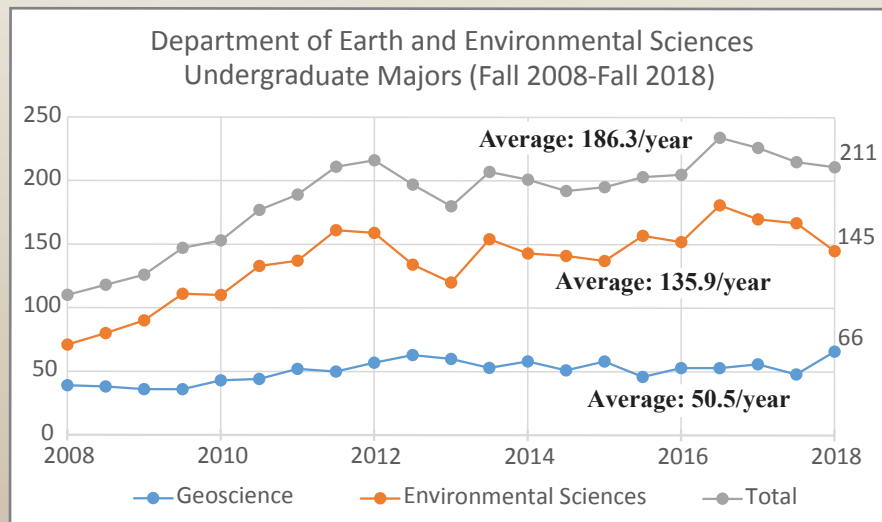




## Message from DEO Tom Foster

As illustrated by the articles on the following pages, the Department is vibrant and in good health with 211 undergraduate majors, 31 graduate students, and 16 full-time faculty. The recently completed College of Liberal Arts and Sciences 10 year review of the Department found that we have an excellent faculty, dedicated staff, productive graduate students, and a “happy and engaged undergraduate population.” It concluded that the Department “is the best it has been in several decades.” Metrics documenting our recent progress related to students are: the number of students enrolled in our general education courses has increased 36% since 2015, the number of Geoscience majors has increased 38% since 2015, and 21 of our students are presenting their work at the national and international meetings this fall.



The increase in the number of majors can be directly attributed to the funds that friends of the Department have provided to us via the University of Iowa Foundation. The increase in majors correlates very strongly with the increasing number of fieldtrips we have begun to offer over the last three years with support from Foundation funds. Similarly, the large number of students presenting at national and international meetings is possible because Foundation funds support most of their travel expense to these meetings. We are very appreciative for the support our alumni have provided, which enables us to do many things that would not be possible in an era of declining state support and increasingly challenging private and national support.

### Inside this issue...

**Faculty profiles:**

**Frank Weirich**  
Professor

**Bill McClelland**  
Professor

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**The University of Iowa  
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## Faculty Profile

### Bill McClelland, Professor

My tectonics and geochronology research program over the past several years has largely focused on the recognition and importance of strike-slip fault systems in accretionary processes along continental margins. I continue to participate in Arctic fieldwork – the photo was taken this summer in Svalbard on a trip to examine the Biskhayerh-alvøya eclogites with our Polish colleagues. I have been trying to get there for over a decade, because these are some of the most poorly dated eclogites in the world; that should change soon. Four recent NSF projects addressed terrane interactions along the Arctic margin in Yukon and Nunavut. I am a co-editor of the soon to be released

Geological Society of America Special Paper 541, Circum-Arctic Structural Events: Tectonic Evolution of the Arctic Margins and Trans-Arctic Links with Adjacent Orogens, that presents results of my projects on Svalbard, northern Ellesmere Island, and northern Yukon. Another NSF project to examine translation of the Precordillera terrane along an intra-arc structure in Argentina is also nearing completion.

I remain committed to providing field-based education for our majors and graduate students through annual spring field trips in the Mineral and Petroleum Exploration and Tectonics courses, as well as our two field courses in Montana. In addition, I continue to help General Education undergraduate students understand the importance of Earth Science in everyday life through my introductory course in Earth Science.



## Faculty Profile

### Frank Weirich, Professor

I hold appointments not only in our department but also in the Iowa Institute of Hydraulic Research and the Department of Civil and Environmental Engineering and this is reflected in the interdisciplinary nature of the classes I teach. While my main instructional focus centers on higher energy processes such as floods, fire-impacted landscapes, debris flows and landslides my overall instructional goal is to context such processes in their wider environmental setting. To that end, in my upper division and graduate classes (fluvial geomorphology, integrated watershed analysis, field instrumentation and hydrologic field methods) an effort is made to not only present the basic processes and methods but also the application of that knowledge to real world problems and issues. As one of the founders of the Environmental Science major I have sought to

provide the students with an understanding of not only the basic science upon which our understanding of environmental process is based but also the application and environmental policy implications that follow from that knowledge.

