



# The NREM Newsletter

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## Dr. Miller's Departmental Update

In September Dr. Keith Owens was named Interim Associate Director of the Oklahoma Agricultural Experiment Station. Keith moved upstairs and my reported October 10, 2014 retirement was delayed again as I accepted the position as Acting Head of NREM. This has been a challenging and rewarding experience. All of the NREM and Coop Unit faculty and staff have been very helpful and made this assignment most enjoyable. Even Keith helped me re-learn the routine and to stay on track. Thanks to all.

We had a great turnout at the retirement reception for Drs. Terry Bidwell, Tom Hennessey, and Larry Talent in November, and properly roasted and congratulated them for their contributions to NREM, DASNR and the State of Oklahoma. They will be missed.

NREM was well recognized at this year's Society for Range Management annual meeting. Dr. Karen Hickman and the Range Club brought home awards that indicate our faculty and students rank among the best in the nation.

In February, a joint meeting of the Oklahoma Wildlife Commission and the Oklahoma Cooperative Fish and Wildlife Research Unit was held on campus and provided an excellent opportunity for NREM students and faculty to see the workings of the Commission and gain a better understanding of the degree to which our Coop Unit scientists, NREM faculty, and the Oklahoma Department of Wildlife Conservation (ODWC) cooperate in fish and wildlife research and support graduate education. NREM, the Division of Agricultural Sciences and Natural Resources (DASNR) and the Oklahoma Fish and Wildlife Unit reviewed a draft of a new cooperative agreement for the operation of the Unit and contributions of the cooperating agencies. Dr. Scott Loss and Dr. Sue Fairbanks, the new NREM faculty members have made excellent progress in their teaching and research assignments. Sue and Scott started in August

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## Departmental Update Continued

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2013, and have now completed three semesters and a summer with the Department. Sue's work with bears and Scott's work with anthropogenic impacts on avian communities highlight their research interests.

NREM has been authorized to fill a new faculty position in landscape hydrology and sustainability. The announcement and search for this new position should begin this spring. NREM is proud to announce the hire of Dr. Laura Goodman in our Range and Forage Systems position. This teaching and Extension position is one component of a cluster-hire with partner positions in Plant and Soil Science and Animal Science. Laura joins us from New Mexico State University and should be arriving in Stillwater sometime prior to the beginning of the fall semester 2015.

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## Whooping Cranes and Prescribed Fire

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By - Kate Golden



Research examining the relationship between prescribed fire and whooping crane habitat-use will guide further conservation efforts on its wintering grounds.

The historic population of whooping cranes was estimated at approximately 1,300 birds during the mid-1800s. However, the population experienced a rapid decline due to overhunting and habitat loss, resulting in only 15 wild birds remaining by 1941. Concern for the remaining birds became a public issue, however the whooping crane was not formally protected in the United States until the passage of the Endangered Species Act in 1973. The current wild population of whooping cranes that migrates from breeding grounds at Wood Buffalo National Park in northern Canada, through Oklahoma, to wintering grounds at Aransas National Wildlife Refuge (NWR) on the Texas coast is estimated at 250 birds.

The Aransas National Wildlife Refuge was created to protect the habitat of the whooping crane in 1937 and was declared critical habitat for the cranes in 1978. The cranes use the salt marshes, freshwater inland wetlands, and upland areas for overwintering and depend on these sites for food. The marsh needs to be clear of tall vegetation and the water level needs to be a certain height to protect the cranes from predators.

One of the primary habitat management tools on Aransas NWR is the use of prescribed fire. Prescribed fires are conducted during the winter to open vegetation structure and improve food resources such as blue crabs, clams, wolfberries, acorns, and aquatic insects for the overwintering whooping cranes. For example, fires make acorns more visible and easy for the cranes to locate. Fires are also conducted during the summer to help control various invasive species that occur on the refuge. The oak species on the refuge need to be kept below four feet tall so that the cranes (which are about five feet tall) can visually locate predators and other threats. There is a widely held belief that whooping cranes prefer to use recently burned habitat during the winter, but little research has been conducted to determine this. Our research will focus on determining how the severity of past fires influenced crane use of burned habitat. Determining if recently burned areas are important habitat for the cranes could be helpful in re-establishing additional locations for the cranes to overwinter outside of the Aransas NWR.

