

ALUMNI NEWSLETTER

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SUMMER 2019

Greetings to the friends and alumni of the Department of Environmental Sciences! The department continues to grow and evolve!

The University has been moving forward with its Strategic Plan 2017–22, focusing on five core areas: student success and academic excellence; research, scholarship and creative activities; faculty, staff and alumni; fiscal positioning and infrastructure; and reputation and engagement. One area of excellence identified in the Strategic Plan is the area of the environment, in part a recognition of the excellent work done within the department.

During the past year, we have experienced some personnel changes. Drs. Don Stierman and Hans Gottgens retired last summer and have been awarded emeritus faculty status. Both continue to work on their research activities. Hans' replacement will start this fall. Dr. William Hintz is a fisheries ecologist performing post-doctoral work at Rensselaer Polytechnic Institute. His lab will be at the Lake Erie Center (LEC). Joining him at the LEC is Dr. Trisha Spanbauer. She is a limnologist with post-doctoral experience from the University of Texas. She is Dr. Carol Stepien's replacement. Carol left the University and now works at the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) Pacific Marine Environmental Research Laboratory in Seattle.

This past year, two visiting assistant professors have helped with teaching our courses. Dr. Leighannah Akins finished her Ph.D. in biology from Kent State University. Hannah Pankratz is nearly finished with her Ph.D. from Western Michigan University. Lastly, Dr. Tom Bridgeman is the new

director of the LEC.

Congratulations are in order for many of our students and faculty who received awards or were promoted in rank. Dr. Bridgeman was awarded the Ohio Chancellor's Award for his work on harmful algal blooms and for his statewide leadership on this topic. Dr. Mike Weintraub was promoted to full professor, and Dr. Chris Mayer was awarded a sabbatical leave for autumn 2019. Dr. David Krantz received the College Excellence in Teaching Award, and Dr. Daryl Moorhead won the College Excellence in Professional Service Award. In June 2018, a team of UToledo students, including Madeline Tomczak (B.S., environmental sciences) won the Outstanding Field Research Award at the International Biodesign Challenge Summit in New York City.

Our graduate students have won many awards as well: Nathaniel Marshall was a recipient of the Genetics Section James E. Wright Graduate Award and an International Association for Great Lakes Research (IAGLR) scholarship; Silas Fischer and Sarah Carter each were awarded Conservation Leaders of Tomorrow Professional Development scholarships; Sara also received a Sevilleta National Wildlife Refuge Fellowship; Matthew Snyder was the top researcher in the Big Data Research category at the 18th annual Sigma Xi student research conference; Gunnar Kramer was awarded a Graduate Dean's Fellowship; and Sarah Carter and Austin Hulbert each won a 2018 UToledo Graduate

Research Award, which Tom Valachovics won in 2017.

The second annual Day of Giving in October 2018 resulted in a near tripling of the donations from the first year. We received \$1,610 to support student field trip and research experiences. Please join me in reaching a target goal of \$2,500 this October. A big thanks to the alums and friends of the department who contributed, and to those who continue to contribute to department funds.



Dr. Timothy Fisher
 Chair

NEWS FROM FACULTY—PAST AND PRESENT

Dr. Mark J. Camp

“After a hiatus of a few years, my sixth railroad depot book, *Railroad Depots of East Central Ohio*, hit the shelves in summer 2018. I am also collecting data for a book on dimension stone and fieldstone depots of North America that will interweave my interests in geology and railroad history,” Dr. Camp said. “On the geological side, I continue research on a future publication on the Ohio brick and tile industry, curating the collections of rocks, minerals and fossils, and upgrading some of the museum displays.”

Dr. James Harrell

“My archaeological geology fieldwork in the Middle East continued in 2018,” Dr. Harrell said. “In February, I worked along the Nile River’s Fourth Cataract in northern Sudan, where I investigated sources of red garnet for ancient Egypt and also did a geological survey of the area around the ancient

temple and pyramid complex at Jebel Barkal. In March, I was in Egypt for work in the Eastern Desert, first on a 40 km-long road from 1500 B.C., and then on a newly discovered Roman quarry for ornamental stone.”