My research as a process based geomorphologist and hydrologist is focused on developing a better understanding of how specific higher energy geomorphic agents and processes operate. To that end I operate a computer lab based in the department; an experimental laboratory and field support facility based in one of the IIHR Hydroscience & Engineering buildings out at the University's Oakdale Campus; and a field support laboratory located at the USDA, San Dimas Experimental Forest Station near Los Angeles, CA. Together with my graduate students I have studied a range of topics such as: how fire-flood processes increase runoff and erosion; the generation, flow dynamics and deposits of debris flows; glacial meltwater processes; landslide initial processes; high energy reservoir sedimentation dynamics; and the hydrology of tile drainage systems. The work has been undertaken at sites in Canada, Alaska, South Africa, California and here in Iowa. The methods employed range from high end computer modelling of such processes to field monitoring using advanced ground penetrating radar systems; the deployment of 3-D sensor arrays; and near real time monitoring of flood and debris flow dynamics. This has led to: conducting fire monitoring experiments with the space shuttle; watershed wide experimental fire experiments in Canada, South Africa and California; whole reservoir sedimentation experiments; the development and deployment of flood/debris flow warning systems as well ongoing field and laboratory experiments of slope failure/landslide processes.



# EES Public Outreach and Engagement

by Tiffany Adrain

Everyone in EES is committed to public outreach and engagement, from giving public talks to identifying rocks and fossils for drop-in visitors. Here are some of the highlights of 2018.

2018 has been a fun year for public engagement! Staff and students participated in regular annual events such as Coralville Winterfest and the Mid-America Paleontology Society Expo, took hands-on activities to local schools, gave talks to The Optimists' Club and the Iowa City Rotary Club, loaned rocks and fossils for activities at UI School of the Wild, Lake Macbride State Park, and loaned dinosaur casts and real fossils to the UIMNH for children's birthday parties. Tiffany was surprised to discover she can fit a 7ft-long ichthyosaur cast and an undergraduate in her tiny car!



We participated in the Obermann Center Archive Crawl, with a display of rocks and fossils at the UI Museum of Natural History (“geology collections are the archives of the Universe!”). We helped bring the 110lb Tilden meteorite to two public events on meteorites given by Physics and Astronomy undergraduate, Zachary Luppen. Phil Kerr took smaller meteorites to several other events. *(continued on page 5)*

## In Remembrance



Louis James Maher, Jr., 84, Emeritus Professor of Geology and Geophysics at UW-Madison, died peacefully at home on August 22, 2018, after a long illness. He was born on December 18, 1933, in Iowa City, Iowa, to Louis James and Edith Hamm Maher. He attended rural school and University elementary and high schools in Iowa City, participating in band and debate, making lifelong

friends, and graduating in 1952. He began to fulfill a lifetime goal by taking flying lessons from a WWII veteran in a Piper Cub on a grass strip near his home. Lou attended the University of Iowa, Iowa City, where he majored in Geology and participated in the marching band. He enjoyed field camp, living in a tent near Deadwood SD and learning geological mapping. He claimed he was the only one who didn't find a dinosaur fossil! He graduated from Iowa in 1956 with Highest Honors and Phi Beta Kappa. He was awarded a Danforth Foundation Graduate Fellowship, greatly benefiting his further studies. Lou married Elizabeth Jane Crawford, his high school sweetheart, at Trinity Episcopal Church in Iowa City on June 7, 1956. Theirs was a typical geologist's honeymoon where Lou went out every day to map the mountains near Buffalo WY for his Master's thesis.

## Conferences News



Justin Rosenblume (PhD student) presented his talk *Handheld X-RAY Fluorescence applied to Lower-Middle Pennsylvanian Strata, Forest City Basin, Southern Iowa* at the 2018 International Sedimentological Congress in Quebec City, Canada

# The University of Iowa Thin Section Lab

by Matt Wortel

Our mission at the Thin Section Lab is one of support, education, and outreach. We assist with a variety of research areas through the preparation of high quality microscope slides and analytical mounts made from diverse materials. Over this past year, we have produced slides/mounts from fossils, rocks, loose sediments, pottery sherds, meteorites, bone, and one unfortunate housefly. These slides were then utilized in a range of disciplines across paleontology, geochemistry, petrology, climatology, anthropology, and archeology. The housefly is still with us. Environmental Science major Leo Gastel recently joined our staff; his energy and enthusiasm are a welcome addition to our laboratory. The opening of the Electron Microprobe Facility (essentially fueled by thin sections) at our department has raised the bar for our entire operation, both in terms of quality and quantity. Through our work with the microprobe lab, we have developed techniques for producing our own analytical standard mounts, critical items which are only commercially available at a very high price.



