Department Update
By Dr. Keith Owens

The last 6 months have been very full within the Department. The most noteworthy items are the establishment of a new endowed chair position, the retirement of a long-time faculty member, and gaining new office space for the Oklahoma Fish and Wildlife Cooperative Research Unit.

Mr. John D. Groendyke, chairman and CEO of Enid-based Groendyke Transport Inc., has committed $500,000 to make the lead gift for the Chair in Wildlife Conservation and Natural Resource Development within the Department. It qualifies for matching funds from T. Boone Pickens' 2008 challenge gift for endowed faculty positions and the State Regents for Higher Education, resulting in a total of $1.5 endowment. Mr. Groendyke, a 1966 general business graduate who minored in animal science, has been the Oklahoma Department of Wildlife Conservation's District 8 Commissioner for 34 years. He is also past president and chairman of the Grand National Quail Club and a Trustee for the Oklahoma chapter of The Nature Conservancy. The Endowed Chair position will not be available until all the funding has been received and will be filled later.

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Managing Ponds during Drought
By Dr. Marley Beem

The majority of Oklahoma ponds were built as means of storing water for livestock. In an average year they support cattle well and provide fishing and other benefits as a bonus. However, during a drought decreasing water volume, shrinking pond surface area and worsening water quality may become issues.

Part of the proper design of a pond involves determining if the size of the watershed is sufficient to fill and maintain the pond. The Natural Resource Conservation Service advises landowners on watershed requirements and all other factors involved in successfully building a pond.

When a pond’s volume shrinks significantly and cattle are wading or loafing in the immediate area, decreases in palatability of the water, followed by lower water consumption or even direct harmful effects to livestock can occur. In some cases this scenario can be avoided or delayed by fencing to exclude livestock and pumping water up into a temporary watering trough. A livestock water test can be conducted through your county Extension office to determine if water remains suitable for consumption.

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Low ponds are a common sight in Oklahoma this year.
The Oklahoma Prescribed Burn Association (OPBA) has been formed to provide state prescribed burn associations and landowners an organization that can assist them with liability insurance, finding funding for equipment and training, and a voice for prescribed burning throughout the state.

The OPBA was formed through a three year Conoco-Phillips challenge grant from the Playa Lakes Joint Venture through the High Plains Resource and Conservation District. Ron Voth is the executive director of this first of its kind organization to assist landowners with all aspects of prescribed burning.

The primary goal of the OPBA is to become the umbrella organization for landowners and local prescribed burn associations to receive reasonably priced liability insurance for conducting prescribed burns. Through the OPBA, the insurance will be available to burn association members at an affordable rate. The insurance covers escaped fires, suppression costs, injury to people assisting with the burn, and problems caused by smoke.

A five member board of directors has been formed to assist with the development of this organization. Members include Darrel Dominick, Oklahoma Conservation Commission; Alva Gregory, Oklahoma Department of Wildlife Conservation; Paul Clark, Natural Resource Conservation Service; Karsen Davis, Roger Mills Prescribed Burn Association; and John Weir, NREM, Oklahoma State University.

There will be a minimal annual fee, and a charge for each burn the landowner would like to have insured. There will be some requirements for each burn which are currently being developed by the association and the insurance company.

The OPBA is currently conducting a survey of landowners throughout the state to get information on the number of landowners that would be interested in joining a prescribed burn association and if they are interested in the liability insurance. The survey can be found at the Oklahoma Prescribed Fire Council website (www.oklahomaprescribedfirecouncil.okstate.edu).

Click on Burn Associations and send the completed survey to Ron Voth at the address listed.

The burn association is also hosting three meetings throughout the state to reach landowners and inform them about the organization and the insurance. Landowners can attend a meeting to complete a burn survey and learn about burn insurance and prescribed burning. The meetings are planned for July 7th at 11:30am Great Plains Tech Center, Lawton, OK and July 14th at 6:00pm Payne County Expo Center, Stillwater, OK. The third meeting will be in the northeastern part of the state and has yet to be determined.

John Weir is a Research Associate of Fire Ecology in NREM at Oklahoma State University.
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The weight of fish that can be supported in a pond is determined by the surface area of the pond. Monitor the body condition of fish by “hook and line” sampling. Skinny fish in a shrinking pond will probably benefit from increased harvest. Low oxygen fish kills are also possible as nutrients become concentrated causing algae growth to increase. In some cases low oxygen kills can be averted by using a pump set to aerate water when fish show signs of gulping or “piping” at the surface. A more reliable way of reducing the risk of a fish kill is to harvest an “at risk” pond heavily and fill your freezer.

