

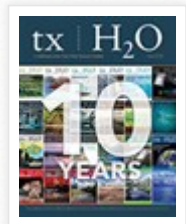


Conservation Matters

THE TEXAS LAND, WATER AND WILDLIFE CONNECTION

NOVEMBER 2015

[txH2O magazine celebrates 10 years and brand new issue](#)



Since 2005, the Texas Water Resources Institute (TWRI) has published its flagship magazine, txH₂O, and the Fall 2015 issue celebrates those [10 years of publishing](#) as well as the announcement of Dr. John C. Tracy as the institute's new [director](#).

Other stories examine the [management of floods](#) in Texas, the institute's award-winning [bacterial source tracking program](#) and [water education programs for kids](#) around the state. [State Climatologist Dr. John Nielsen-Gammon](#) is profiled and [quail researchers](#) talk about the relationship between drought recovery and quail recovery. Stories on TWRI's and Texas A&M Institute of Renewable Natural Resources' [training program](#) and TWRI's [watershed monitoring, planning team](#) rounds out this issue.

Subscribe to the online edition [here](#); if you would like a hard copy, email twri@tamu.edu.

[Riparian and stream ecosystem workshop set for Dec. 3 in Nacogdoches](#)



The Texas Water Resources Institute's (TWRI) [Texas Riparian and Stream Ecosystem Education Program](#) will host a workshop from 8 a.m.-4 p.m. Dec. 3 in Nacogdoches for area residents interested in land and water stewardship in the Attoyac Bayou watershed.

The free workshop is co-hosted by the [Texas A&M AgriLife Extension Service](#) office in Nacogdoches County and the [Attoyac Bayou Watershed Partnership](#).

The morning session will be at the Courthouse Annex, 203 W. Main St. The afternoon session will include a walk and presentations along the bayou.

Attendees must RSVP by Nov. 27 to Nikki Dictson at 979-458-5915 or n-dictson@tamu.edu, or [online](#).

The program will include a lunchtime presentation and a catered barbecue lunch is available from C.C.'s Smokehouse for \$10 with RSVP prior to Nov. 27. After Nov. 27, lunch is \$15 payable at the door the day of the event. Attendees may bring their own lunch if they prefer.

Dictson, AgriLife Extension program specialist for TWRI and coordinator of the program, said the workshop will focus on the nature and function of stream and riparian zones, as well as the benefits and economic impacts from proper functioning riparian systems.

A riparian zone is the land area adjacent to the bank of a stream, creek, bayou or river.

Dictson said workshop topics will include riparian and watershed management principles, water quality, riparian vegetation, hindrances to healthy riparian areas, stream processes, management practices and discussion of local resources.

Workshop presentations will be given by representatives of TWRI, [Texas Parks and Wildlife Department](#), U.S. Department of Agriculture's [Natural Resources Conservation Service](#), AgriLife Extension and [Texas A&M Forest Service](#).

Lucas Gregory, a project specialist for TWRI, said the goal of the watershed partnership is to promote the long-term conservation and stewardship of the Attoyac Bayou watershed that improves and sustains water quality, protects the natural resources it contains and maintains its economic viability.

Gregory said the Attoyac Bayou Watershed Partnership developed a watershed protection plan in 2014 to help mitigate the water quality concerns.

Ricky Thompson, AgriLife Extension agent for Nacogdoches County, said participants will receive a certificate of completion and appropriate continuing education unit certificates at the conclusion of the training.

The workshop offers more than five types of continuing education units including three units – two general and one integrated pest management – for Texas Department of Agriculture pesticide license holders. It offers one unit from the Texas Water Resources Institute and six hours for Texas Nutrient Management Planning specialists. Foresters and professional loggers can receive six hours from Texas Forestry Association and 5.5 hours from Society of American Foresters. The program may also be used for continuing education units for professional engineers and architects.

The riparian education program is managed by TWRI and is funded through a Clean Water Act grant provided by the Texas State Soil and Water Conservation Board and U.S. Environmental Protection Agency.

For more information, contact Dictson or visit the Texas Riparian Association [website](#) or Facebook [page](#).

[Aggies explore water resource issues in Guanajuato, Mexico](#)



Texas A&M University students recently took a hands-on approach to understanding water resource management concerns in rural regions. This past summer 19 graduate students from Texas A&M University and 15 students from the University of Guanajuato enrolled in a two-week water management study abroad course in Guanajuato, Mexico.

