

Conservation Matters August 2013

Latest issue of *txH₂O* covers water and technology



The Summer issue of [txH₂O](#), the Texas Water Resources Institute's magazine, spotlights 21st century technologies that are improving and affecting water resources not only in Texas, but throughout the world. Many of the stories highlight research developed and enhanced by The Texas A&M University System researchers.

For example, Texas A&M AgriLife Research plant breeders are using [next-generation DNA sequencing](#) to make the connection between genes and plants' resistance to drought, disease and insects. With that information, they can develop plant lines more quickly and efficiently. An AgriLife Research center is focusing on [commercializing electron beam technology](#) to the wastewater industry to make wastewater more sustainable.

AgriLife Research and the Texas A&M AgriLife Extension Service are working together to advance and get [water-efficient technology](#) in agricultural producers' hands faster. And scientists at the Texas A&M AgriLife Research and Extension Center at Temple are developing and improving [computer models](#) that simulate agricultural, grazing and water information as far away as Africa.

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Expert advises landowners on conservation and Endangered Species Act

By Leslie Lee



To some Texans, the term endangered species may sound like a special interest or a mundane detail of wildlife management, but the protections for plants and animals listed under the federal Endangered Species Act (ESA) can have wide impacts not only on species and ecosystems, but also on communities, properties and industries, according to a Texas A&M Institute of Renewable Natural Resources (IRNR) expert.

"Texans need to know what's on the horizon regarding ESA listings and how the listings could affect them," said **Brian Hays**, an IRNR associate director.

Passed by Congress in 1973, the ESA was established to protect and recover imperiled species and the ecosystems upon which they depend. The Interior Department's U.S. Fish and Wildlife Service (FWS) and the Commerce Department's National Marine Fisheries Service (NMFS) administer the ESA. Under the ESA, species may be listed as either endangered or threatened. Endangered means a species is in danger of extinction throughout all or a significant portion of its range, and threatened means a species is likely to become endangered within the foreseeable future, [according to FWS](#).

Texas currently has 65 animal and 28 plant species listed under the ESA, 21 candidate species and 118 recently petitioned species under status review. A candidate species is one that FWS has enough information to propose for listing but is precluded from doing so by higher listing priorities, according to FWS. The ESA allows citizens and groups to petition for species to be added to the federal list of threatened and endangered species — as well as to be removed from the list — and sets specific timelines for responding to those petitions.

Freshwater mussels are one of the groups of animals to watch in Texas, Hays said, and if listed, freshwater mussels could potentially impact many aspects of the Texas economy.

Hays said that a recent analysis by the University Of Texas Bureau Of Economic Geology, [Potential Economic Impacts of Environmental Flows for Central Texas Freshwater Mussels](#), estimated one-year economic costs to Texas commercial, industrial, municipal and agriculture sectors if [environmental flows](#) requirements, caused by reductions or reallocations of water following a possible ESA listing, were put in place during a drought. The study found that in a segmented market scenario, in which water could not be transferred between water-user types or from county to county, economic losses would total up to \$80 million; and in an integrated scenario, in which water transfers were allowed, losses would total up to \$11 million.

Using an ecosystem-based approach, sometimes FWS employs group listings, Hays said. This approach could be applied to mussel listings in Texas. He encouraged landowners and other stakeholders to be engaged in the process of conserving species.

"Market-based conservation is a key concept," Hays said. "With Texas being 94 percent privately owned, if we are going to recover a listed species or keep a species from being listed in Texas we are going to have to develop programs that private landowners embrace. It is important to have the landowners involved in the process and the goal in my opinion is to develop programs that make what is perceived as a liability an asset. Market-based or incentive-based programs are one way to do that and provide the financial incentive for putting conservation practices on the ground."

