New txH2O spotlights water conservation technologies, partnerships and leaders

The Texas Water Resources Institute's (TWRI) Summer 2015 issue of txH2O is now online. This issue spotlights innovative work in improving urban water conservation, a new partnership in the Lower Rio Grande Valley, and several natural resources nexuses, including the water, energy, food nexus and the water, soil nexus.

The lead story features interviews with researchers and water utilities staff about new water conservation technologies and tools that help homeowners and municipalities monitor and manage water use.

Scientists from The University of Texas, Texas A&M University and NASA are using different monitoring methods, including satellites and in-ground sensors, to tackle questions about soil moisture, and their research is featured in Satellites, sensors and soil.

This issue profiles Carlos Rubinstein of the Texas Water Development Board and his years of service in Texas water. In another story, world-renown Texas A&M University researcher Dr. Rabi Mohtar explains how the water, energy, food nexus and computer modeling can help solve interconnected natural resource problems.

Disappearing habitat examines waterfowl feeling the effects of water and land management changes in the Texas Mid-Coast. Conserving through partnerships outlines the new partnership in the Lower Rio Grande Valley led by TWRI.

The final story recounts how re-establishing environmental flows in Caddo Lake has helped re-establish the American paddlefish, an historic and indicator species for the lake.

Interested readers can subscribe to the magazine and read previous issues.

Recent flooding could potentially speed up spread of zebra mussels

Among all the negative effects of the recent drought in Texas, there was one positive result: low lake levels, and the resulting closure of many boat ramps, may have limited the spread of zebra mussels, an aquatic invasive species. With the recent heavy and frequent rains, however, the state's zebra mussel outlook has changed.

"We've got to be thankful for these rains," said Brian Van Zee, inland fisheries regional director for the Texas Parks and Wildlife Department (TPWD). "I'm not going to complain the least bit, because the lakes were so low for so long and we really needed that water."

But, Van Zee said, the large amounts of water flowing down river basins in May and June could potentially spread zebra mussels from the current seven infested lakes to more water bodies.

“Because zebra mussel larvae are free-floating in the water column for about 3-4 weeks after being spawned, zebra mussels are going to naturally migrate downstream with the flowing water,” he said. “In a drought situation, that happens a little slower due to low flows. But, when we have a wet spring like we had this year, with all the rain and flooding, what we suspect is they may spread downstream further and probably quicker than what may have occurred otherwise.”

Zebra mussels were discovered in Texas in 2009 and have since infested seven lakes: Texoma, Ray Roberts, Bridgeport, Lavon, Lewisville, Belton and most recently Waco. According to TPWD, the rapidly reproducing mussels can clog water intake pipes, damage boats and motors and completely cover anything under water, all resulting in serious economic, recreational and environmental impacts.

Some circumstances created by recent rains and flooding could help prevent the spread, he said. High river flows resulted in increased turbulence and turbidity, both of which could be harmful to zebra mussel larvae survival.

“So, I can’t say definitively that everything from the Trinity River Basin in Dallas-Fort Worth down to Houston is now going to have zebra mussels, but it is very possible,” Van Zee said. “It’s certainly something we’re going to be monitoring.”

TPWD currently monitors 26 lakes in five river basins for zebra mussels. It also works collaboratively with several other partner agencies and universities, including the U.S. Geological Survey and the University of Texas - Arlington, who monitor other lakes around the state.

Van Zee said the recent high flows have also hampered monitoring. Physically inaccessible lakes and high amounts of organic matter and debris have made sampling difficult.

“We’re sampling where we can right now, but in some of these river basins, like the Trinity and the Brazos, we will probably have to wait and do some additional sampling this fall to get a better handle on where we may or may not be seeing zebra mussels.”

Boaters in Texas can do their part to help control zebra mussel infestations by following TPWD’s Clean, Drain and Dry public awareness campaign, he said. Originally focused on LakeTexoma and other north Texas lakes, the outreach efforts now stretch down the I-35 corridor, south to lakes Belton and Waco and into the Austin and San Marcos areas, Van Zee said.

“While we can’t stop the downstream migration of zebra mussels, boaters can help us prevent the spread of zebra mussels to other non-infested river basins and lakes in the state,” he said.

Boaters can help prevent the spread of zebra mussels in Texas by cleaning, draining and drying boats. Image and above image by TPWD.

It is illegal to possess or transport any prohibited aquatic invasive species in Texas. Since zebra mussel larvae, called veligers, are invisible to the naked eye, boaters must drain all water from their boat and all receptacles on board when traveling on a public roadway to or from a public water body in Texas.

“All aquatic invasive species are detrimental,” Van Zee said. “If boaters can clean, drain and dry, then that will help prevent not only the spread of zebra mussels, but the spread of these other invasive species as well.”