The Water Management and Hydrological Sciences (WMHS) 602 study abroad course: “Contemporary Issues in Water Resources: Mexico and the U.S. Water, Energy and Food Nexus” was a required class for many of the students enrolled in the [WMHS program](#).

The course’s objective was to provide a unique learning experience for students to directly explore water resource systems in the state of Guanajuato, including the economic, political and social issues of such topics in comparison to water management in Texas, according to the course catalogue description.

Lectures were delivered by faculty from both universities, speakers from government institutions and experts in water, energy and food sectors. Together with graduate students from the University of Guanajuato, the binational group jointly studied and explored the contemporary water resource issues of the state, including irrigation methods.

The most widely used irrigation method in Guanajuato — gravity or furrow irrigation — is the least expensive to install but also the least effective, said Clare Entwistle, [Texas Water Resources Institute](#) (TWRI) graduate research assistant who attended the course.

“A lot of their practices for irrigation are really inefficient,” Entwistle said. “They do a lot of the gravity and furrow irrigation. Since it’s a similar climate to Texas, most of it gets evaporated instead of infiltrated into the soil.”

However, for many of Mexico’s rural farmers who lack even proper waste disposal systems, the financial investment required for installing drip or sprinkler irrigation is simply too high, Entwistle and Camilo Bastidas, a graduate student in WMHS, wrote in the [The Drop](#), the WMHS newsletter.

Efforts to introduce new irrigation or farming methods in Mexico are often met with resistance by the rural communities that persist throughout the countryside, said Jason Murray, TWRI graduate research assistant who also attended the course. Farmers who grow crops based on tactics used by their family for generations typically are suspicious of what they see as new, unreliable approaches to farming, he said.



WMHS graduate students learn about stream profiling during their visit to Mexico.

“They don’t really understand that if you use less water, you’re optimizing both how much water you have to pump and you’re going to get the same amount of crops,” Murray said. “But they’ve been doing it the same way for so long, and they don’t actually pay for the water, so they don’t see an incentive not to use the water.”

Murray said the relationship between the federal government of Mexico and the water management of its states may be part of the problem in the rapid depletion of resources.

“In Mexico, water is considered a right; it’s not a service,” he said. “They’re going to use it, because they’re going to say we’re allowed this much, so we’re going to use this much.”

Kayla Rohrbach and Jessica Foster, graduate students in WMHS and the [Texas A&M School of Law](#), respectively, wrote in *The Drop* that water is considered national property under Mexico’s Constitution. Individuals requesting water rights must apply for a permit through CONAGUA, the national agency that has control over administering rights. All permits have already been allocated, so water transfers occur by private transactions through a water bank with minimal oversight or records.

“They are greatly using more groundwater than they need,” Murray said. “The groundwater storages is being rapidly decreased as a result.”

Texas also relies heavily on the use of groundwater resources, but unlike Mexico, there are legal limits on groundwater withdrawal to conserve and monitor aquifers, Entwistle said.

“I think the difference in Texas is that there’s been a greater emphasis on conservation,” she said. Incentives offered by Texas to increase conservation practices include offering grants and loans to local stakeholders and educational programs through agencies such as the [Texas Water Development Board](#).

Educational outreach efforts in Guanajuato are more challenging to implement, Murray said. Training seminars and open forums are held for farming communities who lack access to the internet or television, but the disconnect between government and rural citizens can impede advances in conservation.

Murray said many rural communities in Guanajuato, however, practice reusing their resources. “If they take a shower, they’ll catch all their water and reuse it to wash their clothes or water their garden,” he said.

Wastewater irrigation is a practical solution for many rural communities that lack treatment plants or septic systems, according to The Drop contributors Anna Gitter, TWRI graduate research assistant, and John Roberts, WMHS graduate students. The domestic waste serves as an affordable fertilizer by providing nutrients to the soil, and applying wastewater to farmland prevents it from entering local water sources and helps improve water quality.

The primary issue with using wastewater is the human health concern of coming into contact with bacteria, Entwistle said.

“You’re seeing a lot of bacteria and other water issues that are going into the plants and into the soils,” she said. “Then you see not only the farmers who are handling the soil and growing the plants contracting these diseases or infections, but it can also then get sent to the consumer as well.”

Murray agreed that using raw wastewater can have an adverse effect on the health of local communities. “People tend to get sick more often with gastrointestinal stuff, because of the E.coli.”

