highly visible part of the tallgrass prairie fauna. Closer observations reveal differences in color, size, whether they jump or fly and their extreme sensitivity to your movements. Their large compound eyes provide an early warning system for rapid escape reactions. Next to bison they are major consumers of grasses but also of broadleaf plants. Just how much total plant material they remove and the kinds of plants affected by grasshopper grazing depends upon the numbers of both immature and adult stages of each species during the growing season. Grasshopper populations generally increase during a series of dry years, when their diseases and parasites are less effective. Under these conditions, they may seriously compete with cattle and bison for forage, as well as destroy various grain and other food crops. Kansas farmers were devastated during the drought years of 1870s by enormous migrating swarms of the now extinct Rocky Mountain locust, and by other grasshoppers during the dry years of the dirty thirties and later. However, other species of grasshoppers may be beneficial by eating undesirable range plants, and by providing nutritious food for birds, reptiles and small mammals. In addition to their importance as grazers, the diversity of grasshoppers with their different food habits and life histories may play other important roles in the ecology of the tallgrass prairie.

More than sixty species of grasshoppers have been found in the Flint Hills, and many of these occur on the Konza Prairie. The students participating in the **Grasshopper Schoolyard LTER** project are adding new species to the list each year. **True grasshoppers** have antennae shorter than their body, whereas their close relatives the **crickets and katydids** have whip-like antennae longer than the body. The latter are also diverse and important insects on the Konza Prairie.

Grasshoppers can be divided into related groups of species as a first step for identification and recording population numbers. The **slantface grasshoppers** that feed almost totally on grasses have specialized mandibles adapted for cutting and ingesting grass foliage. As their name implies the head is acutely pointed and for protection from predators the body is streamlined and colored to resemble the grasses they feed upon. The green and brown **Admirable Grasshopper** is a beautiful example of this group. Many grasshoppers however, are mixed feeders consuming a variety of grasses and forbs. A large number of these are in the **spur-throated group**, so called because of a small spine on the exoskeleton between the front legs. Some of these grasshoppers can be serious crop pests when they occur in high populations. Among these is the **Differential Grasshopper**, a large yellow or olive drab grasshopper with black chevrons on the hind jumping legs. Others such as the little wingless **Sagewort Grasshopper** only feed on a single plant species, Louisiana sagewort (*Artemisia ludoviciana*). They spend their entire life on this plant and match the color and leaf shape perfectly to blend in. They are able to ingest the dense cotton-like hairs and chemical glands on the sage leaves that protect this plant from most other insects.



Slantface Pasture photo- S.White



Admirable photo- V. Wright



Differential photo- V.Wright



Sagewort photo- T. Hopkins

A third group is the **bandwinged grasshoppers** most of which have colorful hind wings (yellow, orange or red with black bands on the margins). These are medium to large grasshoppers that blend in with the grasses when resting, but flash their brightly colored wings in flight. Just as a predator homes in on the colored target, the grasshopper folds its wings and drops to the ground doing a disappearing act. A common member of this group is the **Carolina Grasshopper** that rests perfectly camouflaged on bare ground (trails, roads) but when in flight displays black hind wings with yellow borders. The **really large grasshoppers** are a mixed group that include the **Bird Grasshoppers** and the **Lubber Grasshopper**. The former are strong fliers resembling small birds in flight, whereas the lubber is huge wingless grasshopper of green and brown coloration sometimes seen ambling along the ground.



Lubber

photo- V. Wright

Further research on the complex interactions of the grasshopper fauna with plants and other organisms and the broader effects of burning, grazing and climate on these associations are needed to understand the diverse role of these fascinating insects in the tallgrass prairie ecosystem.

Ted Hopkins is a retired professor from Entomology after 40 years at KSU. One of his specialties is the study of grasshoppers. Ted has been a big help with the Schoolyard LTER grasshopper and stream invertebrate programs.

Prairie Patter

by Dr. Valerie Wright, Environmental Educator and Naturalist

Perhaps you have read a little about our recent teachers' workshops in Bison & Bluestem (Patches of Prairie). Docents are always welcome at these workshops, which are considered in-service training. Several docents participated this year. Sue Hunt stayed with us all week and was a contributing member of the group. Verlyn Richards presented a summary of the Docent Program to the teachers. Gordon Cunningham, Bob Davis, Nancy Goulden, Lon Lewis and Wilton Thomas came for specific topics. It was great to have them all here.

Hokanson Homestead is buzzing again with sounds of saws and hammers. The little red shed is being rebuilt. Sue Hunt, Charlie Fleeker and Jan Olewnik have put up the walls and trusses. In September we'll finish off the shed and have a general workday at Hokanson to spiffy everything up for Visitors' Day. Hope to see you there!

And speaking of Visitors' Day, at this moment Eva Horne, the Assistant Director of Konza, has not heard from enough volunteers to fill all the work slots for Saturday, September 28. Please help us out. There are so many different jobs and it's great fun!