Through our support of research, our facility also plays a direct role as an educational facility. EES undergraduate and graduate students engaged in research often begin their work by trimming rocks and making thin sections. These students represent a variety of sub-disciplines; Some of our more recent guests have worked in structural geology, volcanology, planetary geology, and sedimentology. The field of sample preparation occurs largely in the private sector. Its techniques are often considered a “black art” and are treated as trade secrets by the industry. By contrast, as an academic facility, it is our pleasure to teach our techniques to students from other schools interested in improving their own thin sectioning and preparation facilities. Our development work with adjunct faculty at Cornell College has been a particularly rewarding form of professional outreach.

Equally rewarding have been our projects with other areas of the university and the general public. We occasionally host “Meet the Minerals” gatherings where advanced ceramics students can see what the minerals they use in their clays and glazes look like in natural form. This past fall we hosted our first ever “Sketch Some Crystals” gathering where advanced drawing students spent an afternoon with us studying crystal forms. Cookies and punch were served, great fun was had, and we all learned from each other! We also enjoy our work with our friends at the Iowa Museum of Natural History bringing the endless beauty of rocks and minerals to the general public of all ages. We sometimes host summertime mineral shows at the museum and are looking forward to bringing our fluorescent minerals to the IMNH Haunted Walk again this fall!

Perhaps best of all, our doors are open to absolutely anyone who wants to stop by, talk about rocks, and maybe grab an agate from our trays. Come to Trowbridge Hall, ride the elevator all the way down, and it will drop you about 5 feet from our door. Follow the music, rock saws, and lively conversation and you’ll find us!





## EES Public Outreach and Engagement (*continued*)

We provided the most important and beautiful crinoids from the UI Paleontology Repository for a special display at the Cedar Valley Rocks and Minerals Society show in Cedar Rapids in support of the campaign for Crinoid for Iowa's State Fossil, and gave two talks on the history of the crinoid collection. AAPG students ran a bone dig activity. Thanks to the Iowa Geological Survey, we took Scorpy the Giant Sea Scorpion (the 6ft-long, life-size model of Iowa's Ordovician eurypterid) to two rock and fossil shows.

Emily Finzel took the entire first grade of Garner Elementary around Devonian Fossil Gorge on a beautiful, sunny morning that involved over 80 students rotating in groups through the Gorge, a fossil hunt activity at the nearby shelter, and the Coralville Lake Visitor Center.

This summer's public library reading program theme was "Libraries Rock!" and a few libraries chose the geological interpretation. With the help of numerous students and the Iowa City Science Booster Club (based in UI Biology), we provided hands-on children's programs and displays at the Coralville and Iowa City Public Libraries and gave public tours of the Paleontology Repository for the adult reading program.

The FOSSIL Project, a National Science Foundation- supported initiative (Fostering Opportunities for Synergistic STEM with Informal Learners) came up from Florida to drop by the Paleontology Repository with Tiffany Adrain, and members of the Mid-America Paleontology Society, to film part of their FOSSIL: 50 States of Fossils - Iowa Video Feature. Check it out here: <https://youtu.be/TwKVSvsJI6o>.

Finally, Tiffany was thrilled to receive a "Friend of Darwin Award" from the National Center for Science Education (NCSE) for having "significantly contributed to efforts to increase the public's understanding and appreciation of evolutionary biology in informal educational settings," through her support of the Iowa City Science Booster Club, the pilot for a now national initiative.

Thanks to everyone who participated in, and supported, the department's outreach efforts.

EES Outreach Committee: Bill Barnhart, Mary Kosloski, Tiffany Adrain



## Graduate Student Profile

### Jennifer Thines - PhD student

**Advisor:** Ingrid Ukstins

**Research:** My research is focused on understanding the petrogenesis of large volumes of silicic magma. I have been studying rhyolitic tuffs and ignimbrites from the Oligocene Afro-Arabian volcanic province in Northern Yemen and Ethiopia through a variety of geochemical techniques. The silicic component of the province is often overlooked but records an interesting story of magma mixing, crustal assimilation and extreme fractional crystallization. In order to quantify how these magmas are formed, I am performing detailed mineral chemistry, thermometry, isotope analysis and numerical modelling on a suite of rocks representing four million years of silicic volcanism.

