



Tallgrass Gazette Winter 2009

"The Newsletter for Docents and by Docents"

Tough times call for bigger brains

By Timothy C. Roth II & Vladimir V. Pravosudov,

Department of Biology, University of Nevada

Many animals store (or cache) excess food during the fall to use during the winter when naturally available food is in short supply. Some of these animals that scatter their caches over a fairly large area to avoid theft often use spatial memory to retrieve their food. Some species of birds, for example, can make well over 10,000 caches in a single fall season and rely completely on this cached food for the duration of the winter. As a result, their spatial memories are incredibly acute, and for good reason. If they do not cache enough food or cannot remember where they cached their food, they will starve. Thus, food-caching animals living in harsh environments that demand more food during the winter should rely more on cached food than those living in mild conditions, and so should have better memories to support more efficient cache retrieval. Consequently, these animals may benefit from more neurons within a larger hippocampus, a part of the brain involved in spatial memory processing.

We conducted the first large-scale test of this relationship in a single food-caching species, the black-capped chickadee. Black-capped chickadees range from Alaska to New Mexico, and the species encounters a great diversity of climatic conditions. We collected birds at five locations along a gradient of environmental harshness (Alaska, British Columbia, Montana, Colorado, and Kansas) to determine if their brains were affected by the local environmental conditions. We found that birds from more harsh northern climates (defined by lower temperatures, shorter day lengths, and more snow cover) indeed had significantly larger hippocampal volumes and more neurons than those from more mild southern latitudes.



Black-capped Chickadee
(Photo-Dave Rintoul)



Black-capped Chickadee (Photo-Dave Rintoul)

Our work suggests that environmental pressures are capable of influencing specific brain regions, which may result in enhanced memory, and hence survival, in harsh climates. This work gives us a better understanding of how the brain responds to different environments and how animals can adapt to their environment in general.

Non-technical summary of:

Roth, T. C. and V. V. Pravosudov. 2009. Hippocampal volume and neuron numbers increase along a gradient of environmental harshness: a large-scale comparison. *Proceedings of the Royal Society B*. In press.

Editor's Note: Dr. Roth gathered data on Konza Prairie Biological Station in October 2007. **TGG**

Prairie Patter

by Dr. Valerie Wright, Environmental Educator and Naturalist



Dr. Lauren Ritterbush

On a perfect prairie day in January, five docents, one guest, Annie and I took a long hike around K4A and the Kings Creek Trail for Konza Quest. The views were inspiring and the company lively. It was a great start to the year. Another early event was the in-service presentation on January 10 by Dr. Lauren Ritterbush, our KSU expert on prehistoric Indian culture of the Great Plains. Thirty-six people attended. The questions were numerous and the session went into late morning. Lauren will continue to look for artifacts in our area. A future Konza Quest may be one of these hikes of discovery.

A big thank you to all who came out for the two winter workdays. It is amazing how much can be accomplished when there are more hands and minds. Nineteen people helped in January and another seven in February. All of the fall grasshopper inventory was archived, all the materials and equipment for spring SLTER were created and reorganized, nooks and crannies were cleaned, and much more. The lunches included home made soups, salads and deserts - well worth the effort!

At the end of January the renovated barn (Konza Meeting Hall) became the scene for the 12th Annual Docent Roundup. There was plenty of room for the 50 participants, unlike the crowded conditions of previous gatherings in the Education Center. Our speaker was the new Director of Konza Prairie, Dr. John Briggs. He gave information about woody plant encroachment on the prairies, which is the subject of his long-term research, and answered many questions the audience had about changes in policy and research on Konza. There were quizzes and photo montages that were fun to create and fun to watch others enjoy. From comments we heard the docents went away satisfied. The Wilton Thomas Memorial Fund was announced. Donations are still being accepted.



Winter work day

At Roundup Martha Seaton and Susan Hancock sang Martha's original song about a baby bison, honoring Mary Good Elk Woman's capture of six bison calves in 1881. Martha now has composed ten songs about the prairie, inspired by her docent training. Here is a short excerpt from the lyrics:

"Baby Bison, all alone, padded brightly over snow. Flakes would tumble deep, fast as floods in spring.
How could he know?"



January Konza Quest

The Quality Docent Program recognized ten excellent docents for 2008. They were Earl Allen, Diane Barker, Gordon Cunningham, Charlie Given, Nancy Goulden, Sue Hunt, Susie Johnson, Larry Loomis, Jim Morrill and Ann Murphy. Congratulations to all for your commitment to Konza Prairie!

