



Innovative Research and Discovery for a Sustainable Future

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Director's News



This spring, TRIES continues its efforts to serve and develop several collaborative projects across the campus of Sam Houston State University. The TRIES facility has been recently reclassified and is now an Education and General (E&G) building. This new facility classification is due to several developments including support of university infrastructure related to physical plant operations and several educational and scholarship activities at the University. TRIES currently supports educational activities through laboratory instruction within the TRIES Analytical Laboratory, hosts selected graduate classes in the sciences, in addition to scientific conferences and bi-weekly discussions and critiques of journal articles and manuscripts.

Among other exciting developments, we are currently communicating with the Texas Parks and Wildlife Department

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about helping in their effort to create a regional research operations manager in east Texas. If TPWD is able to create and fill this research manager position, TRIES will have the opportunity to host the researcher to help our efforts in growing the community of researchers at TRIES and further collaborations with Sam Houston State University faculty.

In ending this brief update on the research activities at TRIES, we are looking forward to this summer's activities and projects and welcome you to contact us with any ideas or comments that may help TRIES better serve both the University and Huntsville community in its mission to continually develop research and interesting scholarship opportunities.

Dr. William I. Lutterschmidt, Director
 Texas Research Institute for Environmental Studies
 Professor of Biological Sciences

TxPWD Directors Conference at TRIES

Dr. Gary P. Garrett, Fisheries Biologist and Program Director for the Texas Parks and Wildlife Department's (TxPWD) Watershed Policy and Management Program has scheduled directors' conference on the campus of Sam Houston State University. The conference will be held at TRIES on the 14th and 15th of June 2010 with nearly 20 upper level managers

and biologists visiting and staying on campus. The University Hotel has made accommodation for these members of the TxPWD and TRIES is looking forward to showing off Sam Houston State University and the TRIES facility. As part of the planned activities, many members of TxPWD who still remember the old State's Huntsville fish hatchery, will tour this



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TxPWD Directors Conference at TRIES (Continued from Page 1)

facility which is now the Department of Biological Sciences' biological field station, the Center for Biological Field Studies, directed by Dr. Monte L. Thies. Drs. Lutterschmidt, Hargrave, and Wozniak will be helping to host Dr. Gary Garrett and his colleagues of the TxPWD to ensure they have a most productive and memorable meeting and visit.



Keeping Us Organized and on Schedule



Ms. Peggy Ellenberger joined the TRIES team in May 2009 as the Administrative Secretary to Dr. Lutterschmidt, Director of TRIES. "I don't know what I would do without Peggy's dedication and skill set. Peggy handles all of the

day to day operations making my duties at TRIES manageable" said Dr. Lutterschmidt. Peggy has worked at Sam Houston State University for the past 10 years and started her SHSU career as a Secretary III in 1999 within the School of Music. Although she married and moved to Wisconsin for six months in 2001, she tells us that she and her husband returned to Texas as soon as they could. She knew when they returned to Texas that SHSU would once again be a part of her career. Peggy returned to SHSU in January

2002 as a Financial Aid Assistant transferring later to the Department of Political Science where she was employed as a Secretary III for seven years. Peggy has always enjoyed the University community and was greatly pleased that she had the opportunity to once again be a part of this community upon returning to the area.

Peggy started a new career opportunity at TRIES where she is responsible for directly helping Dr. Lutterschmidt with the Research Institute's mission and operations. As Peggy is the only clerical personnel at TRIES, she has enormous responsibility and stays busy with all aspects of running a research department while providing all the necessary secretarial and accounting skills for the department.

Peggy and her husband, Lonnie, live near Cleveland and have four children and two grandchildren.

A DAAB Update

The Deployable Autonomous Aerobic Bioreactor (DAAB) demonstrations continue at various locations throughout Texas showing off the DAAB's technology and durability for successfully cleaning wastewater. Project director, Mr. Sabin Holland, is working with the U.S. Army's Engineer Research and Development Center (ERDC) to finalize a site for demonstrating a DAAB unit. Mr. Holland stated, "We are trying very hard to find either a disaster stricken area, potentially Haiti, or a remote location to fully demonstrate our technology on a national scale."

