

# ENV Notes

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## Department of Environmental Science, Baylor University

### Bratton's Book: The Spirit of the Appalachian Trail in Knoxville News Sentinel

Susan Bratton's new book, The Spirit of the Appalachian Trail: Community, Environment and Belief on a Long-Distance Hiking Path, published by University of Tennessee Press, appeared in hard-cover in June 2012. The book investigates the interactions of local communities and volunteers, including churches, with the hikers.

The project is the first academic volume to focus on the spirituality of hiking and incorporates surveys of hikers who report their perceptions of their sojourn in environmental, personal, community and transcendent terms. The book has already received a nomination for a national academic book award,

the Crader Family Book Prize, which recognizes the single author, English language work, "which best exemplifies the values of the Crader Family Endowment for American Values: individual liberty, constitutional principles and civic virtue."

Robert Kent, a University Scholar who concentrated in environmental science courses, assisted with the field work in the Appalachians as an undergraduate. He was so inspired by his visit to the trail corridor, he returned and walked all 2,180 miles of the Appalachian Trail after graduation from Baylor. Robert won a Rotary Scholarship for post-graduate study abroad. Dr. Bratton is



Susan Bratton

working on a second project on hiking and religious values, and was assisted last summer by Marcus Keck, who graduated with a B.S. in Environmental Science in January 2012.

## Undergrad David Dreier honored with award from Environmental Protection Agency

David Dreier has been awarded an impressive [Greater Research Opportunities \(GRO\)](#) Fellowship from the United States Environmental Protection Agency (EPA). The GRO Fellowship encourages highly capable students to study and conduct research in environmentally related fields. The program is designed to ensure a national effort to reach human resource needs of studies in the environmental science, engineering, and policy fields. The Fellowship in itself is given to Juniors and Seniors with up to \$19,700 in academic support and approximately \$9,500 towards an internship. This can total \$48,900 over the two year time interval available to David. David Dreier is a Junior, Environmental Health Science major who studies in the Honors Program.



## 2012 Homecoming Reception



The Environmental Science Department will host an Environmental Science/Environmental Studies Homecoming Reception in the Baylor Science Building on November 3rd. It will be in room A.401 following the Homecoming parade. There will be refreshments provided

and Faculty, alumni, students, friends, and parents are all welcome! Meet friends, make new connections, and celebrate our growing department!

## 2012-2013 Environmental Science Department Undergraduate Scholarship Recipients

The following Environmental Science Juniors and Seniors received scholarships for the 2012-2013 school year:

**Dannie Dinh Leah Frazier**

**Adrian Parr Jessica Gabler**

**David Dreier Brian Jonescu**

**Jimmy Britven**

## Ph. D student Tate Barrett attends NSF PASI workshop organized by Dr. Cobb

Ph. D. student Tate Barrett recently attended a National Science Foundation short course called Air Quality at the Interface: Megacities and Agroecosystems. The course was presented by the Society of Environmental Toxicology and Chemistry (SETAC), and organized by Dr. Cobb, the head of the Environmental Science Department. Students, post-docs, and researchers from across the United States, Central, and South America gathered to discuss the importance of air quality in both agricultural and urban environments. The diverse student cohort included 53% female and 47% male participants from 8 different countries with research and education backgrounds that involved non-point sources, urban air quality, agricultural air quality, improved sampling techniques dynamic air quality modeling, and stressor effects on organisms.

"This course gave me the opportunity to meet fellow researchers from across the Americas who are eager to improve air quality not only regionally, but globally," Barrett stated.

The course emphasized the difficulties in determining the impact of agricultural practices on urban air quality, and the effects of megacities on agricultural air quality. Instructors also provided expertise in the areas of agricultural air quality, urban air quality, atmospheric reactions and dynamics, improved monitoring systems, integrated

active and passive monitoring campaigns, and adverse effects of air pollutants. Students learned new mitigation strategies for improving air quality in both megacities and agricultural areas and discussed in the interdisciplinary science and cross-cultural aspects. Course participants shared not only classroom time, but also interacted on a social level. These activities included dining together for a majority of the meals during the course interval, exploring sites in the city, and informal discussions about the various cultures represented in the cohort. "I would like to thank Baylor University, SETAC, and NSF for making this course possible," Barrett mentioned. "I look forward to possible future collaborations with the group from SETAC PASI."





