



DEPARTMENT OF

GEOGRAPHY, GEOLOGY, AND THE ENVIRONMENT

Geology Celebrating 50 Years

Volume 44
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Glacial Deposits



Greetings from the Department

A Message from the Chair



Greetings from the Department! I hope this message finds you in good health and spirit. I am happy to announce that 2018 was another fantastic year for our Department. Our faculty, staff, and students continue to make significant contributions to the mission of Illinois State in areas of teaching and student mentorship, scholarship, professional service, and outreach activities. This fall, we launched our new interdisciplinary program in Environmental Systems Science and Sustainability (ESSS) with 11 students enrolled at census day. The Department became a permanent home to the Illinois Geographic Alliance. Its activities will continue to serve teachers and the geography discipline across the state of Illinois for years to come; these initiatives will be made possible through an \$800,000 endowment from the National Geographic Society to the Department.

The year 2019 marks the 50th anniversary for our Geology Program. We have taken the opportunity to honor this important milestone by hosting a variety of events throughout the course of the year, starting with a 50th Anniversary Field Camp reunion this past August in Cody, Wyoming. Twenty-two alumni from over a dozen graduation years joined in the celebration. We continue to celebrate throughout this academic year by inviting several of our Geology and Hydrogeology alumni to campus to spend time with current students and faculty, and to reconnect with the Department.

Last year we began a new initiative to build a collection of stories about professional trajectories of our past graduates, through an effort we call "Career Snapshots". This venture has been very successful thanks to the engagement of our alumni. Each participant is featured on a canvas print that appears in one of our classrooms for all current and potential students to see that there are no boundaries where professional success is concerned for graduates in Geology, Geography, or Hydrogeology. The collection is quickly demonstrating the impact that graduates from our programs have on their disciplines, and our society. Our graduates are shaping our world as members of professional teams that transform their communities through various leadership, mentorship, and philanthropic positions.

The following pages of *Glacial Deposits* showcase our accomplishments and share stories, often from the perspective of our students, of the happenings and exciting opportunities we have enjoyed over the past year. As in years past, many of the in-class field trips, student club excursions, other explorations, student scholarships and awards, and the Career Snapshots initiative have been made possible through generous gifts that we continue to receive from donors like you. I hope you enjoy the content.

On behalf of all of us in Geography, Geology, and the Environment, I thank you for your continued friendship and support.

Dagmar Budikova, Chair



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The Right Environment for Change

By: Emmi Chambers



Environmental Systems Science and Sustainability Majors.

The environment has been my passion for as long as I can remember, which is why I am honored to be the first Environmental Systems Science and Sustainability major at ISU. I remember sitting in Dr. Budikova's office two and a half years ago as a prospective student and feeling my face light up as she talked about the Environmental Systems major. The more she described the way the program melds science and social science to take an interdisciplinary approach to environmental problems, the more I felt myself fall in love with this major.

The part of the ESSS major that truly drew me in was the Systems. There is no way for humanity to address environmental issues if we are unable to look at them holistically. Attempting to fix these problems requires us to look at our world as a system. If we want to restore endangered populations, we not only need to understand population genetics and conservation biology, but also the political and economic factors that drove the species to endangerment in the first place.

The ESSS major focuses on developing a thorough understanding of both hard sciences and social sciences. It can be tailored through elective choices to lean more toward one or the other, but there are options for both. I generally lean more toward the social sciences than the physical, but I fully acknowledge the necessity of each. Without understanding the science behind these problems, it is impossible to grasp the severity of situations. This semester alone I am in three different science classes. With every science class I take, I learn a variety of skills I can incorporate into my future field. I have learned to use burettes and perform titrations; studied microevolution across generations of flies; and performed

gel electrophoresis to compare genetic materials. These are just a few examples, but they have prepared me to better analyze the environment I strive to protect.

The ESSS major contains plenty of social sciences, as well. There are economic analyses, discussions of how to define nature, and research into environmental initiatives and policies integrated throughout the major. It never separates people from nature, because it is our actions, values, and societies that damage the environment.

Unlike programs at other universities that focus on the environment from a scientific perspective, policy perspective, or another narrowed viewpoint, our program takes a far more holistic approach. It provides the skills to look at all influencers on the environment. I am so proud to be part of this program because I believe it will empower all its students to become the environmental defenders our planet desperately needs.



