ALUMNI NEWSLETTER

SPRING 2016

utoledo.edu/nsm/envsciences

Mark Camp, Editor

Dr. Timothy Fisher
Chair

DEPARTMENTAL NEWS

Greetings to the friends and alumni of the Department of Environmental Sciences! With renovations to labs, classrooms and offices in Bowman-Oddy and Wolfe Hall now complete, everyone is settled in and being productive. The number of majors at the undergraduate and graduate level remains constant around 160. The university is still undergoing change, but we are hopeful now that with a new president the waters will calm. After Provost Scarborough was hired at Akron as president in Fall 2014, interim Provost Barrett from the College of Law has proceeded with a straightforward, transparent approach to academic affairs. Our new President, Dr. Sharon Gaber, was trained as an urban planner and came up through the academic ranks from professor, chair, dean and then provost at other schools. A goal of hers is national and international ranking of UT, and she has been vocal about supporting research activity. It is only a few months into her tenure at UT, and we look forward to improvements as time goes by.

Congratulations are in order for many of the faculty who received awards and who were promoted. Von Sigler was promoted to Full Professor. Scott McBride received the 2013–14 college outstanding staff award and Todd Crail received the excellence in teaching award. Chris Mayer won the 2014–15 College Excellence Award in Research. Hans Gottgens received the 2015 UT Outstanding Advising Award for his stellar work advising students for many years. Tom Bridgeman received a Shining-Star Award this past fall from the Provost to recognize his research on harmful algae blooms. For the Fall 2015 semester Ricky Becker was awarded a sabbatical, and Todd Crail was on family leave following the birth of his daughter. Lastly, I was elected a Fellow of the Geological Society of America.

I'm excited to announce that we hired a husband and wife team into two tenure-track positions as Jiquan Chen's replacement. They are Jeanine Refsnider who began Fall 2015 and Henry Streby who begins Fall 2016. Previously both were working on post-docs at UC Berkeley. Jeanine's expertise is herpetology and Henry's is ornithology. More information about Jeanine appears later in the newsletter.

Our faculty continue to excel at publishing important science in well regarded journals. In the 2014–15 academic year over 100 authored or co-authored papers were published, many of them include student authors. This is an impressive milestone to reach and reflects well on the high caliber and dedication of the department faculty and students. I'd like to single out one publication. Professor Song Qian and the students in his EEES graduate special topics course "Statistical Issues in Measuring and Reporting Microcystin in Drinking Water" published the product of their course work in the latest issue of *Environmental Science and Technology*, an authoritative peer-reviewed journal in the environmental disciplines. The course was organized in the immediate aftermath of the 2014 summer drinking water crisis in NW Ohio.

The faculty have been involved with developing new courses, programs and engagement with the local community. One of the projects for the Environmental Capstone course involved the planning and planting of an Oak Openings plant community in one of the new traffic roundabouts (traffic circle) in Lucas County. The Dwyer lab saw the opening of their designed wetlands along Berger Ditch at the entrance of Maumee Bay State Park that is successfully minimizing sediment and nutrient loading to Lake Erie. Building on a successful sabbatical,

continued on page 2

continued from page 1

Jon Bossenbroek is leading an Ecology Field Trip course to Trinidad this spring, while Ricky Becker's Geology Field Trip over Spring Break is to the Mojave Desert and Death Valley. Tom Bridgeman developed an online Coral Reef Ecology Lab for general education science credit, and Song Qian developed an Environmental Data Management course designed for seniors and graduate students to effectively manage large datasets. The department has approved a Professional Science Masters (PSM) in Water Resources and Environmental Management. A PSM is the science equivalent of a MBA in the business world, and ours is designed for both students fresh from a related undergraduate program or the working professional interested in understanding the science of water resources and the environment. Part of the process was the assembly and meeting of an external board made up of local professionals in NW Ohio to provide guidance on programmatic goals.

Enjoy the rest of the newsletter, and please keep in touch with emails, visits, and filling out the alumni questionnaire at the department website. *utoledo.edu/nsm/envsciences/index.html*

NEWS FROM FACULTY AND STAFF – PAST AND PRESENT

Please meet our newest faculty member!

Jeanine Refsnider

My name is Jeanine Refsnider, and I'm excited to be a new faculty member in the Department of Environmental Sciences. As an evolutionary ecologist, I am interested in understanding how organisms will respond to climate change. When I was an undergraduate at the University of Minnesota-Morris, I took a herpetology course, and I have been studying reptiles and amphibians ever since. Many reptiles have temperature-dependent sex determination, which means that the sex of offspring is determined by the temperature at which the eggs incubate. This also makes reptiles incredibly vulnerable to climate change, as small changes in environmental temperatures could result in strongly skewed sex ratios. I went on for a Master's degree in conservation biology at the University of Minnesota-Twin Cities, and then spent a year in New Zealand as a Fulbright Fellow studying effects of climate change on tuatara, a reptilian "living fossil" found only on offshore islands in New Zealand. I continued to work on reptiles and climate change for my Ph.D. at Iowa State University, where I studied how female painted turtles adjust their nesting behavior to compensate for a warming climate and to prevent skews in offspring sex ratios.

