Edwards Aquifer Research and Data Center

Newsletter **Spring 2004**

The Texas Legislature established the Edwards Aquifer Research and Data Center in 1979. EARDC's mission is to promote the study, understanding and use of the Edwards Aquifer.

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EARDC activities are organized around a Technical Services Center, an Education Center, a Research Center and a Data Center.

San Antonio Conservation Society to Fund Graduate Scholarship for Studies Related to the Edwards Aquifer:

The San Antonio Conservation Society recognizes the importance of water and water resources to the history and future of San Antonio and Texas. To this end, the SACS will fund a scholarship in the amount of $2,500 for graduate studies of students pursuing research and a career in Aquatic Resources. The funds from the scholarship can be used to purchase research equipment and supplies, travel for research and professional meetings, or for books or other supplies needed for the student's research or course work. Once these needs are met, the funds may be used for tuition or other University fees.

Awards will be made to the most qualified applicants, as determined by a selection committee appointed by the Director of EARDC. The committee will prioritize its recommendations to the EARDC Director who will then contact SACS with a recommendation.

Interested persons may contact EARDC for eligibility requirements and information about the application process.

Technical Services Center activities:

Water analysis services-

The EARDC water analysis laboratory has been providing environmental services since 1979. The EARDC lab is certified by the Texas Commission of Environmental Quality (TCEQ) for the analysis of bacteria in drinking, source, surface and wastewater. The EARDC lab is preparing to seek National Environmental Laboratory Accreditation Conference (NELAC) accreditation when TCEQ starts accepting applications. EARDC has provided a wide range of services for private citizens and numerous organizations including the Environmental Protection Agency (EPA), TCEQ, Texas Parks and Wildlife Department (TPWD), Barton

Springs Edwards Aquifer Conservation District (BSEACD) and City of San Marcos.

The laboratory is equipped with basic water quality instrumentation and more advanced instrumentation such as Gas Chromatographs, Ion Chromatograph and Atomic Absorption Spectrophotometer with Graphite Furnace. Furthermore, EARDC has a Nikkon Optiphot-2 microscope equipped with an Episcopic-Fluoresence attachment and associated attachments for detecting *Giardia* and *Crytosporidium*. EARDC is in the process of updating equipment to meet new EPA requirements for the analysis of *Giardia* and *Crytosporidium*. After requirements are met and proficiency is demonstrated EARDC will seek certification for the analysis of *Giardia* and *Crytosporidium*.

The EARDC Laboratory operates under a stringent Quality Assurance Program that insures that data produced is scientifically sound, legally defensible and of known documentable and verifiable quality. The quality assurance system at EARDC stresses training and planning that yields increased personal performance and improved laboratory management.

EARDC provides opportunities for students to train alongside biologists and chemists as student workers, work-study students or non-paid interns assisting in the preparation and performance of basic analyses. Students are trained and are allowed to perform analyses only after proficiency is demonstrated. Laboratory hours are Monday-Friday 8 a.m. – 5 p.m. Containers and sampling instructions can be provided upon request. Bacteriological samples are not accepted on Friday. Special arrangements can be made to submit samples on Friday or after hours, if necessary. For information about laboratory services, contact Joe Guerrero at (512) 245-3545 or e-mail JG13@txstate.edu.

Biomonitoring services-

The biomonitoring lab is contracted with the Texas Department of Transportation (Tx DOT) investigating the toxicity of highway runoff using EPA aquatic target toxicity test organisms and the fountain darter (*Etheostoma fonticola*). The lab is comparing the influence of stormwater runoff at a Tx DOT highway bridge construction site over the San Marcos River to a control site sampled before construction during a non-rain event and during a rain event.

The biomonitoring lab cooperates with the US Fish and Wildlife Service Contingency Plan to collect individual Texas blind salamander (*Typhlomolge rathbunii*), San Marcos salamander (*Eurycea nana*) and Comal Springs salamander (*Eurycea*)and distribute them to refugia.

The lab will be working with Texas Parks and Wildlife Department to run *Prymnesium parvum* toxin bioassays using the fathead minnow (*Pimephales promelas*) as a test species. *Prymnesium parvum* is a golden algae species that has caused tremendous problems with large scale fish kills in different water bodies around the state. Here is a photo of *Prymnesium parvum* from the TPWD "Golden Alga in Texas" page, http://www.tpwd.state.tx.us/hab/ga/.

Photo: Dr. Carmelo Tomas, UNC Wilmington

EARDC has provided freshwater biomonitoring services since 1990 and has participated in EPA's Quality Assurance Plan

since 1991. Available services include 24-hour acute screen and definitive testing, 48-hour and 96-hour acute testing and 7-day chronic testing. An ISCO Model 6712 Sampler is available for composite or sequential sampling services and for collection of industrial pretreatment samples. For information about biomonitoring services, contact Victor Castillo at (512) 245-3546 or e-mail VC05@txstate.edu.