**Experience I value at UI:** The past two years as a student in the department has exposed me to a variety of research disciplines and perspectives that have allowed me to think about geology in a different way. The diversity of analytical equipment that I have access to has been instrumental to conducting my research and exploring new avenues. Additionally, this summer I had the opportunity to accompany Dr. Ingrid Ukstins and her new student Aline Blasizzo to Iceland to study the 1961 Askja lava flow. All of the support that I have been given from graduate students, faculty and staff has made my time here a joy and will continue to make my future at the university successful.

**Future Plans:** Following the completion of my PhD in 2020 I will be seeking a postdoctoral research position with the goal of pursuing a career in academia.



## Graduate Student Profile

### Kacey Garber - MS student

**Advisor:** Emily Finzel

**Research:** Sedimentology and provenance of the Late Cretaceous Beaverhead Group, Southwest Montana

**Experience I value at UI:** My time as a master's student at University of Iowa has allowed me some excellent and memorable experiences. I'm early in my second and final year and have gotten to travel to many different places for my courses already, including southern California, the upper peninsula of Michigan, and the Laramie range in Wyoming. I spent three weeks in southwest Montana doing field work for my thesis and about two weeks in Tucson, Arizona to date zircons from my thesis samples. I will be traveling to Indianapolis in November to present my current thesis progress as a poster at the GSA annual meeting. I have also gained much more teaching experience during my time here. Besides all of these opportunities, I feel very fortunate to be surrounded by such a caring and impressive faculty!

**Future Plans:** Once I complete my thesis defense this coming April, I am hoping to get a job in industry or consulting. I worked for the USGS in Virginia last summer on project examining the effect of urbanization and heavy land use on streams and sediment transport, and I am really interested in working on similar projects for my career. Eventually, I would like to go back to school and get my PhD, with goals of working in academia in the future.



## Undergraduate Student Profile

### Zachery Love - Environmental Science BS student

**Research:** This past summer I assisted Dr. Heather Sander in data collection for her research on urban biodiversity in the Iowa City/Cedar Rapids area. I recorded data on present tree species, diameter, height, crown, and canopy. This data is being analyzed in conjunction with bird and mammal surveys to discover biodiversity trends in varying urban systems. I also had the pleasure of completing a Green Iowa AmeriCorps service term with the City of Iowa City. The highlight of my service term was writing a restoration and management plan for the natural areas in Calder Park, the goal of which is to restore the system to an oak savannah, create a natural corridor connection to Hickory Hill Park, and engage the local residents in stewardship of the land. Through this project, I was able to work with the city's horticulturalist and parks supervisor, make connections with local residents and discuss the importance of conservation, and experience the peer review process.

**Experience I value at UI:** One of my favorite experiences was taking Field Ecology at the Lakeside Laboratories in Okoboji, Iowa- that's where the photo of myself (front) and my classmates was taken. I learned more in the immersion based curriculum of Lakeside than I have in any other course and really dove into the course content. I've also developed relationships with a few professors; visiting them during their office hours to discuss anything from course work, research, contemporary environmental issues, conservation, asking for advice, etc. has become a weekly occurrence.

**Future Plans:** After I graduate in 2020, I plan to pursue a master's degree in Urban and Regional Planning. I've always had a passion for civil service, and I can't think of a better way to serve my community than creating policy and programs that build a happier, healthier, more accessible and sustainable city. Specifically, I am passionate about creating programs/policies that encourage and facilitate habitat reconstruction on private land (i.e. turf to prairie initiatives) and believe that restoring native habitats within urban systems is equally important as energy efficiency, waste reduction, and storm water management.



# Senior Trip to Guadalupe Mountains and Big Bend Parks



Dr. Kate Tierney (right) and PhD student Stephan Oborny



Nmarig Mohamed in Dog Canyon, Big Bend National Park



**Back row:** Allison Kusick, Nmarig Mohamed, Mads Gilbert, Clint Henning  
**Middle Row:** Hannah Shea, Ginny Ji, Megan Koch, Geoff Montour  
**Front Row:** Emma Mankin, Nathan Ingram, Alison Kramer



Tuff Canyon in Big Bend National Park



Top of the Permian Reef



# Junior Trip to Elephant Rocks State Park, Missouri



Why do they call them “Elephant Rocks”?