I arrived at the University of Toledo from a post-doctoral position at the University of California, Berkeley. At Berkeley I studied Bd, the fungal pathogen that causes the deadly amphibian disease chytrid, to understand how the pathogen can very rapidly evolve increased virulence. I also started a long-term study in the mountains of Utah, where I am studying a community of lizards to measure both their evolutionary and behavioral responses to climate change. I am continuing the lizard study at the University of Toledo, and I am also starting a new project to investigate the effects of harmful algal blooms on the health and immune function of local freshwater turtles. Check back soon for updates on these projects and on new members of my lab!

Tom Bridgeman

HABs (Harmful Algal Blooms) gained much notoriety during the Toledo Water Crisis last August when the City of Toledo was faced with unsafe levels of microcystin toxin in drinking water. In response to growing concerns about the toxin in municipal water systems and high costs associated with treating it, the Ohio Board of Regents dedicated $2 million, plus matching funds from participating institutions (including UT), to fund a Lake Erie R&D (Research and Development) Initiative. Tom is the principal investigator for the Lake Erie HABs and lake water quality in Maumee Bay and surrounding areas of the Western Lake Erie Basin. Objectives for the 2 year project include continued sampling around the Toledo and Oregon City water intakes and other sites in Western Lake Erie, and aiding development of an advanced warning network for the water utilities. This project will provide water treatment facilities with advanced warning of potential HABs that may migrate near the water intakes.

Mark J. Camp

In August 2015, the annual Fall field trip headed back out to Nebraska and Wyoming. The trip duplicated some stops of the 2013 trip, but concentrated on Yellowstone and Grand Teton National Parks. We took two 12 passenger vans, removing the two rear benches to make space for gear in one van and leaving all seats in the other so that we could accommodate all 11 of us in one van when working out of our base camp in Gardiner, MT. I'm happy to report we had none of the van problems of the previous trip that caused us to eliminate a couple of stops. Aside from spending days in Yellowstone and Grand Tetons we also visited Agate Fossil Beds N.M. and Crater of the Moons N.M. for the first time and revisited Fossil Butte and Scotts Bluff National Monuments. Next August we will celebrate the centennial of the National Park Service by visiting some 20 parks and monuments in Colorado and Utah.

My new book, *On a Handshake, a history of Ohio's oil and gas industry*, should be out in Spring 2016. My wife's Boyds Retro Candy Store continues to be a destination. We had over 3900 people visit when we hosted the Red Ball Project in August and recently ranked as the 4th best candy store in Ohio.

Daryl Dwyer

Last year the STEM club from St. Ursula's Academy (advised by Jackie Kane) did some research in my laboratory and entered their work in a science competition – Innovate to Mitigate – which is funded by the NSF. You may remember that the students won last year – March 2015. They are attempting this year to win another competition – The Lexus Eco Challenge – with a new project done with a little of our help here at UT.

I mention this because Trisha Martin has been the student spearheading this work and the person who did most of the research during the summer – you may know her as Geoff Martin's daughter. We will see her as a new undergrad student in our Department (officially enrolled) come January 2016 – our gain is OSU's loss. Also, thanks to Ryan Jackwood for helping direct the students. Jackie Kane should get tons of recognition for the advising she does and her love of science.

James A. Harrell

In both the fall and spring of 2014 and 2015 I returned to Egypt for more fieldwork. In the Nubian Desert I discovered four previously unknown Middle Kingdom forts and their associated gold mines (all dating to about 2000 BC), and spent parts of two trips surveying these sites. In the Nile Valley I continued my study of ancient limestone and sandstone quarries, and did part of this work as a member of two archaeological teams, a Swedish one at Gebel el-Silsila in Upper Egypt and a British one at El Amarna in Middle Egypt. At the latter locality, besides discovering a limestone quarry for 18th Dynasty statuary (dating to about 1350 BC), I also found and surveyed other quarries of the same age for gypsum and chert. When not in Toledo planning my research trips or writing up their results, I spend time with family in Tennessee and California.

Christine Mayer

Congratulations to Chris, the recipient of the 2014 – 2015 College of Natural Sciences and Mathematics' award for "Excellence in Research." This distinguished award is open to full-time faculty members in the College of Natural Sciences and Mathematics. The awardee is chosen based on faculty/student nominations and qualifying research. She leads the Aquatic Ecology Lab at the LEC. Her research focuses on the Maumee River-Bay ecosystem critical fish habitat examining historically important spawning and nursery areas, impact of human habitat alterations, poor water quality, land-water-fish connections, and lake coastline effects. Her lab also studies changes in foodweb connections along productivity gradients, relates walleye spawning locations to prioritize areas for protection and restoration, and assesses habitat suitability for possible reintroduction of lake sturgeon to the Maumee River.

Daryl Moorhead and Michael Weintraub

The official notice on our new program IMOLD follows:

Introducing IMOLD: the Interactive Model of Leaf Decomposition (http://imold.utoledo.edu/), designed to provide educational outreach about decomposition for grades 9-12. IMOLD includes professionally animated and narrated lessons about decomposition and the C cycle; an interactive model that allows users to simulate decomposition for several plant litters in different environments based on a range of LTER sites; and lesson plans for teachers with learning objectives that map to specific curricular standards at national and state levels. All materials on the IMOLD website may be used and shared freely for educational purposes.

continued on page 4

continued from page 3

IMOLD was created by Drs. Mike Weintraub and Daryl Moorhead, and the Center for Creative Instruction at the University of Toledo. This project was funded by the National Science Foundation Ecosystem Science Program (Grant# 0918718).