Dr. Don Stierman

After 34 years at The University of Toledo, Dr. Don Stierman retired June 1, 2018. Upon returning to the geophysics lab after the mandatory two-month separation, he discovered that several instruments also had retired. The gravity meter is once again operational, following a trip to Texas and Steve’s follow-up repairs. The smoked paper seismograph also was inert, and the SuperSting electrical resistivity system misbehaved. We cannot test the resistivity fix until spring, but the seismograph works on external battery. Dr. Stierman has requested several recycling bins, as he needs to make room for the new

geophysicist anticipated to arrive before autumn 2019. Dr. Stierman plans to help conduct geophysical surveys in spring 2020 in support of archaeological research at a Toledo metropark and will no doubt haunt the lab for several more years. He hopes that a new hip (to go along with his new knee) will enable him to get back into the field. He is writing a book about a probable impact crater and hopes to complete a manuscript before summer. He finds retirement quite agreeable, particularly when the wind chill is -20°F.

CONTRIBUTIONS AND ACTIVITIES OF OUR LABORATORIES AND CENTERS

GLASS Lab

A brief update from the GLASS (Glacial Lake And Sediment Science) lab: Jonathan Luczak defended his thesis in late 2018. Earlier in the year, he began working as a field geologist in west Texas for Barr Engineering Co. from its Minnesota office. His M.S. thesis focused on the deglaciation chronology along the thumb of Michigan, where the Imlay Channel acted as an outlet for ancestral Lake Erie. He was able to replicate the previous chronology, and importantly, with good subsurface data, determined that the channel was occupied at lower water planes than was previously known.

New to the lab is Alex Sodeman, who is co-supervised with Dr. Richard Becker. Alex did his undergraduate work at Indiana University in Bloomington, and he is tackling some unusual tunnel channels nicknamed “two-tracks” in northeast Indiana. Research involves fieldwork and physical

model simulations in a newly constructed flume box. The synergistic relationship with scientists from the Indiana Geological and Water Survey (IGWS) continues with Alex’s project, and also with Tom Valachovics’ work. Tom is using the new

OSL lab at the IGWS to date outwash in northeast Indiana near where former students Jennifer Horton (2015) and Mitch Dziekan (2017) worked. New to the lab this summer is Brian Samsen, a UToledo graduate whose thesis topic will be assessing the thick sequences of outwash and glacial sediment in northeast Indiana, beginning with a 220-foot core, nearly to bedrock, just collected by the IGWS.

A recent paper published in *Canadian Journal of Earth Sciences* focused on work by Jennifer Horton (2015) where OSL-dated sand dunes on an outwash surface were last

NEWS FROM OUR STUDENTS—PAST AND PRESENT

Dr. Atilla Ciner

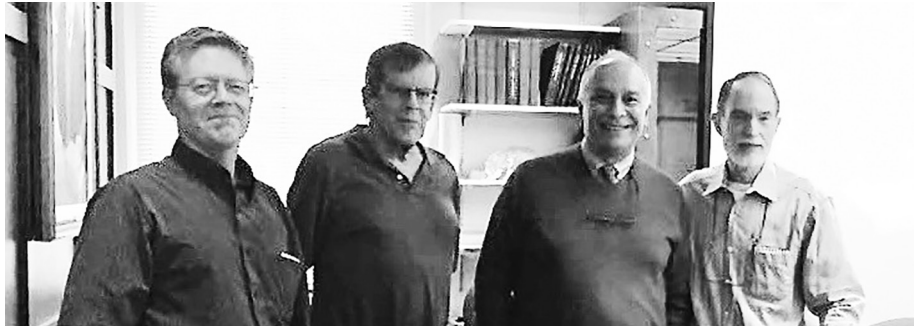
(M.S. — GEOLOGY, 1988)

Dr. Ciner visited the department Dec. 4, 2018. He presented a seminar reviewing his research on cosmogenic surface dating, including the dating of alluvial fans, moraines and other geomorphic surfaces in Turkey and quantifying fluvial incision. Dr. Ciner is professor of sedimentary geology and director of the Eurasia Institute of Earth Sciences at Istanbul Technical University, Istanbul. He completed his M.S. under Dr. Craig B. Hatfield, emeritus professor of geology.