Hays recommended that stakeholders look into the [FWS Partners for Fish and Wildlife Program](#) as well as the Texas Parks and Wildlife Department [Landowner Incentive Program](#). Another resource for current information on this subject can be found at texasahead.org/texasfirst, which is managed by the Texas Comptroller of Public Accounts, Hays said.

For more information, see the FWS site on [the 40th Anniversary of the ESA](#), and read more about IRNR's [mussel research program](#).

IRNR has integral role in national conservation program

By Kathy Wythe

The [Texas A&M Institute of Renewable Natural Resources](#) (IRNR) is playing an integral role in a new nationwide federal, local and private collaboration dedicated to natural resource sustainability for areas surrounding military installations.

IRNR is assisting the U.S. Department of Agriculture, U.S. Department of Defense and the U.S. Department of the Interior in developing a viable framework and executing the Sentinel Landscapes Partnership, according to **Bruce Beard**, associate director for IRNR's military sustainability program.

Through this partnership, [announced recently](#) in Washington, D.C., the three federal agencies and other entities have committed to work together in priority areas near military installations, recognizing those areas as Sentinel Landscapes.

Beard said large rural landscapes are vital to sustaining agricultural productivity and protecting wildlife habitat.

"However, large landscapes are also important to preparing this country's military for the challenges of combat," he said. "Yet, many training and testing areas, once remote, are now encroached upon by competing demands, such as urban sprawl, habitat fragmentation and energy siting."

By maintaining certain landscapes as farms, ranches, timberlands, or simply open space, landowners have for years — and without due recognition — significantly contributed to the nation’s defense, according to a Sentinel Landscapes fact sheet. Through the Sentinel Landscapes Partnership, landowners will be recognized and rewarded for using their lands in ways that are compatible with the military mission and will be encouraged to continue those land-use practices well into the future.

“The vision for Sentinel Landscapes is to better engage private landowners and frame a truly comprehensive and cost-effective landscape approach to protecting the military’s test and training mission,” Beard said.

“The Sentinel Landscape approach is different than other conservation programs because it promotes working lands, conservation and national defense together,” said **Dr. Roel Lopez**, IRNR director. “Other programs conserve land and wildlife, but we need to also bring those conservation efforts strategically around military lands, and Sentinel Lands meets that need.

Beard said IRNR’s military sustainability program is providing its land grant expertise in sustaining the environment and building economic and social vitality in local communities.

“Conservation, working lands – including farming, ranching and forestry – and national defense, each has unique requirements,” Beard said. “We can apply our land grant expertise in helping to find where those interest share commonalities, and where mutual support provides desirable outcomes for each mission.”

“We hope that through our role in advancing Sentinel Landscapes, we can, by example, encourage and advocate land grant and other university engagement in supporting private land stewardship in a manner that both protects military readiness and sustains rural communities,” Beard said.

“Texas A&M can serve a leadership role in supporting Sentinel Landscapes, which serves the land-grant mission in providing practical and timely solutions to maintaining rural landscapes and economies,” Lopez said.

The first pilot Sentinel Landscape is in the South Puget Sound region of Washington state. Home to Joint Base Lewis-McChord, this region has some of the last remaining native prairie habitat in the state.

The Defense Department, USDA’s Natural Resources Conservation Service, Interior’s U.S. Fish and Wildlife Service and partner organizations will invest more than \$12.6 million to restore and protect more than 2,600 acres of the prairie habitat on both public and private lands. Wildlife habitat will be created and managed to benefit species as well as agricultural production and military readiness, according to a USDA news release.

Learn about urban landscape water use with new publications



Urban-municipal use is the second largest category of water use in Texas, and landscape irrigation is its largest component. A [new article in the Texas Water Journal](#) and an accompanying Texas Water Resources Institute (TWRI) brochure provide an evaluation of urban landscape acreage in Texas, associated water use and strategies for improved water conservation in the sector.

“Addressing the current knowledge gaps and developing practices that significantly enhance water-use efficiency in urban activities, particularly landscape irrigation, is

necessary to the Texas economy,” said **Dr. Kevin Wagner**, TWRI associate director.