Susan Steiner, a science teacher at Marshall High School who has worked with Mike, introduced IMOLD to attendees at the recent AGU meeting, the State Science Teacher's Meeting, and National Science Teachers Meeting. These will all be interactive presentations.

Von Sigler

In a continuing effort to find ways to reduce the severity of seasonal flu outbreaks, Dr. Von Sigler and his Ph.D. student, Kristen Coleman, will be monitoring Ottawa Hills Elementary School for airborne influenza virus. One of the project goals is to use virus densities as a predictor for student illness and absenteeism. In order to accomplish this, the school nurse will record student-reported upper respiratory symptoms, and the school secretary will keep track of student absences due to illness. During the 2013-2014 flu season, airborne influenza virus was detected on four different occasions in the elementary school. More importantly, detection seems to correlate with student illness and absenteeism. This indicates that sampling for influenza virus in a timely fashion might be a reliable way to predict student illness. Furthermore, predicting student illness could serve as a preventative measure for community flu outbreaks, as children are known sentinels of disease in the greater community. This year, the project will incorporate surface sampling into the mix. In addition to air sampling in the main hallway, student desks will be swabbed and analyzed for influenza virus. Because airborne viruses are difficult to detect, better recovery of influenza virus is expected from desktop samples.

2015 -16 SCHOLARSHIP RECIPIENTS

Kaylie Deyarman,
Jeffrey Black Scholarship

Dylan Grieselding,
Brigham Scholarship

Alexa Seaman,
Brigham Scholarship

Ryan Krantz,
Peter Fraleigh Memorial Scholarship

Alyssa Corbeil,
Hogan Memorial Scholarship

Amy Towell, Kristie Bowersox,
Toledo Gem & Rockhound Scholarship

Benjamin Kuhaneck,
Elliot Tramer Scholarship

Jeanna Meisner,
C.V. Wolfe Scholarship

Joseph Turner,
C.V. Wolfe Scholarship

CONTRIBUTIONS AND ACTIVITIES OF OUR LABORATORIES AND CENTERS

GLASS Lab

There has been considerable activity in the lab over the past few years. Joe Blockland was hired by the North Dakota Geological Survey. This summer Jennifer Horton successfully defended her thesis on the age of the Sturgis Moraine of the Saginaw Lobe on a Friday, and started work as a Quaternary mapper with the Minnesota Geological Survey the next Monday! She is mapping old tills in the southeast corner of Minnesota. Barb Hanes (2010) was recently hired by the Pennsylvania Department of Environmental Protection as a Geologic Specialist. Amber Boudreau (2005) and husband Armand are still in Madison, WI, and this year celebrated the arrival of a second daughter.

Mitch Dziekan (University of Michigan) is the newest MS student in the lab. He will be dating moraines on either side of the Sturgin moraine to evaluate the data collected by Jenn. Joe's MS mapping results were published in the Journal of Maps this year. Joe's chronological results from ancestral Lake Erie beaches and associated sand dunes were merged with Brad Anderson's (2011) thesis data on glacial lacustrine rhythmites in the Toledo area, and published in the Ohio J. Science (2015). Drs. Krantz and Stierman are coauthors. I had another paper published with a large group discussing recent advances and future challenges of reconstructing paleo ice sheets. And finally, I was very much humbled this year when I learned that I had been nominated for and became a Fellow of the Geological Society of America. I hope to hear from all former GLASS lab members.

Tim Fisher

Lake Erie Center

A new 28' research vessel – the R/V Rocket Explorer, equipped with state-of-the-art technology and lake sampling equipment arrived for the successful 2015 field season! The Rocket Explorer was used by the summer REU undergraduate students, the new Fish Ecology class, and by the Bridgeman lab for their monitoring of water quality and harmful algal blooms, including the deployment of a new buoy equipped with sensors to provide early warning of HABS.

A new summer 2015 NSF-funded REU (Research Experiences for Undergraduates, Using the Lake Erie Sensor Network to Study Land-Lake Ecological Linkages was funded April 2015 for 3 years. Our REU program received 205 applicants for 11 openings from 32 states. We operated a very successful summer 2015 program, with students and faculty from DES (headed by Dr. Stepien, also Dr. Bossenbroek, Dr. Bridgeman, and Dr. Qian), along with Geography and Planning and Civil Engineering faculty. The student projects were on water quality, harmful algal blooms, invasive species, and climate change.

New 1 week long, 2 credit hour Summer 2015 Field courses – for undergraduate and graduate, students, including Field Ecology and Behavior of Fishes (taught by Dr. David Jude, University of Michigan), and Field Ecology and Behavior of Amphibians and Reptiles (taught by Dr. Katy Klymus, the postdoc in Dr. Stepien's lab) were offered.