Austin Bartos

(B.S. — ENVIRONMENTAL SCIENCE, 2018; ALUMNUS OF THE MONTH IN NOVEMBER 2018)

Austin completed departmental honors research on phosphorus remediation techniques under the direction of Dr.

*Drs. Fisher, Camp, Ciner and Harrell*

Daryl Dwyer Austin is a graduate student at Utah State University, where he will research heavy metal and cyanotoxin contamination in the Great Salt Lake and characterize past contamination history through sediment cores.

“Having strong relationships with faculty will make you enjoy your time at UToledo the most and put you on a path to become a great scientist,” Austin said.

“The environmental science world

is small, so get to know as many people as you can and you will always have someone to get a beer with – since most science is done in bars, anyway.”

For further information about our alumni of the month, please visit utoledo.edu/nsm/envsciences/alumnispotlight.html.

active preceding and during the Younger Drays cold period. Another paper published in *Geomorphology* used the distribution of buried former stream channels (compaction ridges) on the floor of glacial Lake Agassiz to determine how low the lake dropped during the Moorhead Phase. This was undergraduate research by John Dilworth, who, after completing his M.S. in the Krantz lab, gained employment with a local consulting firm.

I hope to hear updates from former GLASS lab graduates!

Refsnider Lab

We started two new projects this summer, each funded by grants from the U.S. Fish and Wildlife Service (USFWS). M.S. students Sarah Carter and Austin Hulbert are studying landscape-scale productivity of declining eastern box turtles and spotted turtles in Ohio and Michigan with funding from the Competitive State Wildlife Grants program. Ph.D. student Josh Otten is examining demographic and health effects of the 2010 Kalamazoo River

oil spill on river turtles with USFWS funding. M.S. student Tyara Vazquez and undergraduate student Adam Siefker received summer research grants to continue their research about climate change impacts on lizards in the mountains of Utah. We also received a grant from the Ohio Water Resources Center to determine how Lake Erie’s harmful algal blooms affect the health of aquatic wildlife. M.S. student Jessica Garcia presented preliminary results of this research at the Wildlife Society’s national conference.

Stephanie Condon

(B.S. — BUSINESS ADMINISTRATION, MINOR IN ENVIRONMENTAL SCIENCES, 2015; ALUMNA OF THE MONTH IN OCTOBER 2018)

For her capstone senior project, Stephanie initiated the use of native plants for landscaping projects on the Dorr and Centennial roundabouts, which included coordination with Lucas County engineers, organizing and arranging transportation for volunteers, and the development of a flyer to educate community members about the project.

Stephanie is an environmental education interpreter at Metroparks Toledo, an Ohio-certified volunteer naturalist, a Project House of Hope ambassador, and an active volunteer for Wild Ones of the Oak Openings Region.

Jamie Forbush

(B.S. — ENVIRONMENTAL SCIENCES, 2017; ALUMNA OF THE MONTH IN DECEMBER 2018)

Jamie was an intern at the Black Swamp Bird Observatory and Nature Conservancy, and later served as a paraprofessional in Toledo Public Schools. Since December 2017, she has been an education coordinator at Nature's Nursery Center for Wildlife Rehabilitation and Conservation Education in Whitehouse, Ohio. Jamie is an active volunteer at Metroparks Toledo, the Nature Conservancy and The University of Toledo.

“I found the best way to be successful is through networking and creating stepping stones early to quickly pave the way toward my future career,” she said. “If you already have the knowledge and experience, you are ahead of the curve.”

