



# SOES

## School Of Environmental Studies

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# Newsletter

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### Message from the Director

Greetings and welcome to the inaugural issue of our school's newsletter! We are pleased to offer this platform for communicating with students, faculty, staff, alumni, businesses, agencies and others about our current activities. In this issue, you can learn about recent undergraduate capstone projects with Habitat for Humanity and Rock Island State Park, highlights and awards from student and faculty researchers, along with alumni updates. We also have an interview with our school's newest faculty member, Steve Sharp. Our goal is to publish the newsletter twice a year, so keep an eye out for another issue in December or January. Past newsletters will be archived on the school's website. Special thanks to all who contributed to this issue, especially Amy Stafford for her editorial and design work. I encourage everyone to stay in touch with us to provide content for upcoming issues. Enjoy!

*Hayden Mattingly*

# BACHELOR OF SCIENCE

## Environmental & Sustainability Studies



Student teams in the 2015–2016 Environmental and Sustainability Studies capstone courses developed and

implemented their own environmental service projects. **Jake Gentry, Zachary Frontz, Daniel Samples, Drew Corder, Taylor Frye, Jasen Ickes and Trae Terry** collaborated with Ranger Jason Miller of **Rock Island State Park** to improve trails and technology to enhance

recreational and educational opportunities for park visitors. For trail improvement, they developed a new footpath linking two parking areas together. The project consisted of forging and leveling a trail into the hillside. The team then installed steps and directional posts in order to assist park visitors in safely navigating the new trail. The group also increased visitor accessibility and safety by creating a rock installation at the bottom of a trail that experienced heavy erosion. Another element of the project was to increase accessibility of information for park visitors through technology. The team installed two signs which feature a Quick Response (QR) code and an



HTML short link to the park map which provides an online portal for visitors to use their phones to find information on the park. Additionally, the team developed various infographics that can be posted on social media.

In the end, the team hopes this initial collaboration will result in a long-lasting partnership between the School of Environmental Studies and Rock Island State Park.

A capstone team consisting of **Daphne Ekmanis, Carolyn Huppmann, Daphne Wilson, Evan Summerville, Maria Davis, Sara Kenney and Sydney Crews** proposed a plan to **Putnam County Habitat for Humanity** that would enhance their community building initiatives. This particular Habitat



affiliate is currently developing a planned community on the west side of Cookeville that will contain 52 housing units, their largest project in Cookeville to date. The team's proposal to Habitat included three elements: community gardens,

environmental education and carefully chosen landscaping to enhance aesthetics and improve home energy efficiency by providing shade and wind breaks. The team proposed locations for traditional in-ground beds, raised beds and container gardens. Educational lesson plans were devised for both children and adults so that the entire community can be more environmentally aware. One significant issue was the close proximity of train tracks adding ambient noise. The team proposed strategic placement of specific native trees (Virginia pine, eastern red cedar, black walnut) and shrubs (upland sea oats, switchgrass, staghorn Sumac) to reduce unwelcome noise. Through this proposal, the team has given Habitat a sustainability framework that can be implemented as they see fit in the coming years.



# PROFESSIONAL SCIENCE MASTER'S Concentration in Environmental Informatics



PSM-EI student **Chuck Sutherland** recently garnered two prestigious awards at the Tennessee Geographic Information Council (TNGIC) conference held in Chattanooga this spring. Chuck's poster presentation at TNGIC, titled "Predictive Modeling of Cave Entrances Utilizing Hyperspectral Imagery and Digital Elevation Models," won both the Best Spatial Analysis and the Viewers' Choice awards. Bill Eberle from Tech's computer science department co-authored the presentation. Chuck has been supported through a teaching assistantship and a TTU Diversity Fellowship and is scheduled to graduate in August 2016. He completed his PSM internship with **The Nature Conservancy,**

**Tennessee Chapter,** working on a project to merge and improve cave geodatabases for the state. Chuck has worked as a graduate teaching assistant for several geographic information system (GIS) courses and has been a valuable educational resource for his students and colleagues due to his extensive experience with geospatial analysis.