Also if you want to drive a university van for bison loop tours, the required van training is being given four times before Visitors' Day: Thursday, September 5, 2:00-4:00 p.m. in 213 Union; Friday, September 6, 8:00-10:00 a.m. in 206 Union; Wednesday, September 11, 9:30-11:30 a.m., 206 Union; and Tuesday, September 17, 1:00-3:00 p.m. at 13 Leasure Hall. Please let me know if you have taken the training. Some auto insurance companies give a small discount for taking the training.

See you all soon at the 10th Anniversary of the Docent Program. Don't forget, if you want a souvenir t-shirt, give me your order now.

Tallgrass Gazette Editors:

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The frame of the new shed at HH with Sue, Jan O. and Charlie.

Konza Prairie – Docents in Action

OBSERVATION: A KEY EXPERIENCE

As trainees we sit in class and listen attentively. We play mainly the role of observer as Val and others take us onto the prairie. And, sometimes, we are officially an “Observer” tagging along with a scheduled group of visitors.

Why do I view this role of “Observer” as such a great experience for docents?

First, the power of direct observation is almost unfathomable. Visiting teachers, I knew I could write at length about the first ten minutes of being in another person’s classroom. As I reflect on four instances of being an observer with a variety of groups visiting the Konza during my docent training, I see that this role enhances almost everything that we have read and heard during class sessions.

Second, as an Observer, we can be relaxed, taking notes, interacting at will, mostly keeping quiet and keeping our eyes and ears attuned to everything that happens. And our subconscious absorbs a great amount of detail that we, by definition, don’t consciously know.

My third and final point here is that we gain greatly from the casual, friendly interaction with other docents and trainees. After my first year as a trainee, I even need it more, I believe, as the space of time between experiences means that I need help. My fire for learning needs to be stoked, and I need to revive and extend the knowledge I once had at hand.

It’s a never-ending, fascinating, enriching search for knowledge. The main new wildflower for me this year is the beautiful Prickly Poppy, *Argemone polyanthemos*, that I found in June near our house south of Manhattan; and I will readily share this with you if we observe together (merely ask!). Let’s make good use of this grand opportunity for (free!) experiences as observers.

Loren Alexander, Docent Coordinator



KONZA DOCENT ANNIVERSARY

On **September 27, 2002, at 3:00 p.m.** we will round up all the docents trained since 1992 for a reunion with Dr. John Zimmerman and all the folks at Konza.

The fun will start at 3:00 p.m. with a hayride down Memory Lane to the Hokanson Homestead and the bison beyond. You can hike if you like on the Nature Trail or Butterfly Hill. Just be back by 5:00 when we’ll be taking photos for the archives and having some light refreshments. A special order of the new butterfly t-shirt with "Konza Prairie Docents - 10th Anniversary - 1992-2002" on the back will be offered for \$16. Numbers are limited, so if you want one, please reserve your size in advance.

Docent graduation begins at 5:30 when 12 trainees from the class of 2002 become official Konza Prairie Docents. This event includes recognition of our hard-working docents who spend many hours on Konza.

The Friends of Konza Prairie Annual Meeting is at 6:00 p.m. followed by the Bison Burger Barbeque at 6:30. Jean Craig and her crew will have quite a spread for you. From 6:30 on van tours to the Bison Loop will be led by our expert docents. Take a tour before supper or after you finish, whichever you prefer.

It will be a relaxed evening with time to renew acquaintances and make new ones, to learn more about Konza Prairie Biological Station, the Konza Environmental Education Program and the Docent Program of the past, present and the future!

Please RSVP the number of persons in your party (families are welcome!) and your time of arrival (3 p.m. or 5:00 p.m.) to the Konza Prairie Office (785/587-0441) by Friday, September 20 or for more detailed information call Valerie Wright or Jan Evans at 587-0381 or e-mail keepkonza@ksu.edu. We're looking forward to seeing you all here!



Jan Evans, Margy Stewart, Clyde Ferguson, Earl Allen and Ted Hopkins after Minneapolis High School took a stream inventory.

Docents Announcements

Sept. 8 and 15; Sundays 2-5pm: We need your help!

At Hokanson Homestead, we're building a new red storage shed. The framing is completed (see page 2). On the 8th bring your gloves to put up the siding and paint the shed a nice, new red color. Sept. 15th we need people for landscaping, clean-up and preparation for Visitors' Day.

Sept. 27, Friday 3pm : Docent 10th Year Anniversary, New Docent Graduation, Friends of Konza Prairie Annual Meeting. Please join us for a fun-filled afternoon. (See article on page 3.)

Sept. 28, Saturday 7am-5pm: Visitors' Day.

All docents are needed to help with all the various activities. There is a job list available that was e-mailed out to the docents.

Please sign-up ASAP with Eva Horne, ehorne@ksu.edu (532-5929) or Valerie Wright, konzaed@ksu.edu (537-0381).

Prairie Study:

Page Twiss with Junction City high school students studying and inventorying Konza grasshoppers.



Tallgrass Gazette

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