



[New director appointed for the Texas Water Resources Institute](#)



[Dr. John C. Tracy](#) was recently appointed as the new director of the Texas Water Resources Institute (TWRI) by Dr. Mark Hussey, vice chancellor and dean for Agriculture and Life Sciences, Texas A&M University System. The position is currently held by Dr. Roel Lopez, who also is and will continue to serve as director of the Institute of Renewable Natural Resources. Tracy will assume the TWRI director position in December 2015.

Tracy, a civil engineer, comes to TWRI with extensive experience relating to water resources management. He currently serves as director of the Idaho Water Resources Research Institute at the University of Idaho and has held this position for 11 years. He also serves as the associate vice president for research and previously served as interim vice president for research at the university.

Through interaction with faculty, Tracy has initiated and led water research initiatives that have addressed many western water resource concerns, Hussey said in the announcement memo.

As director, Tracy said he believes he can serve as a catalyst to bring together faculty at Texas A&M University with Texas A&M AgriLife Research scientists and Texas A&M AgriLife Extension Service outreach specialists to address the water resource issues Texas faces.

"I see the Texas Water Resources Institute enhancing its current role in addressing Texas' water resource challenges," he said, "and I believe that Texas A&M is poised to further its role in leading the development of both technological and policy solutions to many of Texas', the nation's and the world's most pressing water resource problems."

Prior to his work at the University of Idaho, Tracy worked at the Desert Research Institute for seven years, serving as director of the Center for Watersheds and Environmental Sustainability for four years. He was also a hydraulic engineer for the Army Corps of Engineers in California and held academic positions at Kansas State and South Dakota State universities.

Tracy received his doctorate and master's from the University of California-Davis and his bachelor's from Colorado State University.

[Texas A&M institute publishes interactive Web tool for land use trends](#)



The [Texas A&M Institute of Renewable Natural Resources](#) (IRNR) recently added a new interactive Web tool to its [Texas Land Trends](#) website that allows users to interact with land use information released in 2014.

The October 2014 Texas Land Trends report described key findings of changes in land use, ownership size and property values of rural working lands alongside population changes from 1997 to 2012.

“This new Web tool allows users to interact with the data to view land trends across Texas for user-defined areas,” said [Amy Snelgrove](#), IRNR’s program coordinator.

Snelgrove said users can view 15-year trends in private working lands for such metrics as land use, market value, ownership size and population by county, river basin, ecoregion or region of interest. They can also choose different regional areas to make side-by-side comparisons of different metrics used.

“For example, a user interested in trends in land use and ownership size in Brazos County can use the interactive tool to see that information for 1997-2012,” Snelgrove said. “Then, if the user wants to see how those trends compare to the same metrics in another area, they can.”

[Dr. Roel Lopez](#), IRNR’s director, said the 2014 Texas Land Trends report showed that Texas experienced a net loss of nearly 1.1 million acres of rural working lands from 1997 to 2012, continuing the trend of rural land loss and fragmentation in Texas.

“This dramatic loss and fragmentation of privately owned farms, ranches and forests — also known as rural working lands — is affecting the state’s rural economies, the conservation of water and other natural resources, as well as the nation’s food security and military training capabilities,” he said.

Lopez said the interactive data in Texas Land Trends provides public and private decision-makers with information needed to plan for the conservation of these vital working lands.

“Texas Land Trends is a critically important data source for policy makers, conservation organizations, state agencies and federal agencies in terms of looking at what is happening to our land base in Texas,” he said.

Ross Anderson, IRNR’s software applications developer, built the database for this interactive tool using data sources that included the Texas Comptroller of Public Accounts property tax/value data, which provided an annual compilation of land use and land value data from 1,021 independent school districts. Other data sources included the U.S. Department of Agriculture’s National Agricultural Statistics Service Census of Agriculture data from 1997 to 2012 and Texas Department of State Health Services census population data and between census years estimates.

Lopez said the Web tool will be followed by a series of reports relating land trends to natural resource issues across the state. All reports will be available on the [Texas Land Trends](#) website as they are published.

Texas Land Trends was developed in cooperation with [Texas A&M AgriLife Research](#), [Texas A&M AgriLife Extension Service](#) and [Texas Agricultural Land Trust](#). It was funded by the Meadows Foundation, Houston Endowment, Mitchell Foundation, Hershey Foundation and AgriLife Extension.