Education Center activities:

Teacher workshops-
Twenty-five teachers participated in watershed health and aquatic ecology teacher workshops on March 22 and April 12, 2003. Participants carried out a watershed survey and viewed several internet sites containing useful information about individual watersheds; conducted a stream walk to visually assess a stream; performed water quality tests for physical and chemical properties; sampled stream biota and evaluated how the biological community integrates watershed and stream conditions to indicate ecological health.

Due to the generosity of the Bamberger Ranch Foundation, each participant in the workshop received an educator's kit consisting of two aquatic collecting nets, a water quality monitoring kit and five different manuals and monitoring handbooks.

Aquatic Studies Camp 2003-

Six one week sessions and one two-day session were held. Three teachers and 113 campers participated in the one-week sessions and one 12 campers participated in the 2-day session. The Aquatic Studies Summer Camp has been held each year since 1989. It provides students aged 9–15 the opportunity to learn about aquatic biology and water chemistry in a university atmosphere while also enjoying various water-oriented recreational activities.

For 2004, the camp will undergo a few changes. The camp is now called the Aquatic Sciences Adventure Camp to more accurately reflect its educational and adventure recreation aspects. Additionally, we have modified the itinerary of some of the camp sessions to allow for a more modest tuition. More camp information can be obtained at the camp website, http://www.eardc.txstate.edu/camp.html.

Aquatic Studies Field Days-

Programs were conducted for 1026 students and 82 teachers from 32 schools during the past year. The field day program gives students an opportunity to collect living aquatic organisms and observe them under a microscope. Students also learn about the Edwards Aquifer and its biota and view San Marcos Springs from a glass-bottom boat at Aquarena Center. The field day website can be found at http://www.eardc.txstate.edu/fielddays.html.

For information about teacher workshops, the Aquatic Sciences Adventure Camp or to schedule a field day, contact the education center at (512) 245-3541 or e-mail LG16@txstate.edu.

Educational materials-

EARDC has contracted to produce middle school educational materials for the San Antonio River Authority. The materials will

be used by students in Wilson, Karnes and Goliad Counties and will focus on issues important to the San Antonio River basin.

Research Center/Data Center activities:

EARDC hydrogeology is participating in a two-year study of the Blanco River Basin in Central Texas. The study, jointly funded by the Nature Conservancy of Texas and the International Institute for Sustainable Water Resources (IISWR) at Texas State, includes aquatic biology collections and analysis and hydrology. The hydrology component includes flow measurements throughout the Blanco Basin and watershed modeling using the SWAT 2000 model developed by the U.S. Department of Agriculture. EARDC hydrogeology arranged training in use of SWAT in January, 2004 attended by the Blanco Basin study team, including graduate students. Marshall Jennings is also overseeing special springflow measurements in Cypress Creek near Wimberley, TX for the Jacobs Well and Blue Hole Springs requested by the Wimberley Valley Watershed Association. Jennings is working with graduate student Dennis Fowler, Texas State Geography, on these measurements and on SWAT. Closely allied to the Blanco Basin study, EARDC hydrogeology and IISWR hosted a meeting of the National Academy of Sciences, National Research Council on the Texas State University campus in late March 2004. The Academy had assembled a team of scientists to review the Texas Instream Flow Program and met in San Marcos to finalize its report. EARDC and IISWR were pleased to host the meeting and provide a field trip of the San Marcos Springs and upper San Marcos River system.

Marshall Jennings, EARDC hydrogeologist, is working in association with Andrew Sansom, IISWR Director, to co-sponsor a statewide groundwater conference at the State Capitol Extension on November 17-19, 2004. The conference, called Texas Groundwater 2004, is expected to draw about 300 attendees from groundwater conservation districts, state agencies, universities, and water planning staffs statewide. The Conference will focus on sustainability issues including science and policy for all 30 major and minor aquifers in Texas.

EARDC hydrogeology is partnering with Sul Ross State University beginning in 2004 on extensive new groundwater investigations in Far West Texas including graduate student studies of major spring systems and field determination of aquifer properities for Bolson and Igneous minor aquifer systems. In addition, EARDC and Sul Ross will operate about ten new groundwater monitors with satellite telemetry throughout West Texas and in cooperation with West Texas groundwater conservation districts.

EARDC will begin new Texas groundwater studies in association with IISWR and Texas A & M University- Kingsville in summer of 2004 funded by the Environmental Protection Agency. These studies will seek to assist Texas Groundwater Conservation Districts with groundwater science, training, and policy issues in the Gulf Coast Aquifer.

EARDC has concluded a compilation of Trinity Aquifer water level and aquifer property databases and transferred the information to state agencies involved with an update to the Trinity Aquifer model for Central Texas. This compilation completes about four years of data collection and analyses by EARDC and associated students.

To contact EARDC:
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