Current Faculty



Dr. Tenley Banik
Assistant Professor of Geology;
Petrology, Volcanology, Geochemistry



Adam Bauer
Instructional Assistant Professor of
Geography



Dr. Amy Bloom
Instructional Assistant Professor of
Geography;
IGA Co-Coordinator



Dr. Dagmar Budikova
Professor of Geography & Chair;
Climatology, GIS



Dr. James Day
Professor of Geology;
Paleontology, Paleoecology,
Paleogeography



Dr. Alec Foster
Assistant Professor of Geography;
Urban Environmental Change, Urban
Sustainability, Environmental Justice



Dr. Matt Himley
Associate Professor of Geography;
Nature-Society, Political Ecology,
Latin America



Dr. John Kostelnick
Professor of Geography; GIScience,
Cartography, GEOMAP
Director, IGA Coordinator



Dr. David Malone
Distinguished Professor of Geology;
Structure, Stratigraphy, 3-D
Mapping



Dr. Catherine O'Reilly
Associate Professor of Geology;
Biogeochemistry, Water Quality,
Hydrogeology



Dr. Reecia Orzeck
Associate Professor of Geography;
Political Economy, Historical and
Social Geography, Middle East



Dr. Eric Peterson
University Professor of Geology;
Hydrogeology, Karst Hydrology



Dr. RJ Rowley
Associate Professor of Geography;
Sense of Place, Cultural Geography,
Internship Coordinator



Dr. Wondwosen Seyoum
Assistant Professor of Geology;
Hydrogeology, Remote Sensing,
Hydrologic Modeling



Dr. Jonathan Thayn
Associate Professor of Geography;
Landscape Ecosystem Function
Modeling, Remote Sensing, Latin
America



Dr. Lisa Tranel
Associate Professor of Geology;
Geomorphology, GIS Applications



Dr. Henry Zintambila
Assistant Professor of Geography;
Precipitation Geochemistry,
Climatology, Africa



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Current Staff



Karen Dunton
Administrative Clerk



Barbara Fiest
Civil Service Extra Help



Megan Maher
Assistant Director of GEOMAP, Public Outreach Coordinator, GIS Specialist



Paul Meister
Coordinator of Academic Services in Geology, GEO 102 Instructor



Jill Thomas
Geography Advisor, Teacher Education Specialist, Geography Lecturer



Mujen (Jack) Wang
LEA Laboratory Coordinator



Students at Badwater Basin, Death Valley, California.

Volcanic Processes Takes Field Trip to Nevada and California

By: Preston Konop



This past spring students of Volcanic Processes had the opportunity to attend a field trip led by Dr. Tenley Banik to Death Valley, California, and surrounding areas. While on the trip students were able to view the local geology of southern California, including Death Valley National Park; Knopf's Knob, a classic geology site near Bishop; and the Mammoth

geothermal energy plant. We explored other geologic features in the area such as Split Cinder Cone Mountain in Death Valley and the deposits of the Long Valley eruption exposed in Owen's River Gorge in Bishop, California. At each of the locations students were able to practice their field skills such as rock description, field notes, and stratigraphic columns. The highlight for many on the trip was seeing geology resulting from volcanic processes. One of the most interesting places Dr. Banik took us was to an outcrop that contained mantle

and lower crust xenoliths—they were spectacular to see! The field trip was a fantastic learning experience and gave us awesome new experiences with geology. The students that attended the trip want to extend gratitude and thanks to contributors to the Powell Fund, Dr. Banik, and Paul Meister for making the trip possible!



A teaching moment at Split Cinder Cone, Death Valley, California.

2018-19 Donors. Thank you!

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Gifts were received between 11-1-18 and 10-23-19



Geography Club at Sleeping Bear Dunes.

Dunes, Dutch, and Memories in Michigan

By: Olivia Bachtold

This past summer in mid-May, I had the pleasure of being part of Geography Club's end of the year trip in Michigan. We started our four-day excursion arriving at the "Wayfarer Treehouse," a modern Scandinavian house nestled in the woods and right by Lake Leelanau. We went to Sleeping Bear Dunes National Lakeshore the next morning, which has a beautiful landscape of glacier formations complemented with a sandy coastline overseeing Lake Michigan.

We then went to Glen Arbor, which is home of the first Cherry Republic store. They carry over 200 different cherry products and did not disappoint on the samples of cherry chocolates, cherry sodas, and cherry salsas! One of my favorite destinations was Fishtown, a historic fishing district established in the 1900s right along the Leland River. The fish shanties are

wasted space after the hospital closed is now a repurposed property where you can dine, shop, and tour the underground steam tunnel. After seeing the village on the inside, we explored the winding trails surrounding the property and found the infamous Hippy Tree. The tree is technically multiple trees and has been covered with vibrant paint throughout the years. The best way I can describe it, is that it looked like a ginormous art sculpture in the middle of the woods. After all the hiking and exploring, it was time for ice cream! We got to visit Moomers homemade ice cream shop, which is located on the owner's family dairy farm.