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# Herbicides for Pond Management

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**By - Dr. Marley Beem**

Excess aquatic plant growth is a common pond problem and often requires use of herbicides to manage. Unfamiliarity and discomfort with herbicide application is common among some landowners – they are often heard to exclaim, “I don’t want to use anything toxic.” On the other end of the spectrum, other landowners may suffer from a complete lack of caution in their use of herbicides.

The first consideration is to only apply herbicides approved by the EPA and the state of Oklahoma for use in ponds. County Extension educators can assist in selecting an appropriate herbicide based on the problem plant, the pond, and objectives. Aquatic herbicides have specific withdrawal times for livestock watering, swimming, fishing and irrigation.

Many common terrestrial herbicides such as Karmex® and RoundUp®, are not approved for use in ponds. There are other glyphosate herbicides which are approved for aquatic sites. The difference lies in additional ingredients in RoundUp® which make it more toxic to certain kinds of aquatic life.

As with any herbicide, avoid skin, eye, or mouth contact. This may mean using gloves and eye protection, long sleeve shirts and other protective clothing. Every pesticide label will have a section outlining what personal protective equipment is required. Do not apply herbicides at more than the recommended rate.

Be aware of the possibility of pond overflow and the drift of fine droplets or vapor from foliar applications. Talk with your Extension educator about steps to reduce these risks. Do not apply herbicides to ponds which have a direct connection to groundwater.

The greatest risk to the environment when using approved aquatic herbicides is killing too much plant material at one time. This can lead to a fish kill as decomposition uses up all dissolved oxygen. To help avoid this, treat only a quarter of the pond at a time and do not treat during the warmest months of the year.

Herbicides are seldom a cure-all and usually recommended in combination with practices such as edge deepening, nutrient runoff reduction and other steps to correct underlying problems.



Cattails growing along the edge of a pond can become dense and may require management.

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# Slowing the Expansion of Woodlands in the Southern Great Plains

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**By - Dr. Chris Zou**



Eastern redcedar encroachment in grasslands is a significant problem in the Great Plains.

Drs. Chris Zou and Sam Fuhlendorf are among a team of researchers from Oklahoma State University working with Texas A&M University, Virginia Tech and the University of Arizona studying the impact of woody plant encroachment on ecosystem services. The goal is to understand how this encroachment process is driven by interactions between fire and grazing regimes constrained by policy and culture.

“Slowing the Expansion of Woodlands and Increasing the Resilience of Grasslands in the Southern Great Plains” is a three-year, \$1.4 million project funded by the National Science Foundation.

The OSU team will primarily be responsible for testing questions related to how changes in ecosystem structure alter functions and services such as water availability.

Researchers will compare three regions with contrasting degrees of woody plant encroachment in Kansas, Oklahoma and Texas. A dynamic, agent-based model will be developed to examine factors influencing decision-making by land managers with respect to the use of prescribed fire as a management tool.

At the completion, the model can be used to forecast changes in regional woody plant cover under different scenarios of fire use and project the effects on portfolios of ecosystem services including groundwater recharge, stream flow and carbon sequestration.



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# OSU Hosts First of Three NRCS National Fire Schools

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**By - Sean Hubbard**



NRCS fire school lighting a strip flank fire.

Oklahoma State University has a strong reputation in the world of prescribed fire. This has led the USDA's Natural Resources Conservation Service to select OSU to teach national fire schools since 1996.

Of the six national fire schools attended by NRCS employees, NREM will be hosting three of them in 2015. The first of which, "Burning in Tallgrass," took place in Stillwater from Jan. 12 through Jan. 16.

The NRCS employees in the class, representing many states, spend mornings in the classroom discussing the history of fire, writing burn plans, fire prescriptions, weather conditions and the effects on wildlife habitat.

"The goal is to train these employees so they are knowledgeable and comfortable with talking to landowners about fire, and writing burn plans to provide assistance," Weir said. "The primary thing about prescribed burning is safety. We stress that first and foremost."