Barbara Hanes

(M.S. — GEOLOGY, 2010; ALUMNA OF THE MONTH IN JANUARY 2018)

Barbara completed her M.S. in geology at UToledo under the supervision of Dr. Tim Fisher. She also holds a B.S. in geology and an associate of engineering technology degree from Edinboro

University in Pennsylvania. At UToledo, her research regarding eolian sand records indicated that peaks in eolian sand in lake sediments are related to climatic, sunspot and lake-level fluctuations. Currently, Barbara works at the Pennsylvania Department of Environmental Protection in the Bureau of Oil and Gas Management as permitting geologist for oil and gas wells and aquifer test and water management plans. Barbara also volunteers as an educator at state parks in Pennsylvania, and is an adjunct faculty member at Mercyhurst University in Erie, Pa., teaching hydrogeology and GIS classes.

Barbara said: **“Think of education as an adventure, not a chore, and may your adventure last a lifetime. Always take joy in the wonders around you, wherever you may be.”**

Ben Kuhaneck

(B.S. — BIOLOGY, 2016; ALUMNUS OF THE MONTH IN MARCH 2019)

Ben completed his undergraduate degree under the supervision of Dr. Christine Mayer. During this time, Ben conducted research on the impacts of the altered Lake Erie shorelines on near-shore fish communities by electrofishing and analyzing digital photographs.

After graduating, Ben worked as a West Coast Fisheries Observer with Alaskan Observers in Seattle. He returned to Toledo to assist with UToledo lake whitefish research in Lake Erie as a student contractor for the U.S. Geological Survey. In May 2018, he traveled to Uganda as a Peace Corps volunteer to help local farmers apply for grants as an agribusiness advisor.

“Getting professional experience while in school was a large factor of landing my post-graduate jobs,” Ben said. “My advice would be to go beyond the class experience. Such experience will greatly improve your chances to secure

a job.”

Danielle Kurek

(M.S. — ECOLOGY, 2010; ALUMNA OF THE MONTH IN FEBRUARY 2019)

Under the guidance of Dr. Michael N. Weintraub, Danielle's research project and thesis examined the physical, chemical and biological impacts on soil after prescribed burns.

After completing her degree, Danielle moved to California to work as an environmental scientist on alternative energy construction projects with a focus on field compliance and environmental mitigation. She now lives in Texas and is managing a permitting and compliance program across a five-state territory focused on storm water, erosion and sediment control. She is an active member of the board of the International Erosion Control Association and continues to contribute to various industry professional publications.

“Luck is what happens when preparation meets opportunity,” Danielle said. “Along with big dreams, curiosity and affinity for adventure, my time at The University of Toledo prepared me to go out and take on the world, head-first.”

Jeffery L. Leberfinger, PGp, PG:

(MS — GEOLOGY, 1995; MINOR — GEOPHYSICS; ALUMNUS OF THE MONTH IN FEBRUARY 2018)

Jeff earned a B.S. in geology from Bloomsburg University in Pennsylvania. At UToledo, he completed his thesis by mapping the Coshocton Glacial River Valley in Ohio using seismic, resistivity, electromagnetic and gravity research techniques under the supervision of Dr. Don Stierman. After graduating, Jeff has managed numerous survey projects involving the detection of munitions and unexploded ordnance at military installations. He also uses his skills and expertise in environmental, mining, archaeological, and oil and gas applications.

He chairs the National Association of Ordnance Contractors' Technology Committee and served as former president of the Pennsylvania Council of Professional Geologists. Jeff is employed as a senior geophysicist at Exploration Instruments, where he provides training, demonstrations and technical support for geophysical data collection systems.

“UToledo prepared me well for my career as a geophysicist. On my first day of work, I was overseeing the collection and processing of seismic data for a landfill project,” Jeff said.

“I was able to do so with minimal oversight. UToledo also gave me the insights to apply new geophysical techniques when both sensor and data processing technologies evolved.”

Dr. Barry Muller

(PH.D. — BIOLOGY, 2004; M.S. — GEOLOGY, 1992; B.S. — GEOLOGY, 1985)

Dr. Muller has taught introductory geology courses at UToledo and, as a field geologist, played key roles in the Fernald (Ohio) Superfund cleanup, as well as in other remedial investigations and feasibility studies. Bridging the

gap between structural geology and environmental work, Barry was a field geologist in Antarctica and a radiological engineer at the Fermi 2 nuclear power plant near Monroe, Mich., monitoring radioactivity in the environment.