We ended the trip heading south to Holland, Michigan, where we stopped at Nelis' Dutch Village. The village had gourmet candies,



Students doing a traditional Dutch Dance in Holland, Michigan.



Geography Club in Fishtown, Michigan.



occupied with art and clothing boutiques, as well as fish-centered eateries you can spend most of the day exploring.

Historic Mission Point Lighthouse was built in 1870 and is located near the 45th Parallel. We participated in a self-guided historical tour through the lighthouse and climbed all the way up to the top of the lighthouse for a rewarding view of the Grand Traverse Bay. There is also a park by the lighthouse that is occupied with multiple trails we were able to hike on. We stopped for lunch the following day at The Little Fleet in Traverse City. They had a variety of different and modern food trucks, serving sushi to tacos to vegan barbecue sandwiches. We then explored the diverse Front Street, and went to Kilwin's dessert shop, a rock and mineral shop, and other unique stores showcasing the finest of Traverse City.

The next day was spent at The Village at Grand Traverse Commons. The Village is one of the largest historic preservations and was once the Northern Michigan Asylum originating in the 1890s. What was once

cheeses, personalized clogs, and an unending variety of tulip-themed gifts. We were right on time to see a traditional Dutch dance be



performed, and we were also chosen to dance in a circle with them for the end at the end of the show. I had a blast seeing cherry vineyard after cherry vineyard on our journeys to the next destination, as well as the walks by Lake Leelanau in the morning. Some nights we cooked with the provided grill at the Treehouse and had some smores by the campfire. I made some unforgettable memories and kicked the summer off to a great start representing the Geography Club in Michigan!

Social Science Geography Education Major Interns in Taichung, Taiwan

By: Kylie Tunk

In the spring 2019, Illinois State University's secondary education programs through the Study Abroad office, created a partnership with the Ivy Collegiate Academy in Taichung, Taiwan. This new summer experience would be an all-expense paid trip plus stipend to assist teachers at the ICA during the summer. Through a rigorous interview process, four ISU students were chosen. Two were from our Social Science Geography Education program: Nicole Derf and Kylie Tunk. Unfortunately, Nicole could not attend. Kylie did complete the internship and is currently student teaching geography and social sciences in Chicago. Below are Kylie's thoughts on her experience from this initial internship.



This past summer I had the opportunity to partake in a teaching internship in Taichung, Taiwan. I taught summer school at the Ivy Collegiate Academy and co-coached volleyball after school. This experience has changed my life and has given me a sneak peek into international teaching.

Every intern had different experiences while in the classroom. I am a geography major, but I was teaching writing and literature. This was a challenge because it was out of my content area. Teaching any subject area at ICA is going to feel like teaching an English class because these students are working on those skills in all subjects. Every intern was given a mentor, and some were more hands-on than others. My mentor was the director of the internship program and he left me alone most of the time with my students. It felt like my own classroom and I really liked that. Other interns had more assistance and were weaned into teaching; that was just not the case with me. I was definitely thrown into it, but it helped me in the long run because I was able to figure out lesson plans and assessment by talking to the other teachers.

Another responsibility I had at ICA was coaching volleyball. This was summer school, therefore, the team did not play any other schools and we just did scrimmage games. This was such a rewarding part of my experience because coaching volleyball is something I would like to do in the future, and the amount of growth I saw in my students in just four weeks was amazing. Most of the girls have never played volleyball before, so Tayah and I were trying to teach basic skills before we got into any game-play. Tayah was another intern from ISU who was co-coaching the volleyball team with me. We did not think it was going to be possible to have a scrimmage game with the team since they were at such a low level when we first started. Our minds soon changed after we saw extreme growth among the kids. This experience furthered my interests in being a coach because it created a unique community among the girls and I felt so much closer to my students.

On the weekends, the interns still had duties to attend to. Each of us were given a group of students to watch over on our Saturday field trips. Some of these field trips were to amusement parks, night markets, and historic sites. This was a task that was stressful at first, because I myself have a language barrier going out in town, but the girls I chaperoned would translate for me and even made me a Chinese notebook with basic words and phrases. This was another part of the internship that really brought me closer with student who were not in my classes.