Local cooperation between rural communities can improve water quality and foster economic efficiency. Farmers in proximity of one another sometimes jointly purchase a tractor or irrigation tool and share it among their communities, Entwistle said.

“They can be more efficient without having to take all the economic burden on themselves,” she said. “That’s one way they start working together.”

Both Entwistle and Murray said the study abroad experience led to not only an examination of Guanajuato’s water management systems but a deeper understanding of Texas’s own fundamental water quality and management issues. While both regions experience similar climatic conditions and resource problems, management practices and efforts to address them differ based on government ideology.

Murray said the experience helped him to see the importance of education for proper resource management. “Taking care of your resources is important,” he said. “And just because you have it, doesn’t mean you should use all of it.”

[Meet a Scientist: Dr. Lee Fitzgerald](#)



Biodiversity: that’s a word many biologists are well familiar with.

But even before the term was coined by E. O. Wilson in his 1992 book “The Diversity of Life,” Dr. Lee Fitzgerald and his research team were cataloging biological diversity within the country of Paraguay.

Fitzgerald, professor and curator of Amphibians and Reptiles in Texas A&M University’s [Department of Wildlife and Fisheries Sciences](#), is accustomed to traveling for his field research. Referring to himself as a “conservation biologist, herpetologist and ecologist,” his research focuses on understanding ecological factors that influence persistence and distribution of reptile and amphibian species in various habitats.

Fitzgerald said he looks at how physiology, community ecology and population biology influence the way in which species are distributed across the land.

“I’m really interested in understanding what makes conservation work and also understanding the ecological factors that make species disappear,” he said. “Knowing what makes species and ecological communities persist points the way to

understanding what causes the loss of biodiversity.”

Fitzgerald defined biodiversity as “a concept that encompasses the structural arrangement of life from genes to species to ecological communities to ecosystems and the functional interactions among life forms and their environment. Measurement of biodiversity, for example by understanding changes in species diversity and the distribution of species, has become a fundamental step in developing conservation priorities and management practices.”



Dr. Lee Fitzgerald, professor and curator of Amphibians and Reptiles in Texas A&M University's Department of Wildlife and Fisheries Sciences

His current research projects focus on conservation of ground lizards, particularly the dune sagebrush lizard and the community of lizards in the Monahans sand hills of West Texas and in adjacent New Mexico. He also works with his graduate students to study other animals such as frogs, lizards, snakes, alligators and turtles. More recently, he has assisted in ongoing research on the Nile crocodile of the Okavango Delta.

“I go to the field a lot,” he said. “I spend a lot of time in South America and the deserts of the southwest.”

After graduating from Stephen F. Austin State University, Fitzgerald joined the Peace Corps and was stationed in El Salvador for a year, where he worked on a project to study green iguanas and spiny-tailed iguanas. “I lived in a very

small national park and worked with park rangers,” he said. “We did mark and recapture studies of the iguanas.”

The outbreak of the Salvadoran Civil War forced Fitzgerald to evacuate from El Salvador and move to Paraguay, a small, landlocked country in central South America. Once there, the team of young biologists in the Peace Corps, National University, Paraguayan Forest Service and visiting scientists from the Smithsonian Institution and U.S. Fish and Wildlife Service began the ambitious task of discovering the biodiversity of the country, at a time, as Fitzgerald put it, “before the word biodiversity was invented.”

“We did biological inventories of the country of Paraguay and started a national museum of natural history,” he said. “That’s where my roots go back to, in fieldwork, collecting and museum curation.”

Fitzgerald said his fieldwork in Latin America strengthened his understanding of conservation and sustainable development and exposed him to several important mentors. This combination helped inspire him to become a herpetologist and earn his doctorate in biology from the University of New Mexico, where he set his course on a career in research at Texas A&M University.

Fitzgerald said what he enjoys most about his research is the process of learning how ecological systems work and exploring how species interact with the environment. “I love it for the fieldwork,” he said. “I really like fieldwork and traveling and seeing new systems.”

Human actions significantly affect the status and distribution of wildlife populations, and Fitzgerald has always included local people and institutions in his work. “Humans play a role in everything and that’s why we talk about the Anthropocene as a new era on the planet,” he said. “Human activity affects pretty much every single thing, enough that we are re-configuring the surface of the earth.”

Fitzgerald said he wants his research and teaching at Texas A&M to make a difference in the world. For more information about his research, visit [The Fitzgerald Lab](#).