## Environmental Professor Dr. Brooks elected to SETAC Board of Directors



Dr. Bryan Brooks was recently elected to the Board of Directors of the Society of [Environmental Toxicology and Chemistry](#) (SETAC). The leading global environmental science organization, SETAC is very unique because it requires equal representation from academia, industry and government for all aspects of membership and governance. Such tripartite approaches are key to achieving SETAC's mission, which is to support the development of principles and practices for protection, enhancement and management of sustainable environmental quality and ecosystem integrity. SETAC promotes the advancement and application of scientific research related to contaminants and other stressors in the environment, education in the environmental sciences, and the use of science in environmental policy and decision-making. As a past president of the South Central regional chapter of SETAC; Dr. Brooks begins a three year term in November 2012.

## Lone Star Chapter of the Society of Toxicology Annual Chapter Meeting



The Lone Star Chapter of the Society of Toxicology held their annual Regional Chapter meeting September 7-8, 2012 at Baylor University. Approximately 60 toxicologists from the Lone Star State participated in the meeting. The theme of the meeting was "Advances in Toxicology," and hosted a keynote address as well as platform and poster sessions. Two Environmental Science students (advised by Dr. Erica Bruce) received awards for their presentations. Crystal Usenko won second place platform presentation and Fan



Zhang won honorable mention poster presentations. The department of Environmental Science sponsored a portion of the meeting and our own; Dr. Erica Bruce is the chapter president.

## Department of Environmental Science hosted Regional SETAC Conference

The Department of Environmental Science hosted the Regional Society of Environmental Toxicology and Chemistry (SETAC) Conference in the Baylor Science Building May 31<sup>st</sup>-June 1<sup>st</sup>. SETAC is the leading global research society in environmental science. Assistant professors Cole Matson and Sascha Usenko co-chaired the conference which served as an opportunity for university faculty, postdoctoral scientists, graduate students, undergraduates, environmental consultants, industry representatives, TCEQ scientists, and others to gather from across Texas and Louisiana to learn about ongoing environmental research in our region.

There were approximately 85 participants in the conference, which featured 14 platform presentations and 20 poster presentations. Regional SETAC conferences are designed to give undergraduate and graduate students an opportunity to present their research findings to the scientific community. Almost all of the research presentations at the conference were given by graduate students, with Baylor being particularly well represented.

We are proud to report that three of our Environmental Science graduate students won awards for their presentations. Kristin Connors and Krista Prosser, won 1<sup>st</sup> and 3<sup>rd</sup> place awards, respectively, for their platform presentations. Tate Barrett, won the top honor for his poster presentation. In all, Baylor graduate students took three of the six possible awards, which come with travel support for these three students to attend the North America SETAC Conference being held in Long Beach, California in November.

# Summer Intern Spotlight

## Environmental Studies major receives summer internship with HOTCOG



As a student interested in policy and law, Sabrina Bosiacki, a Junior Environmental Studies major at Baylor University, had an opportunity to intern with the Heart of Texas Council of Governments (HOTCOG) during summer 2012.

"HOTCOG was a great fit for me," stated Bosiacki. "I attended networking meetings and a city council meeting. I also got a private tour of the Waco landfill and had all of my questions answered by the man in charge."

While working in the office, Bosiacki was in charge of researching and re-drafting the amendment to the Regional Solid Waste Management Plan. She also worked with the public on many projects, including public education presentations, researching information on recycling and trash pick up, and organizing and helping plan for the sustainable communities initiative that several communities in the Heart of Texas region are conducting. Bosiacki's research and parts of her re-drafts will be included as part of a long document that details how six counties in Texas will dispose of their waste. Bosiacki mentioned, "It was an honor to be able to help draft such an important and irreplaceable piece of regulation that changes and decides how six counties in Texas will deal with waste."

