



Fire Ecology and The Fire Reversal Experiment

Fire has been a central part of our long-term studies since the initiation of the Konza LTER program, and several syntheses have been published regarding the effects of fire and fire frequency in this grassland. Our long-term experiments have indicated that frequent spring burning usually increases total plant productivity. It also increases the dominance of a few species of warm season grasses, while reducing overall plant species richness and diversity (a reduction in many cool season grasses and forbs).

The absence of fire, leads to large accumulations of detritus, and an increase in cool season and woody plant species. Different fire treatments also alter soil properties—frequent burning reduces available forms of N, while the absence of fire leads to greater N availability. As a result, our long-term fire treatments have lead to areas of Konza with very different plant communities and soil properties. How important are these "initial conditions" in determining grassland responses to a change if fire treatments? Can the changes brought on by decades of different fire treatments be easily reversed? To address these kinds of questions, we have initiated an important new 'reversal of fire treatments experiment' on selected watersheds (two annually burned and two unburned watersheds) at Konza Prairie. This project will provide new information on the effects of fire history and changing fire frequencies, and new insights into the temporal scales over which plant and soil processes respond to altered fire regimes. This will aid in interpreting the role of 'site history' in affecting population, community and ecosystem soil responses to fire.

As background information, we have quantified the seasonal dynamics of primary production in two watersheds (one annually burned and one unburned) for 14 years, and have completed comparable measurement for 3 years on two additional watersheds. We also installed neutron access tubes for measuring soil water content on all four watersheds and have quantified a variety of population, community, and ecosystem properties prior to the switch in fire treatment. For example, in the summer of 2000 we completed a survey of the distribution and cover of woody vegetation and used this information to generate a GIS database for the four experimental watersheds. We also completed an extensive analysis of soil chemical and biological properties. These pre-treatment analyses will provide the appropriate background against which we will evaluate both short- and long-term responses to a change in fire regimes. The switch in fire treatments began in April 2001, and we have begun appropriate measurements to intensively monitor the transition period.

Fire Reversal Primary Scientists:

Alan Knapp, Biology, KSU, John Blair, Biology, KSU
Gene Towne, Biology, KSU, Don Kaufman, Biology, KSU
John Briggs, Plant Biology, Arizona State University,



Shrub islands in April when 20 A (now R1A) was burned for the first time.



Docents Hoogy Hoo gheim and Chuck Bussing survey the shrub islands with a biology class from Minnea polis High School w ith teacher Dale Henderson (Sept. 2001).

Prairie Patter

by **Dr. Valerie Wright, Environmental Educator and Naturalist**

As the reality of autumn is here, so is the busy fall season. The Schoolyard LTER events this fall have had the benefit of many docents who enjoy science activities. Most recently Verlyn Richards and Brock Dale helped Joe Gelroth's class from Eugene Field Elementary with the insect gall research. Tish Simpson's ecology class from Manhattan High School took data for the fall plant inventory with Gordon Cunningham, Page Twiss, Earl Allen, Verlyn Richards, and John Tartarko. Some of our new docents observed while Shauna Dendy, Verlyn Richards, Howard and Liz Beikman, Chuck Bussing, Clyde Ferguson, Doris Burnett and Gordon Cunningham, who have all become grasshopper experts, worked with Cindy Quinlan's class from Hauge Alternative School and Darren Gunderson's class from Fort Riley Middle School. Our experts from the Entomology Department were Dr. Ralph Charlton for stream invertebrates and Michelle Kaczmarek for grasshoppers (and of course, Dr. Ted Hopkins). The stream invertebrate docents were Doris Burnett, Sue Hunt, Brock Dale, Gayle Bennett and Verlyn Richards. There will be an in-service training on the stream invertebrate SLTER coming up in the spring of 2002.

The Hokanson Homestead barn, wildlife observation lean-to and public potty are mostly complete. The structure for the composting toilet was built by Ron Fowles, contractor. If you have never used one, this is state of the art. And it's open for business!



Jin-cheng Gao, my research assistant, hired through the Eisenhower Professional Development grant, fixed the databases for use in the classroom and we were able to get the science activities on line for use this fall (see www.ksu.edu/konza/keep at "Science Adventures at Konza"). Jin and Hong helped with the Technology Workshop in August, as did Dr. John Blair, Dr. Phil Fay and Dr. Ray Matlack. In early October Jin and Hong added a second daughter to their family. Wendy and Mom are doing fine.

At the workday on October 6, Bob Hudgens, Franz Samelson, Earl Allen, Jan Olewnik, Connie and Wade Walker, Harrison Otto and myself spent a total of 23 person hours landscaping and generally fixing up the last few items before winter sets in. Jan O. put locks on the barn doors and installed the loft window. There will be a lock on the north door with the same combination as the gates. If you take a group into the barn this winter, please be sure you turn off the lights and lock the door before you leave. Thanks.