The following students had noted accomplishments in 2015:

- PhD Student Megan Niner – winner of the IAGLR (International Association of Great Lakes Research) Scholarship May 2015
- PhD Student Matthew Snyder – winner of The University of Toledo's University Fellowship Award 2015-16 (full stipend, tuition, fees, renewable for 4 years)
- Undergraduate Devin Eddins – winner of the 2015 Lake Erie Center FOLEC (Friends of the Lake Erie Center) Outstanding Student Award (Undergraduate)
- PhD Student Ryan Jackwood – winner of the 2015 Lake Erie Center FOLEC Outstanding Graduate Student Award
- MS Student Brian Schmidt – winner of the 2015 Lake Erie Center FOLEC Outstanding Graduate Student Award

A press conference was held at Maumee Bay State Park on May 27, 2015 to mark the opening of the Great Lakes Restoration Initiative funded Wetland Restoration project. The press conference was attended by nearly 80 local, state, and federal governments, agencies, and news media. Opening remarks were given by Interim University of Toledo President Nagi Naganthan. Congresswoman Marcy Kaptur helped mark the opening of the wetland by saying this was "really a celebration of victory and results". Dr. Daryl Dwyer explained the design and gave preliminary results and Bill Petruzzi, a UT graduate from Hull and Associates, spoke about their technical role.

Carol Stepien

Dr. Tom Bridgeman

NEWS FROM OUR STUDENTS – PAST AND PRESENT

Justin Chaffin

Ph.D in Biology 2013
Master of Science in Biology 2009
Alumnus of the Month for September 2015

"The experience I gained working with several labs in the Department of Environmental Sciences (DES) and the Lake Erie Center gave me the skillset needed to operate at OSU's Stone Laboratory and oversee research programs. The faculty in DES use many different tools (from analytical chemistry to molecular tools to ecosystem modeling) to study the environment, and I have incorporated those tools into my research programs. Being able to work at all levels of biology with different tools opened many doors for me since graduation".

As a UT graduate student, Justin researched the role of nitrogen, phosphorus and turbidity in cyanobacterial blooms in Lake Erie. During his time in DES, he worked as a teaching and research assistant, served several terms as President of Environmental Graduate Students and was awarded a National Science Foundation Teaching Fellowship.

After his Ph.D., he took the position of research coordinator at Stone Laboratory, Ohio State University's Lake Erie field station. There, he oversees research activities and equipment including arranging stays for visiting researchers and aiding their projects. He coordinates the Charter Boat Captain program where six captains collect water samples each week after fishing and analyzes those samples. Justin is also responsible for organizing the summer undergraduate research program, which allows students to conduct research. His own research continues to focus on understanding the triggers of harmful algal bloom formation and microcystin production in the western and central basins of Lake Erie.

Stephanie Clendenen

Bachelor of Science in Environmental Science 2014
Alumnus of the Month for June 2015

Stephanie is currently working towards a Masters of Public Health (MPH) in Epidemiology through the 3 + 2 program. This 3 + 2 program allows Stephanie to

earn her Bachelors and Masters degrees in five years rather than six in the traditional program. The 3 + 2 program also allows her to continue her education while working full time as a biological technician in sampling water quality at Maumee State Park.

Stephanie has found it beneficial to identify a professor or two to connect and meet with regularly as, "these discussions can lead you to programs that you had never heard of before."

Michael W Deal

Master of Science in Biology (Ecology track), 2011
Bachelor of Science in Environmental Science (Biology concentration), 2009
Alumnus of the Month for January 2015

Mike is currently employed with the Ohio Environmental Protection Agency in Columbus, Ohio, as an Environmental Specialist in the Division of Drinking and Ground Waters (2012 to present). He works with municipal water systems across the State of Ohio to ensure they remain compliant with Federal and State drinking water regulation. Prior to current position, he worked for 16 months as an Environmental Sensor Technician and his main responsibility was to install and implement the Lake Erie Center Sensor Network (LECSN) at the Lake Erie Center (LEC).

Mike credits his studying/working experience at UT for learning to be professional and adaptive. "Formative", he says, when asked about the time he studied and worked in DES. He learned to be well-organized and developed a strong work ethic and the ability to collaborate while working in the Landscape Ecology and Ecosystem Science (LEES) lab in DES. Mike thinks he has used very few specific topics learned in the classroom during his career. Instead, the logic and deductive reasoning he learned during the studying years often help him clarify the largest impact of issues when assigned with a task. "This ability was developed during my time at UT and has helped make me successful in my career", Mike says.

Kristin Gardner

Bachelor of Science in Environmental Science 2007
Alumnus of the Month for February 2015

Kristin works as a Scientist II with Hull and Associates, Inc. Hull is a project development, energy, and engineering consulting firm headquartered in Toledo, Ohio. As a Scientist II, Kristin works on a number of projects including superfund, dredged material management, wetland and stream delineation, environmental permitting, and environmental site assessment and remediation. Working on these projects requires fieldwork, which includes environmental sampling and stream and wetland delineation, and office work, which consists of preparing reports, interacting with clients, and community outreach.

Kristin credits her time in DES with providing her with a strong scientific background. She also points to her time with the DES helping her develop critical thinking, writing, and communication skills. While in the DES, she had the opportunity to work on research projects and help others with their projects by working in a laboratory, and credits these experiences outside of the classroom as being important to her training for her career.

Kristin's advice to current students would be to seek out opportunities outside of the classroom. This is not because what you learn in class is not important in your career, but because the other opportunities allow you to apply your knowledge and results from projects in a professional setting. This will lead to the development of a variety of skills and form a network of environmental professionals that will be important throughout your career.