Authored by Wagner, **Dr. Raul Cabrera**, associate professor at the Texas A&M AgriLife Research and Extension Center in Uvalde, and **Dr. Benjamin Wherley**, assistant professor in the Department of Soil and Crop Sciences at Texas A&M University, the Texas Water Journal article is available at texaswaterjournal.org.

The **Urban** Landscape Water Use in Texas brochure complements another TWRI publication, [Status and Trends of Irrigated Agriculture in Texas](#). Both are available at twri.tamu.edu/publications.

Freshwater mussels may be saved during drought by relocating

By Kathy Wythe



Researchers with the [Texas A&M Institute of Renewable Natural Resources](#) have found that relocating freshwater mussels may be an effective strategy for saving mussel populations impacted by drought or bridge construction activities in Texas.

In a pilot project studying for the first time the effectiveness of mussel relocation in Texas, **Eric Tsakiris**, research assistant, and **Dr. Charles Randklev**, a research scientist, relocated three species of mussels from a site in the lower San Saba River in Central Texas to a site upstream with similar species and habitat.

To-date, of the mussels recovered, 100 percent survived and grew, Tsakiris said.

“Short-term relocation is successful,” he said, “but long-term, we still don’t know. Most studies suggest monitoring the mussels after relocation for a minimum of one to two years to get an idea of how they are performing.”

“Although these are really promising results,” Randklev said, “This study was limited to three species and to the San Saba River. It needs to be replicated in different places within Texas with different species to evaluate whether relocation is truly an effective management tool.”

Freshwater mussels are important in the state’s streams and rivers, because they are indicators of stream health, Randklev said.

“Declining populations of mussels can mean that the stream health is deteriorating,” he said.

At the San Saba site, the team collected 80 individual mussels in July 2012 and another 40 in November 2012 and tagged the mussels so they could monitor the mussels’ survival and growth. For the 80 relocated in July, Tsakiris said 88 percent were recovered and 100 percent of those survived. Tsakiris, a graduate student in Texas A&M University’s [wildlife and fisheries science department](#), will continue to monitor the 120 mussels for two years as part of his broader dissertation research project.

Randklev said this pilot study was done in response to a contingency plan developed by the [Texas Parks and Wildlife Department](#) and [U.S. Fish and Wildlife Service](#) during the drought in 2011 to explore conservation measures to alleviate potential impacts to mussels from the drought.

“The 2011 drought caused record-low flow levels in Texas streams, and many previously perennial streams went dry or became intermittent,” Randklev said.

In addition to possibly being a mitigation tool during drought, Randklev said relocation may also be a viable option for the [Texas Department of Transportation](#) when working on bridges. Because some freshwater mussels are state-threatened or candidates for listing under the federal [Endangered Species Act](#), the department must evaluate a site for the presence or absence of these species prior to construction or renovations of bridges.

Tsakiris and Randklev, along with the Texas Department of Transportation are studying the feasibility of temporarily relocating mussels to other locations while the transportation department works on the bridges.

"There are a lot of questions about survival and mortality when relocating mussels," he said. "It is important to determine whether relocation is a viable option for drought or construction activities before any mussel species are formally listed," he said.

Save the date: Riesel historic designation ceremony Sept. 23



The Agricultural Research Service (ARS) experimental watershed facility, commonly called the Riesel Watersheds, recently received national recognition as "a Historic Landmark of Agricultural and Biological Engineering" by the American Society of Agricultural and Biological Engineers (ASABE). A designation ceremony and open house is set for **Sept. 23** from 2–6:30 p.m. at the facility, 1702 Blackland Road, Riesel. Texas Farm Bureau and other sponsors will provide refreshments.

Established in 1937–1938 and the last remaining original experimental watershed, the Riesel site is one of 58 historic landmarks recognized nationally by the society.