In 2015, this experience led him to start his own consulting firm, ERG Consult, reviewing groundwater monitoring programs at nuclear power plants and completing decommissioning work of nuclear power plants for the Electric Power Research Institute. Most recently, Barry returned to corporate work as a staff nuclear specialist at Davis-Besse Nuclear Power Station in Oak Harbor, Ohio.

“UToledo provided me with a quality education at a cost that allowed me to pay for school with what I could earn while working on my degrees,” Barry said. “This combination gave me a background that allows me to earn a good living, applying that knowledge and experience to ensure businesses and industry comply with environmental regulations.”

Dr. Matthew Neilson

(PH.D. — BIOLOGY, 2009; ALUMNUS OF THE MONTH IN MARCH 2018)

Dr. Neilson completed his doctorate in biology at the UToledo Lake Erie Center under the supervision of Dr. Carol Stepien. He also holds an M.S. from California State University and a B.S. from the University of New Hampshire. Dr. Neilson authored several publications examining the systematics, biogeography and phylogeography of Ponto-Caspian gobies. Dr. Neilson has worked in various capacities at the University of Florida, University of South Florida and Jacobs Technology in Tampa, Fla. He is a fishery biologist at the U.S. Geological Survey and continues to work with the Wetland and Aquatic Research Center in Gainesville, Fla.

“One of the best things about UToledo’s Department of

Environmental Sciences is its interdisciplinary nature, which has the inherent potential for collaboration and for learning broadly on topics not directly related to one’s personal research focus or concentration,” Matthew said. “Be sure to use it wisely!”

Dr. Jennifer Sieracki

(PH.D. — BIOLOGY, 2014; ALUMNA OF THE MONTH IN APRIL 2018)

Dr. Sieracki attended The University of Toledo for her doctorate in ecology under the supervision of Dr. Jon Bossenbroek. Dr. Sieracki holds a B.S. in fisheries and wildlife conservation and an M.S. in forestry from the University of Minnesota. Before beginning her doctorate work under Dr. Bossenbroek, she worked for the U.S. National Park Service and the U.S. Forest Service.

Dr. Sieracki is a biological resources data manager at the U.S. National Park Service.

“Don’t worry so much about strategically planning your career,” Jennifer said. “It is more important that you remain open to opportunities that you otherwise wouldn’t have considered.”

FIELD TRIPS

Across the Northern States was the title of this year's fall geology field trip (Aug. 12-23, 2018). Dr. Mark Camp, with the able assistance of graduate student Eric Armstrong, led four students (Kailey Doherty, Gage Frankevic, Jared Lesniewicz and Luke Skowronek) west to Theodore Roosevelt and Glacier national parks and back through the iron ranges of Minnesota, Keweenaw Peninsula of Michigan and Pictured Rocks National Lakeshore.

Our first official stop was in western Wisconsin to visit Susan Ruedisili, widow of the late Lon Ruedisili. We enjoyed a luncheon and tour of the Ruedisili's little piece of the Driftless Area. We spent a day viewing prairie dog towns, concretions, Paleocene stratigraphy, and the badlands of the Little Missouri River in Theodore Roosevelt. It was a long drive through

the ranch lands of central Missouri to a short stop in Fort Benton, Mont., to walk in Lewis and Clark's footsteps along the Missouri River to visit Shep Memorial, which overlooks the city.

Our visit to Glacier was compromised because of major wildfires, but everyone enjoyed a day of hiking in the Logan Pass area. From Glacier, it was back east across the plains of North Dakota, with stops at a few museums and historical sites to view dinosaur remains, local natural history and the human history of this coal mining and, more lately, oil patch region. Open-pit mines were seen as we entered the Mesabi Range. Since two of the major viewing areas of active mines were temporarily closed, we marveled at the equipment at the Minnesota Museum of Iron Mining.