The silver lining is that droughts offer three opportunities for possibly needed maintenance work. Edge slumping and cattle traffic can produce shallow edges and ideal conditions for the growth of cattails, bulrush and other generally unwelcome pond plants. Low water levels can allow access by equipment to rebuild the slope to a more desirable 3 to 1 slope. Ponds with a black, sulfurous smelling layer of organic matter on the bottom will benefit from complete draining and drying until the bottom cracks. Ponds with carp, bullheads, stunted crappie or other undesirable fish can be “renovated” by eliminating all fish and restocking.

Dr. Marley Beem is an Extension Aquaculture Specialist in NREM at Oklahoma State University.

New Research Focuses on Fire, Grazing, and Climate
By Dr. Dave Engle

Drs. Sam Fuhlendorf and Dave Engle teamed with other DASNR scientists, Drs. Tyson Ochsner (Plant & Soil Sciences) and J.D. Carlson (Biosystems and Agricultural Engineering) to write a successful grant proposal titled “Development and Evaluation of Dynamic Vegetation Models for Grassland Fuels under Variable Fire and Grazing Regimes.” The team also includes NREM faculty Mark Gregory and Dr. Tom Lynch as collaborators.

This research will focus on coupling Oklahoma Mesonet weather and soil-water data with satellite data to assess grassland fuel load (mass) and water content of the live portion of the fuel bed. Much of the research will be located on the patch-burning research pastures at the OSU Range Research Station near Stillwater.

The research is the latest in a series of funded research and extension activities directed at OKFIRE, a Mesonet-based fire management decision support tool created and operated by Dr. Carlson. Drs. Terry Bidwell and Engle previously teamed with Dr. Carlson to develop OKFIRE and to deliver extension education programming for user groups.

The grant marks a significant step toward achieving an important vision of DASNR’s Water Research and Extension Center—online decision aids for Oklahoma land managers, government agencies, and policy makers to better cope with climate variability.

Dr. Dave Engle is the Director of the Water Research and Extension Center and a Professor in NREM at Oklahoma State University.

Current fuel and fire behavior models fail to account for greenness. The research team aims to build a model able to predict the transition of live plants to dead fuel.
Impacts of Drought on Trees
By Dr. Craig McKinley

A lack of rainfall, often leading to drought conditions, can be expected in Oklahoma almost every year. Droughts have well-documented effects on crop, hay and livestock production, but may also impact trees. The most common consequence of drought is the failure of young trees to survive immediately after they are established. During the most severe droughts in the southern United States, native pines as old as 30-35 years have died from lack of moisture. Loss of growth and quality also may result from low moisture conditions.

To prevent tree mortality, select tree species adapted to less rainfall. There is a common saying that if a tree species does not grow here naturally, there is a reason. For example, in the southeastern part of the state, loblolly pine is naturally adapted to the coastal plain region, but farther north and west, drier sites and less rainfall results in shortleaf pine replacing loblolly pine as a native species.

When planting trees, native species are usually more desirable than non-natives (exotics). A problem encountered in Scots and Austrian pines (both non-native to Oklahoma) are pinewood nematodes, which generally do not attack native pine species. Management practices can also help in reducing drought effects in trees. Control of weeds around young trees, thinning of overcrowded stands, and removal of insect damage/diseased trees are methods often used in forest stands. Homeowners can mulch around trees and/or provide supplemental water, assuming that water restrictions and/or costs are not prohibitive.

By selection of the appropriate species and application of appropriate management, we can reduce the effects of inadequate moisture in our forests and landscapes.

Dr. Craig McKinley is a Professor of Forestry in NREM at Oklahoma State University.

Mulching around trees is one method used to conserve soil moisture.
Ranching Through Droughts

By Dr. Terry Bidwell

Drought is common in the Great Plains and can persist for many years. The drought of the 1930’s is probably one that many people have heard of but a more recent and severe drought was during the mid 1950’s.

When I was growing up in the McAlester area in the 1950’s, I remember seeing pickups with cattle racks lined up as far as you could see at the Union Stockyards. I asked my dad why people were selling their cattle and he said “they ran out of water.” That was a time before there were many stock ponds and ranchers watered their cattle in creeks which had never gone dry in anyone’s memory.

Long-term weather data suggest that we are overdue for another major long-term drought but only time will tell. Are you prepared?

Ranchers that traditionally run too many cattle for the ranch to support, as evidenced by months of feeding hay in normal precipitation years and frequent herbicide applications, are unprepared for drought and risk going out of business. At best they will have to rent additional grazing resources or buy feed, usually at inflated prices, to avoid liquidating the cow herd. Being overstocked before and during drought will have a negative impact for several years and take significant stocking rate reductions for grass to recover.