[TPWD's Kills and Spills Team responds to fish, wildlife kills](#)



Since the 1950s, the Texas Parks and Wildlife Department (TPWD) staff, referred to as the [Kills and Spills Team](#), have responded to and investigated 9,345-reported pollution events and fish and wildlife kills in the state.

Fish kills result from predominately [natural causes](#), according to the TPWD website. The most common cause is a low concentration of dissolved oxygen in the water causing fish to lose the ability to breathe.

“The low dissolved oxygen concentration happens for a lot of reasons,” said Jennifer Bronson Warren, TPWD regional biologist for Region 1. “Typically, there is more oxygen being consumed by plant and aquatic organisms than the water is either able to hold or is being produced.”

According to the TPWD website, other natural causes of fish kills include extreme weather, bacterial/viral diseases, parasitic infections and harmful algal blooms. Infections and diseases tend to only affect a single species while a lack of oxygen, extreme weather or harmful algal blooms will affect all species present.

A normal algal bloom in water can become harmful to fish very quickly due to such factors as an increase in nutrients, change in temperature, quality of water or amount of sunlight. Two well-known types of harmful alga are [red tide](#) and [golden alga](#).

“Red tide is an alga that blooms in large numbers that colors the water red and when the cells die they release an aerosol that can be irritating to humans and fish alike,” Bronson Warren said. There is no evidence of golden alga threaten humans.

This year, the team in the coastal regions of the state has been responding to a large red tide event spreading from Matagorda Bay down to South Padre Island, she said.

According to Bronson Warren, human activities, such as vehicle accidents, water and oil pipeline breaks and wastewater treatment plant malfunctions, can also cause fish kills. She said there are things that humans can do to prevent kills or spills.

“You can make sure that you don’t put things down storm drains or flush things that could cause lines or storm sewers to clog, therefore helping to prevent overflow,” she said. Any toxic release into the water can easily spread and cause harm to the wildlife and aquatic organisms living under the water’s surface.

According to the website, kills and spills require a prompt response and accurate analysis to find the source and correct it if possible.



Fish kill in 2011 from red tide. Photo by Noemi Matos, Texas Parks and Wildlife Department.

“First make sure it is safe; don’t hang around if there is a strong odor.” Bronson Warren said. “Note if there are any fish, if there is a smell, any unusual water color, if there is foam and location of spill.”

TPWD should be contacted immediately if a kill or spill is spotted by calling one of the two 24-hour communication centers at 512-389-4848 or 281- 842-8100. For guidelines on how to report a kill or a spill, visit the TPWD Kills and Spills [website](#).

[Aggies participate in Galveston beach clean up](#)



While most students consider a beach day to be a relaxing vacation, a handful of Texas A&M University students recently turned a coastal visit to an environmental conservation opportunity.

Twenty students from Texas A&M’s [student chapter](#) of the Marine Technology Society (MTS) and Society of Naval Architects and Marine Engineers (SNAME), joined hundreds of other volunteers on Sept. 26 to participate in a Galveston beach cleanup.

The effort was part of the Texas General Land Office’s [Adopt-A-Beach Program](#), which organizes two statewide beach cleanups throughout the year as well as offers an adoption system for groups wishing to assume responsibility over a section of beach. Adopting a beach is a three-cleanups-a-year, two-year commitment that the group undertook to help promote organization involvement with environmental conservation.

The land office’s program provided safety equipment such as gloves and trash bags to volunteers who spent most of the day removing trash from the Galveston coast. Much of the trash removed during the cleanup was tiny pieces of plastic, called microplastics, said Amanda Massingill, vice president of MTS. Microplastics generally begin as larger pieces of plastic but eventually deteriorate to smaller fragments due to continuous abrasion.

“Getting microplastics out of the ocean before they break down even more is really important, because at this point they’re still big enough to see and pick up,” she said. “When they get even smaller, you can’t pick them up anymore.”

The small size of the plastics allows them to be easily swept into the water supply and ingested by fish and other aquatic life, she said. Ingesting harmful substances could lead to death or affect their meat for human consumption.

Microplastics from the ocean often wash up to the shore and collect in clumps on driftwood, said Austin Grieger, student chapter president of MTS/SNAME. Larger pieces of litter can then get caught in the pile.

Fishing lines and hooks also comprised a large portion of the debris picked up by volunteers, Massingill said. “Galveston’s a huge fishing destination, and fishing lines pose a huge threat to the environment. Wildlife gets tangled up in them all the time.”