Current research is exploring modules that can be added at the end of the system to bringing wastewater to potable standards. Initial results are promising and laboratory results will verify such ability to produce potable water directly from wastewater. This system may revolutionize wastewater system designs. "With fresh water supplies becoming increasingly sparse around the world, this may be part of the solution to

mitigate such a global crisis," says Mr. Holland. The most immediate impact for such a "closed loop" system is in remote areas where fresh water sources are scarce or costly to produce.

Investigators have received another cycle of funding (\$800,000) from ERDC for continued research. Partner institutions, Lamar and Sul Ross State Universities, will continue to help in this collaborative effort.

Mr. Dan Davis, Associate VP for Research and Technology Commercialization, and Mr. Holland are working to commercialize this University developed technology. Three units were recently delivered to Afghanistan with the sale of these units providing royalty to SHSU in the amount of \$62,500.

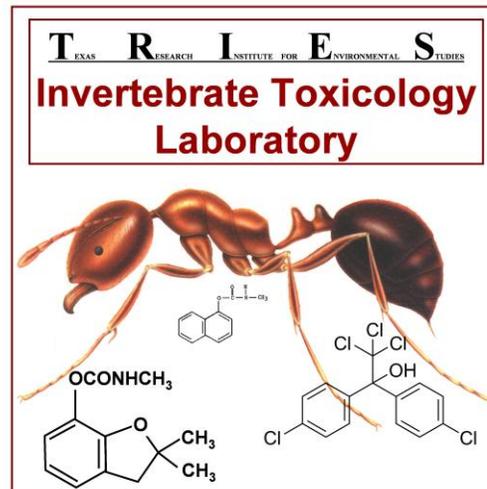


A First Ever Checklist to the Ants of Belize

Researchers from the Invertebrate Toxicology Laboratory at TRIES are nearing completion of a novel research project investigating the Leaf litter Ant (Hymenoptera: Formicidae) diversity of the Maya Mountain Pine Ridge Forest Reserve in Belize. Results from the project will serve as a key taxonomic foundation for the region and sets the standard for both scientists interested in Myrmecology and ecologists/conservation biologists engaged in biodiversity surveys. The project's overall goal was to determine the proportion of collected species that are new to science and represents the first database created for the ants of Belize.

Ants were collected over a period of two years in Belize and identified in the Invertebrate Toxicology Laboratory at TRIES, under the supervision of Dr. Jerry L. Cook. Field collection of leaf litter using the Winkler method was very efficient and provided a good representation of species present, with Belize's Mountain Pine Ridge Forest yielding a total of 3,652 specimens. In Belize, the collection produced an increased number of interesting and rare taxa, as compared to the other study sites.

The specimens collected will serve as future references for Myrmecologists around the world and, pending further analysis, may include multiple new species never before noted in the field. All ant specimens have been cataloged in the SHSU Entomology Collection.



Dr. Jerry L. Cook
Associate VP for Research
ORSP



Ms. Shirley Carrias
Operations Manager of the
TRIES Invertebrate
Toxicology Laboratory

TRIES Analytical Laboratory Operations and Updates



Ms. Rachelle Smith (Operations Manager) of the TRIES Analytical Laboratory has completed our application for certifying laboratory operations and testing of samples through the EPA's National

Environmental Laboratory Accreditation Conference (NELAC) and the Institute for National Environmental Laboratory Accreditation (INELA). This certification process has been a long-term process which has involved approximately four years of preparation. Once the Laboratory has NELAC certification, many more collaborative research projects will become part of the TRIES Analytical Laboratory operations.

The Laboratory continues its mission in University educational service. We hosted more than ten soil science lab tours this semester for students and majors

within agriculture enrolled in the Soil Sciences laboratory course (AGR 433). Students are given a opportunity to explore the Analytical Laboratory's instrumentation and receive instruction regarding how the instrumentation is used for soil science.

Other student and educational activities have included the utilization of instrumentation and services of the laboratory for assisting in a geology project and two ecology lab groups.