Undergraduate Liz Flanagan checking out the rocks

# National Parks Trip to southern California



Fossil Falls State Park, Owen’s Valley CA



Great Basin National Park



Noonday Dolomite, Mosaic Canyon, Death Valley





Breakfast at Sacramento Pass BLM Campground, Wheeler Peak in the background, Zach Gustofson



20 Mile Beach Campground, NV near Mono Lake, CA



Long Valley Caldera, California  
Ellen Carlson, Eric Small, Jessica Bumen



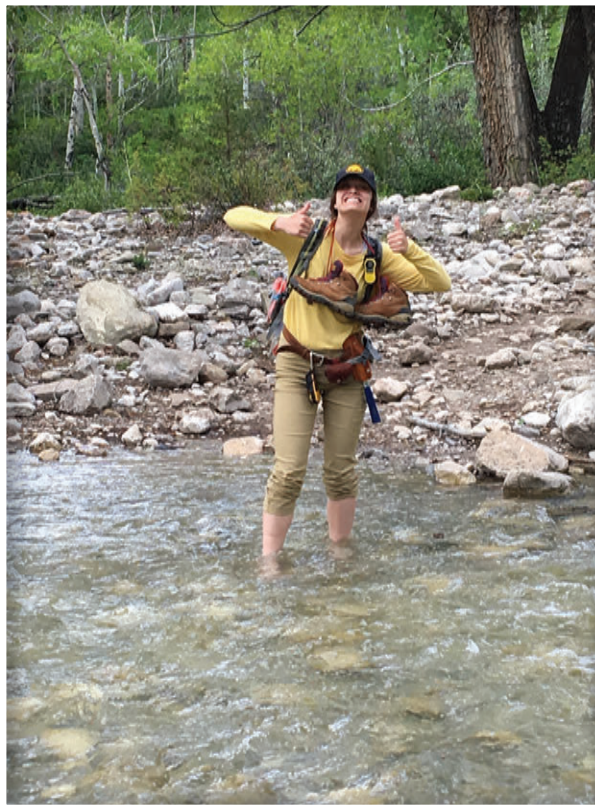
Now where did those students go?

## Montana Field Camp



Sun Canyon Lodge, Augusta, Montana





(top left) Hannah Shea slings her boots over her shoulder to cross a stream. (top right) Field Analysis students on a boat ride across Gibson Reservoir. (right) Lunch at the wall



Emma Mankin checking her notes in the field

Alex and Natalie Ruppert working on their maps during the evening classroom session





## Graduate Student Profile

**Larkin McCormack - MS student**

**Advisor:** Christopher Brochu

**Research:** My research is focused on anatomy and phylogenetics of fossil crocodylians. Crocodylia is the lineage that leads to modern crocodiles, alligators, and gharials, and has a rich and diverse fossil record extending back to the Late Cretaceous. For my thesis, I am describing a new species belonging to the genus *Borealosuchus*, from the early Campanian (~82 Ma) of Alabama. This genus has been difficult to place phylogenetically, and is either an early crocodylian, or close relative to this lineage. This new species is significant as it extends the lineage

of *Borealosuchus* back roughly 15 million years and provides insights into the early morphology of this clade. This fossil is potentially the oldest, or one of the oldest known crocodylians. For my research, I've had the chance to visit museum collections including the Field Museum, Museum of Northern Arizona, New Mexico Museum of Natural History and Science, and the Science Museum of Minnesota to observe related crocodylian fossils, as well as modern crocodylian skeletons in order to better inform my research. Studying crocodylians at University of Iowa has been a rewarding and interesting experience that has helped to inform my future interests within paleontology.

**Experience I value at UI:** The Earth and Environmental Sciences Department at the University of Iowa has given me many opportunities to expand my knowledge of paleontology and geology. As a paleontologist, geology is extremely important to interpret the depositional environments and ages of the rocks we find our fossils in. Due to this, classes including Sedimentary Geology and Geochronology have been very useful to me. Additionally, our Paleontology Seminar course has been beneficial to learn about new paleontological methods and significant recent publications in the field. I also value the field trip opportunities in the department, as a geoscientist the best way to learn about many concepts is in the field. Lastly, I greatly value the friendships and community that I have found in the department. I know that I have made friendships and connections that will last a lifetime.

**Future Plans:** After I finish my MS this spring, I hope to get a job working as a fossil preparator and field manager at a natural history museum, university, or government organization (BLM, NPS).

## Congratulations to Emma Hartke - recipient of an Iowa Space Grant Consortium (ISGC) Undergraduate Research Fellowship!