Driving north into the Vermilion Range, most of us went underground to the iron

mine at Tower, Minn. We then headed to Duluth and on to Amnicon Falls State Park to see our second major overthrust. Afterward, it was on to the Porcupine Mountains and Lake of the Clouds, as well as the tip of the Keweenaw Peninsula at Copper Harbor in Michigan. The Delaware Mine offered us another chance to go underground. After a required mineral shop stop, we headed for Marquette, Mich., and eventually Pictured Rocks. The next day was a rather short trip back to Toledo.



Investigating the old east entrance to Theodore Roosevelt National Park near Medora, N.D.



IN MEMORY

John Herman (M.S., Ph.D.) passed away July 2, 2018. John joined Florida Gulf Coast University in 2011 and “quickly became known as an exceptional teacher, scientist, colleague and friend,” according to FGCU Dean Robert Gregerson.

A stop at the Minnesota Museum of Mining in Chisholm, Minn., provided a look at equipment used throughout the iron ranges and this huge core of Ely Greenstone.

Dustin Dehm, Alex Sodeman and Matt McCormick with Dr. Fisher at the 2018 annual meeting of the Geological Society of America in Indianapolis.



SELECTED GRANTS

TITLE	SPONSOR	FACULTY	TOTAL AWARD
Plant perception of insect herbivores includes leaf vibrations caused by chewing	NSF	Appel	\$117,224
Hyperspectral imager atmospheric correction	NASA	Becker	\$107,000
Trace element update in grass carp otoliths	OSU	Bossenbroek	\$69,500
Lake Erie open water impairments and HAP scum criteria	OSU	Bridgeman	\$97,125
Lake Erie bathing beach monitoring	ODH	Dwyer	\$11,465
Biomonitoring of nutritional and environmental stress in plants	USDA	Heckathorn	\$58,140
Ichthyoplankton community ecology and distribution in Lake St. Clair	USGS	Mayer	\$275,000
Balancing substrate enzyme and biomass dynamics in an analytical model of energy and nutrient interactions during plant litter decay	UToledo	Moorhead	\$8,486
Vegetation surveying in support of grass carp spawning potential in the Sandusky River Basin – continuation with more funding	USGS	Quian	\$187,983
Use of existing fishery assessment data to determine detection probability of rare and newly introduced nonindigenous species in Lake Erie	ODNR	Quian	\$82,647
Addressing environmental challenges and proposing sustainable solutions at Lake Erie land-lake interface	NSF	Refsnider	\$113,395
Gray vireo demography	New Mexico Dept. of Game and Fish	Streby	\$23,000
Collaborative research: winter snow depth as a driver of microbial activity, tree growth, and treeline advance in the Arctic	NSF	Weintraub	\$161,811