For a simple overview of how to properly clean, drain and dry a boat, watch this TPWD video.

For more information on zebra mussels and the campaign, visit texasinvasives.org/zebramussels and read this TPWD news release.

Meet a Scientist: Wade Ryberg

Quick reflexes and a set of hands — these were Dr. Wade Ryberg's childhood tools for catching reptiles and amphibians. After the capture, he would often bring the animal home for further study. "I would catch something in the wild, keep it, feed it, watch it eat, and then I would just put it back where I found it," he said.

This early contact inspired Ryberg to pursue a career in herpetology and led him to the work he does today at the Texas A&M Institute of Renewable Natural Resources (IRNR). "A lot of herpetologists say that we get paid to do the same thing that we did as a kid, "he said. "I would say that's not quite true. I can do some sophisticated stuff now that I couldn't do when I was a kid."

To become a professional herpetologist and conservation biologist, Ryberg earned his bachelor's and master's in wildlife and fisheries sciences from Texas A&M University. And he received his doctorate in evolution, ecology and population biology from Washington University in St. Louis in 2009.

In August 2014, Ryberg joined IRNR, where he studies reptile and amphibian biology and conservation in Texas. He said he enjoys being able to collaborate with other professionals. "I call it 'my' work, but it's 'our' work," he said.

A few of the species Ryberg has studied include the dunes sagebrush lizard and the massasauga rattlesnake. He is currently working on a number of conservation projects for other species, such as the Western chicken turtle, spot-tailed earless lizard, reticulate collared lizard, and Louisiana pine snake, to evaluate their current status in Texas.

Dr. Wade Ryberg

Texas is a great place to study reptiles and amphibians, Ryberg said. The diversity of habitats available throughout the state translates to a diversity of animal species. Although there are many species, many have small habitat ranges, meaning habitat loss could pose a greater threat to those species, he said.

Another unique feature to Texas is its subtropical climate. Many reptile and amphibian species found in tropical regions of Central America can also be found in South Texas. These species do not make it north of Texas because of the cooler climate, he said.

In particular, Ryberg studies species that are candidates for state or federal endangered species listing. His work helps determine if a species should be listed.

"Certain species are going through the listing process but we don't know much about them, so they may actually be very common when they were thought to be rare before."

For example, the dunes sagebrush lizard went through the listing process but was determined not to be endangered, Ryberg said. The lizard was not listed because new information about its status and distribution allowed conservation plans to be developed that minimize threats to the species, he said.

Some of Ryberg's work also involves working with land managers, policymakers and stakeholders to make conservation decisions. Although it can be challenging to unite people who have differing opinions, he said, it is important to present the

science to all parties involved in the decision-making process.

Ryberg enjoys passing on his knowledge to the next generation of herpetologists and conservation-minded people. He often shows off the reptiles he captures to local schools, letting the children get hands-on experience with the animals, like he did as a child, he said.

“You can watch shows on TV and learn about animals that way, but there is something different about having the animal in your hand.”

To learn more about Ryberg’s work, visit his website and see this video interview.

Celebrate Smart Irrigation Month and save water

July is Smart Irrigation Month, and the Texas Water Resources Institute and Texas A&M AgriLife Extension Service have many resources to help Texans save water supplies and money by irrigating their landscapes more efficiently.

Check out these links for irrigation tips and information:

- Landscape water conservation publications, Earth-Kind Landscaping program, Texas A&M AgriLife Horticulture
- Water Resources for Homeowners, AgriLife Extension Water Education Network
- WaterMyYard program, AgriLife Extension
- Aggie Catch Can information, kit and video for irrigation system audits, AgriLife Extension School of Irrigation
- Cycle-soak Method of Watering Lawns, AgriLife Extension
- School of Irrigation, AgriLife Extension
- Advancing conservation, *txH_2O* magazine
- Turf in Texas: Still sustainable, *txH_2O* magazine
- The art of smart irrigation, *txH_2O* magazine

Smart Irrigation Month is a public awareness campaign lead by the Irrigation Association to promote efficient water use. The Irrigation Association provides these simple tips to “save water and see better results” in your landscapes:

- Plant right.
- Water wisely.
- Invest in an irrigation system.
- Maintain and upgrade your system.
- Work with an irrigation professional.

Learn more at www.smartirrigationmonth.org.

Intro to watershed modeling workshop July 8 in Austin

The Texas Water Resources Institute is hosting an Introduction to Watershed Modeling July 8 at the Texas Commission on Environmental Quality headquarters, 12100 Park 35 Circle, in Austin.

The workshop is set for 9 a.m. to 5 p.m. in the commission’s Building E, Room 245S. Cost is $75 and includes course materials, a catered lunch and a certificate of completion.