The immediate removal of debris is beneficial to wildlife as it prevents accidental ingestion and entanglement, but regular beach cleanups are critical for continued environmental protection, she said. Early removal of large pieces of plastic prevents them from being broken down to smaller, more unobtainable pieces that disperse into the water supply.

“Just like when you clean your room, as long as you stay on top of it, it’s easy, it’s manageable,” Grieger said. “If you weren’t cleaning that beach every year, it would be easy to come back to it two years later and see a pile of trash because no one’s giving it any attention.”

The program provides data cards to all volunteers to help track the source of the trash. Analyzing the different types of litter can provide information to the Texas General Land Office regarding where it originated from, Massingill said. While some

debris may come from messy beachgoers, some has been floating and decomposing in the ocean for a long time.

According to the Texas Adopt-a-Beach website, because of the tidal patterns in the Gulf of Mexico, trash dumped anywhere in the gulf, even as far away as South America, is most likely going to wash up on a Texas beach. The land office's analysis of the trash collected by volunteers has been monumental in the passage of international laws and treaties designed to protect coastal waters from offshore dumping, according to the website.

The beach cleanup benefited the students as well, who were able to enjoy the advantages of a clean coast after their day of work. "We got to have fun on the newly cleaned beach. We played sports. We fished," Massingill said. "And there's no glass we could have stepped on, because we cleaned it all up."

For more information on the student chapter of MTS-SNAME, visit its [website](#).

[AgriLife Extension researcher comparing turfgrass varieties under Texas conditions](#)



Not every grass is a good fit for home lawns, golf courses or athletic playing fields, so turfgrass researcher Dr. Casey Reynolds is testing varieties and comparing them side by side under Texas conditions as a part of the [National Turfgrass Evaluation Program](#) (NTEP).

Reynolds, a [Texas A&M AgriLife Extension Service](#) turfgrass specialist in College Station, is joined by Dr. Matt Elmore, an AgriLife Extension turfgrass specialist, who is growing additional trials at the [Texas A&M AgriLife Research and Extension Center at Dallas](#).

Reynolds said the AgriLife Extension trials at both locations include approximately 100 grass varieties, and the College Station trials were recently featured at the Texas A&M AgriLife Turfgrass and Landscape Field Day.

"The primary objective of these NTEP trials is to evaluate new and emerging varieties for their performance in southern and southeastern transition zone environments," he said.

NTEP will take data from this location and data from throughout the United States at other cooperating universities and compile it.

"This way a producer or a customer or anyone who is interested in planting a new variety can look and see an independent source of data and use it to evaluate whether or not that grass is a good fit for their needs," Reynolds said.

"For instance, we may have a zoysia grass that may do great in terms of how it performs under drought, and next to it one that may look a little better, but the data tells us it may not perform as well under drought," he said.

According to Reynolds, NTEP is a great way to organize all that data and compare varieties.

That's an important thing to understand when selecting a grass variety, Reynolds said, "because we all know in the southern United States drought is always an issue and will continue to be an issue. We certainly want to breed and select grasses that do well in hot, dry climates."

[Turfgrass trials video](#)

Reynolds said it is important not to get hung up on having the latest new variety — sometimes if it is not broke, why try to fix it?

“With the data we collect, we try to do it in a manner that is going to be reflective upon how people are going to view these grasses when they get to their home or their golf course or athletic field and whether it is going to fit into their environmental conditions.”

More information can be found at aggjeturf.tamu.edu. Read the full AgriLife Today [news release](#) for more details.

[Groups make education of chronic wasting disease a priority](#)



With the appearance of chronic wasting disease (CWD) in a Texas deer in July, the [Texas A&M AgriLife Extension Service](#) and others have made educating the hunting public about this disease and the necessary precautions to take a priority.

On July 1, a positive case of CWD was verified in a captive white-tailed deer in Medina County outside of San Antonio. The first and only other case was reported in far west Texas in 2012.

“Chronic wasting disease is a condition that affects the nervous system of deer, elk and moose,” said Dr. John Tomecek, Texas A&M AgriLife Extension Service wildlife specialist at San Angelo. “It is similar to diseases such as scrapie in sheep and goats, and bovine spongiform encephalopathy or BSE in cattle.”