Emily Heppner

Bachelor of Science in Environmental Science, 2009
Alumnus of the Month for April 2015

Hailing from Pickerington, OH, Emily Heppner discovered her passion for the environment after attending a summer science camp for high school students. The science camp was held by UT in DES. She credits the camp as a major influence for choosing UT and perusing a career working with the environment. During Emily's undergraduate career, she primarily contributed to projects working on Geographic Information Systems (GIS) that dealt with invasive species in Colorado and mapping trees west of Toledo sickened with the emerald ash borer. In addition, she provided her assistance to many graduate students with their research projects at the LEC involving water quality assessment and to Dr. Jon Bossenbroek and Dr. Hans Gottgens when they needed help sampling in the field. Lastly, she helped her fellow undergraduate and friend Phil Mathias on his mussel field survey of the Ottawa River.

"My UT education and experiences helped me tremendously in my career. It was through my many opportunities to work one on one with professors and graduate students on projects that gave me the skills I now use in my career."

The fieldwork experience she acquired from the various research projects as well as her environmental science courses at UT enabled Emily to land temporary jobs right after college at the Ohio River Valley Water Sanitation Commission (ORSANCO), the Midwest Biodiversity Institute, the Ohio Department of Natural Resources, and at the Sanitation District No. 1 of Northern Kentucky. Currently, Emily is working at Brown County Soil and Water Conservation

District in southern Ohio as a Watershed Coordinator. Her duties are to oversee the restoration of wetlands and stream function and habitat in the White Oak Creek watershed. This includes the removal of dams and reduction of nutrient runoff from nonpoint source pollutants from agricultural operations.

Ryan Jackwood

Ph.D student

I was awarded second place at the annual Ohio Section of the American Water Works Association for a paper I submitted about source water protection (i.e. my research). Because I was a top three finisher I was invited to give an oral presentation at their annual conference this year held at the Cleveland Convention Center September 15 – 18, 2015 and I also received a $200 scholarship. The paper was presented in a session entitled *Restoration Projects to Reduce Phosphorus & Escherichia Coli Loadings into Lake Erie: From Concept to Implementation*. I will also be recognized as an award winner in the American Water Works Association Ohio Section Newsletter this fall.

Qinglin Li

PhD of Biology (Ecology track), 2006
Alumnus of the Month for July 2015

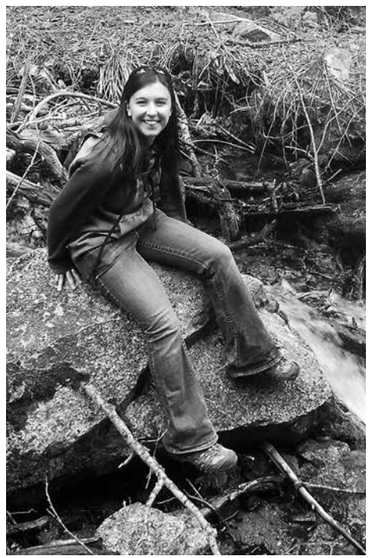
Since 2008, Qinglin has been an analyst for the Carbon Modeling and Forest Inventory, Ministry of Forests, Lands, and Natural Resource Operations in British Columbia, Canada. The main tasks of his position include data analyses, modeling, and research, with a focus on forest ecosystem dynamics and carbon cycling. He also serves as liaison with federal government and universities. Prior to his current position, he worked as a Post-Doctoral Research Associate at the Department of Environmental Science, University British Columbia, Kelowna, Canada (2007 – 2008) and as a senior Landscape Ecologist at the Timberline Natural Resource Group Ltd. Kelowna, Canada (2006 – 2008).

Qinglin studied in DES at UT from 2002 to 2006 and earned his M.S. (equivalent) degree in GIS and Applied Geographics and Ph.D. degree in Environmental Sciences. During his study, he learned the most through conducting independent research supervised by the DES faculty. In addition, the skills and field experience he gained while participating in research projects also helped him secure a career path. "Rewarding", he says, while asked about the working and studying experience at UT. The DES program offers a variety of topics such that students have a great opportunity to work with people from diverse fields and to form collaborations. All these experiences helped him develop skills of profession and communication that, he points out to be, "the personal character and potential that employers are seeking".

Darian Marinis

B.S. Environmental Sciences 2015
Alumnus of the Month for November 2015

Darian received a Bachelor's of Science in Biology with a concentration in Ecology and Organismal Biology (BIOM) in the spring of 2015. Her undergraduate honors thesis focused on establishing soil property metrics that could be used for



Darian Marinis

distinguishing high and low quality dry sand prairie sites. During her stay at UT she worked as a lab tech for Dr. Mike Weintraub and participated extensively in undergraduate research. She also worked with other undergraduates and graduate students in the field. Darian was awarded the Jeffrey A. Black Scholarship in 2014 for her exceptional academic performance within the department. She believes balance in life is the key to having fun as a student. In May 2015, she was recognized as the department's outstanding graduating senior. She also served as a UT ambassador.

Her experience at UT has led her to work towards a Ph.D. in crop and soil science starting Fall 2015 at Michigan State University. She hasn't nailed down a project yet but she will focus on both applied and basic research on agricultural productivity and nutrient dynamics.