Research news includes Ms. Smith receiving a U.S. patent for research on the removal of metals using a bio-polymer resin which she recently presented at an international conference. This resin was developed in the TRIES Analytical Laboratory by Ms. Smith. Her research continues to improve the process and determine adsorption capacities and efficiency.

Updates on Dr. Wozniak's Research Program in Aquatic Ecosystems Ecology

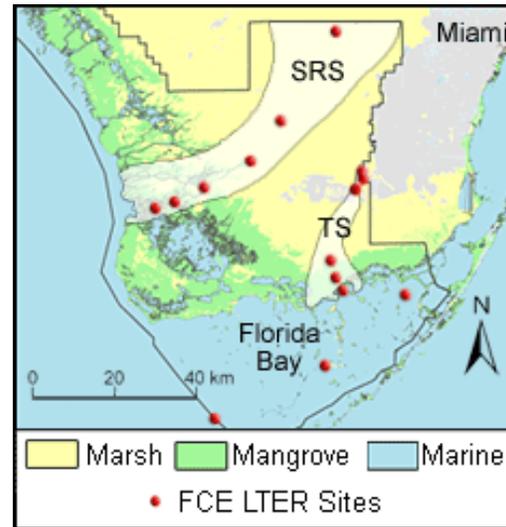


It has been a busy and exciting winter in the Aquatic Ecosystems Ecology Lab here at TRIES. The summer field season promises to be just as busy with pilot experiments occurring along the Texas Gulf Coast and in the mangrove ecotone of the Florida Everglades. The lab

has also expanded our water quality monitoring network at the Center for Biological Field Studies and was recently received two grants to conduct aquatic research at a Pymatuning Laboratory of Ecology in Pennsylvania. Below are the highlights of just a few of the ongoing projects in my Aquatic Ecosystems Ecology research program at TRIES. Please visit my lab's website for more up to date information and graduate student opportunities at the following web address: <http://www.shsu.edu/~jrw034/>

■ **Summer Research Grant Funded:** In very exciting news Dr. Wozniak has received two research awards: the McKinley Research Award & the Leasure K. Darbaker Prize in Botany from the Pymatuning Laboratory of Ecology. The research project centers on using invertebrate communities to determine how both natural and anthropogenic drivers have impacted aquatic ecosystems around Sanctuary Lake in northwestern Pennsylvania. The project was conceived in collaboration with the Pennsylvania Game Commission. Three students from SHSU have been selected to participate in the summer-long research project: Jessica Sanchez, Christopher Kroll, and David Leggett. These students will spend the summer in residence at the Pymatuning Laboratory of Ecology conducting field and laboratory research. This is a wonderful research opportunity for these SHSU students, who will be involved in every aspect of the project from conceptualization and development of the experimental design to manuscript preparation. Congratulations to these students and we wish them best of luck this summer in Pennsylvania. Additional information on the project can be found at the following web address: <http://www.shsu.edu/~jrw034/PLEsummerresearchproject.htm>

■ **Independent Student Research Projects at TRIES:** Graduate student Kaitlen Gary (Hargrave Lab) and



undergraduate Christopher Rahlwes are both currently conducting independent research projects in the Aquatic Ecosystems Ecology Lab at TRIES. Upon completion the two projects will provide vital information on the nutrient cycling and primary production of Harmon Creek. Kaitlen is qualifying the major algal assemblages found in the creek and quantifying how primary production (biological oxygen demand) varies through time and space.

Chris is currently taking a food web oriented approach to determine the ecological stoichiometry of Harmon Creek. He will be sampling various keys ecosystem components (algae, fish, detritus, etc) of the stream system to determine how the relative concentrations of nutrients drive the overall structure and function of the Harmon Creek ecosystem.

■ **Florida Coastal Everglades LTER:** Over spring break Dr. Wozniak attended the annual All-Scientist Meeting of the Florida Coastal Everglades Long Term Ecological Research program (FCE LTER). The meeting was extremely productive and the foundation for collaborative research projects between TRIES and multi-university research teams were discussed. Stay tuned for more info on these projects, proposals, and potential graduate student opportunities.