The ISGC UG Research Fellowship is awarded to students in STEM disciplines that support NASA's mission by getting involved with NASA-related STEM research projects on their campuses. I am so thankful and excited to be selected as a recipient of this fellowship, which supports my current research project: to evaluate how changes in the global carbon cycle are preserved in the rock record by evaluating high-resolution differences between the organic carbon and carbonate carbon isotopic record during the Silurian Ireviken Event. This project will require me to use stable isotope geochemistry, which I am anxious to begin as it will act as my first training towards a career in planetary geoscience and astrobiology. As a part of the ISGC UG Research Fellowship, I will also be presenting my work at a research symposium and poster session in early March of 2019. Overall, I am so thrilled to be given this opportunity; I look forward not only the career training it provides, but also to sharing my findings with the geologic community.

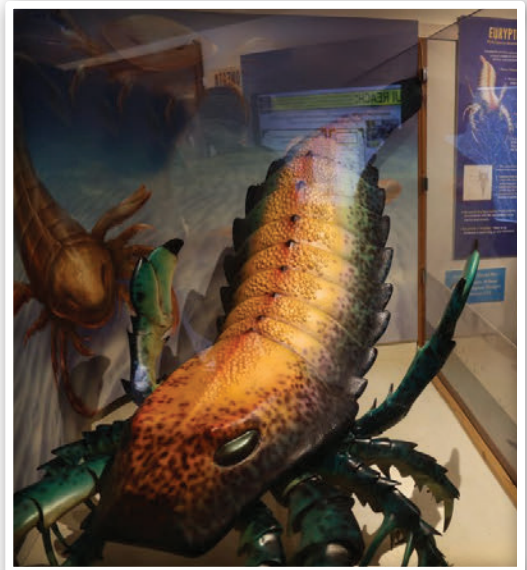
# University of Iowa Paleontology Repository

by Tiffany Adrain



Rusty, Dunky, Scorpy, and Bucky – these are not the nicknames of my interns, but the members of a growing team of celebrity fossils in the University of Iowa Paleontology Repository. You may be more familiar with Rusty the Giant Ground Sloth (pictured here) the mascot of the UI Museum of Natural History, but did you know the Paleontology Repository is home to the fossil remains of several of these giant ground sloths from Iowa? The Tarkio Valley Giant Ground Sloths (*Megalonyx jeffersonii*) are a group of three animals; adult, juvenile and infant, from SW Iowa. Excavated with the help of countless volunteers between 2002 and 2010, this group has been studied in a collaborative project involving researchers and students in multiple institutions, and the report, written by lead authors Holmes Semken (Emeritus Professor, EES) and Greg McDonald (National Park Service), is nearly ready for submission. In preparation, we've put photographs of all the Tarkio sloth bones on the Iowa Digital Library: <http://digital.lib.uiowa.edu/cdm/landing-page/collection/paleoarc>

A more recent addition to the collections is , a 6ft long, 475 million year old eurypterid from Decorah, Iowa. The story of Scorpy's discovery is quite extraordinary, especially because the localized shale that the specimens are preserved in was deposited in a meteorite impact crater – the second one discovered in Iowa. My immediate task is to curate all the fragments of eurypterid and other fossils from this amazing Lagerstätte deposit. A life-size model of Scorpy (pictured here) recently toured Iowa in the UI Mobile Museum. You can find out more about Scorpy (*Pentecopterus decorahensis*) here: <https://www.iuhr.uiowa.edu/blog/2017/04/25/delving-deep-fossils-from-iowas-ancient-sea/>



The Paleontology Repository is 160 years old this year. The original “cabinet of natural history” was created in 1858 by an Iowa Act of

Legislature that states: “For the purpose of supplying a cabinet of natural history, all geological and mineralogical specimens which are collected by the state geologists, or by others appointed by the state to investigate its natural history and physical resources, shall belong to and be the property of the university, under the charge of the professors of those departments” (Iowa Code 263.3). Surprisingly, given all this early recognition of the importance of the geology of the state, Iowa is one of only seven states that doesn't have a state fossil. Given that we now have over one million fossils in the “cabinet,” I think it's high time we did! In January this year, a bill was put forward to make the crinoid the state fossil. While this bill didn't make the first round, I'm hoping that the campaign will pick up again in time for next year. You can get involved with the campaign here: <https://www.cedarvalleyrockclub.org/crinoids.html> Photo: SUI 102745 Ronsocrinus rabia Cordie and Witzke, 2017, a new genus of crinoid from Iowa's Devonian Fossil Gorge.