"Being a student in DES was one of the best decisions I ever made. Getting to know your professors is a great way to learn about job and research opportunities as well as to build a support system to get you through classes, work and research. I encourage new students to pursue research opportunities (there is an endless supply) and to be adventurous about the topics they study. I "knew" that I would never be interested in studying soils and nutrient dynamics and yet I am now pursuing a Ph.D. in just that!" GO ROCKETS!!!!

Philip Mathias

Bachelor of Science in Environmental Science 2009
Alumnus of the Month for March 2015

As a junior in high school, Toledo native, Philip Mathias discovered his interest in the field of ecology. While attending a science summer camp for prospective students at UT, Phil thoroughly enjoyed doing research on the local ecosystems with the professors of DES. He credits the science camp for deepening his interest in the field of ecology and it became a major deciding factor for him to attend UT. As an undergraduate, Phil assisted in a variety of research

projects. In Dr. Jon Bossenbroek's lab he worked with GIS and database software to help model the spread of the invasive Dreissenidae mussels and the emerald ash borer. In Dr. Hans Gottgens lab he assisted in sampling fish assemblages in the agricultural drainage ditches found throughout northwest Ohio. Phil discovered his passion for surveying native mussels, while assisting PhD student, now UT lecturer, Dr. Todd Crail with his native fish and mussel surveys. He carried his newly found passion into his senior honors' thesis, which studied the distribution of mussels in the Ottawa River. His honors' thesis is titled *Distribution of Unionid Mussels (Unionidae) in Ottawa River from the University of Toledo Main Campus to the Stranahan Arboretum*.

Currently, Phil designs and implements native mussel survey protocols as the state mussel biologist for the Wyoming Game and Fish Department based out of Casper, WY. His duties include planning, organizing, and supervising native mussel survey trips throughout Wyoming with a crew of two technicians to determine what species Wyoming has and each species' distribution and ecology. He also makes management recommendations on the native mussels and determines the overall imperilment of the populations for each species in Wyoming.

Jeffrey Niedermeyer

Bachelor of Science 2013
Alumnus of the Month for May 2015

Jeff Niedermeyer grew up in Cleveland, OH where he discovered his passion for cars and began drag racing at the age of 13. Jeff always enjoyed learning how things worked and this passion eventually drew him to the sciences. In the fall of 2010 Jeff began his first semester at UT. While attending UT, Jeff began to explore his love of ecology and herpetology (the study of reptiles). Jeff transferred into DES after his second year and immediately found classes and peers that reflected his passion for science. Here Jeff found his favorite class, Field Ecology, and began to extend his education beyond the classroom. In his third year Jeff began a summer internship with Dr. Daryl Dwyer working on sustainable agriculture and exploring techniques which would reduce the amount of phosphorus and *E. coli* that might enter Lake Erie. During this time Jeff also became involved with the Building Ohio's Sustainable Sustainable Energy Future (BOSEF) group where he helped design and build an anaerobic digester that would improve biomass energy production. In his final year, Jeff took a position at the Stranahan Arboretum where he managed the arboretum's public outreach campaign, worked with fellow students on new sustainable agriculture techniques and spent his free time exploring the reptiles and amphibians native to the 100-year old forest. Jeff also worked part-time collecting and analyzing water samples from the Lake Erie beaches at the LEC. With all of Jeff's "outside the classroom" experience he became well-versed in plant identification, water sampling techniques and microbiology. Jeff graduated in December, 2013 and used his aquired skills to get a job in Raleigh, NC working in a microbiology lab for the Food Bio Processing and Nutrition Department at NC State.

Dr. James Reichard

Bachelor of Science in Geology 1981
Masters of Science in Geology 1984
Alumnus of the Month for October 2015

Dr. James Reichard first came to UT in 1977 as an undergraduate in the geology program, graduating Magna Cum Laude in 1981. His outstanding scholastic performance earned him the Award for Best Undergraduate in the Department of Geology (now the Dept. of Environmental Sciences). After completion of his bachelor's degree, he immediately continued into the master's program for geology. With the guidance of his advisor, Dr. Stuart Dean, James wrote and successfully defended his thesis entitled "Fracture Studies, Lineament Analysis and Geology in the Temple Hill, Freedom and Gamaliel 7.5 Minute Quadrangles, South-Central Kentucky". The thesis was so well received that James received the Outstanding Thesis Award for the Department of Geology (now the Dept. of Environmental Sciences) upon graduation in 1984.

James went on to earn a Ph.D. in Geology from Purdue University in 1995. His doctoral thesis was titled "Modeling the Effects of Climatic Changes on Groundwater Flow and Solute Transport Systems." Dr. Reichard considers his greatest professional accomplishment to be authoring *Environmental Geology* in 2010 which is soon to be in the third edition. Dr. Reichard currently teaches courses in environmental geology and hydrogeology at Georgia Southern University and as an educator he inspires his students to foster their innate fascination with the natural world. He advises students to "think of science as a way of learning and investigation, not just a bunch of facts to be memorized."