The FCE LTER is now in the second 6-year cycle of funding from the National Science Foundation and seeks to study how hydrology, climate, and human activities affect ecosystem and population dynamics in the ecotone and more broadly, the Florida Coastal Everglades. Visit <http://fcelter.fiu.edu/> for more information.

Updates on Dr. Wozniak's Research program in Aquatic Ecosystems Ecology (Continued from Page 4)

■ **Water Quality Update:** Lastly, an update on our collaborative research project with the Colleges of Arts & Sciences and Criminal Justice to initiate a long-term water quality monitoring project at the Center for Biological Field Studies. All the sample stations are up and running and we now have several months of high resolution water quality data. We have also expanded the original design to include a long-term monitoring site in Harmon Creek. Stay tuned for an upcoming presentation at the Southwestern Naturalists meeting that will highlight our preliminary findings and future directions!



Recent Scholarship and Publications (Continued on Page 6)

Publications:

In Print:

Burra R, GA Pradenas, RA Montes, CC Vasquex & TG Chasteen (2010) Production of dimethyl triselenide and imethyl diselenenyl sulfide in the headspace of metalloid-resistant *Bacillus* spp. Grown in the presence of selenium oxyanions. *Analytical Biochemistry* 396:217-222.

Burra R, JD Fox, GA Predenas, CC Vasquex & TG Chasteen (2009) Biological interactions of Selenocyanate: bioprocessing, detection, and toxicity. *Environmental Technology* 30:1327-1335.

Cureton II JC, AB Buchman, CP Randle, WI Lutterschmidt & R Deaton (2009) Characterization of ten novel microsatellite loci for the threatened ornate box turtle, *Terrapene ornate*. *Conservation Genetic Resources* 1(1):141-143.

Wozniak JR & BM Mason (2010) Overcoming elemental imbalance with food through shifts in feeding behavior: a study of the caddisfly *Ptilostomis ocellifera* (Trichoptera: Phryganeidae). *Journal of the Pennsylvania Academy of Science* 84(1):3-10.

In Press:

Cureton II JC, AB Buchman, CP Randle, WI Lutterschmidt & R Deaton (*In Press*) Development and cross-amplification of nine novel *Gambusia geiseri* microsatellite loci in *G. clark-hubbsi* and the endangered *G. nobilis*. *Conservation Genetics Resources* (*Online DOI: 10.1007/s12686-010-9220-7*)

Lutterschmidt WI, JC Cureton & AR Gaillard (*In Press*) Extraction and isolation of DNA from keratin protected tissue within the claws of *Terrapene ornate* museum specimens. *Herpetological Review*

In Review:

Buchman AB, JC Cureton II, ED Wilson & WI Lutterschmidt (*In Review*) Seasonal occurrence of activity and reproduction of three-toed box turtles (*Terrapene carolina triunguis*) in east Texas. *Bios*

Cureton II JC, AB Buchman, P Deaton & WI Lutterschmidt (*In Review*) Molecular Analysis of Potential Hybridization between Eastern (*Terrapene Carolina triunguis*) and Western (*Terrapene ornate*) Box Turtles. *Copeia*

Carrias ES (*In Review*) Preliminary checklist of Belize Ants (Hymenoptera: Formicidae) with emphasis on the Mountain Pine Ridge Forest Reserve. *Neotropical Entomology Journal*

Cook JL & DJ Richardson (*In Review*) Earwigs (*Dermaptera: Hemimerina*) associated with Emin's pouched rat (*Cricetomys emini*) in Cameroon, Africa. *Entomological News*

Wozniak JR, DL Childers, WT Anderson, EE Gaiser, DT Rudnick, & CJ Madden. (*In Review*) A ¹⁵N natural abundance study in the freshwater marshes of the southern Everglades, Florida USA. *Hydrobiologia*.