"The landmark designation is a high honor for the facility," said **Carol Flautt**, ASABE awards coordinator. Headquartered in St. Joseph, Michigan, the society has recognized the nation's historic developments in agricultural engineering for more than 80 years.

The Riesel Watersheds facility, located 2.5 miles east of Riesel, is operated by the Temple-based [ARS Grassland, Soil and Water Research Laboratory](#). ARS is the chief scientific research agency in the U.S. Department of Agriculture, and the Temple lab is an international leader in developing decision support tools and sustainable management systems for crops, forage and rangeland. ARS owns and operates the Riesel Watersheds but works closely with Texas A&M AgriLife Research and Extension at the Temple Blackland/Grassland Center.

"This collaboration between state and federal scientists headquartered in Temple has enhanced and sustained research at Riesel and has contributed to its longevity," said [Dr. Daren Harmel](#), director of ARS operations in Temple and Riesel.

The Riesel Watersheds were established by USDA's Soil Conservation Service as part of the New Deal's attempt to increase farm productivity during a devastating drought and to prevent massive soil erosion, Harmel said. The watersheds were transferred to the newly created ARS in 1954.

"For more than 75 years, scientific staff at the 840-acre facility has been researching water, its use and its conservation, and has used this information to solve critical soil and water resource problems," he said. The other two original experimental watersheds created at the same time, in Coshocton, Ohio, and Hastings, Nebraska, are now closed.

"Of these original three watersheds, only the Riesel site continues to provide essential information on agricultural fields and watersheds from which to determine their impact on soil erosion, floods, water resources and the agricultural economy," Harmel said.

Harmel and his team oversee 17 water-monitoring stations and 15 rain gauges that measure rainfall, runoff and water quality on the various kinds of lands found in Central Texas, which include native prairie, grazed rangeland, improved pasture and cultivated cropland.

Their scientific findings provide long-reaching influence on land use and economic development in Texas and across the nation. "The Agricultural Research Service pays incredible returns for the U.S. population," Harmel said, "solving problems such as screwworm infestation and constantly battling crop diseases, invasive species and increasing droughts."

Two riparian and stream ecosystem workshops coming in September



The next stops for [Texas Riparian and Stream Ecosystem Education Program](#) workshops include the Leon River watershed **Sept. 12** near Moody and the Geronimo and Alligator creeks watershed **Sept. 17** in Seguin.

The free educational programs cover how streams function and the role of riparian vegetation in stream-system function, said **Nikki Dictson**, Texas Water Resources Institute Extension program specialist and program coordinator.

"Riparian education programs like this lead to informed landowners and members of the public more inclined to use practices that improve the management of riparian and stream ecosystems," said Dictson. "Proper management, protection and restoration of these vital areas directly influence water quality and quantity, plus stabilizes stream banks and improves fish and aquatic habitats and communities."

The program is led 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.

To register for the workshops or learn more about the program, see texasriparian.org.

Rolling Plains Quail Research Ranch hosting field day Sept. 27

The [Rolling Plains Quail Research Ranch](#) will conduct its 6th annual field day from 9 a.m.–3 p.m. **Sept. 27** at its ranch near Roby. The program will theme is Best Management Practices for Quail.

"The quail situation looks better this year than any year since 2007," said **Dr. Dale Rollins**, Texas A&M AgriLife Extension Service wildlife specialist and Rolling Plains Quail Research Ranch director. "With the adoption of good management practices, hopefully we can capture this momentum and get back to huntable levels across west Texas."

Rollins said the program will be moved to Roby in case of rain and will include talks on Bermuda grass renovation, enhancing useable space for bobwhites on post-Conservation Reserve Program contract lands, establishing "brood patches" and "quail oases," use of "camera trapping," sculpting prickly pear habitats and shrub mortality response to prickly pear herbicides.