According to Nikki Dictson, Texas A&M AgriLife Extension Service program specialist for the institute, the workshop will provide watershed coordinators and water professionals with an introduction to watershed modeling.

She said models that will be discussed include load duration curves (LDC), Spreadsheet Tool for Estimating Pollutant Load (STEPL), Generalized Watershed Loading Function (GWLF), P8 urban catchment model (P8-UCM), Soil and Water Assessment Tool (SWAT), AGricultural Non-Point Source Pollution Model (AGNPS), Hydrologic Simulation Program - FORTRAN (HSPF), and Storm Water Management Model (SWMM).

“Participants will gain an understanding of what model is needed for watershed protection planning, how modeling fits into the Environmental Protection Agency’s nine elements of watershed planning and the resources needed to take the next steps,” Dictson said.

Dr. R. Srinivasan, director of the Texas A&M University Spatial Sciences Laboratory, will talk on the purpose, limitations, time, costs and different requirements of watershed models currently available.

Dr. Larry Hauck, lead scientist for Tarleton State University’s Texas Institute of Applied Environmental Research, will present information on tools that can be used with limited data and under resource constraints, such as load duration curves and GIS land-use-based methods.

Sandra Arismendez, lead nonpoint source quality assurance specialist for the Texas Commission on Environmental Quality, will explain quality assurance project plans and what the plans need to cover, how the data need to be described and other details.

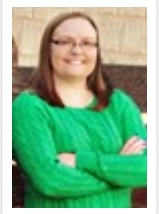
“The course will conclude with a presentation on stakeholder communications and modeling,” Dictson said. “Bringing stakeholders to the table to understand the model, facilitating consensus and approval of inputs and presenting modeling results to engage stakeholder in implementation is very important.”

One Texas Water Resources Institute continuing education unit will be provided upon course completion.

Participants may register for this training at http://watershedplanning.tamu.edu/training/ and more information is available at the website or by contacting Dictson at 979.458.5915 or n-dictson@tamu.edu.

The training course is supported by funding from the Texas State Soil and Water Conservation Board through a U.S. Environmental Protection agency nonpoint source grant.

Extension expert teaching free webinar on water law July 2



Water law in Texas can be complicated. For an overview of Texas water laws as well as recent legal cases, attend a July 2 webinar taught by Tiffany Dowell Lashmet, Texas A&M AgriLife Extension Service specialist and assistant professor in the Department of Agricultural Economics at Texas A&M University.

The webinar, Texas Water: Basic Law and Current Hot Topics, will be presented from 12 p.m. - 1:00 pm CST.

For more details and to attend the webinar, visit Natural Resource Webinars. Follow Lashmet on Twitter and read her Texas Agricultural Law Blog to keep up with legal happenings in the state.

Utilities across Texas invited to AMI workshops

The Texas Water Resources Institute (TWRI), Texas A&M Engineering Experiment Station and Johnson Controls Inc. are continuing to host free advanced metering infrastructure (AMI) system workshops for water utilities in cities throughout Texas this summer.

The workshops locations and dates are:

- Conroe: July 17, San Jacinto River Authority, 1577 Dam Site Rd.
- Amarillo: July 23, Texas A&M AgriLife Research and Extension Center, 6500 Amarillo Blvd. W.
- Robstown: Aug. 6, Texas A&M AgriLife Extension Service office, 710 E. Main Ave., Suite 1

Dr. Allen Berthold, TWRI research scientist, said the trainings are open to municipal employees interested in learning more about various aspects of AMI system technology. The technology uses water meters to wirelessly transmit hourly household water usage information to water utilities and then potentially to water users through a customer website.

“Efficient household water use is crucial to meeting Texas’ future water demands,” Berthold said. “Using AMI system technology can help water utilities be more efficient by detecting and managing leaks and encouraging water conservation by residents.”

All of the workshops are from 10 a.m. to 2 p.m. Participants should preregister for the workshops at nrt.tamu.edu/ami. Lunch will be provided to those who preregister a week before the workshop. Seating is limited to 45 people.

Craig Hannah, engineering manager for Johnson Controls’ municipal utility solutions team in Amarillo, said training topics include AMI system components, transmitting options, network schematics, mobile automatic meter reading versus fixed-base AMI, line-of-sight communications, comparisons of AMI systems for water-only utilities, health and privacy concerns and installing AMI. A business case and lessons learned will also be discussed.

“Participating in this training is a great opportunity to not only learn about various topics related to AMI systems, but also to network with other utilities and gain some insight into their key considerations and lessons they have learned thus far,” Berthold said.