Presentations:

Alford, JG & WI Lutterschmidt (2010) Modeling the movements of a thermoregulating timber rattlesnake. Joint Mathematics Meetings for the 116th Annual Meeting of the American Mathematical Society and 93rd Meeting of the Mathematical Association of America. San Francisco, California. (13–16 January 2010)

Gao S., WI Lutterschmidt & DI Lutterschmidt (2010) Diel variation in standard metabolic rate: mediation by photoperiod



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TRIES Mission — The Texas Research Institute for Environmental Studies is a research facility dedicated to the pursuit and dissemination of scientific discovery through innovative research and to the growth of unique educational opportunities for both faculty and students at Sam Houston State University. The Institute hosts and supports leading researchers in environmental science and provides opportunities for acquiring external funding to support innovative research programs. The institute also maintains and operates a state-of-the-art analytical laboratory which serves both the University and the surrounding community.

TRIES Staff

Dr. William I. Lutterschmidt, Director
Ms. Peggy Ellenberger, Administrative Assistant
Mr. Steven Parker, TRIES Mechanical Technical Advisor
Ms. Rachelle Smith, Analytical Lab Operations Manager
Ms. Shirley Carrias, Invert. Toxicology Lab Operations Manager
Dr. Jeffery Wozniak, Research Fellow

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K.J. Lilly <i>Houston</i>	G. Wilkinson (Resigned) <i>Dallas</i>
R. Mitchell <i>Horseshoe Bay</i>	C. Covo, Student <i>San Marcos</i>

Recent Scholarship and Publications

(Continued from Page 5)

cues and melatonin? 2010 Annual Meeting of the Society for Integrative and Comparative Biology. Seattle Sheraton Hotel and Washington State Convention and Trade Center, Seattle, Washington. (3-7 January 2010)

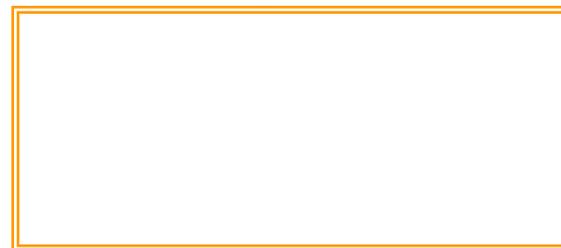
Khan A, R McDaniel, A Moore & TP Primm (2010) Composition analysis of an engineered biofilm used in a wastewater reactor unit. 2010 Spring Meeting of the Texas Branch of the American Society for Microbiology, held April 8-10 at the T Bar M Resort in New Braunfels, Texas. (8-10 April 2010)

Miller M & WI Lutterschmidt (2009) Comparative Physiological Ecology of Cutaneous Water Loss in Two Congeneric and Sympatric Pitvipers. 2009 Sigma Xi Annual Meeting. Woodlands, Texas. (12-15 November 2009)

Moore A, L Center, R McDaniel & TP Primm (2010) A method of bacterial preservation for use in the inoculation of a wastewater bioreactor. 2010 Spring Meeting of the Texas Branch of the American Society for Microbiology, held April 8-10 at the T Bar M Resort in New Braunfels, Texas. (8-10 April 2010)

Wozniak JR, SE Davis & D Rolke (2009) River inflow effects on spatial and temporal patterns of water quality in San Antonio and Galveston Bays *presented in High Resolution Spatial Sampling of*

Mailing Address



Aquatic Systems in Real Time. 20th Biennial Conference of the Coastal and Estuarine Research Federation. Portland, Oregon. (1-5 November, 2009). *Invited Seminar.*

Wozniak JR, SE Davis III, TM Swannack, RD Slack & WE Grant. (2010) Estuarine inflow patterns and the effects on Carolina Wolfberry (*Lycium carolinianum*) fruit abundance: Insights into coastal marsh habitat quality. Freshwater Inflows: Beyond 2010 Conference. Corpus Christi, Texas. (8-10 February 2010)

Grants:

Wozniak JR & J Bish (2010) Using Invertebrates as indicators of biological integrity in aquatic habitats across the Sanctuary Lake landscape. Pymatuning Laboratory of Ecology: McKinley Research Award & Leasure K. Darbaker Prize in Botany Award with support from Graduate Studies, ORSP and TRIES. **\$26,615**