



## KSU Herbarium A History Museum

By Dr. Carolyn Ferguson, *Curator, KSU Herbarium*

The KSU Herbarium is a research natural history museum of ca. 200,000 dried, pressed plant specimens. It was established in 1877 and is among the oldest, largest and most diverse collections of plants in the region. It is particularly important because of its extensive historical holdings (i.e., collections made in the latter two decades of the 19<sup>th</sup> century; Fig. 1; see also Barnard, 2003, for detailed discussion of the Herbarium's history) and for specimens of plants relevant to agriculture (e.g., introduced weeds and grasses; Woods et al., 2005). While about one half of the Herbarium's holdings are collections from Kansas and the surrounding Great Plains, the remaining specimens are from around the U.S. and the world.

Herbaria are the foundational infrastructure for research in plant taxonomy (describing, classifying, and naming plants) and floristics (analyzing the distribution patterns of plants). A diverse group of additional researchers also utilize the collections to assist in plant identification or for the deposition of specimens to document the species named in their studies. Finally, the collections form a critical core of the distributional data that are the bases for literature and online resources (such as the USDA PLANTS database).

Research initiatives presently underway in the Herbarium have strong links to Konza Prairie and the larger Flint Hills ecoregion. With support from the National Science Foundation (NSF), the label information attached to all specimens is being databased (Fig. 2). This database currently contains approximately 80,000 records and is searchable via the Herbarium's website ([www.ksu.edu/herbarium](http://www.ksu.edu/herbarium)). NSF funding also provides logistical support for plant collecting (plant presses, and equipment) for teachers in the "Prairies Across Kansas" (PAK) project led by Dr. Valerie Wright. PAK classes are employing the Herbarium database as they study floristics in their local prairie sites, and documenting their findings with pressed specimens. A related, new project in collaboration with workers in the Department of Entomology and the Digital Initiatives group at Hale Library will utilize the specimen databases as core technical data in development of a digital KSU Biodiversity Information System (BioDIS). This system will make KSU's biodiversity data



Fig. 1 *Helianthus maximiliani* specimen from 1895 on the right. Left specimen collected on Konza in 1991.



Fig. 2 Herbarium student, Virginia Brunner entering label data.

available in a wide variety of formats, customized for local needs and also using general standards for serving data to external portals (e.g., the Global Biodiversity Information Facility, [www.gbif.org](http://www.gbif.org)).

Much of the recent excitement over the KSU Herbarium stems from a key fact: a physical specimen is *the only* means by which we can document the occurrence of a given species at a particular place and time.



**Middle school girls working with press plants in the Herbarium as part of the KSU's Girls Researching Our World (GROW) outreach program.**

From the time of European settlement to today, Kansas plant communities have undergone incredible change. Our ability to track *floristic changes* depends greatly upon the quality and quantity of preserved collections over time. In turn, understanding these changes in plant distributions can enable prediction of future dynamics, potentially informing land use and land management practices. Preserving historical collections is critical, and the need for ongoing collecting is as strong today as it has ever been (although, tragically, collecting activity at most herbaria in the U.S. has been declining in recent years; Prather et al. 2004a, 2004b). KSU Herbarium workers are now partnering with others to explore and predict ecological change in the region. Initiatives include both targeted botanical collecting (informed by the database and other ecological and physical data sets) and data mining to explore floristic patterns.

To improve our understanding of Kansas plants, we have a great need for **more field collecting activity** by many workers. Toward this end, we are increasing collecting activity by Herbarium workers and also encouraging a general interest in collecting (Fig. 3). Through training of students, teachers, extension agents, docents and others, we hope to enhance the KSU Herbarium and enable continued valuable study of the plant life of the Great Plains. A short course for docents on plant collecting was conducted in late August, and another is tentatively planned for late spring. If you are interested in participating, contact Carolyn Ferguson ([ferg@ksu.edu](mailto:ferg@ksu.edu)).



**Fig. 3 Grassland ecology student Clair Nash.**

**Footnotes:**

Barnard, I. 2003. The 137-year history of the Kansas State University Herbarium. *Transactions of the Kansas Academy of Science* 106: 81-91.

Prather, L. A., O. Alvarez-Fuentes, M. H. Mayfield and C. J. Ferguson. 2004a. The decline of plant collecting in the United States: a threat to the infrastructure of biodiversity studies. *Systematic Botany* 29: 15-28.