Other subjects to be addressed include translocation of scaled or “blue” quail into former ranges, key plants for quail, “shale and quail” — considerations in a pending oil boom, and updates on “Operation Idiopathic Decline” and “Operation Transfusion” research efforts, Rollins said.

Individual preregistration is \$10 until **Sept. 20** and \$20 thereafter. Student preregistration is \$5. The fees include lunch, refreshments and field day abstracts. For more information or to preregister, contact Rollins at 325.653.4576 or d-rollins@tamu.edu. Two Texas Department of Agriculture continuing education units will be available for those with a valid private applicator’s license.

The field day is a collaborative effort among AgriLife Extension, the Rolling Plains Quail Research Ranch, Texas A&M AgriLife Research, Park Cities Quail and AgriLife Extension’s Quail Initiative.

Read the full [AgriLife TODAY article](#) for more information or see quailresearch.org to learn more about the research ranch.

North Texas water district launches WaterMyYard.org



A new pilot project by the North Texas Municipal Water District has the potential to save millions of gallons of water every summer on over-watered landscapes, according to **Dr. Guy Fipps**, Texas A&M AgriLife Extension Service irrigation engineer.

The water district services about 60 cities and communities in the north central Texas area, including Plano, McKinney, Terrell, Garland, the Colony and Farmersville, representing about 1.6 million users, according to **Denise**

Hickey, public relations coordinator for the district.

The district has been faced with some serious water supply problems in the past few years, Hickey said. First, there has been the ongoing drought, dropping reservoir levels. And Lake Texoma, once making up 28 percent of the district’s water supply, has been offline since 2009 because of a zebra mussel infestation. The mussels multiply rapidly and clump together causing many problems, including clogged pipelines.

The WaterMyYard project incorporates automated weather stations situated throughout the district that feed data to a website, WaterMyYard.org, which uses evapotranspiration — usually termed “ET” — rates to calculate weekly irrigation recommendations specific to areas within the district, Fipps said.

Evapotranspiration is a measure of how much water plants need to grow and stay healthy, he explained. Water requirements depend not only on the type of plant, but also on local weather conditions such as temperature, relative humidity, wind speed and solar radiation. This may all sound complicated, but it’s been made nearly a “no-brainer” for water district customers, Fipps said

“The WaterMyYard website employs simple, intuitive images and information prompts,” Fipps said. “With a few clicks, homeowners get recommendations on how long — in minutes — to run their irrigation systems.”

Users can also subscribe to get watering recommendations emailed to them on Mondays of each week, he said. Since 1994, Fipps has been promoting the use of scientific weather station data on websites to promote more efficient use of water in urban landscapes and agricultural crops. The [TexasET Network](#) posts daily weather and has tools to determine watering requirements for landscapes and crops that are available to all.

"Evapotranspiration and irrigation needs are calculated from local weather data using internationally recognized and standardized methods," Fipps noted.

Studies have shown homeowners typically apply twice the water needed to maintain lawns. Even in a 'wet' year, this is wasteful as it not only represents misuse of water but the extra cost of energy needed to pump the water, he said.

Read the full [AgriLife TODAY article](#), visit [WaterMyYard.org](#) and watch the [accompanying video](#) for more information.

New Texas Coastal Citizen Planner program to start Sept. 25

Starting in September, coastal community officials can turn to a new training program for local planning and development issues.

The [Texas Coastal Citizen Planner](#) is an eight-course program that covers trends and best practices concerning community planning and development, designed specifically for local and appointed officials, according to **Steven Mikulencak**, coordinator for the Texas A&M AgriLife Extension Service's [Coastal Watershed Program](#).

The evening courses will be held **Sept. 25** through early December in the Houston-Galveston and the Corpus Christi areas, Mikulencak said. The registration fee is \$100 until **Sept. 18** and then is \$125. Information, registration and a course calendar are available at [CitizenPlanner.tamu.edu](#).