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## California internship with Natural Treatment Systems and Fleet/Facilities



During summer 2012, Brian Jonescu completed an internship in the Natural Treatment Systems (NTS) and Fleet/Facilities Departments at the Irvine Ranch Water District in Southern California. Spending time at NTS allowed Jonescu to accomplish many projects relating to the effectiveness of natural treatment systems in naturally treating runoff. He evaluated air quality permit information, and helped collect weekly water quality measurements throughout the fourteen different NTS sites.

"My time spent in the Facilities and Fleet Department was mainly focused on air quality," Jonescu stated.

The opportunity of working with air quality gave much time to go through permits issued by the South Coast Air Quality Management District and determine what forms needed to be resubmitted or not needed while on the job. Forms involving tax benefits and breaks for using alternative fuel sources for vehicles showed to be an important role for Jonescu that involved calculating and analyzing fuel consumption data, vehicle mpg data, and the water district's van pool effectiveness. "I learned about how effective communication is among various public agencies in order to accomplish the greatest good for the public," mentioned Jonescu. This internship was a continuing learning opportunity about the water industry for Jonescu, and brought a real world perspective of future projects by water districts in order to help reduce water stress by a growing population.

Jonescu also had the ability to conduct weekly walkthroughs of the vegetation to make sure that all species were local and not invasive. Along with taking weekly measurements, he helped collect weekly, monthly, and yearly water samples from NTS sites to be analyzed by the Water Quality Department. While collecting many samples at NTS, Jonescu calculated and organized data on removal rates of nitrogen, phosphorus, selenium, and various bacteria species, along with operating costs of each site to be used in the NTS yearly report.

## A Baylor first Matthew Reid interns with JRCOSTEP



Matthew Reid became the first Baylor University undergraduate student intern with the U.S. Public Health Service Junior Commissioned Officer Student Training and Extern Program ([JRCOSTEP](#)). Reid, a Junior Environmental Health Science major, spent his summer in Billings, Montana, where he engaged in unique, hands-on environmental health and epidemiology training with the Indian Health service.

“We’re very proud of Matthew’s accomplishment; such an experience is so valuable and a rare opportunity for an undergraduate,” said Dr. Bryan Brooks, Director of Baylor’s Environmental Health Science Program.

Overseen by the Surgeon General, the U.S. Public Health Service Commissioned Corps is an elite team of more than 6,500 highly qualified, public health professionals. To be eligible for the competitive JRCOSTEP program, applicants must have completed at least 2 years in professionally accredited baccalaureate programs. The Environmental Health Science program at Baylor is one of only 30 nationally accredited undergraduate degrees in the field (<http://www.ehacoffice.org/>).

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## Baylor Senior interned with Texas Commission on Environmental Quality

Senior at Baylor University, Dannie Dinh had the opportunity to intern at the [Texas Commission on Environmental Quality](#) in the Office of Waste, Permitting and Registration Division through the Mickey Leland Internship Program during summer 2012. The Division Director’s Special Assistant Kelly Zrubek, acted as Dinh’s internship supervisor. Dinh worked directly with Zrubek, in addition to others in the Division to receive assignments and report progress.

During Dinh’s first week she completed assigned tasks, and shadowed Zrubek during her representations for the Office of Waste in Information Technology project meetings. As Dinh gradually moved into assisting the Industrial Hazardous Waste/Municipal Solid Waste Team and managing web content for the Occupational Licensing Section, her responsibilities grew from completing small tasks and mostly observing to working on more extensive projects that worked from beginning to end.

“These projects must meet specific deadlines and goals,” Dinh said. “I had to focus specifically on these tasks, coordinate with Division and Regional staffs, and make sure to manage time efficiently.”