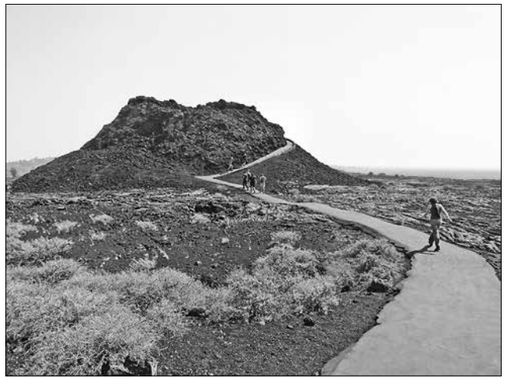
From Dr. William Kneller, the UT geology instructor who inspired me to become a geologist: "Always do the best that you can, but not quite as well as you'd like."

Dr. James Reichard

FIELD TRIPS

Dr. Camp and ten students—Mike Cline, Alyssa Corbeil, Dylan Grieselding, Aaron Lucius, Matt McCormick, Chance Mitchell, Melissa Russell, Katherine Smarkel, Angie Williams, and Danny Wilson left campus early August 10th for a 12 day excursion to sites of geologic interest in Nebraska and Wyoming. Stops in Nebraska at Agate Fossil Beds, Ashfall Fossil Beds, Fort Robinson, Scotts Bluff, Toadstool, Chimney Rock concentrated on the fauna and stratigraphy of the Oligocene White River Group and Miocene Arikaree and Ogallala Groups. In comparison, we examined areas of volcanic and geothermal activity at Yellowstone National Park and Thermopolis in Wyoming and Craters of the Moon National Monument in Idaho and faulted, folded and volcanic mountains in the Absaroka, Beartooth, Teton, and Wind River Ranges. In between were visits to Wyoming's lone natural bridge, Fossil Butte National Monument and its Eocene fauna, a number of rock shops, the mother store of J.C. Penney, and former coal mine sites.

The group at Ayres Natural Bridge just west of Douglas, WY. LaPrele Creek has cut through a ridge of Pennsylvanian Casper Sandstone.



Craters of the Moon National Monument in Idaho preserves a vast lava plain with many spatter and cinder cones.

Just before leaving the Yellowstone region a rainbow appeared above our campground in Gardiner, MT.

The Grand Tetons rise majestically, west of Jackson Hole.

SELECTED PUBLICATIONS

Armenio, P.M., C.M. Mayer, S.A. Heckathorn, T.B. Bridgeman and S.E. Panek. 2015. Resource contributions from dreissenid mussels to the benthic algae Lyngbya wollei (Cyanobacteria) and Cladophora glomerata (Chlorophyta). Hydrobiologia 17p.

Bista, D. Heckathorn, S. Bridgeman, T., Chaffin, J. and Mishra, S. (2014) Interactive Effects of Temperature, Nitrogen, and Zooplankton on Growth and Protein and Carbohydrate Content of Cyanobacteria from Western Lake Erie. Journal of Water Resource and Protection, 6, 1139-1153. doi: 10.4236/jwarp.2014.612106.

Bossenbroek, J.M., A. Croskey, D. Finnoff, L. Iverson, S.M. McDermott, A. Prasad, C. Sims, D. Sydnor. 2015. Evaluating the Economic Costs and Benefits of Slowing the Spread of Emerald Ash Borer in Ohio and Michigan. Invasive Species in a Globalized World edited by R. Keller, M. Cadotte and G. Sandiford.

Chaffin, J.D., V. Sigler and T.B. Bridgeman. 2014. Connecting the blooms: Tracking and establishing the origin of the record-breaking Lake Erie Microcystis bloom of 2011 using genetic fingerprinting. Aquatic Microbial Ecology. 73:29-39.

Cousino, L.K.**, Becker, R.H., Zmijewski, K.A., Modeling the Effects of Climate Change on Water, Sediment, and Nutrient Yields from the Maumee River Watershed, Journal of Hydrology Regional Studies, 4: 762-775.

Esseili, M. A.I. Kassem, J. Lis and V. Sigler. 2014. Application of denaturing gradient gel electrophoresis (DGGE) for assessing fecal pollution sources at a recreational beach. Journal of Water and Health 12:846-857.

Fisher, T. G., Blockland, J.D. Anderson, B., Krantz, D.E. Stierman, D., and Goble, R., 2015, Evidence of Sequence and Age of Ancestral Lake Erie-Levels, Northwest Ohio: Ohio Journal of Science, v. 115, no. 2, p. 61-77.

Haponski, A.E., C.A. Stepien. 2014. Genetic connectivity and diversity of walleye (Sander vitreus) spawning groups in the Huron-Erie Corridor. J. of Great Lakes Research. 49(2014) 89-100..

Harrell, J. A. and R.E. Mittelstaedt. 2015. Newly discovered Middle Kingdom forts in Lower Nubia. Sudan & Nubia 19:30-39.

Helbing, CM, DL Moorhead and L Mitchell. 2014. Seasonal replacement of Culex restuans (Diptera: Culicidae) by Culex pipiens (Diptera: Culicidae) in Northwest Ohio: A case study in habitat partitioning between mosquitoes. Journal of Environmental Entomology 1-7; doi:10.1093/ee/nvv094

Martin-Hayden, J.M. Plummer, M and Britt, S.L. 2014. Controls of wellbore flow regimes on pump effluent composition. Groundwater, v. 52, no. 1, pp. 96–104.