"Local officials may enter public life with an ethic of service, but they may lack the planning know-how to turn a community's vision and plan into reality," Mikulencak said. "This program is designed to address that knowledge gap."

A range of legal authorities and planning practices are available to Texas communities, he said, and the course will provide a comprehensive overview of options available. Instructors from several disciplines will lead each course and offer Texas-based case studies of planning-in-action. Course time will be dedicated to fostering peer-based learning.

"The need for a program like this in Texas is pretty obvious," said Councilwoman **Joanna Sharp Dawson** of League City. "In the Houston region alone, hundreds of locally elected officials are sworn into office every election cycle."

Dawson and an advisory committee of 11 other local officials, university researchers and planners have been helping to shape the new Texas program, Mikulencak said.

Officials and city staff juggle numerous local duties such as working with the public to create plans, he said. Local governments then use these plans to adopt policies and guide decision-making on specific proposals about land use, natural resources and economic redevelopment. Local governments also review site plan proposals submitted by developers to make sure they conform to local laws.

"These planning decisions can have significant long-term impacts, shaping how fast communities grow and the quality of development," Mikulencak added. "Regional trends in public health, water usage, land conservation and post-disaster recovery costs hinge on decisions made at the local level. These decisions also offer opportunities and challenges that local officials may be unaware of when coming into office."

The program is administered as a joint project of AgriLife Extension, Texas Sea Grant and the Texas Coastal Watershed Program.

For more information, read the full [AgriLife TODAY article](#), see CitizenPlanner.tamu.edu or contact Mikulencak at smikulencak@tamu.edu.

Desalination conference coming to Austin Sept. 12–13

Co-sponsored by the Texas Water Development Board (TWDB) and organized by the Texas Desalination Association, Texas Desal 2013 will be held in Austin **Sept. 12–13**. According to organizers, the event will include industry experts, policymakers, regulators and researchers who are leading the way for desalination and water reuse in Texas.

[Conference presenters](#) will explore opportunities for and obstacles to desalination in Texas, address policy and legislative matters, discuss new technologies and financing options, and present case studies.

Carlos Rubinstein, TWDB chairman, will make the keynote address at the luncheon on **Sept. 13**, and **Dr. Robert E. Mace**, TWDB interim executive administrator, will provide information on financing options for implementing desalination. **State Representatives Lyle Larson** and **Bill Callegari** will address desalination from policy and legislative perspectives.

Full details of the conference are available at www.TexasDesal.org.

Lone Star Healthy Streams workshop in Lampasas set for Sept. 18



A [Lone Star Healthy Streams](#) workshop will be held **Sept. 18** at the Farm Bureau building at 1793 N. U.S. Highway 281 in Lampasas.

The Lone Star Healthy Streams program aims to educate Texas livestock producers and land managers on how to best protect Texas waterways from bacterial contributions associated with livestock production and feral hogs, said **Jennifer Peterson**, Texas A&M AgriLife Extension Service program specialist.

The workshop is free to all participants and three continuing education credits will be provided for certified pesticide applicators from the Texas Department of Agriculture. The workshop will run from 10 a.m. to 2:45 p.m. and include a catered lunch.

To RSVP, visit lshs.tamu.edu/workshops or call Peterson at 979.862.8072.

The workshop will focus specifically on issues within the Lampasas River Watershed, which is currently undergoing development of a watershed protection plan, Peterson said. A watershed protection plan is a coordinated framework for implementing prioritized and integrated water quality protection and restoration strategies driven by environmental objectives.

Workshop presentations will focus on basic watershed function, water quality and specific best management practices that can be implemented to help minimize bacterial contamination originating from beef cattle, horses and feral hogs, Peterson said.

The Lone Star Healthy Streams program is funded through a Clean Water Act nonpoint source grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency.

Read the full [AgriLife TODAY article](#) for more information.