The internship responsibilities consisted of completing important work that is usually handled by a Team Leader or specialized staff member. While the job description dealt with directly handling web content of online exam registration, Dinh assisted in pushing forwards and completing an initiative that has been on hold for over a year.

“I really saw myself grow and mature tremendously by applying myself to the projects and to the professional work environment,” Dinh stated. “An education is a foundation that provides the basic knowledge, but I learned and explored my interests by practice, by working at my internship, observing and asking questions, noting what I had done right, correcting mistakes, and making connections.”

There were high expectations upon her arrival at the internship, but Dinh is now back at Baylor to complete her final fall and spring semesters of undergraduate study. The internship was able to give real world experience relevant in her field of study. She mentioned “I have a much better assessment of myself and my interest, my classes, knowledge, and what I have to do to achieve my immediate goal of furthering my education through graduate and law programs.”



## Promising future for the new Baylor University Student Chapter of SETAC

The Environmental Science Department is excited to announce the founding of a new science based student group on campus, the Baylor University Student Chapter of the Society of Environmental Toxicology and Chemistry (SETAC). The impetus for the creation of this group was the desire to promote the academic and professional growth of its members through discussing hot topics in the field, practicing presentations, providing constructive criticism of current research of group members, and networking with Baylor students and faculty.

The Baylor Student Chapter of SETAC has a promising future. In the five short months since the establishment as an official student group of Baylor on April 26, 2012, the group has been extremely busy. First, they were recognized by the international SETAC organization as a student chapter. Then in June they helped to hold the South-Central SETAC meeting at Baylor by organizing student volunteers, preparing meeting materials and overseeing food delivery and setup. Finally, the group was awarded a carbon offset grant that encompasses the mitigation of the shoreline of Lake Waco, TX, USA in conjunction with TPWD, the US Army Corps and the City of Waco in August.

The Student Chapter is eager to keep the ball rolling, and the next big endeavors are to secure membership, to take on volunteer work, and to prepare all members going to the national SETAC meeting in November.



### Recent Publications      Fall 2012 Publications (\* denotes Baylor student coauthor)

Zhang J and **Cobb GP**. 2012. Effect of Titanium Dioxide Nanomaterials and Ultraviolet Light Co-exposure on African Clawed Frogs (*Xenopus Laevis*). *Environmental Toxicology and Chemistry*. 31(1):176-183.

Chase D Yu F, Karnjanapiboonwong A, Morse A, **Cobb GP**, Anderson, TA. 2012. Occurrence of synthetic musk fragrances in effluent and non-effluent impacted environments. *Science of the Total Environment*. 416:253-260.

McMurry ST, Jones LE, Smith PN, **Cobb GP**, Anderson TA, Lovern MB, Cox SB, Pan XP. 2012, Accumulation and effects of octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) exposure in the green anole (*Anolis carolinensis*). *Ecotoxicology*. 21(2):304-14

Faust DR, Knowles N, McGruder E, Haukos DA, **Cobb GP**, Maul JD, Anderson TA, Smith PN. 2012. Inorganic and organic contaminants in sediments from an urban playa and associated toxicity among *Hyalella azteca*. *Toxicological and Environmental Chemistry*. DOI:10.1080/02772248.2012.728608

Boxall ABA, Rudd M, **Brooks BW**, Caldwell D, Choi K, Hickmann s, Innes E, Ostapyk K, Staveley J, Verslycke T, Ankley GT, Beazley K, Belanger S, Berninger JP\*, Carriquiriborde P, Coors A, DeLeo P. Dyer S, Ericson J, Gagne F, Giesy JP, Gouin T, Hallstrom L, Karlsson M, Larsson DGJ, Lazorchak J, Mastrocco F, McLaughlin A, McMaster M, Meyerhoff R, Moore R, Parrott J, Snape J, Murray-Smith R, Servos M, Sibley PK, Straub JO, Szabo N, Tetrault G, Topp E, Trudeau VL, van Der Kraak G. 2012. Pharmaceuticals and Personal Care Products in the Environment: What are the Big Questions? *Environmental Health Perspectives* 120: 1221-1229.