Read the AgriLife Today [story](#).

[Watershed planning begins for Navasota River downstream of Lake Limestone](#)



The [Texas Water Resources Institute](#), [Texas A&M AgriLife Extension Service](#) and [Texas State Soil and Water Conservation Board](#) are hosting two watershed protection plan kickoff meetings in

November for Brazos and Robertson county residents interested in improving and protecting water quality in the Navasota River and its watershed downstream of Lake Limestone.

Meeting times, dates and locations are:

– 1:30-3:30 p.m. Nov. 5 at the College Station Utilities Meeting and Training Facility Assembly Room, 1601 Graham Road in College Station. Registration begins at 1 p.m.

– 6:30-8:30 p.m. Nov. 10 at the Pidgeon Community Center's Franklin Room, 351 Cooks Lane in Franklin. Registration begins at 6 p.m.

Homeowners, landowners, business owners and city and county officials are invited to attend either meeting where they can take part in the formation of the Navasota River Watershed Partnership, according to [Lucas Gregory](#), Texas Water Resources Institute project specialist.

The Navasota River begins in Hill County and flows south through Limestone, Leon, Robertson, Brazos, Madison and Grimes counties before it drains into the Brazos River. Sterling C. Robertson Dam was built by the Brazos River Authority in 1978 near the intersection of the boundaries between Leon, Limestone and Robertson counties, to form Lake Limestone.

The Texas Commission on Environmental Quality began monitoring water quality on the river in 1974, with more recent monitoring being conducted by the Brazos River Authority, Gregory said. Since 2002, the river and several tributaries downstream of Lake Limestone have been considered impaired due to elevated levels of bacteria.

"High numbers of bacteria indicate an increased risk to humans ingesting the water," Gregory said, "although bacteria are commonly found in all creeks, lakes and rivers across the state."

"During these initial meetings, we will discuss the current state of water quality and options for improving and protecting it," he said.

Dusty Tittle, Brazos County's AgriLife Extension agent, said watershed protection plans are a common approach across Texas to address instream water quality using voluntary measures.

"These plans are developed by local watershed stakeholders through a facilitated planning process making them an effective roadmap for improving and protecting water quality," he said.

Edward Schneider, Robertson County's AgriLife Extension agent, agreed. "Local stakeholders are the most important part of this process as they will work together to help identify potential sources of water pollution and design efforts to improve water quality," he said.

The Navasota River Watershed Protection Plan is funded by the Texas State Soil and Water Conservation Board through a state nonpoint source grant.

For more information, go to the Navasota River Water Quality Improvement [website](#) or contact Gregory at 979-845-7869 or lfgregory@ag.tamu.edu.

Read the AgriLife Today [article](#).

[Request for pre-proposals for 2016-2017 TWRI graduate student research programs](#)



The Texas Water Resources Institute (TWRI) announced its call for pre-proposals for students conducting water resources research. TWRI has funds available for graduate students at Texas universities through two programs, the [TWRI Mills Scholarship Program](#) (available to Texas A&M College Station and Galveston only) and the [U.S. Geological Survey Graduate Research Program](#) (available to all Texas universities).

TWRI anticipates funding 6 to 8 graduate research projects of up to \$5,000 each in the area of water resources and hydrology that have the potential to help Texas solve future water problems. The institute expects the funds will become available to graduate students in spring 2016 with a project timeline of one year. Additionally, those students selected for the Mills Scholarship will also be eligible for an out of state tuition waiver.

Proposed research can deal with a wide range of water resources topics. However, priority will be given to research addressing the science, technology, policy or socio-economics of:

- Implementation of state water plan water management strategies including agricultural and urban water conservation, development of new surface and groundwater sources, desalination, reuse and aquifer storage and recovery
- Addressing major water quality impairments in Texas including bacteria, dissolved oxygen and mercury
- Impacts of endangered species listings on water management in the state
- Oil and gas industry water use, reuse, and reclamation or disposal of produced water
- Impacts of climate variability and drought on water resources and adaptation measures

See the [request for pre-proposals](#) for additional details. To be considered for one or both of these opportunities, students should complete the [pre-proposal application](#) and return it to Danielle Kalisek (dmkalisek@tamu.edu) on or before Nov. 16.