Being an intern also means that we were dorm parents. We lived on the same floor as the students and shadowed dorm parents who have been teaching at ICA for a few years. We would have to wake the girls up in the morning and make sure they checked in at dinner. We also had to make sure their rooms were cleaned every morning and even kill off some cockroaches in the girls' room. Exciting.

After all of those intern duties during the week, there was still no time for relaxing. This trip kept all of us moving. On Fridays we would have dinner with Chris, who was the director of the internship program and my mentor. He would debrief our week's work and schedules. And he would allow us to get away from school for a little. Saturdays were field trip days during the day, but at night, Chris had something planned for us every weekend, including Sundays. We went to a different city every weekend and explored the island and all it had to offer. We saw dozens of temples and my favorite was in Kaohsiung which was a Buddhist temple. We got to go underground to this temple, where we had to take off our shoes and pray. It was such an amazing experience and I wish I was able to get pictures, but photography was not allowed in a lot of these temples. We also went to Taipei and spent the weekend there. It was interesting to see how different each city was.

My favorite part of this trip was the FOOD. There are some interesting foods that students wanted me try at night markets, and one of those is stinky tofu. It smells terrible and I did not end up trying it, but we went to a traditional Taiwanese Hot Pot and Chris made the interns try duck blood. It was not my favorite food there, just knowing what I was eating made it a lot worse. My favorite food that we ate was at Din Tai Fung and we had soup dumpling with spicy noodles. We went there twice and were thinking about going a third time because it's amazing. I still crave it even though I have been home for over a month.

If anyone is thinking about applying for this internship, I highly recommend it. It was the coolest thing I have ever done in my life and I hope to teach internationally some day. I would even consider reaching out to Chris once I have my degree and maybe return to Taiwan in the future.



Faculty Spotlight

In this section, we would like to shine a spotlight on the accomplishments, research, and publications of a few of the Department's faculty members. This year's spotlight is on ...



Dr. Alec Foster

New Research Project Examines Rapid Social and Environmental Change in Philadelphia

I am excited to report on a new research project that I have started in the last year since joining the Department. The project investigates rapid social and ecological change and its influence on local residents in Philadelphia's South Kensington neighborhood, building upon my previous research in Detroit and Philadelphia. Geography students have been part of both the lab-based and fieldwork portions of this research, funded by the Illinois Geographical Society and Illinois State University's College of Arts and Sciences University Research Grant program.

Across the United States, postindustrial cities are exploring different creative strategies to revitalize the vast swathes of vacant and abandoned land left by the exodus of residents and industry. Indeed, some have argued that the extensive amount of vacant land in these shrinking cities offers the potential for sustainability transitions not possible in cities where land is often scarce and in high demand. However, many redevelopment strategies have failed to account for the social, ecological, and economic activities already occurring, which can increase the marginalization of current residents. Displacement of residents and their informal land use practices can occur when they are not included in plans for neighborhood change. However, despite growing awareness of the paradox of urban greening and the perils of environmental gentrification, there remains a critical need to document and analyze the spatial and statistical relationships between environmental improvements and neighborhood socio-economic change. It is only through such understanding that strategies for development without displacement can be developed.



This project will begin to fill this critical research gap by investigating such rapid socioecological change and its influence on residents in Philadelphia's South Kensington neighborhood. Specifically, it will analyze how land uses and demographics have changed at both the parcel and neighborhood scale as the formerly distressed

neighborhood has recently seen a boom of residential and commercial development. We will analyze the influence of development on the presence of different types of public and private greenspace, alongside changes in the residential makeup of the neighborhood. We are working with a local environment advocacy group to help them document how development is causing the loss of greenspace in the neighborhood and try to preserve what remains.

This summer, I worked with three students to develop two datasets of urban greenspace in the South Kensington neighborhood, allowing for a temporal comparison. They used freely available, high resolution aerial imagery provided by Google Earth to complete a greenspace census for the neighborhood in 2010 and 2016, working parcel by parcel to digitize formal and informal greenspaces. At the end of the summer, we visited Philadelphia to verify our results on the ground. Over the course of two long, hot days, we walked the neighborhood block by block, groundtruthing our remote sensing results. It was amazing to see the amount of development in the neighborhood, and how many greenspaces had been lost in such a short time period.



This fall, we are analyzing the results and preparing our initial findings for publication. This project is part of a larger comparative study on rapid urban socioecological change in postindustrial cities (Detroit and Philadelphia, with more cities to be added pending additional funding). The long-term goal of this project is to understand how these shrinking or legacy cities can address challenges of vacancy and economic decline equitably by generating strategies for redevelopment without displacement.