Last year the Manhattan Community Foundation granted us funds to create Konza Kits for all the 13 USD 383 school libraries and for the Manhattan Public Library. The original Konza Kits were created by Karen Bargabus back in 1995. Our updated materials include new books on the prairie, field guides, games and units for class use, artifacts of the prairie and the list goes on. We hope to have these finished sometime this spring. **TGG**

Networking Konza

By Charlie Given

Konza Prairie Biological Station is affiliated with several national and international networks involved with ecological research. The research includes air quality monitoring, water quality monitoring, stream height/flow rate, solar radiation, seismic activity, and other topics. Following is a list and very brief description of the major Konza networks:

ILTER/SLTER (Long Term Ecological Research/Schoolyard LTER). The 26 LTER sites support research on long term ecological phenomena in the United States. The 24 SLTER sites share the same mission but target elementary and secondary school age groups. See www.lternet.edu

USGS/HBN (United States Geological Survey/Hydrologic Benchmark Network). These 48 active sites provide long-term measurements of stream flow and water quality in areas that are minimally affected by human activity. <http://water.usgs.gov/pubs/circ/circ1173>



NADP/CASTNET (National Atmospheric Deposition Network/Clean Air Status and Trends Network). These two networks were developed in 1978 to monitor dry (CASTNET) and wet (NADP) acid deposition. NADP has been expanded to include the National Trends Network (NTN) which measures other pollutants. See www.epa.gov/castnet

ANSS (Advanced National Seismic System). This is a network of at least 7000 sites to provide real-time earthquake information to interested parties. See www.anss.org

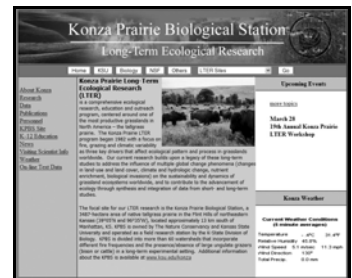
USGS Real-time water data. A very large network of stations that provide information on stream heights, discharge volume, recent precipitation amounts and water temperatures. See www.waterdata.usgs.gov

AERONET (NASA) Sunphotometer. A worldwide aerosol monitoring network supported by NASA's Earth Observing System (EROS). The sunphotometer measures the intensity of incoming sunlight at eight discrete wavelengths to determine the decrease due to aerosols. See <http://aeronet.gsfc.gov>



NOAA Weather Reporting. One of hundreds across the nation, Konza has two automated, fully instrumented stations. Current weather and climatic data can be found on the Konza LTER website. www.konza.ksu.edu

LINX (Lotic Intersite Nitrogen eXperiment). A collaborative study of the variability among streams in the uptake, retention and recycling of nitrogen. Although no longer funded by NSF, all nine stations continue to collect and publish data. www.biol.vt.edu/linx or Google LINX.



NEON (National Ecological Observatory Network). A continental-scale research platform for discovering and understanding the impacts of climate change, land use change, and invasive species on ecology. www.neoninc.org

If you look at all the listed networks, you will find that Konza Prairie is the only site common to all the networks. If anyone remembers the previous mention of these networks in the *Tallgrass Gazette* (about four or five years ago), the Sopchoppy River is in the Florida panhandle and is still reporting on the Benchmark Network. **TGG**

Docent Nancy Ohlenbush enjoys retirement in Texas

Editors' note: The following is from an e-mail Nancy sent in December 2008.

Dear Friends,

I miss the prairie and the people I met while a docent-in-training and a docent. I can see myself going for those hikes. I'd love to see the improvements and changes. I hope to get back.

Paul has gotten involved with the Wildlife Management Committee in Sun City, TX. He serves as an advisor. We have hired a wildlife manager who was a game warden and has retired from Texas Parks & Wildlife. We have a deer problem and now a feral hog problem! The residents volunteer to do a deer census each year and Sun City works through Texas Parks & Wildlife to relocate deer to ranches who have been approved by the TP&W. Some deer are tested for Chronic Wasting Disease each year, but they have tested clean and we didn't have to do that this year. TP&W sets the removal rate based on the census. The goal this year is to remove 150. They have trapped over 50 so far. If we do not have a relocation place, the deer have been slaughtered with the venison going to a local food bank. This year the deer are being relocated to Llano County.

We are both active in the Nature Club here. I've led two walks for our Native Plant Special Interest Group, with Paul's assistance on one. We had a wildfire go through some of our native area, and truthfully, were very excited to lead a group there to see what changes occurred and how the vegetation recovered. The burn was about 25 acres. Most of the Native Plant Group thought the burned prickly pear would disappear, but I have some photos of how it put out multiple pads as part of its recovery. The fire didn't kill many junipers either.

I'm in the Visual Arts Club and have painted pictures of a bison and calf on the prairie and a winter scene from a photo on the Bison Loop that Chod sent me. His Christmas card this year is begging to be painted too! I'm participating in the Amphibian and Reptile SIG, Rock and Minerals SIG, Native Plant SIG of the Nature Club. I'm in the Photography Club too. Wow! I never thought retirement would be so busy!

I still get the *Tallgrass Gazette*. I'm very glad I haven't been taken on the list!

Nancy Ohlenbush <nancyoh@suddenlink.net>



Burned cactus



Regenerated cactus

Don't miss "Interpreting Interpretation" with Dr. Ted Cable

Monday March 9, 7:00 pm, Konza Prairie Education Center

As Konza Prairie docents, you are not only 'informational', but 'inspirational'. Through guided tours, you encourage in visitors a 'greater sensitivity', a 'heightened ecological and cultural awareness', and a 'meaningful link' to the Flint Hills tallgrass prairie. You are Interpreters.