Berthold will also present information on a current AMI technology research project of Texas A&M AgriLife Research, Texas A&M AgriLife Extension Service, TWRI and Texas A&M Engineering Experiment Station.

“This project aims to measure changes in water consumption as a result of making hourly water use available to residents,” he said.

The full schedule of all upcoming workshops, training details and registration are available at nrt.tamu.edu/ami. Contact Berthold at 979.845.2028 or taberthold@ag.tamu.edu for more information.

Urban Wildlife Management conference July 29 in Dallas

The Texas A&M AgriLife Research and Extension Center in Dallas will host an Urban Wildlife Management conference July 29.

The conference will be from 8 a.m.-5 p.m. in Building C of the center, located at 17360 Coit Road in Dallas. Lunch is included.

“Anyone working with or interested in managing wildlife populations will benefit from attending this program,” said Janet Hurley, AgriLife Extension urban integrated pest management specialist, Dallas. ”It will include presentations and discussion

from experts from across the state and elsewhere who will address ways to successfully manage wildlife issues."

"Wildlife to be covered in the program include coyotes, bobcats, birds, bats, small mammals and snakes," she said. "There also will be discussion on diseases associated with wildlife and how to deal with the media. This promises to be a fact-filled day."

She said specific presentation topics will be living with bats in an urban setting, wildlife feeding ordinances and leash laws, rodent management, zoonotic diseases, and Texas laws and rules governing wildlife control.

The cost is $30 per person and seating is limited. Attendees must preregister by July 23 to ensure a spot at the program and an accurate lunch count.

To register online, go to http://public.ntmn.org/urbanwildlife. For more information, contact Hurley at 972,952.9213 or, janet.hurley@agnet.tamu.edu.

Read the full AgriLife Today news release for more details.

Reminder: IWR and NIWR proposals due to TWRI July 13

The U.S. Army Corps of Engineers Institute for Water Resources (IWR), in cooperation with the National Institutes for Water Resources (NIWR) requests proposals for grants to support applied investigations in select topic areas related to water resources issues in the United States.

Grant proposals may request up to $200,000 in federal funds, but proposals for lesser amounts are encouraged. There is no matching funds requirement for these awards. Proposals must be submitted by email to the NIWR-designated Water Resources Research Institute or Center, which for Texas researchers is the Texas Water Resources Institute (TWRI). The government's obligation under this program is contingent upon the availability of funds.

All proposals must be submitted in PDF format by email to TWRI by July 13 to be reviewed, approved and submitted to IWR.

The RFP is available online. For more information regarding the submission process, contact Danielle Kalisek at 979.845.2781 or dmkalisek@tamu.edu. Questions or comments concerning the review process or this RFP may be addressed to Dr. Joe Manous at 703.428.7074 or Joe.Manous@usace.army.mil.

Alamo Area Conservation Workshop coming to San Antonio Aug. 28

The Texas A&M AgriLife Extension Service and Texas A&M Forest Service will present an Aug. 28 workshop for small-acreage landowners, homeowners and natural area enthusiasts.

The Alamo Area Conservation Workshop will be held from 9:15 a.m.-4:30 p.m. at the Phil Hardberger Park-Urban Ecology Center, 8400 N.W. Military Highway in San Antonio.

"We will have educational programming, along with time for one-on-one conversations with the speakers and other exhibitors," said Troy Luepke, AgriLife Extension water program coordinator, Bexar County.

Registration is $20 in advance or $25 at the door, and lunch will be provided. Attendance will be limited to the first 200 paid registrants.

The program will be held in conjunction with the Central Texas Conservation Partnership, Bexar County Master Gardeners and Alamo Area Master Naturalists.

“We will have a variety of experts on conservation presenting at the program, including experts from AgriLife Extension, the Texas A&M Forest Service, San Antonio City Parks and the U.S. Department of Agriculture,” Luepke said.

Program topics will include natural history of the South Texas Plains, fire in the urban/wildland interface, oak wilt and other tree diseases, feral hogs, invasive pest insects and water quality.

For more information, go to http://www.texasconservation.org. RSVP and register by Aug. 21 by mail to: Texas A&M AgriLife Extension Service, Attn: Angel Torres, 3355 Cherry Ridge, Suite 212, San Antonio, TX 78230-4818, or contact Torres at 210. 467.6575.

Read the full AgriLife Today news release for more details.

New IRNR and TWRI publications

Potential Cropping Benefits of Unmanned Aerial Vehicles (UAVs) Applications, R.D. Lacewell, P. Harrington, TR-477, 2015.

Natural Resources Training

- Introduction to Watershed Modeling, July 8, Austin, TX
- Introduction to ArcGIS 10, July 15-16, College Station, TX
- AMI Training, July 16, Beaumont, TX
- AMI Training, July 17, Conroe, TX