Prather, L. A., O. Alvarez-Fuentes, M. H. Mayfield and C. J. Ferguson. 2004b. Commentary: implications of the decline in plant collecting for systematic and floristic research. *Systematic Botany* 29: 216-220.

Woods, T. M., S. C. Strakosh, M. P. Nepal, S. Chakrabarti, N. B. Simpson, M. H. Mayfield and C. J. Ferguson. 2005. Introduced species in Kansas: floristic changes and patterns of collection based on an historical herbarium. *Sida* 21: 1695-1725.

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# Prairie Patter

by Dr. Valerie Wright, Environmental Educator and Naturalist

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Docent Graduation on September 29 highlighted the 17 trainees who are now official Konza Prairie Docents. The 2007 class is Adi Angel, Robbie Bear, Betty Burlingham, Byron Burlingham, Mike Butler, Paula Cooper, Cathy Gaidos, Susan Hancock, Richard Johnson, Susan Johnson, Sara Leavitt, Shiloh Lockhart, Nan Mueller, Richard Santiago, Martha Seaton, Marlene Sedillos, Sherman Sisco. They received the KEEP patch and name tag, which recognizes each as part of the Konza Prairie team. Susie Johnson was chosen as Docent Trainee of the Year for her willingness to step into the docent role long before graduation. Susie is a “take charge” person who always helped on the 12 observations she signed up for. She has already committed to several more school groups this fall. With her experience as a teacher, she will be a great asset to KEEP. Nan Mueller was the only trainee with 100% attendance in 2007.



**Docent class of 2007.**

The Docent Committee also chose two experienced docents as Docents of the Year. Ann Murphy and Nancy Calhoun have been exceptional in the number of hours they have helped KEEP, both as trail guides and science aids. Both have volunteered for 15 or more groups in 2007. Ann also has taken charge of Hospitality for FOKP, dealing with the food and other arrangements for various events. Nancy has volunteered to help us with the revamping of the KEEP web site, which has required many hours of her time.

Long-term Leadership Awards were earned by Bob Davis, Nancy Goulden and Jim Morrill for guiding more than 10 groups per year for at least five years. There are now 19 docents who have earned this award.

Darren Gunderson has been a part of KEEP and FOKP since 2000. His expertise with technology has been indispensable at the annual Teacher’s Workshops and as a new member of the FOKP Board, he has already become active on the membership committee. Darren was chosen for the Leadership Award this year.

Doris Burnett and Chod Hedinger are again our Early Birds, jointly hosting 14 Prairie Chicken groups in the wee hours of the morning. These events brought in \$940 for KEEP.

The “Golden Girls” Award is not given every year. This year we recognized Karen Hummel for the hours she has spent helping Annie and me with administrative work. Karen joins Sue Hunt as our original and every year Golden Girl.

Other docents on whom we depend every year for their help and special expertise are Ted Hopkins, Cindy Jeffery, Earl Allen, Jean Craig, Gordon Cunningham, Larry Loomis, Glen Busset, Cindy Quinlan, Verlyn Richards, Gerry Snyder, Charlie Given and Wilton Thomas. All deserve our thanks. And all of the docents, past and present, help in so many ways. Thank you all.



**Valerie and Darren Gunderson.**



**Valerie, Earl Allen, and Susie Johnson.**

## What docents are doing—

### Konza Trail Hike

By Ann Foster

I was really leery of taking first graders on a hike. I wasn't sure I could relate to that age group. But we started down the trail and I started my spiel about what we were going to see and do. They were interested! We came to the first bridge and they followed across it just fine, but a bit timidly, then the second bridge over the water and lots of oohs and aahs and giggles, but everyone got across. We made it up to where the trail divides — over the hill to the radio tower or around the hill to Hokanson Homestead — when the distant thunder started. We started around the hill and just got to the trees before we had to turn back. Bad weather was coming our way and we just can't take chances with lightning.



The kids were still inquisitive and asking questions about everything. That's what I have come to love about this age group. Everything is new and exciting! And on the way back one little boy was overcoming his fear of the bridges. He and a couple of his classmates were so excited when he crossed the shaky, bouncy bridge all by himself — a real accomplishment for a first grader who has not been in the woods before.

Now when I get a choice of age groups, I choose the little ones. Teaching them, watching them and learning from them as they enjoy the natural landscape makes my day.