**Amy Stafford** started the PSM-EI degree program in August 2015 with support from a TTU Diversity Fellowship. She also serves as a graduate assistant, splitting her time between the College of Interdisciplinary Studies and the School of Environmental Studies where she works on website development, design, recruiting, marketing, social media accounts and related duties. She also assisted Steven Frye from the School of Interdisciplinary Studies with writing a chapter for a published book on adult education and learning by producing the literature review of relevant studies on the topic. Amy earned her bachelor's degree in environmental studies from Maryville College and gained additional experience working for Spectra Tech, an environmental, nuclear, and engineering contractor located in Oak Ridge. This summer, she will start her PSM internship with the **U.S. Fish and Wildlife Service** working under the supervision of Emily Granstaff on a project involving the monitoring and analysis of stream temperature data across the southeastern United States.



**Justin Medley** started the PSM-EI program in summer of 2014 and has a background in Business, Math, and Computer Science. He served as a Graduate Teaching Assistant for the Department of Earth Sciences, where he assisted professors in classes that covered topics such as Climate Change and Geology. For his PSM internship experience, he completed the **Tennessee Aquarium Conservation Institute Freshwater Information Network** (TNACI-FIN). It was during this internship that University leadership took note of the FIN project, and offered him funding through the TTU Water Center as a Graduate Research Assistant. Currently, Justin

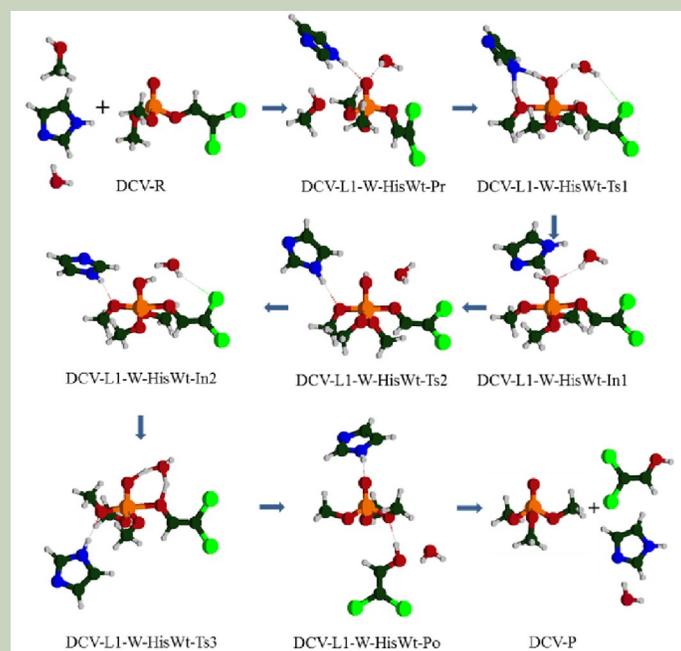
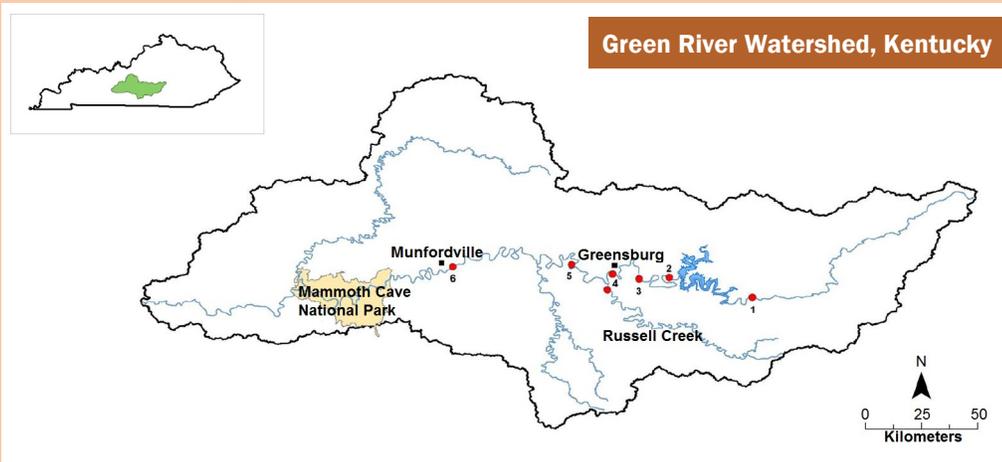
works for the TTU **iCube**, where he manages and consults on environmental, virtual reality, and water research projects. He is scheduled to graduate from the PSM degree program in August 2016.