Melle CJ, Wallenstein MD, Darrouzet-Nardi A, Weintraub MN 2015. Microbial activity is not always limited by nitrogen in Arctic tundra soils. Soil Biology & Biochemistry 90: 52-61; doi: 10.1016/j.soilbio.2015.07.023

Moorhead, D., Czerniak, C. M., & Mentzer, G. 2015. Transforming Science Teachers into Scientist Teachers: How Philosophical Perspective Influences Teaching Effectiveness. Pp. 101-119 In S. K. Stratton,

R. Hegevik, A. Feldman & M. Bloom (Eds.), Educating science teachers for sustainability. ASTE Environmental Education Forum Monograph. Association for Science Teacher Education. Springer, NY, 478 pp.

Moorhead, DL, G Lashermes, S Recous and I Bertrand. 2014. Interacting microbe and litter quality controls on litter decomposition: A modeling analysis. PLOS One 9(9) e108769: 1-12.

Ouyang, Z., Chen, J., Becker, R.H., Chu, H., Chao, C., 2014, Disentangling the confounding effects of PAR and air temperature on net ecosystem exchange in time and scale, Ecological Complexity, v19,pp 46-58, doi:10.1016/j.ecocom.2014.04.005

Shao, C., Chen, J., Stepien, C.A., Chu, H., Bridgeman, T., Czajkowski, K., Becker, R.H., Ouyang, Z., John, R. Diurnal to annual carbon, latent and sensible heat fluxes in a Laurentian Great Lake: A case study in western Lake Erie (JGR, 10.1002/2015JG003025)

S.S. Qian 2015 The frequency component of a water quality criterion compliance assessment should be data driven. Environmental Management. 56: 24-33

S.S. Qian and R. Miltner (2015) A Continuous Variable Bayesian Networks Model for Water Quality Modeling -- A Case Study of Setting Nitrogen Criterion for Small Rivers and Streams in Ohio, USA. Environmental Modelling and Software. 69: 14-22

Stepien, C.A., L.R. Pierce, D. Leaman, M. Niner, B. Shepherd. 2015. Gene diversification of an emerging pathogen: A decade of mutation in a novel fish Viral Hemorrhagic Septicemia (VHS) substrain since its first appearance in the Laurentian Great Lakes". PLoS One (Public Library of Science).

Stokes, C, Tarasov, L., Blomdin, R., Cronin, T.M.Fisher, T.G., & 21 others. On the reconstruction of palaeo-ice sheets: Recent advances and future challenges, Quaternary Science Reviews 125, 15–49.

SELECTED GRANTS

PI or co/PI	Grant	Agency	Total Value
Becker	HICO Identification of Harmful Algal Blooms	NASA	$187,257.00
Bossenbroek	Great Lakes Hydrilla Assessment	Ecology and Environment Inc./ US Army Corp of Engineers	$82,183.00
Bossenbroek(Crail)	Oak Openings Regional Invasive Species Strategy	Nature Conversancy/ US EPA	$55,941.00
Bridgeman(Mayer, Becker,Qian,Seo)	Assessment of Nutrient/Eutrophication Dynamics in Western Lake Erie	Ohio Lake Erie Commission/US EPA	$160,903.00
Bridgeman	HAB Detection, Mapping, and Warning Network: Maumee Bay Area	Ohio State University	$249,597.00
Dwyer	Maumee AOC, Wolf Creek: Passive Treatment Wetland to Improve Nearshore Health and Reduce Nonpoint Source Pollutants	US EPA	$1,348,595.00
Fisher	Elucidating triggers of dune mobility along eastern shoreline of Lake Michigan	National Geographic Society	$20,000.00
Gottgens	Effective wetland design for water quality improvement in the Maumee River basin	University of Toledo	$26,000.00
Heckathorn	Biomonitoring of Nutritional and Environmental Stress in Plants	US Dept of Agriculture	$120,000.00
Mayer	Determining the contribution of Maumee River fisheries production to western Lake Erie stocks	US Geological Survey	$213,475.00
Mayer	Assessment of Riverine Habitat Restoration in the St. Clair-Detroit Rivers System	US Geological Survey	$223,375.00
Qian(Bridgeman)	A Bayesian Hierarchical Modeling Approach for Comparing Water Quality Measurements from Different Sources	University of Michigan	$50,000.00
Qian(Mayer)	Grass carp apawning potential in the Sandusky River basin	US Geological Survey	$100,059.00
Qian	Begetation Surveying in Support of Grass Carp Spawning Potential in the Sandusky River Basin	US Geological Survey	$71,903.00
Stepien(Sigler)	Early Detection DNA Technology for High Risk Invasive Fish Species	US EPA	$598,922.00
Stepien	Invasive Invertebrate Species Prevention, Detection, and Control: A New Generation Sequencing Assay	US EPA	$499,964.00
Weintraub	Collaborative Research: Winter snow depth as a driver of microbial activity, nutrient cycling, tree growth and treeline advance in the Arctic	National Science Foundation	$580,850.00

THE UNIVERSITY OF
TOLEDO
1872

Department of Environmental Sciences
Mail Stop 604
The University of Toledo
2801 W. Bancroft St.
Toledo, OH 43606-3390