[Follow TWRI on Pinterest to learn about conservation, rainwater harvesting and more](#)



The Texas Water Resources Institute (TWRI) is on [Pinterest](#), and we want you to check us out! From classroom resources about conservation to gardening tips and more, TWRI's Pinterest page is chock-full of great information.

For those who aren't Pinners, Pinterest is a visual social bookmarking site that allows users to collect and organize content by their specific areas of interest, similar to an online scrapbook.

TWRI's Pinterest account currently consists of 24 active boards covering a range of water resources topics, highlights from our publications Conservation Matters and txH₂O and so much other interesting science-based information!

For example, we have a [board](#) dedicated to our "Meet a Scientist" series in Conservation Matters, so if you ever miss one or just want to read it again, it is right there for you. We have a [Classroom Resources](#) board that has information and ideas on how to teach younger generations about water safety and conservation. Another [board](#) gives how-to videos, publications and articles on rainwater harvesting.

This is only a quick snapshot of all that our Pinterest account has to offer. Join our ever-growing network of followers, and be on the lookout for the [Texas A&M Institute of Renewable Natural Resources](#) to join the world of Pinterest soon. Check out other AgriLife Pinterest's boards: [Texas A&M AgriLife Extension Service](#), [Texas 4-H](#) and [Junior Master Gardening](#).

[Meet a Scientist: Charles Randklev](#)



[Dr. Charles Randklev](#) is not one to shy away from challenges. In fact, based on his current field of research, he seems to embrace them.

As the principal investigator for [Texas A&M Institute of Renewable Natural Resources](#) Texas A&M University Mussel Research Group, exploring freshwater mussel populations literally involves getting his feet wet — sometimes wading waist deep in Texas streams and rivers.

Randklev became interested in mussel conservation during his undergraduate time at the University of Texas – Arlington, where he volunteered in a research lab in the Department of Biology. At the time, most research on freshwater mussels focused on invasive species; little was known about the status and distribution of native unionid freshwater mussels. The allure of an unexplored field and the overall decline of unionid mussels in the United States is what prompted Randklev to pursue a research program focused on conserving native mussel populations in Texas.

“The focus of our group is to help conserve rare and common mussel species and to do this requires understanding the status and distribution of the species and how that compares historically,” he said.

Since 2011, his research has led him across Texas, often in rivers that were presumed to be uninhabited by mussels. This approach has yielded successful results, most notably the discovery of several [freshwater mussel species](#) thought to be extinct or eradicated.

As part of their conservation efforts, the team may [relocate threatened species](#) whose habitats may be damaged by bridge construction to a different part of the river. They also conduct follow-up assessments to evaluate survival, growth and reproduction.

In addition, his research focuses on describing geographic patterns in mussel distributions within and between drainage basins and examining how environmental and man-made factors contribute to those patterns.

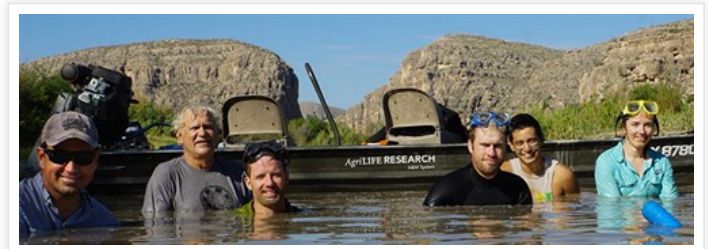
The team is now studying the reproductive behaviors for several threatened mussel species. Randklev said unionid mussels have an unusual reproductive process, whereby a host, usually a fish, is needed for their larvae to reach juvenile stage. Some mussel species can use a large number of fish species as hosts, while others are very specific. “In Texas, hosts are known for only 13 of the 52 mussels species, which means there is still a lot to learn, which is exciting,” he said.

Human-mediated impacts can destroy mussel and fish habitat, and this can lead to mussel population declines, which overtime will eventually effect their distribution, Randklev said. Surveying for mussels to determine their distribution and abundance, identifying habitat associations and evaluating their reproductive biology are important tools for minimizing these impacts and preserving the remaining mussel fauna in Texas.

Randklev said what he enjoys most as a research scientist is being out in the field and collaborating with other researchers and graduate students.