Preparing for a drought happens before the drought, not during the drought. Ranchers who have been in business for many years have either learned the hard way or have seen neighbors suffer and understand the consequences.

Preparing for a drought primarily involves using a conservative stocking rate—the cow enterprise accounts for 60 to 70 percent use of forage production in the average year. In years of abundant rainfall, the cow-calf producer uses the extra forage for grazing with stocker cattle.

In drought years, the ranch does not run additional cattle, but stays in business because of a conservative stocking rate that reserves forage for drought and maintains vigor of forage plants. Hopefully this is not the next big drought but only time will tell.

Dr. Terry Bidwell is an Extension Range Specialist in NREM at Oklahoma State University.
Texas and parts of Oklahoma are experiencing what may be the worst drought in history. Predictably, the drought is having devastating effects upon agriculture and livestock, but it is also affecting native wildlife. Drought is generally hard on native wildlife because it lowers production of native plants that in turn reduces food available to wild species dependent upon plants and their seeds.

A good example of drought sensitive wildlife species is the northern bobwhite quail. Researchers in Texas have demonstrated that the biggest most significant predictor of population trends in bobwhites is the modified Palmer drought severity index. The worse the drought, the greater the population decline.

Mottled ducks that nest along the Texas Gulf Coast are expected to have a lean year in terms of production and survival of young as a result of the drought. Wood ducks in portions of eastern Texas and Oklahoma are also expected to decline in abundance because of insufficient productivity.

But the effects of drought extend beyond population trends. As drought has its impact upon plants, rodents and other plant-dependent wildlife move into areas where there is more water and plant production. Such areas include watered lawns and gardens around people’s homes. As plant eating wildlife move closer to human habitations, so does wildlife hunting them as food. Recently an 11-year-old girl was severely injured from the bite of a copperhead outside her home in Conroe Texas. Officials reported a substantial increase in the number of encounters with and bites by venomous snakes attributable to the drought.

An adult mountain lion recently entered downtown El Paso, Texas apparently following deer that had been attracted to the surface water and more succulent vegetation in town. Authorities tried unsuccessful to dart the cat and, out of concern for people’s safety, shot the animal.

Drought stresses native wildlife, can reduce their populations, and increases encounters between humans and wildlife.

Dr. Jim Shaw is a Professor of Wildlife in NREM at Oklahoma State University.
Upcoming Events

NREM will conduct a Natural Resource Management Workshop on August 27 from 9am-3pm at the Oklahoma County Cooperative Extension office. This workshop will cover range, forest, pond, fire, and wildlife management. Registration is $100. For information, go to nrem.okstate.edu/marketplace.

The Oklahoma Department of Wildlife Conservation will once again host the popular Wildlife Expo from September 24-25. This event is held at the Lazy E arena in Guthrie and is supported by NREM.

Members of the Oklahoma Chapter of The Wildlife Society will hold their annual meeting in Idabel on September 28-30. For information contact Will Mosely at wamotoley@noble.org.

Members of the Oklahoma Section of the Society for Range Management will hold their annual meeting in El Reno on October 5-6. For information contact Brian Northup at brian.northup@ars.usda.gov.

The Governor's Water Conference and Research Symposium will be held October 18-19 in Norman. For details, visit: agwater.okstate.edu/events/governor-water-conference-and-research-symposium.

Summary Tips on Surviving the Drought

As all of us are aware, most of the Southern Great Plains is experiencing a significant drought this season. In this issue of NREM news, we focused on how drought impacts natural resources and what landowners can do to mitigate. Hopefully, rains will come soon to relieve concerns. Regardless of when the drought ends, we encourage you to prepare for the next drought as we live in a region that is characterized by extreme weather fluctuations. Below are general tips for surviving droughts that might help you.

1) Don't overstock – Moderate livestock numbers ensure that during droughts you have a forage reserve.

2) Provide ample habitat – Limited cover and food gives wildlife few options during extreme weather events.

3) Build ample water storage – Ponds should be constructed per NRCS guidelines to ensure an adequate watershed to store water for drought periods.

4) Use natives – Native plants are adapted to local conditions and will outperform introduced plants during variable weather.

5) Expect drought – Planning for average weather is poor planning in this region. Droughts and floods are common.

6) Mulch – Keep landscaped plants mulched to reduce water loss and irrigation needs.

Giving to NREM

Support training and research in natural resource conservation and management. Send a tax-deductible contribution made payable to:

“OSUF – NREM Programs”
Oklahoma State University
Natural Resource Ecology & Management
008 C Ag Hall,
Stillwater, OK 74078.

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