Through the workshops, the NRCS employees are now armed with more knowledge and experience with prescribed fire, which makes them more comfortable and confident when talking to landowners in their own respective states.

"Prescribed burning is a practice we use to manage resources around the country," said Chuck Stanley, NRCS rangeland management specialist. "Prescribed burning is one of those technical applications that requires a lot of training to be able to do it safely."

Morning sessions are followed by hands-on exercises in the field. When weather conditions allow, burns are conducted.

Stanley said he enjoys bringing his crew to the trainings offered by OSU and looks forward to the relationship continuing in the future. "I don't think we've ever gotten a bad review. Our employees really learn a lot."

OSU will host the "Burning in Oak Pine Forests" and the "Burning in the Growing Season" workshops later this year.

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# Lesser Prairie-Chicken Research

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By - Ashley Unger



Technician Jarret Katchel releases a female lesser prairie-chicken that has been fitted with a GPS transmitter in Beaver County, Oklahoma.

The March 2014 listing of the lesser prairie-chicken as a threatened species has put a spotlight on the conservation needs of this declining bird. Oklahoma State University researchers are focused on filling in gaps in lesser prairie-chicken research to better inform future conservation efforts within Oklahoma. Research objectives include determining how development, such as oil and gas, impact lesser prairie-chicken habitat selection, survival and nesting at different scales.

To investigate these objectives, graduate student Ashley Unger and technicians have trapped and fitted 69 individual birds (51 males, 18 females) with GPS transmitters in the panhandle region of Oklahoma over the past 2 years. These GPS transmitters are solar-powered and record up to 15 locations per day, resulting in the collection of over 100,000 locations thus far. Preliminary analysis of these data show a peak in daily movement and mortality from March – May and November-December. Our crude analysis of habitat use reveals an avoidance of anthropogenic features including oil and gas wells, transmission lines, and roads; however a more comprehensive analysis is needed to determine what characteristics of development may have caused this behavior. We are currently preparing for our third field season. Increasing energy development has the potential to impact large portions of current lesser prairie-chicken habitat, therefore we hope the results of our analyses will help agencies, industry, and landowners improve management and inform future conservation and development plans.



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# AWARDS & RECOGNITIONS

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## Hickman Receives Outstanding Achievement Award



Dr. Karen Hickman, professor in NREM, received the Outstanding Achievement Award for Research at the Society for Range Management's (SRM) 68th Annual Meeting in Sacramento, California. The Outstanding Achievement Award is presented for achievement in rangeland research.

Karen is an ideal recipient of this award. While at OSU she has taught 15 different courses, mentored 24 graduate students, and conducted 84 undergraduate research projects demonstrating her impact on young professionals. She is a prolific author and accomplished grants-woman with more than \$3.4 million in external grants.

Karen has developed a nationally recognized program in invasive species on rangelands. Her leadership in the Oklahoma Invasive Plant Council has contributed to its reputation as a widely used source of scientific and managerial information. The results from her teaching and research programs are being widely distributed and are making a difference on rangelands.

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## OSU Range Club Receives Multiple Awards



Front row: Jack Tidwell (Secretary), Nolan Craun (President), Duel Brown, Hannah Stevens (Treasurer); Back Row: Seth Coffey (Vice President), Clark Roberts, Corban Hemphill, Jeremy Schallner.

Schallner tied for 1st place. Jack Tidwell placed 3rd in the Extemporaneous Speaking contest with his presentation entitled "Environmental Impacts on Range Plants". Finally, Nolan Craun presented his undergraduate research project in an oral paper presentation.

The OSU Range club placed first in the display board competition at the recent SRM meeting in Sacramento, California. Their display entitled "Managing Diversity Means Managing Diversely" focused on rangeland management issues in Oklahoma.

OSU Range Club members were also presented with the SRM Collegiate Trail Boss Award at the annual meeting. This award is presented to the range club with the most points accumulated in competitions and participation. Club members competed in several competitions including the Undergraduate Range Management Exam (URME), and OSU's Jeremy

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## AWARDS & RECOGNITIONS

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### Owens Receives SRM Fellow Award



Dr. Keith Owens, a professor in NREM, received a Society for Range Management (SRM) Fellow Award at the 68th Annual Meeting of the Society for Range Management. Dr. Owens' career has maintained excellence in research, leadership and service to the range profession and to the SRM for over 35 years.