“I look at the field as my laboratory,” he said. “I like seeing my research put to practice.”

Randklev is also involved with public outreach where he has co-hosted several mussel workshops to help educate the public, industry and resource managers about threats, monitoring and identification of unionid mussels.



Dr. Charles Randklev (left) with the Mussel Research Team. Photo by Colin McDonald.

[Sneak preview: Fall 2015 txH2O](#)



Ever wonder what a state climatologist does? The Fall 2015 issue of [txH₂O](#), the Texas Water Resources Institute's flagship publication, will profile [Dr. John Nielsen-Gammon](#), Texas' climatologist and a regents professor in Texas A&M University's [Department of Atmospheric Sciences](#).

The issue will also include stories on the management of floods in Texas, the institute's award-winning bacterial source tracking program and water education programs for kids around the state as well as other stories.

Published twice a year, txH₂O's Fall issue is scheduled for an early November publication date. Readers may subscribe [online](#).

[Watershed partnerships offering free area soil testing](#)



The Texas A&M AgriLife Extension Service is offering free soil testing in the Geronimo and Alligator creeks Watershed and the Arroyo Colorado Watershed.

The [Geronimo and Alligator Creeks Watershed Partnership](#) is offering free soil testing now until Nov. 17 to area farmers, ranchers and homeowners.

"A soil test will give you the necessary information on what levels of nitrogen, phosphorus and other nutrients are in your soil," said Ward Ling, AgriLife Extension program specialist and watershed coordinator for Geronimo and Alligator Creeks.

Ling said samples must be submitted by Nov. 17 in a soil sample bag that can be obtained at AgriLife Extension offices in Comal and Guadalupe counties. Lab results will be made available for pickup on Dec. 8 at the Guadalupe County AgriLife Extension office. A short presentation at 3 p.m. on Dec. 8 at that office will provide participants with information on how to interpret the lab results.

In the Lower Rio Grande Valley, the [Arroyo Colorado Watershed Partnership](#) is offering free soil testing from now until Jan. 31, 2016 for agricultural producers in Cameron, Hidalgo and Willacy counties, said Victor Gutierrez, AgriLife Extension assistant for the Texas Water Resources Institute (TWRI). TWRI manages several projects for the Arroyo Colorado Watershed Partnership.

Gutierrez said producers may pick up forms and sample bags at their local AgriLife Extension office or the AgriLife District 12 office in Weslaco. Once the soil has been collected, the bags may be dropped off at the same office. Results will be mailed to the producers within one to two weeks.

Ling said a short YouTube video on how to properly collect a soil sample can be found on youtube.com and directions are listed on the back of the soil sample bag.

"It is important that people having their soil tested pay attention to and follow proper directions for obtaining a soil sample," Ling said.

He said having a soil test will help area landowners determine how much, if any, fertilizer is needed, as well as what kind should be used.

"Fertilizer is expensive, costing around a dollar a pound or more, and it comes in varying types and concentrations," Ling said. "To help make sense of all of this, you first need to test your soil to see what the nutrient content is before deciding if

more is needed — and how much.”

The soil testing is made available to area residents as a result of the implementation of an Environmental Protection Agency-approved watershed protection plan, Ling said. An EPA grant was provided to AgriLife Extension by the Texas State Soil and Water Conservation Board (TSSWCB) to facilitate the implementation of the Geronimo and Alligator Creeks watershed protection plan.

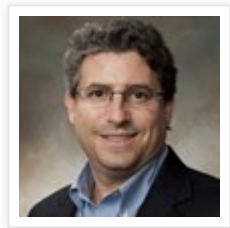
The Lower Rio Grande Valley campaign is funded by a Clean Water Act grant provided by the TSSWCB and EPA.

For more information on the Geronimo and Alligator Creeks testing, contact Ling at 979-845-6980 or wling@ag.tamu.edu.

For more information on the Lower Rio Grande Valley testing, contact Gutierrez at 956-969-5615 or

Victor.Gutierrez@ag.tamu.edu.