Docent Events:

Mark your calendar!

Nov. 10, 9am; In service training- Geology of the Konza (meet at Konza Scenic Overlook (off of K-177).

Christmas Party; Listen for information of this fun get-together.

Jan. 24, 7pm; Docent Round-up- Speaker and weather will be announced.

Tallgrass Gazette Editors:

This is our first edition as new editors.

We hope you like it! If you have story ideas for the next newsletter, please contact us.

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Docents Aid with Exotic Plant Survey

This past year, fourteen docents have played an important role in an extensive program to monitor and control key exotic (introduced) plant species on the Konza Prairie Biological Station. A year ago in July, these docents received training in identification of the plants and the survey procedures. Then during the month of August, they worked in teams of two in most cases to survey their assigned watersheds. They walked either transects or contours so they could observe the entire area within the watershed. Key species plants were marked with a flag when they were found and the locations were indicated on a map. **Tom VanSlyke** and the **KPBS staff** could then locate them at a later time and apply mechanical or chemical measures for control of the individual plants.

The first summer **Doris Burnett, Myron Calhoun, Jim Craig, Gordon Cunningham, Tawnya Ernst, Anne Feyerharm, Charlie Givens, Chod Hedinger, Cindy Jeffrey, Gary Jeffrey, Frank Mosier, Verlyn Richards, Phoebe Samelson, and Page Twiss**, participated. This past August **Doris Burnett, Gordon Cunningham, Charlie Givens, Chod Hedinger, Cindy Jeffrey, Gary Jeffrey, Frank Mosier** and **Verlyn Richards** walked four additional watersheds.

Docents covered most of the watersheds to the north of the bison enclosures while **Tom VanSlyke** and some of the **KPBS staff** rode horses to survey the bison areas and the southern and eastern watersheds of the Konza in search of *Sericea Lespedeza*, Caucasian Bluestem, Musk Thistle, and Crown Vetch. In most cases, it took 10 to 12 hours or more to walk a watershed. Tom and the staff have spent many hours in the saddle the past two summers.

Sericea Lespedeza was declared a noxious weed in July 2000. It is of special concern in the Flint Hills region because the seeds are disseminated by birds and the plants tend to out compete native plant species. *Sericea Lespedeza* is very prolific and will tolerate a wide range of soil and weather conditions. It has few insect and disease problems. It has been found in various places on the Konza, especially in the southeastern watersheds. Crown Vetch is moving into the southern watersheds along I-70. Caucasian Bluestem and Musk Thistle are also of increasing concern. Control measures have been implemented and an ongoing monitoring program is in place. The work of the docents is appreciated and very likely they will be asked to continue to be involved in the program.



Sericea Lespedeza (Chinese Bush Clover)- photo-Walt Fick

Who is your Docent Committee?

Page Twiss (chair), John Tatarko, Jan Olewnik, Carol Hoogheem, Jim Craig, Phoebe Samelson, Valerie Wright, Jan Evans, Ted Hopkins, Joc Baker, and Doris Burnett



New Docent Training- (Spring 2001)

Who lives on the Konza in November?

Mini-Konza Checklist:

- white-tail deer
- turkey
- coyote
- fox
- bobcat
- raccoon
- skunk
- crow
- red tailed hawk
- harriers
- Harris sparrows
- western towhees
- white-breasted nuthatch
- Lincoln sparrow
- blue jay
- black-capped chickadee

Docents News

Our Docent Class of 2001 has graduated 10 impressive trainees, whose credentials are excellent. Some folks, like Nancy Ohlenbusch, Gary Harter and others, were already knowledgeable about the flora of the prairie. Earl Allen learned all his plants this year! For this stunning achievement he received the "Trainee of



Super Docent of the Year
Wilton Thomas

the Year" award. "Docent of the Year" was shared by four people, Doris Burnett, Chuck Bussing, Ted Hopkins, and Sue Hunt, all of whom took out 15 or more groups and volunteered for other types of work as well. This year we had a "Super Docent of the Year" named Wilton Thomas, who conducted 27 tours, both hikes and Bison Loop events. Congratulations Wilton!

Overall the graduation turned out to be a successful event. Friends and family enjoyed the beautiful fall evening on the prairie with trips through the bison loop, and haywagon rides. Jean Craig outdid herself with all of her amazing work with pulling the BBQ together, all on an injured leg. Thanks Jean! Let's not forget everyone else who pitched in and helped with kitchen duty, cooking bison burgers, giving tours, and cleaning up. We don't know what we'd do without all of your generous help.



Front row: Docent Coordinator Jim Craig, Jan Evans, Lon Lewis, Valerie Wright, Nancy Goulden.
Back row: Earl Allen, Don David, Jean Davis, Mary Sutton, Nancy Ohlenbusch, Loren Alexander, and Karen Warr. Not pictured: Gary Harter



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