During 20 years as a research scientist, Dr. Owens and his colleagues published over 80 peer reviewed manuscripts, book chapters, and editor-reviewed symposium proceedings, and were awarded grants funded for \$6.4 million. With his colleagues, he developed an information base on seed and seedling ecology, resprouting and mechanical defenses of woody plants, grazing patterns in vegetative communities, and water use and hydrologic implications of woody plants on rangelands.

Dr. Owens served as Editor-in-Chief from 2004 to 2008, transitioning the Journal of Rangeland Management (JRM) to Rangeland Ecology and Management (REM). His efforts resulted in doubling the number of manuscript submissions.

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### NREM Graduate Students Take Top Three Places

NREM graduate students placed in the top three in the student paper competition at the Oklahoma Natural Resources Conference in February: Ashley Unger won the Moser Memorial Award (First place in TWS student paper awards), Matt Carroll won second place, and Morgan Pfander won third place. Congratulations on a job well done.

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## Alumni Spotlight

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Dr. Charles Sabatia, 2007 Oklahoma State University M.S. graduate in forest biometrics was recently appointed Assistant Professor in the department of forestry at Mississippi State University. He worked on modeling shortleaf pine biomass under the direction of Dr. Thomas B. Lynch at OSU for his master's degree. Dr. Sabatia then earned a Ph.D. from the department of forest resources and environmental conservation at Virginia Polytechnic Institute and State University.

Dr. Chakra Budhathoki, 2006 Oklahoma State University Ph.D. graduate in Environmental Science in the area of forest biometrics, was appointed Assistant Professor in the School of Nursing at Johns Hopkins University. At OSU he worked on shortleaf pine growth modeling under the direction of Dr. Thomas B. Lynch.





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## NREM-related Social Media

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Social media is a great way to share information with clubs, colleagues or the general public. It's not just a place to keep up with your friends anymore. Social media provides excellent analytics to monitor success in reaching people.

Facebook provides "group" options, a great tool for student clubs or departments, "pages" a great way to share information on a specific topic, and "events" which provides another way to share events with your Facebook friends.

Twitter is now widely used in the natural resources field among many other disciplines. A multitude of agencies and organizations that NREM works with use Twitter and Facebook to educate people and share events. Check them out, you'll be surprised by the use of social media in our discipline.

The following are NREM related Facebook pages and Twitter handles. Consider "Following" or "liking" them, and "share" their information with your friends and colleagues.



### Facebook:

OSU Natural Resource Ecology and Management  
Oklahoma State Society of American Foresters  
Oklahoma State University Range Club  
The Prairie Project  
Prescribed Fire eXtension CoP

### Twitter:

prairieproject  
RxFireCoP

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## Events

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- **Oklahoma Invasive Species Conference**, Norman, OK - March 13, 2015
  - **Lesser Prairie-Chicken Festival**, Woodward, OK - April 15-22, 2015. <http://lektreks.org>
  - **Quail Field Day**, Sandy Sanders WMA - April 16, 2015  
contact: [wayne.elmore@okstate.edu](mailto:wayne.elmore@okstate.edu)
  - **Quail Field Day**, Cross Timbers WMA - June 11, 2015  
contact: [wayne.elmore@okstate.edu](mailto:wayne.elmore@okstate.edu)
  - **Quail Field Day**, Spavinaw WMA - June 12, 2015  
contact: [wayne.elmore@okstate.edu](mailto:wayne.elmore@okstate.edu)
  - **Noble Foundation Summer Burn Workshop**, Ardmore OK - July 21-22, 2015
  - **American Fisheries Society**, Portland Oregon - August 16-20, 2015
  - **The Wildlife Society 22nd Annual Conference**, Winnipeg, Manitoba, Canada - October 17-21, 2015
  - **Society of American Foresters National Convention**, Baton Rouge, LA - November 3-7, 2015
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