Austin Blind and Jollyville Plateau salamanders listed under Endangered Species Act

The [U.S. Fish and Wildlife Service \(FWS\)](#) announced on **Aug. 20** the listing of the Austin blind and Jollyville Plateau salamanders under the Endangered Species Act (ESA) and the designation of 4,451 acres of critical habitat for both species in portions of Travis and Williamson counties in central Texas.

FWS is also publishing a 6-month extension of the final determinations for the Georgetown and Salado salamanders and is reopening the public comment period for those species for 30 days.

Based on new information received since publication of the **Aug. 22, 2012**, listing proposal, FWS is listing the Jollyville Plateau salamander as threatened and not endangered. FWS is listing the Austin blind salamander as an endangered species. According to FWS, the total amount of critical habitat designated in Travis and Williamson counties in the final rule decreased 603 acres compared to the proposed rule.

Public comments received by FWS since publication of the listing proposal have expressed concerns related to the sufficiency and accuracy of the available data related to the listing proposal for the Georgetown and Salado salamanders. In consideration of these concerns, FWS is extending the final listing and critical habitat determinations for these two species in order to solicit scientific information that will help clarify these issues, according to FWS.

"We have carefully evaluated the public comments received on the salamander proposal and our actions reflect the best available science," said **Adam Zerrenner**, the [FWS Austin Field Office](#) supervisor. "The Service is committed to continuing to work with the local communities, landowners and others to conserve the salamanders and the Edwards Aquifer. A healthy Edwards Aquifer is important for the continued vitality of the communities as well as the plant and animal species dependent upon it."

According to FWS, the most significant threat to the salamander species is the degradation of habitat in the form of reduced water quality and quantity, and disturbance of spring sites, and recent drought conditions are also negatively impacting water resources.

The Austin blind, Jollyville Plateau, Georgetown and Salado salamanders are entirely aquatic and dependent upon water from the Edwards Aquifer, according to FWS. The Austin blind salamander resides in the Barton Springs Segment of the Edwards Aquifer, while the others reside in habitat dependent on the northern segment of the Edwards Aquifer. The Jollyville Plateau salamander also depends on groundwater from other aquifer sources, such as the Trinity Aquifer and local alluvial aquifers.

To learn more about the listing, see the full [FWS news release](#) or read documents from the [entire listing process](#), provided by the FWS Austin office. To learn more about the Endangered Species program, go to [fws.gov/endangered](#) and for more information from the Service's Southwest region office, see [fws.gov/southwest](#).

Texas Tech researchers to study wind farm wakes



Wind farms may be operating at less than their potential, according to researchers at Texas Tech University's [National Wind Institute \(NWI\)](#).

In a two-fold study, **Dr. Brian Hirth**, Texas Tech research professor, and **Dr. John Schroeder**, NWI director, will use a [National Science Foundation](#) grant to work with wind farm operators in the Texas, Oklahoma, New Mexico and southwest Kansas region to study wind flows through various wind farms.

In addition to power, turbines also produce wake. The disturbance, while invisible to the naked eye, interferes with the atmosphere downstream. These turbine-to-

turbine interactions along with other wind farm complex wind flows are poorly documented, according to researchers. Currently, there is a shortage of real-time wind data fed into farm control systems, and individual turbines are limited in their response to rapidly changing wind conditions. The result can be damage to the turbines and a decrease in overall wind farm efficiency.

The study will utilize both TTU radars, with the study to last three years, Schroeder said. Hirth said the radar measurements will provide accurate and timely wind maps which can be used in real time to transform how wind farms operate to ultimately improve their performance.

For more information, read the full [Texas Tech Today article](#).

Cypress Creek watershed well owners invited to Sept. 12 Wimberley training

Anyone interested in private water-well management in the Cypress Creek watershed is invited to a free [Texas Well Owner Network](#) training from 8:30 a.m.–3:30 p.m. **Sept. 12** at the Wimberley Community Center, 14068 Ranch Road 12 in Wimberley.