This contagious disease among deer and elk causes abnormal behavior, weight loss and the untimely death of the animal. At this time, there is no vaccination to guard against it, and once infected there is no treatment or known cure.

There is no current evidence that CWD poses a threat to humans or that it is contagious to other animals outside of the deer family. However, it is suggested by Tomecek that hunters take precautions this hunting season and that hunters are educated before going out.

To achieve this goal, AgriLife Extension teamed up with the [Texas Wildlife Association](#) earlier in November on three town-hall style meetings across the state to offer hunters the information they need on this disease.

“We hope through these and earlier efforts that most of the public, especially the hunting public, have gained an appreciation of the potential seriousness of this disease,” Tomecek said in an AgriLife Today news release.

Tomecek said the town hall meetings, in combination with earlier [webinars](#), were meant to educate hunters on this disease, its history, symptoms and transmission, as well as to inform the hunting public on how they can participate in monitoring efforts and to remind them of safe carcass handling practices.

“Hunters are critical, as they are our eyes in the field,” Tomecek said. “They can help by submitting tissue samples from harvested deer and by maintaining healthy deer densities as wildlife managers have done for years. Knowing what’s happening afield is the best way to prevent the spread of this disease should it show up in wild white-tailed deer populations.”

For upcoming town hall meetings, visit the Texas Wildlife Association’s [website](#). For more information on CWD, visit Texas Parks and Wildlife Department’s [CWD webpage](#).

Read the full AgriLife Today releases on [July 17, 2015](#) and [October 26, 2015](#).

[AgriLife Extension sprinkler system lab to be certified to test EPA WaterSense label](#)



New lawn sprinklers have built-in pressure regulators, but how accurate are they?

Charles Swanson, [Texas A&M AgriLife Extension Service](#) irrigation specialist, and Dr. Guy Fipps, AgriLife Extension irrigation engineer, set up the [Irrigation Technology Program](#) lab in 2008 to test “smart” weather-based irrigation controllers, Swanson said. The lab is part of the [Department of Biological and Agricultural Engineering](#) at Texas A&M University.

Recently, the lab completed all the requirements to be certified by the International Code Council to test landscape irrigation products, he said. The Environmental Protection Agency (EPA) requires the certification for labs conducting [WaterSense](#) product testing for manufacturers.

“WaterSense is a partnership with EPA to protect the future of our nation’s water supply,” Swanson said. “They do this by offering people a simple way to use less water with water-efficient products, including new home designs and services.”

Products that earn the WaterSense label have to be at least 20 percent more efficient than similar products without sacrificing performance, he said. Now, WaterSense is starting to focus its attention on landscape irrigation by identifying products that can save consumers water.

Generally, more than half of municipal water supplies in the summer are used to irrigate outdoor landscapes, he said.

Though Swanson and Fipps have been testing “smart” irrigation controllers since 2009, it wasn’t until 2011 that the WaterSense program began testing and labeling them.

The lab certification will allow Swanson to work with manufacturers to test or retest their controllers for the WaterSense label.

“Controllers are not the only product being tested in our lab that can help consumers save water,” he said. “There are other newer technologies like soil-moisture sensors and pressure-regulated sprinklers that we’ll also be certified to test for the WaterSense label.”

As beneficial as smart controllers and soil-moisture sensors promise to be, if the irrigation system has poor coverage, then it will still not apply the correct amount of water, Swanson said.

Swanson and Fipps are currently testing 25 sprinklers from five manufacturers.

“The purpose of this phase of testing is to help the EPA WaterSense program determine the testing specifications and performance criteria for these sprinklers to earn the WaterSense label,” Fipps said.

Read the AgriLife Today [article](#).

[Cow-calf farms converting to multi-paddock grazing in the Southern Great Plains likely net carbon sinks](#)



Reducing greenhouse gas emissions in the Southern Great Plains could require a change of grazing management by traditional cow-calf producers, according to a [study](#) by [Texas A&M AgriLife Research](#).

The research team included Dr. Richard Teague and Dr. Seong Park, both with AgriLife Research, and Stan Bevers, Texas A&M AgriLife Extension Service, all in Vernon, and Dr. Tong Wang, formerly an AgriLife Research

post-doctoral researcher now in the South Dakota State Department of Economics, Brookings, South Dakota.

Adaptive multi-paddock grazing is an advanced, more efficient form of rotational grazing and is a potential option to reduce net greenhouse gas emissions, or GHG, on a cow-calf operation in the Southern Great Plains, according to the study, funded in part by the Dixon Water Foundation.