Subedi B\*, Du B\*, Chambliss CK, Koschorrek J, Rudel H, Quack M, **Brooks BW**, **Usenko S**. 2012. Occurrence of pharmaceuticals and personal care products in German fish tissue: A national study. *Environmental Science and Technology* 46: 9047-9056.

Neisch M, Roelke DL, **Brooks BW**, Grover JP, Masser M. 212 Stimulating effect of *Anabaena* sp. Exudate on *Prymnesium parvum*. *Journal of Plankton Research* 48: 1045-1049.

Roelke DL, **Brooks BW**, Grover JP, Gable GM, Schwierzke-Wade L, Hewitt NC. 2012. Anticipated human population and climate change effects on algal blooms of a toxic haptophyte in the South Central USA. *Canadian Journal of Fisheries and Aquatic Sciences* 69: 1389-14-4.

Du B\*, Perez-Hurtado P\*, **Brooks BW**, Chambliss CK. 2012. Evaluation of an isotope dilution liquid chromatography tandem mass spectrometry method for pharmaceuticals in fish. *Journal of Chromatography A* 1253: 177-183.

Brausch JM, Connors KA\*, **Brooks BW**, Rand GM. 2012. Human pharmaceuticals in the aquatic environment: A critical review of recent toxicological studies and considerations for toxicity testing. *Reviews of Environmental Contamination and Toxicology* 218: 1-99.

Voutchkova AM, Kostal J, Connors KA\*, **Brooks BW**, Anastas P, Zimmerman JB. 2012. Towards rational molecular design for reduced chronic aquatic toxicity. *Green Chemistry* 14: 1001-1008.

**Brooks BW**, Berninger JP\*, Kristofco LA\*, Ramirez AJ\*, Stanley JK\*, Valenti TW\*. 2012. Pharmaceuticals in the Environment: Lessons Learned for Reducing Uncertainties in Environmental Risk Assessment. In: Hogdson E (Ed). *Toxicology and Human Environments. Progress in Molecular Biology and Translational Science* 112: 231-258.

Unrine J.M., Colman B.P., Bone A.J., Gondikas A.P., **Matson C.W.** 2012. Biotic and abiotic interactions in aquatic microcosms determine fate and toxicity of Ag nanoparticles: Part 1-Aggregation and Dissolution. *Environmental Science and Technology*, 46: 6915-6924.

Bone A.J., Colman B.P., Gondikas A.P., Newton K.M., Harrold K.H., Cory R.M., Unrine J.M., Klaine S.J., **Matson C.W.**, Di Giulio R.T. 2012. Biotic and abiotic interactions in aquatic microcosms determine fate and toxicity of Ag nanoparticles: Part 2-Toxicity and Ag speciation. *Environmental Science and Technology*, 46: 6925-6933.

Lowry G.V., Espinasse B.P., Badireddy A.R., Richardson C., Reinsch B., Bryant L.D., Bone A.J., Deonarine S. Chae, Therezien M., Colman B.P., Hsu-Kim H., Bernhardt E., **Matson C.W.**, Wiesner M.R. 2012. Long-term transformation and fate of manufactured Ag nanoparticles in a simulated large scale freshwater emergent wetland. *Environmental Science and Technology*, 46: 7027-7036.

**Sheesley R.J.**, Kirillova E., Andersson A., Krusa M., Praveen P.S., Krishnakant Budhavant, Safai P.D., Rao P.S.P. and Gustafsson O. 2012. Year-round radiocarbon-based source apportionment of carbonaceous aerosols at two background sites in South Asia. *Journal of Geophysical Research*, 117: doi: 10.1029/2011JD017161, 2012.

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## Breaking News:

- George Cobb to Silent Spring Ceremony.
- Master's of Science student Lauren Kristofco awarded the SETAC/EA Engineering Jeff Black award.
- Baylor University SETAC Student Chapter received Carbon off-set grant



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