# DOCTOR OF PHILOSOPHY

## Environmental Sciences Concentrations in Biology or Chemistry

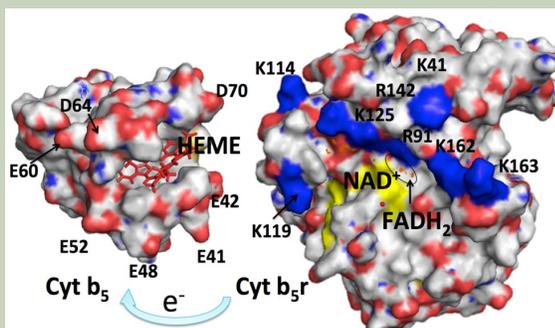
Environmental Sciences-Biology student **Mieko Camp** recently defended her dissertation on the effects of Green River Dam on the growth of bivalve mussels in the Green River in Kentucky. Freshwater mussels are a highly endangered group of animals, with approximately 70 percent of mussel species imperiled in North America. Mieko used stable isotope analysis to assess food availability and mussel diets in the river. She found that different mussel species likely consume foods of different types and origins, adding to the complexity of our understanding of mussel ecological requirements. Mieko's research will help fisheries managers with mussel conservation and restoration efforts in the Green River and elsewhere.

Mieko's advisor is Jim Layzer from the Tennessee Cooperative Fishery Research Unit.



A potential reaction mechanism of the pesticide dichlorvos where methanol mimics serine in the active site of acetylcholinesterase (Above). Electron-transfer-active, solvent-accessible surfaces of two cytochrome b proteins (Right).

Environmental Sciences-Chemistry student **Lasantha Rathnayake** recently co-authored two manuscripts published in the peer-reviewed scientific journals *Computational and Theoretical Chemistry* and *The Journal of Physical Chemistry B*. Lasantha is studying organophosphate pesticides of high to moderate toxicity that affect the central nervous system of animals. His research involves computational simulations of pesticide reactions with serine in the active site of acetylcholinesterase, the target enzyme in the nervous system. Lasantha is also collaborating on research concerning the role of protein electron transfer in physiological reactions such as the reduction of Cytochrome b. Lasantha's advisor is Scott Northrup in the Department of Chemistry.



# GRADUATES & AWARDS

## Alumni Updates



**Joe Martin** (PSM '14) has a background in Environmental Agriscience. Joe's PSM internship was with McWane, Inc., where he analyzed and researched the effects of industrial stormwater runoff on the surrounding environment. Currently, Joe and his wife Amber are living in Denver, Colorado. There he works in the Telecom Industry as a Fiber Engineer

coordinating fiber optic availability and inventory for new and existing customers.

**Johnathan Davis** (Ph.D. '10) currently works an assistant professor of biology as well as the program coordinator of environmental sciences at Young Harris College in Young Harris, Georgia. In 2014, he was given the Faculty Excellence in Teaching Award at YHC. In addition, Johnathan is working with the Georgia Department of Natural Resources, U.S. Fish and Wildlife Service, Tennessee Valley Authority and Hiwassee River Watershed Coalition on several research projects geared towards the conservation of rare and imperiled aquatic organisms in southern Appalachia. Currently, Johnathan lives in Young Harris, Georgia with his wife Malissa (MS Biology '07) and their two children.