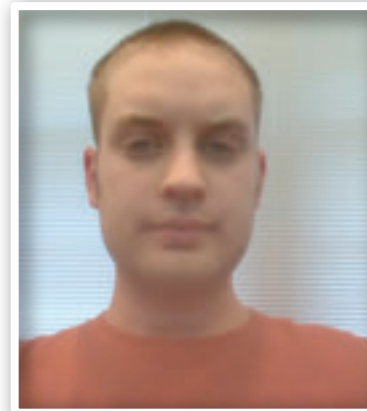


All the work that goes on in the Paleontology Repository - curating the collections, supporting international research, providing materials and activities for teaching, and engaging with the public - could not be done without the help of the amazing student interns and volunteers. In the 2017-2018 academic year, thirteen students contributed over 1,000 hours of work in the Paleontology Repository. My heartfelt thanks to all of them!



### Volunteer spotlight: Tim Diamond

I am currently a fifth year undergraduate that is a geology major with a museum studies certificate. I would like to work behind the scenes in a natural history museum doing curation and digitization work on prehistoric collections. I chose to work in the Repository as it gives me first hand exposure to digitization as well as collection labeling etiquette and organization. I am working on a collection of nautiloids from the quarries of Independence, Iowa, including labeling and inputting the information into the Specify database which is my favorite part of the project, as I get to learn more software that is applicable to museum work.



### Museum Studies Intern spotlight: Mitchell Carber

**Studying:** Geoscience Major, Biology Minor, and Museum Studies Certificate.

**On graduating:** I would like to go to a well-known paleontological graduate school and get my Masters there. After that, I would like to get a job as a paleontologist for a museum.

**Working in the Paleontology Repository:** I chose to work there in order to gain experience with fossil collections, storing, categorizing, cleaning, and other various tasks that could help with me in my career. The best aspect about the project that I am working on is that I get to be Tiffany's assistant and work and various tasks with different objectives. That way every day is never the same.



*Jamie Tigges is fourth from the left*

## Undergraduate Student Profile

### Jamie Tigges- Environmental Science BS student

**Research:** Being a non-traditional student at The University of Iowa my initial plan was to get in, and get out as quickly as possible. Which is probably a sound plan for the majority of students who walk through these doors. However, I quickly realized that doing so would have been a tragic waste of my time here and a lost opportunity. After realizing this I scaled back my work hours in order to invest more time with the research community and people in it. For the past two years I've been working in the Geographical and Sustainability Department with Dr. Sander on her tree and bird survey research. This has opened my eyes to an entire world that I would not have seen had I stuck to the original plan. Not only has the

research experience been an immense help in training me as a future earth scientist, but the people have played a massive part in lifting my heart. The people here have showed me that there is an entire generation who still cares about the planet, and they have the means to do something about it. The friends I've acquired through class, research, and my time at Lakeside have been the most important part of coming back to school.

**Future Plans:** In the future I would love to continue my education by pursuing a Master degree in the sciences. Specifically, I hope to continue down a path which would lead me to marine ecology fields, though anything which will keep me away from sitting at a desk for the next 30 years would be preferable. After that I really don't know yet, and if the last few years have taught me anything it's that plans are meant to be changed, and most likely will change.



## Undergraduate Student Profile

### Geoff Montour- Geoscience BS student

**Research:** For my research, I have been working with Dr. Peate to analyze basalts from the Snaefellsnes peninsula of Iceland, a region of the island that is about 150km off-axis to the main rift zone. The main goal of the project was to determine the depths of the magma chambers, that the alkaline, primitive basalts were erupted from, in order to unravel the details of the plumbing system of the stratovolcano Snaefellsjökull and the surrounding cinder cones and lava flows. To do this, clinopyroxenes were picked from the basalts, sorted, put into a grain mounts, and polished. I then used the electron microprobe to analyze the main element compositions within the zoning of the crystals. Clinopyroxene-melt geothermobarometry was then used to infer depths of magma storage for these mafic flows, using the Neave & Putirka (2017) model. Calculated clinopyroxene crystallization pressures were 6-10 kbar for the two primitive flows, and 3-7 kbar for the more evolved flow. Crustal thickness at Snæfellsjökull has been estimated at 26-29 km, based on receiver function analysis data, although the position of the Moho is not well defined to +/- 2-5 km. Therefore, the clinopyroxene-melt geobarometry results were found to be consistent with magma storage in the lower crust. I am very excited to present my research at the

annual GSA conference in November.