[Texas A&M-Galveston gets grant to study flood risks](#)



An international research consortium led by [Dr. Sam Brody](#), professor in the Department of Marine Science and director of the [Center for Texas Beaches and Shores](#) (CTBS) at Texas A&M University at Galveston (TAMU-Galveston) was awarded a \$3.6 million [Partnerships for International Research and Education](#) (PIRE) grant by the National Science Foundation’s Office of International Science and Engineering. The team will conduct assessments, research and educational activities focused on the physical flood risk characteristics, land use change, the built environment and mitigation techniques

to reduce risk and vulnerability to damaging coastal floods.

Scientists from Jackson State University, Rice University, University of Houston, Texas A&M University, Texas Sea Grant and Delft University of Technology in the Netherlands are part of the grant. This international consortium will allow U.S. researchers the ability to leverage Dutch data, methods and facilities associated with flood management.

Coastal floods continue to be the costliest and most disruptive natural hazard worldwide. Flood risk and associated losses can only be understood and eventually reduced through integrated investigation across multiple disciplines, settings and international boundaries, according the Texas A&M Today [story](#). There is a critical need for a program that will lay a foundation for decision-making aimed at increasing the resiliency of coastal communities.

Read the complete Texas A&M Today [story](#). The Texas Water Resources Institute’s [txH₂O](#) will have an article about flooding and Brody’s research in its Fall 2015 issue. Subscribe [here](#) to get the electronic issue.

[SWIFT round two application period to open on Dec. 1](#)



The [Texas Water Development Board](#) (TWDB) will open the application period for the State Water Implementation Fund for Texas (SWIFT) financial assistance program on December 1, 2015. This will be the second round of financial assistance made available through the [SWIFT program](#).

To be eligible for the upcoming round of SWIFT, projects must be included in the adopted 2016 Regional Water Plans and the subsequent 2017 State Water Plan.

Project sponsors must submit abridged applications to TWDB by February 5, 2016. The abridged applications will provide TWDB with information needed to prioritize the list of interested projects. The projects will then be ranked according to the

[SWIFT prioritization rules](#). During this time, TWDB will identify the amounts of funds available by category and establish the structure of financing and the subsidy terms.

TWDB will then extend invitations in mid-spring to eligible entities to submit full applications. Those entities will have 30 days to complete and submit the full application to TWDB with consideration of approving SWIFT applications in summer 2016.

"We encourage communities to continue to take advantage of SWIFT and the cost saving options made available through the program," said TWDB Board member Kathleen Jackson. "The water management strategies included in the state water plan are key to securing the long-term water supply of our state, and SWIFT is ready to turn planning into projects."

Read the full [news release](#).

[Water-energy-food nexus topic of Nov. 19 symposium](#)



Discussions on the challenge of the agricultural industry feeding an increased population in the future and the linkage between food, water and energy will highlight a daylong symposium Nov. 19 in Austin.

The Navigating Agriculture through the Water-Energy-Food Nexus Symposium is set for 7:30 a.m. to 5 p.m. at the Omni Austin Hotel Southpark, 4140 Governors Row.

Registration is \$125 and includes lunch. Registration is available at agriliferegister.tamu.edu/Nexus.

David Smith, Texas A&M AgriLife Extension Service program specialist, said the program is aimed toward AgriLife Extension educators, technical service providers, regulatory agencies, academic institutions, agricultural commodity groups, producers and agricultural science teachers.

Questions that will be addressed include: What are the linkages between water, energy and food systems? What are the interdependencies and tradeoffs that will influence future policy and sustainability of agriculture? How does the water-energy-food nexus function from local to regional scales, and can it be a useful tool for future planning? Is agriculture prepared to manage risks from climate variability and does it have a voice in climate change policy?

This event is sponsored by the U.S. Department of Agriculture – National Institute of Food and Agriculture project, [Animal Agriculture in a Changing Climate](#).

For more information, contact Smith at DWSmith@ag.tamu.edu.

[Fall and winter to-do's for an Earth-Kind Landscape](#)



With winter just around the corner, many Texas homeowners are looking for ways to maximize their landscape and garden enjoyment while conserving natural resources.

One way is using [Earth-Kind® Landscaping](#), a horticultural system developed by Texas A&M AgriLife Extension Service that combines organic and conventional landscaping practices with a focus on environmental responsibility. Earth-Kind's goal is to encourage water conservation, reduce fertilizer and pesticide use, conserve energy and recycle landscape waste.

