

NREM Gains Natural Resource Economist

By Dr. Difei Zhang

One of the projects I have been working on at OSU concerns the analysis of shortleaf pine growth and yield data. I proposed research on this topic to the USDA with Dr. Tom Lynch.

During 2008, we collected data on shortleaf pine growth. These data are currently being analyzed to compare response to thinning, influence of understory hardwood re-growth on shortleaf pine growth, assessment of ice-storm damage, and revision of survival models.

The results of this study will be of interest due to the applicability to restoration of the shortleaf pine-bluestem ecosystem on the Ouachita and Ozark National Forests, which will entail management for older age classes of pine. Some of the trees in our study are 90-110 years old. Thus, we are beginning to get more substantial representation of trees in older age classes which would be present in the shortleaf pine-bluestem restoration stands.

I have been updating the growth and yield models and the survival function of the shortleaf pine forest growth simulator (SLPSS) model with recent measurements....

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Manufacture of Structural Composite Panels from Eastern Redcedar

By Dr. Salim Hiziroglu

Approximately one-fifth of the land area of Oklahoma is covered by forestland, with almost three-fourths of this land capable of producing commercial timber. Eastern redcedar (*Juniperus virginiana*) is widely distributed in Oklahoma. Current acreage of eastern redcedar in Oklahoma is estimated at 9 million acres and it is projected to be 12.6 million acres by 2013. This project directly addresses the development of value-added structural panel products from under-utilized eastern redcedar. The importance of this work lies in its potential to expand the use

of low quality eastern redcedar in exterior structural composite panel manufacture, which may result in the development of an environmentally sound way to utilize a resource in Oklahoma.

Strand type of panel products such as waferboard and oriented strand board (OSB) are used for exterior structural applications. For this research, I cut low quality eastern redcedar trees into 6 in long sections to produce strands. An average of 6% and 9% liquid phenolic exterior resin was ...

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An unpressed mat of eastern redcedar

Importance of Sand Plum to Birds in Oklahoma

By Brett Cooper

One of the most threatened ecosystems in the United States is grasslands. The loss of grasslands in North America has been estimated at 80%. As a result, many bird species have shown large declines in Oklahoma.

While tree cover was historically limited within the Great Plains grasslands, native shrub species were present and represented a key habitat component. One of the most dominant of these is the Chickasaw plum (*Prunus angustifolia*), also known as sand plum. To evaluate bird use of this plant, I collected data during 2007-08 in northwestern Oklahoma on bird abundance and vegetation.

I found that the declining Bell's vireo were highly associated with sand plum as most (73 %) of their detections were either within or near (≤ 30 m) sand plum thickets. Other species such as the grasshopper sparrow tended to avoid shrub cover such as sand plum.

Wintering sparrows including the savannah sparrow and American tree sparrow were highly associated with sand plum thickets during the winter. This plant appears to be used for cover for these species as they forage through grasslands. In fact, the amount of sand plum cover was directly related to the abundance of these species.

The results of this research show that shrubs are important for some species of birds that occur in mixed-grass prairies. By maintaining a variety of grassland and shrubland plant communities, we can ensure the persistence of the full suite of bird species that occur on Oklahoma rangelands.

Brett Cooper is a M.S. student in NREM.



Sand plum thickets scattered across a mixed-grass prairie.

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4-H Range Management Assessment

By Kevin Allen

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...from the study plots. I also will analyze the effects of understory vegetation on shortleaf pine basal area growth and survival.

An added bonus for this study is the opportunity to evaluate the impacts of the December 2000 ice storm. We will quantify the probability of survival given varying kinds and degrees of ice storm damage. Finally, I will conduct an economic impact assessment of restoring the shortleaf pine – bluestem grass ecosystem.

The results of this work will allow us to provide information regarding the management of older shortleaf pine stands in Oklahoma.



Dr. Zhang is an Assistant Professor of Natural Resource Economics at Oklahoma State University.