**Experience I value at UI:** I am very happy to have found the University's Earth and Environmental Science department; I couldn't imagine myself anywhere else. I was originally a chemistry major up until my Junior year of college, but I knew I wanted to get out into the field more and learn more about the environment. I have come to love the smaller size of the department, I feel like I know all of my peers and professors better. It's really hard not to get to know people in the department when you've been out in the field with them for 3 weeks making geologic maps of southwest Montana, or hiking 12 miles up a Hawaiian volcano to dip you hammer in lava, or even just sharing the experience of having thin sections run through your dreams after a long day in mineralogy or petrology lab. Experiences like these, and the opportunities I've been granted by the department are invaluable to me, and I truly feel that I've been prepared for life after graduation.

**Future Plans:** I have been accepted into the University of Iceland Exchange study abroad program, so I am currently planning to spend next semester in Iceland to see the volcano I do my research on (and take some samples back for Dr. Peate.) After that I am planning to take a gap year and then apply for graduate schools and continue doing research in the field of geochemistry.



## Undergraduate Student Profile

### Megan Koch - Geoscience BS student

**Research:** Geochronology and the tectonic setting of accretion of the Arctic Pearya terrane

**Experience I value at UI:** I enjoy the close-knit community within the department, as well as the opportunities throughout each semester for field work. The field trips that I have attended have been pivotal in defining my interests within the field of geology and the community of professors and students at UI has allowed me to pursue those interests.

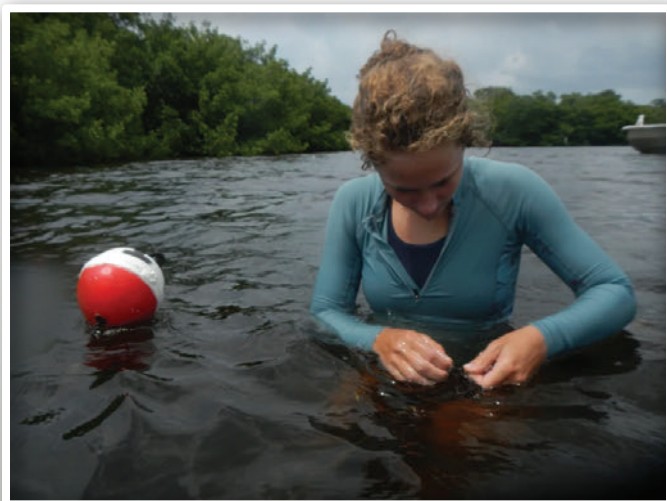
**Future Plans:** I plan to graduate in the spring of 2019 and attend graduate school. I then hope to work for a state or national survey doing geologic mapping or continue to do research through academia.





## Environmental Science Internships with Sanibel-Captiva Conservation Foundation

Hello! We are Claire Carlson and Megan Powers, seniors at the University of Iowa studying Environmental Science and Geoscience. This past summer, we received the opportunity to live in the humid and tropical paradise of Sanibel, Florida for ten weeks. Sanibel is known for its beautiful shell-covered beaches and the Ding Darling National Wildlife Refuge. Here, we interned with the Sanibel-Captiva Conservation Foundation and were able to engage in research studies, participate in conservation restoration projects, and conduct our own marine-related experiments. Claire's experiment revolved around macroalgae aquaculture and its viability as a potential economic and restoration venture. Megan worked on a project to examine the seagrass communities in relation to the symbiotic bivalves necessary to remove toxins from the sediment. Throughout the experience we learned to organize and execute independent research from proposal to final presentation. This opportunity also provided us with excellent lab and field experience in an area of study we wish to pursue (each in our own ways). We are extremely grateful for our time with the SCCF Marine Laboratory.



## AAPG Fall Field Trip

Every fall semester the University of Iowa AAPG Student Chapter takes a field trip to engage upper level students in a professional activity that integrates various aspects of applied geology with their basic geological training. This year, the group traveled to the Cheyenne Belt in SE Wyoming to learn about the Medicine Bow Orogeny and associated magmatism. The group spent three days looking at the Laramie Anorthosite Complex as well as mylonites that define the suture zone between the Wyoming and Yavapai Province. The group camped at beautiful Vedauwoo Campground, 20 miles SE of Laramie, WY.



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EARTH & ENVIRONMENTAL SCIENCES

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## Share your perspective

*Please share the wisdom you've accrued throughout your career with our students by answering one or more of the questions below, or dispensing any other advice you may have. Your responses will be included in the Alumni Perspectives in the next newsletter. Send them to [geology@uiowa.edu](mailto:geology@uiowa.edu) and indicate whether you would like it to be anonymous or attributed to you. Thanks for sharing!*

*What made you competitive in your field?*

*What were your lucky breaks?*

*What type of preparation would have made your career path easier?*