“The Texas Well Owner Network program is for Texas residents who depend on household wells for their water needs,” said **Drew Gholson**, Texas A&M AgriLife Extension Service program specialist and network coordinator. “Well owners who want to become familiar with Texas’ groundwater resources, septic system maintenance, well maintenance and construction, water quality and water treatment will benefit from this training.”

The Cypress Creek Watershed Partnership has identified the training as part of its education and outreach efforts. Participants can have water well samples screened for common contaminants, and a \$10 payment for sample analysis is due for those bringing samples to the training. Bringing well water samples to the training is not required, Gholson said, but if people want their water samples analyzed, they must attend the training.

“We invite private well owners to bring in a water sample to be screened for nitrate, total dissolved solids and bacteria,” Gholson said.

Well owners who would like to have their well water sampled can pick up the two sample containers, one bag and one bottle, at the AgriLife Extension offices in [Hays County](#) or [Blanco County](#). After filling each bottle and bag with a sample from their well, participants should bring the two samples to the **Sept. 12** training, Gholson said.

Attendance is limited. Attendees are requested to register at twon.tamu.edu/training or by calling 979.845.1461 as soon as possible.

The Texas Well Owner Network project is managed by the [Texas Water Resources Institute](#) and funded through a Clean Water Act nonpoint source grant provided by the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency.

Read the full [AgriLife TODAY article](#) for more information.

New Publications / Papers

New Extension publications

[Lone Star Healthy Streams: Dairy Cattle Manual](#), Larry Redmon, Jennifer Peterson, Kevin Wagner, Texas A&M AgriLife Extension Service, SC-003, 2013.

[Lone Star Healthy Streams: Feral Hog Manual](#), Larry Redmon, Jennifer Peterson, Kevin Wagner, Texas A&M AgriLife Extension Service, SC-005, 2013.

[Lone Star Healthy Streams: Poultry Manual](#), Larry Redmon, Jennifer Peterson, Kevin Wagner, Texas A&M AgriLife Extension Service, ESC-006, 2013.

[Lone Star Healthy Streams: Horse Manual](#), Larry Redmon, Jennifer Peterson, Kevin Wagner, Texas A&M AgriLife Extension Service, SC-004, 2013.

[Lone Star Healthy Streams: Beef Cattle Manual](#), Larry Redmon, Jennifer Peterson, Kevin Wagner, Texas A&M AgriLife Extension Service, SC-002, 2013.

New TWRI and IRNR publications

[The Virginia Geocoin Adventure: An Experiential Geospatial Learning Activity](#), L. Johnson, J. McGee, J. Campbell, A. Hays, Journal of Extension 51(4), 2013.

[Water Quality Monitoring in the Buck Creek Watershed and Facilitation of Buck Creek Watershed Partnership: Final Report](#), L. Gregory, P. Dyer, TR-444, 2013.

[Urban Landscape Water Use in Texas](#), R. Cabrera, K. Wagner, B. Wherley, L. Lee, EM-116, 2013.

[Effects of an off-stream watering facility on cattle behavior and instream *E. coli* levels](#), K. L. Wagner, L. A. Redmon, Terry J. Gentry, R. D. Harmel, R. Knight, C. A. Jones, J. L. Foster, Texas Water Journal 4(2): 1–13, 2013.

[An Evaluation of Urban Landscape Water Use in Texas](#), R. I. Cabrera, K. L. Wagner, B. Wherley, Texas Water Journal 4(2): 14–27, 2013.

Natural Resources Training Courses

Texas Riparian and Stream Ecosystem Workshop – Leon River Watershed	Sept. 12
Texas Riparian and Stream Ecosystem Workshop – Geronimo and Alligator Creeks Watershed	Sept. 17
Trinity River Land and Water Summit	Oct. 2
Texas Riparian and Stream Ecosystem Workshop, Junction	Oct. 16
Introduction to ArcGIS 10	Oct. 22–23