Over the past several decades the public has become increasingly concerned about the uses and management of rangelands. While rangelands are important for energy, grazing, and minerals, they also need to be considered for aesthetics, wildlife habitat, and recreation values. Successful rangeland managers will have to implement politically supportable policies that address forage and non-forage values. To do so will require an understanding of beliefs and attitudes across a wider spectrum of society than the traditional range clientele.

With access to the research and resources of the land-grant university system, 4-H is strategically positioned to strengthen the United States' global competitiveness and leadership in science, engineering and technology. NREM faculty conducted a survey of 4-H projects in range management in the United States to assess participation in this area.

The survey response rate was 100%. We found twelve states currently offer a 4-H range management project, and all of these are western states that are dominated by rangelands. With a national 4-H enrollment of nearly 6,000,000 members, enrollment nation-wide in 4-H range management projects is 7,353 or just over 1%.

Clientele lack of Interest was the most common reason states do not offer 4-H range projects. Respondents expressed interest in 4-H range management curriculum and 62% felt a web site with age appropriate materials would be useful.

Fifteen states have a State or District Extension Range Specialist but only seven of these specialists have 4-H program responsibilities.

Nineteen states were aware of the National Range Judging Contest, yet only seven states conduct a state level contest and only five regularly send 4-H teams to this contest. We found those states that participate in state or national contests have a state or district extension range specialist with 4-H program responsibilities. Thus, having these personnel is important to enhance youth interest in range management.

The 4-H program is proven to have positive effects resulting in young adults who are prepared to contribute and assume leadership roles. Significant effort needs to be expended to increase 4-H membership in range management projects to prepare a well informed citizenry capable of making educated decisions facing the complex issues regarding rangeland management.

Dr. Allen is an Extension Specialist in Youth Programs at Oklahoma State University.

Patch Burning on the Cooper WMA

By Steven Winter

During the summers of 2006-08, Elizabeth Daxon and I conducted research on the effects of patch burn-grazing at the Hal and Fern Cooper Wildlife Management Area (Cooper WMA) in Woodward County, Oklahoma. Cooper WMA consists of rolling sandy uplands where the dominant plant is the shrub sand sagebrush (*Artemisia filifolia*). We were interested in how patch burn-grazing, a range management technique that uses fire to concentrate grazing animals in different portions of a single pasture during different years, would affect the habitat of grassland birds.

We collected data on variables such as bird community composition and abundance and breeding bird nest success, and the structure and composition of the plant communities.

Our preliminary results indicate that patch burn-grazing can have a substantial impact on various structural measures of sand sagebrush vegetation such as vegetation height and the canopy cover of grasses, forbs, and shrubs. Values of these variables were lower in patches that had been burned most recently, relative to other patches in the same pasture. Within a patch burn-grazed pasture, patches that are not the most recently burned patch would often have values of these variables that were actually higher than what was found in pastures in which grazing occurred but not fires.

An interesting aspect of our study was that it allowed us to examine the effect of fire on sand sagebrush, the dominant life-form in many Great Plains rangelands characterized by sandy soils. Many sagebrush species are found in rangelands of the western U.S. and they often experience high rates of mortality as a result of fires. Very little, however, is known about how fire affects sand sagebrush. Our results indicate that sand sagebrush is quite resilient to fire, which might be expected for a plant that is found primarily in the Great Plains, a region with a long history of recurring fires helping to shape biotic communities. Additionally, the height and canopy cover of sand sagebrush plants achieves value comparable to pre-burn

conditions within a period of approximately 3-5 years after a fire.

I'm looking forward to additional insights that will arise as the analysis of our data continues and I'll always look back fondly on the time I was able to spend at Cooper WMA. The vast expanse of open rangeland, the high diversity of plants and animals, and the unique experience of working in a shrub-dominated community that is apparently very well-adapted to fires are all things that have made our research there especially rewarding.