### Prairie Chicken Tours

By Chod Hedinger



There are three of us who give the prairie chicken tours— “Hoogy” Hoogheem, Doris Burnett, and myself. This past tour season, I gave eleven tours to view the PC. You might think one would get tired of watching male PC boom and dance trying to attract a female. However, there is always something different going on with the birds. In addition, there is the commentary by the viewers to keep it interesting. For instance, while some research was being done, researchers had painted the rear end of the male birds different colors and one was wearing the color purple. One lady said, “If I were a female PC, I'd choose that guy.” I'm thinking about taking a recorder with me to get some of the commentary.

Another time last year, I had several college girls show up just as we were heading out from the parking lot. They jumped into a friend's car and we headed for the PC binds. I had not noticed what they were wearing. However, when we got to the area to walk to the blinds, one of the girls was not wearing shoes or a coat — just a T-shirt and shorts. It was about 40 degrees or so that morning. Lucky for her, one of the researchers had left an old sleeping bag in the blind. She used that to cover her legs and feet and I had on an extra layer of clothing so I gave her my coat. I now check to make sure that everyone is dressed properly for the cold. This past spring (2007) I gave two tours where the temperature was right at 18°F. Everyone was prepared and I even took a small space heater to try to warm the blind.

Come join us next spring at 4:30 in the morning to watch a spectacular show of nature. It's an experience you are not likely to forget.

## **Additional activities available**

### **By Earl Allen**

Docents who want to be involved in activities in addition to the school groups with KEEP should contact Valerie and Annie for possible assignments. For example, a group of researchers at the University of California at Irvine recently published an article in *Geophysical Research Letters*. It was entitled, “*Regional patterns of radiocarbon and fossil fuel-derived CO<sub>2</sub> in surface air across North America.*” Radiocarbon levels in annual plants provided a means to map out fossil fuel plumes in surface air across the continent. A standard collection protocol was used to collect corn leaf samples from rural areas all across America in 2004 which were sent to the researchers. A sample from the KPBS was collected by docent Nancy Goulden. If you would like to read the paper, a copy can be checked out from Annie.

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## **SPOTLIGHT! On Doris Burnett**

### **By Annie Baker**

At Docent Graduation, Doris Burnett was recognized for her dedicated service to the Konza Environmental Education Program. Since graduating from the Docent Program in 1999, Doris was awarded Long-Term Leader status in 2005 and presented with the 2007 Early Bird Award for guiding prairie chicken tours.

Doris Burnett was born and raised in the mountains of southwestern Virginia. Although growing up on a small farm, she was not encouraged to spend time outdoors. In fact, before marrying husband Bill, an avid fisherman and hunter, she had never seen a tick! Involvement in her son’s and daughter’s Scout troops strengthened her interest in nature. After both children were grown, Doris and Bill built their home on Tuttle Creek Lake, piquing Doris’s interest in the prairie and preserving the grassland community around their home. Doris read about the Docent Program in the *Manhattan Mercury* and after completing training became very active with KEEP. On Konza Prairie, Doris especially enjoys working closely with small groups of students, encouraging them to discover the prairie and try something new - it’s okay to touch a grasshopper! During Visitor's Day, Doris prefers being stationed at Hokanson Homestead to interpret the site and share antiques from her personal collection with visitors. Valerie Wright, KEEP Education Coordinator, remembers a special event on Konza Prairie for an elementary school group where Doris donned a pioneer outfit and shared qualities of edible prairie plants, as well as how they would be prepared for dinner.



Bird watching is a major hobby for Doris. She enjoys guiding prairie chicken and other birding tours for Konza Prairie. During these tours, usually in the early morning hours, Doris has forged new friendships and received invitations to visit and share birding opportunities in other areas. She is active in birding organizations, such as the Kansas Ornithological Society, and birding conferences, sometimes guiding field trip excursions. She participates in Migration and Christmas Bird Counts and travels throughout the United States to bird.

Doris and Bill, married over 30 years, have two children and two grandchildren all living in Kansas. In her spare time, Doris enjoys being involved in her grandchildren's activities and gardening. Her children fondly nicknamed her the ‘professional volunteer’ owing to sustained participation in community service and “Friends” groups locally.



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## Annual Fall Docent Roundup

The Annual Fall Docent Roundup at Hokanson Homestead will be held on Sunday afternoon, 2 to 4pm, **October 14, 2007**. Join us for a beautiful autumn afternoon with friends.

For those who wish to help with the annual cleanup around the Homestead, we will be moving some wood chips, mowing and weeding. Otherwise, just come for refreshments and fun.