## 2015 - 2016 Graduates

### Bachelor of Science

Maria Davis  
Zachary Frontz  
Taylor Frye  
Jasen Ickes  
Collins King  
Clayton Morgan  
Daniel Samples  
Arthur Terry

### Professional Science Master's

Steven Hewett  
Ian Jasitt  
Matt Snider

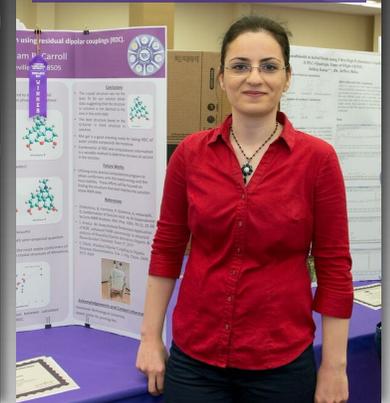


## 2016 TTU Research Day Award Winners

### Sarah Reynolds



### Faranak Mahmoudi



### Justin Medley



### Natalie Knorp



# FACULTY INTERVIEW

## Steven Sharp, Ed.D., Lecturer



### What brought you to the School of Environmental Studies, and what kind of background do you have academically and professionally?

I first joined TTU's College of Interdisciplinary Studies in Fall Semester 2014 to help develop new programs and teach. I immediately began working on ways to benefit all three schools in the college. I was asked to join Tammy Boles in team teaching the introductory and capstone courses in the School of Environmental Studies. I believe I have found a good home in the school; it is a good fit. The School of Environmental Studies is a small school but enjoys an excellent team spirit. My pathway to TTU was certainly not typical. I have an eclectic mix academically with undergraduate training from the University of Tennessee in wildlife and fisheries science and zoology and a master's degree from TTU in education. I began my doctoral studies at Indiana University as a Chancellor's Scholar with a focus on outdoor recreation and nonprofit leadership and then transferred to Vanderbilt where I completed a program in leadership, policy and organizations, with a focus in comparative and international education. Under the direction of Stephen Heyneman, the focus of my dissertation was on faith-based entities and the common good. Before coming to TTU, I served as an administrator of an international boarding school where I also taught environmental science courses and developed an outdoor experiential program for the students.

### What academic areas in particular are you interested in?

I have a particular interest in the role nonprofit organizations play in society, particularly environmental nonprofits and faith-based nonprofits.

### Tell us a little bit about the new class that you created, Nonprofit Organizations.

I created a new course this past semester entitled Nonprofit Organizations and the Environment. In the course description, I described the course as one that "will provide a broad overview of the role of the nonprofit sector in environmental advocacy, education, conservation, management, policy development, and sustainability; and as catalysts, intermediaries, and champions of environmental movements." The nonprofit world has grown tremendously in recent years and plays a significant role in galvanizing groups around particular environmental issues and influencing environmental policy, as well as conducting research and education.

### What other things are you involved in?

One of the tasks I was given when I was first hired was to explore the possibility of new programs for the College of Interdisciplinary Studies. The first one I focused on was a graduate level program in **TESOL** (Teaching English to Speakers of Other Languages). In collaboration with the English department and the Department of Curriculum and Instruction, we were able to get the program approved this past fall. The TESOL program is housed in the School of Professional Studies and is entirely available online. While the College of Education already has a great program for teaching ESL (English as a Second Language), the TESOL program is different in that it is specifically designed for individuals who would like to teach ESL to either adults in the U.S. or abroad. It also meets the needs of non-native teachers of English in other countries who simply need additional English language and pedagogical training. We are excited about the program and look forward to accepting our first students in the 2016-2017 academic year.

## School of Environmental Studies Faculty and Staff

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The following person has been designated to handle inquiries regarding non-discrimination policies:

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