Steven Winter is a Ph.D. student in MREM



Students collecting data on sand sagebrush on the Cooper WMA.

Growing Season Prescribed Fire

By John Weir

Getting people to use and accept fire is often a difficult task, but if you really want to make it complicated, tell people to burn in the summer or during the growing season. This statement is often accompanied by comments like “Why, you’ll kill everything” or “It will not burn when it’s green”. Historically, Oklahoma burned frequently during every season of the year. This means that the native vegetation and wildlife are adapted to fires that occur during any season of the year. Additionally, green vegetation will burn under the right conditions.

Faculty in NREM have been working with growing season burns for several years and have set up research and demonstration plots in various vegetation types throughout the state to show land managers the positive benefits of burning during the summer.

We have found that burning during the growing season allows people the flexibility of adding more days to conduct burns during the year. During July, August, and September the weather is typically more stable than it is during late winter or early spring. Also during the summer months there are fewer burn bans and the prescribed burns are inheritably safer to conduct due to the reduced fire intensity and slower rate of spread of the fire.

There are numerous benefits of growing season burns to native vegetation, livestock, and wildlife as well. For example, summer burns usually produce abundant wildlife food plants for the fall.

We currently have research and demonstration plots located in sand shinnery oak grassland in Ellis and Roger Mills Counties, sand sagebrush grasslands in Woodward County, Tallgrass prairie in Payne County, Oak-Pine Forest in Pushmataha County, and Cross Timbers sites in Osage and Payne Counties. We are in the process of setting up a site in Jefferson County to look at the season of burn effects on mesquite. If you would like look at the sites or have a tour contact NREM fire ecology faculty.

Finally, there will be a growing season burn field day on July 28th at the OSU Research Range west of Stillwater. We will look at the effects of growing season burns and discuss how to conduct summer burns. If conditions permit the fire crew will conduct a burn so attendees can see an actual growing season burn in progress.

John Weir is a Research Associate in Fire Ecology at Oklahoma State University.

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...used. Single-layer hand-formed experimental panels with random distribution of strands were manufactured in a computer controlled press. Both physical and mechanical properties of the samples are being tested.

In the following phase of the work, three-layer panels with oriented strands of redcedar and Southern pine with various mixtures including 20%-80% eastern redcedar and pine, 50%-50% eastern redcedar and pine, and 100% pine as control samples will be manufactured. The results will be tested to determine the effects of raw material and panel configuration against mechanical and physical properties. Results of this research could provide new products from an abundant local resource.

Dr. Hiziroglu is a Professor of Wood Products at Oklahoma State University.



Setting a growing season burn to control eastern redcedar.

Accolades

The OSU Range Club officers and members participated in the annual meeting for the Society for Range Management held in Albuquerque, NM in February. Students in the Range Club that attended the meeting were: Jonathan Kelly, President; Kevin Spears, Vice-President; Cambra Soukup, Secretary; Kyle Cothren, Treasurer; P.J. Martin; John Worthington; and Kanten Klinger. The students competed in the Undergraduate Range Management Exam (URME), the Display Board competition, and the Rangeland Cup competition.



Range Club members attending the national Society for Range Management meeting: Jonathan Kelly, Cambra Soukup, PJ Martin, John Worthington, Kevin Spears, Kyle Cothren, Kanten Klinger, and Dr. Karen Hickman.

Dr. Karen Hickman was recently selected as the Outstanding Undergraduate Teacher by the Range Science Education Council and Society for Range Management. The award was established to encourage and recognize individual excellence in teaching that has extended over the course of many years. Dr. Hickman is also a past recipient of the OSU College of Agricultural Sciences and Natural Resources' Outstanding Advisor Award.

Congratulations to the SAF/Forestry Club for winning the *Most Creative Shack Award* at the 2009 OSU Habitat for Humanity Shack-a-thon.

Last year over 16,000 Oklahoma youth participated in a natural resource program offered through NREM

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