SELECTED PUBLICATIONS

- *Deepesh R, *Bista DR, Heckathorn SA, Jayawardena DM, Mishra S, Boldt JK 2018.** Effects of drought on nutrient uptake and the levels of nutrient-uptake proteins in roots of drought-sensitive and -tolerant grasses. *Plants* 7(2): 28.
- Bossenbroek JM, Burlakova LE, Crail TC, Karateyev AY, Krebs RA, Zanatta DT 2018.** Modeling habitat of freshwater mussels (*Bivalvia*: Unionidae) in the lower Great Lakes 25 years after the *Dreissena* invasion. *Freshwater Science* 36: 330–342.
- Darrouzet-Nardi A, Steltzer H, Sullivan PF, Segal A, Koltz AM, Livensperger C, Schimel JP, Weintraub MN 2019.** Limited effects of early snowmelt on plants, decomposers, and soil nutrients in Arctic tundra soils. *Ecology and Evolution* 9:1820–1844.
- Davis TW, Stumpf R, Bullerjahn GS, McKay RML, Chaffin JD, Bridgeman TB, Winslow C 2019.** Science meets policy: A framework for determining impairment designation criteria for large waterbodies affected by cyanobacterial harmful algal blooms. *Harmful Algae* 81: 59–64.
- *Dilworth J, Fisher TG 2018.** Determining the Lake Agassiz Moorhead Phase lowstand elevation from compaction ridges and newly identified strandlines in the Red River Valley, USA. *Geomorphology* 319: 216–225.
- *Embke HS, Kocovsky PM, Garcia T, Mayer CM, Qian SS 2018.** Modeling framework to estimate spawning and hatching locations of pelagically spawned eggs. *Canadian Journal of Fisheries and Aquatic Science*.
- *Fischer JL, Roseman EF, Mayer CM, Qian SS 2018.** Effectiveness of shallow water habitat remediation for improving fish habitat in a large, temperate river. *Ecological Engineering* 123:54–64.
- Fisher TG, *Horton J, Lepper K, Loope HM 2019.** Aeolian activity during late glacial time, with an example from Mongo, Indiana, USA. *Canadian Journal of Earth Sciences* 56: 175–182.
- Gebremichael E, Sultan M, Becker R, El Bastawesy M, Cherif O, Emil M 2018.** Assessing land deformation and sea encroachment in the Nile Delta: a radar interferometric and inundation modeling approach. *Journal of Geophysical Research: Solid Earth*, 123.
- Harrell, JA 2018.** The Amarna ring road: a new interpretation. *The Akhetaten Sun – Newsletter of the Amarna Research Foundation*, v. 24, n. 1, p. 16-24.
- Moorhead DL, Weintraub MN 2018.** The evolution and application of the reverse Michaelis-Menten equation. *Soil Biology and Biochemistry* 125: 261–262.
- Refsnider JM, Qian SS, Streby HM, *Carter SE, *Clifton IT, Siefker AD, *Vazquez TK 2018.** Reciprocally-transplanted lizards along an elevational gradient match thermoregulatory behavior of local lizards via phenotypic plasticity. *Functional Ecology* 32: 1227–1236.
- Schultz JC, Edger PP, Body MJA, Appel HM 2019.** A galling insect activates reproductive programs during gall development. *Scientific Reports* 9:1833.
- Taff CC, Freeman-Gallant CR, Streby HM, *Kramer GR 2018.** Geolocator deployment reduces return rate, alters selection, and impacts demography in a small songbird. *PLoS ONE* 13(12): e0207783.

*student authors

GREENING THE UNIVERSITY OF TOLEDO THROUGH SERVICE LEARNING

Students have witnessed the good in restoring both natural and human assets through service-learning opportunities at local nature preserves and native plant installations. They wanted to bring this message to campus for those missing the opportunity to interact with these projects.

As a result, Greening UToledo through Service Learning (GUTS) became a student-led initiative to replace select areas of turf grass across campus with native plantings with funding from the UToledo Student Green Fund. GUTS began as a senior capstone project led by undergraduate Jeanna Meisner in the Department of Environmental Sciences. She was then joined by graduate student Jessica Collier and advised by Drs. Jon

Bossenbroek and Todd Crail as the project moved forward.

The GUTS team connects with students in DES environmental courses to host their own service-learning events. By participating in an event, students gain experience relevant to their course work, and GUTS is provided with a stream of volunteers. The service learners discover that native prairie plants work with the ecosystem, rather than fighting it.

UToledo faculty has observed that the deepest impact has been on GUTS employees. Each student-employee has been forced outside their comfort zones by leading their peers in these efforts. They are suddenly “the adult in charge,” and the effect on their confidence has been exciting to watch.

During two growing seasons, GUTS has grown and planted 20,000 plugs across campus among nine installations, successfully installed a half-acre prairie from seed, convinced UToledo groundskeepers this is a viable landscape cover and worked with approximately 300 participants, compiling nearly 1,000 hours of service-learning time. The GUTS team also was recognized by the Wild Ones Oak Openings chapter with a Native Landscaping Award in 2018. Outside recognition helps make the effort real to the students.



Inside the Wolfe Hall greenhouse



Dr. Todd Crail and Dr. Heidi Appel, dean of the UToledo Honors College, take a selfie with students.



Native planting on the south side of Bowman-Oddy



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- Helen H. Edenburn Fund for Geology (1300195)
- Environmental Sciences Progress Fund (2400440)
- Ernest H. Fink Award in Geology (2148193)
- William A. Kneller Geology Graduate Support Fund (1300521)
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