Join Dr. Ted Cable as he shares the meaning and process of Interpretation, and discusses the Principles docents can use to connect "on the trail". For experienced docents and new trainees, reconnect with your passion for docenting, and discover new ways to invigorate your tours for different ages.

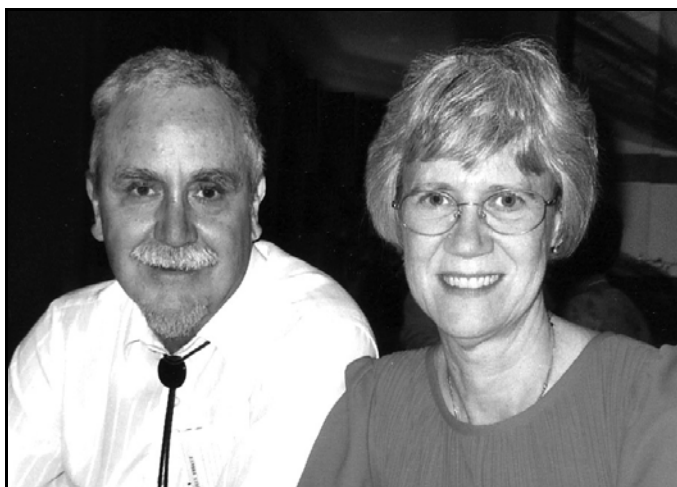
Dr. Ted Cable is an award-winning professor of Park Management and Conservation at Kansas State University. He is the author of eight books and more than 150 articles about natural resource management, interpretation, and birds. Dr. Cable has done speaking engagements, consulting, teaching and training workshops in more than 20 states in the U.S. as well as in several countries in Europe, Africa, and Latin America. **TGG**



SPOTLIGHT! on Nancy and Myron Calhoun

By Annie Baker, Myron and Nancy Calhoun

Dr. Myron and Nancy Calhoun have been part of the Konza Prairie family for many years. They especially enjoy interacting with researchers and faculty, attending seminars, and participating in research activities. Myron is part of the Long-Term Leaders, and Nancy received Docent of the Year in 2006-2007. Awarded for the first time ever, the 2008 Crimson Torch Award for most-active docent on the burn crew was presented to Myron for seven days.



Myron and Nancy Calhoun

Myron and Nancy met in college and were married in 1964. They have made their home in Manhattan since 1971 when Myron accepted a position in the K-State Computer Science and Electrical Engineering Departments. Initially, Nancy was the primary childcare provider, but as their children matured, she earned a second BS and MS in Computer Science and began a seventeen year part-time position at K-State's Information Technology Assistance Center (iTAC). In 1986, Myron accepted a one year Fulbright to teach Computer Science at the University of Benin, Nigeria. Myron retired in 1997 and Nancy in 2005. They have three children and five grandchildren.

To Myron, roaming the prairie was appealing enough to join the docent program. He graduated in the first docent class (1992) taught by K-State Biologist and Ornithologist Dr. John Zimmerman. Nancy accompanied Myron to Konza Prairie events through the years and, after retiring, also completed the training program.

Myron prefers guiding tours for adults, including leading the Bison Loop for Visitors' Day. He has become an integral part of the Konza Prairie Burn Team and Bison Round-up and has also become adept at resetting the Stream Geomorphology transects after high-water events!

Nancy enjoys trail hikes with 2nd through 5th grades, and, through her willingness to volunteer where needed, has become an important part of the student stream-studies research. In 2006, Nancy offered her computer expertise and became a consultant for KEEP, first overhauling the website and currently adapting a data management system to fit the education program.

In addition to their interest in Konza Prairie, Myron and Nancy's other hobbies include amateur radio and gardening. Myron sings in the Little Apple Barbershop Chorus and a quartet, volunteers for Emergency Preparedness, and teaches the Kansas Concealed-Carry Certification Course. Nancy enjoys music and plays bassoon in several groups and piano for the Community of Christ Church. She keeps her mind sharp as a database consultant and website manager for various organizations. **TGG**

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Tallgrass Gazette

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Return Service Requested

Konza Docent Calendar - Save the Date!

Mar 9, Mon, 7:00-8:00pm, In-service "Interpreting Interpretation", Dr. Ted Cable

Mar 15, Sun, 2:00-4:00pm, Hokanson Homestead Workday

Mar 15, Greater Prairie Chicken viewing begins, through Apr 19, Thurs-Sun only

Mar 28, Sat, 8:00am, Annual Konza LTER Workshop (RSVP to cgadbury@ksu.edu)

Apr 19, Sun, 2:00-4:00pm, Annual FOKP Spring Program: Dr. Tom Bragg

May 31, Sun, 6:00pm, Docent Potluck

Jun 4, Thu, 6:00pm, Wildflower Refresher

Jun 7, Sun, 6:30pm, Annual FOKP Wildflower Walk

Every Friday, 3:30-5:00pm - Meet at the Education Center for KONZA QUEST.