“Fall, especially going into the winter time, is a good time to reevaluate your landscape in terms of design and where you might want to make improvements,” said Tim Hartmann, Extension program specialist for Earth-Kind. Taking a systematic approach to landscaping is critical in conserving and protecting natural resources while maintaining quality landscape functionality.

Hartmann said an important step in strategic planning of a landscape or garden is proper plant selection. Natives and other adapted plants are a good choice for homeowners as they’re tough, well suited for their climatic regions and have a high tolerance towards indigenous diseases and pests, he said.

Once the appropriate plants are selected, homeowners should position them in the landscape to meet light and water requirements. Hartmann recommends hydrozoning, which divides plants into three different irrigation groups: heavier water users that do not have a deep root system, such as turf; medium water users that require occasional watering; and low water users, typically shrubs and trees, which are well adapted to the environment.

By grouping plants based on irrigation needs, homeowners can ensure each plant receives only the needed amount of water and no resources are wasted, he said. Plants that are strategically placed will also require less maintenance and can reduce energy costs for water and pesticide usage.

Installing a [drip irrigation system](#) will apply water only to where it is needed and minimize runoff and evaporation loss. Hartmann said drip irrigation is a much more efficient system than traditional sprinkler irrigation and prevents water splashing onto plants’ leaves.

Keeping water off foliage not only conserves water but is beneficial to plant health, as it can help reduce damage to foliage from using water high in salts. Many fungal diseases such as blackspot on roses develop as a result of water collecting and sitting on plant leaves for hours, he said.

While installing a slow and controlled watering method may initially be more costly than sprinklers, the water savings over time as well as disease prevention make it a worthy investment, he said.

Early spring is a good time for homeowners to run their irrigation systems using the ‘manual’ function to look for damage from winter freezes.

Besides drip irrigation, homeowners can use [rainwater harvesting](#) to reduce water bills and irrigate sensitive plants. Collection and storage of rainwater is particularly useful in areas where tap water contains high levels of sodium and chlorine. Drawing aquifers down can result in more impurities in the water, he said.

“As our water resources become more depleted, water quality is also going to be a major issue,” Hartmann said. “Rainwater harvesting can be done in any situation, whether you’re using a little trash can or a 2,000-gallon tank.”

Regardless of which rainwater capture system homeowners choose, the dormant seasons are a good time to begin planning and implementing new irrigation systems for the spring.

For already established landscapes, other practices can be easily implemented to help transition a traditional garden to an Earth-Kind one. Maintaining a 3-inch layer of [mulch](#) year round is an effective means to improve soil and plant health by supplying nutrients, improving drainage and strengthening the root system.

“Fall is a good time to reapply mulch,” Hartmann said. “Mulch is really important as it obviously discourages weed growth and helps to conserve water but also feeds the soil as it breaks down. It will help to modify the soil temperature, so in the winter it will actually protect the roots and keep them warmer, whereas in the summer it keeps them cooler.”

Hartmann said many forms of mulch can be used such as native hardwood or even shredded leaves. Debris from cutting back warm-season perennials, grass clippings and leaves can be made into compost, rather than sending them to the landfill, and should be ready to incorporate into the soil in the spring. Compost builds soil structure and acts as a slow-release fertilizer that can be returned to the soil or serve as an additional layer of insulation and source of nutrients.

Homeowners should avoid using [fertilizers](#) high in nitrogen in late fall. "If you fertilize a lot with nitrogen, your plants are going to respond with a lot of growth," he said. Early growth can lead to damage once the first frost comes. Late winter is the optimal time to begin fertilizing most trees to ensure nutrients are delivered before they begin growing. Pruning should also wait until late winter to prevent early growth and cold damage.

Hartmann said it is never too early to begin implementing environmentally sustainable practices for landscapes and gardens. As the population of Texas grows, water conservation becomes increasingly critical. In some cities, landscaping accounts for 30 percent of municipal water use, he said. In even drier places, it can account for 60 percent. Landowners who adopt Earth-Kind practices are significantly reducing their water consumption, managing their resources effectively and helping to ensure future water availability and quality.

"The cheapest and most effective way to make sure we have water available for the future is to be more efficient with what we already have."

Earth-Kind has numerous publications on water conservation, landscaping for energy conservation, reduction of fertilizer and pesticide use and other topics. Visit its [website](#) to read these publications as well as other resources.