This occurs because, compared to continuous grazing, adaptive multi-paddock grazing results in more carbon sequestration in the soil and produces a higher quality grass that reduces methane production, the study concluded.

The team considered both GHG emissions and carbon sequestration to calculate net GHG emissions for cow-calf farms grazing only rangeland under different grazing strategies, Park said.

Unlike most published work that isolates the analyses of GHG emission and carbon sequestration, he said they used field-measured soil organic carbon data to estimate the carbon sequestrations for different grazing management systems.

“Contrary to other publications claiming cow-calf farms are the most significant GHG emission source in the beef production link, our results show that cow-calf farms converting to multi-paddock grazing in the Southern Great Plains region are likely net carbon sinks,” Park said. “The continuous grazing was less effective in sequestering carbon.”

Beef cattle production management practices in different regions vary greatly in terms of stocking rate, cow size, calving season, forage types and fertilizer use, Bevers said. Analyzing these criteria, the team determined the overall greenhouse gas emissions and main sources of those in the Southern Great Plains region differ from the rest of the United States and other countries.

The researchers did find overall GHG emissions are higher in the Southern Great Plains than the other regions, with almost 80 percent of those GHG emissions coming from ruminant digestion.

“But this means there is great potential to reduce these GHG emissions by increasing grass quality and digestibility using multi-paddock grazing, which could reduce total GHG emissions by as much as 30 percent,” Wang said.

Compared to continuous grazing, multi-paddock grazing can improve grass quality as well as grass production, according to ongoing research on this subject.

“Under multi-paddock grazing management, one paddock is grazed at a time while the other paddocks recover,” Teague said. “This grazing strategy uses short periods of grazing, long recovery periods and adaptively changing recovery periods and other management elements as conditions change.”

There is published and anecdotal evidence from producers that, if applied appropriately to produce most advantageous results, multi-paddock grazing can lead to improved water infiltration and soil health, which could lead to increased forage and livestock production, he said.

Read the full AgriLife Today [article](#).

[National Conference on Grazing Lands set for Dec. 13-16 in Dallas-Fort Worth Metroplex](#)



Grazing management, grazing land economics and marketing, public policy, soil health and the agriculture/urban interface will be among the topics highlighting at the 6th National Conference on Grazing Lands in Dallas, Texas.

The conference is set for Dec. 13-16 at the Hyatt Regency Dallas-Fort Worth and includes daily workshops from 8 a.m. to 5 p.m.

Registration is \$365 and is available online here. On-site registration will also be available.

The [National Grazing Lands Coalition](#) (NatGLC) is a collaborative association of agricultural producers and organizations working together to maintain and improve the management and public grazing lands.

“The National Grazing Lands Coalition’s 6th National Conference on Grazing Lands will feature industry presenters that are federal and state agency experts, from academia, and most importantly, successful producers,” said John Peterson, conference manager.

Featured speakers will include:

- Dr. Don Ball, professor emeritus at Auburn University, who is a leader in agronomic forage and livestock information
- Dr. Garry Lacefield, professor of plant and soil sciences at the University of Kentucky, who is an internationally recognized forage expert
- Dr. Rachel Gilker and Kathy Voth, co-founders of OnPasture.com
- Dr. Peter Ballerstedt, renowned forage specialist with Barenbrug, USA
- Rancher Gary Price of 77 Ranch in Blooming Grove, Texas and winner of the National Environmental Stewardship Award
- Tony Moravec, DVM with Merial

Several other ranchers and grazing land managers will talk about proven practices and techniques that can be taken home and used immediately by attendees, Peterson said. The focus on ranchers as presenters sets this conference apart from others.

This year’s conference will feature a “Texas Day” on Dec. 15 with sessions on prescribed burning and brush management.

Also included is a Grazing Land Soil Health Tour of Texas on Dec. 13, highlighted by visits to Popp Farm and the Dixon Ranches Leo Unit with a barbeque lunch provided. Registration materials and tickets for the tour can be picked up on Saturday evening prior to the event.

For more information, visit [National Grazing Lands Coalition](#).

Natural Resources Training Courses

- Texas Riparian and Stream Ecosystem Workshop – Attoyac Bayou Watershed, Dec. 3, Sept. 3, Nacogdoches, TX
- Introduction to ArcGIS 10, Jan. 27-28, Oct. 21-22, College Station, TX