Alums Fund Field Experiences for Students

By: Laura Freyman

(Originally published on news.illinoisstate.edu)

When Fred Lutgens '67, M.S. '70 went on a field trip with his geography professor, James E. Patterson, in the summer of 1965, he never expected to meet his future wife. But Fred fell for his professor's daughter, Nancy (Patterson) Lutgens '93, M.A. '94, who along with her mother, two sisters, and brother, had accompanied her father on the summer-long field trip. Fred and Nancy were married on Fred's graduation day, June 10, 1967. The two have since enjoyed a life devoted to education and research. In honor of Nancy's late father, the Lutgens family gave \$45,000 in cash and matching gifts to help establish the James and Lucy Patterson Family Geography Field Trip Endowment (<https://giving.illinoisstate.edu/fund/james-and-lucy-patterson-family-geography-field-trip-endowment/>) to encourage field research for Illinois State students. Nancy's three siblings, all University High School graduates—Judy Henderson '87, Janet Goucher '89, and Neal Patterson—also contributed financially to help establish the endowment.

Inspiring a love of learning

James Patterson served as geography professor at Illinois State from 1957 to 1986. His work at Illinois State earned him the first Bone Award for Outstanding Teacher at Illinois State University and the Illinois Geographic Society's Distinguished Geography Educator Award. "My father-in-law was known as a great storyteller," said Fred Lutgens. "He often told students stories from his travels. He was an incredibly engaging professor." Patterson used field experiences to enhance material taught in the classroom. He led student groups on numerous multi-week field trips to the Southwest, Pacific Northwest, and Alaska, often developing partnerships with local universities along the way where he would give guest lectures. Patterson delighted in the look on his students' faces when they experienced new people and places. Patterson's love of learning impacted his daughter Nancy, who returned to school after Fred completed a master's in geography in 1970 to complete her own bachelor's and master's in history in 1993 and 1994. She later went on to earn a master's in library science from the University of Illinois in 1998. Fred's professor turned father-in-law was also an inspiration for Fred's career. Fred taught Earth science and geology courses at Illinois Central College from 1969 to 1999 and has coauthored multiple editions of six college textbooks as well as a high school text that are currently used throughout the country. Some of his textbooks have also been translated into Italian, Korean, Turkish, and Spanish. The Lutgens' passion for education and helping others inspired their two daughters. The Lutgens' daughter Karen holds a master's degree in library and information science and a master's in business administration. Their daughter Kathy is a social worker for the Illinois Department of Child and Family Services.

Enhancing field experiences for students

When the Lutgens helped to establish the James and Lucy Patterson Family Geography Field Trip Endowment, they knew they wanted to give students the same opportunity for field research that Fred—and as the professor's daughter, Nancy—experienced years ago. The fund provides resources to the Department of Geography for field experiences for qualifying individual students or groups of students. In 2019, the department used funds from the endowment to offset student costs for a field excursion in Chicago. Jessica Abdelnour, a junior geography major and geology environmental science minor from Aurora, was among students on the Chicago field trip. "The field

trip allowed me to explore many neighborhoods in Chicago that I had never been to before," said Abdelnour. "I heard amazing stories from locals when we visited the neighborhoods of Chinatown, Humboldt Park, and Bronzeville. They told us about what they are doing to preserve their cultural footprint and fight gentrification. We also learned about inclusiveness and integration when we traveled to Oak Park, a community right outside the Chicago borders." The Chicago field trip group also analyzed how gentrification in the city has affected community members' access to public transportation. "We interviewed people about their use of public transportation, and then I created maps to show the level of access to L-train stations that different ethnic groups have depending on the location of where they live in the city. It was interesting to see how gentrification plays a role in transportation and cultural neighborhoods." Abdelnour is grateful for the opportunity the James and Lucy Patterson Family Geography Field Trip Endowment provides. "I'm so thankful to have gone on the Chicago trip and to expand my knowledge of a city that I can now say I truly love!"



Carrying on the Patterson legacy

For Fred and Nancy Lutgens, giving back to Illinois State was a natural response to the wonderful experiences they enjoyed on campus. "My time at Illinois State was an extremely influential part of my life," says Fred Lutgens. "We're happy to be able to pay forward the benefits we received as Illinois State students." Fred Lutgens points to Illinois State's strong academics and individualized attention from faculty as a reason to continue supporting the institution. "My experience was very positive, as was my wife's experience," said Fred Lutgens. "It was a different era when I was a student. During my freshman year, it was Illinois State Normal University. But Illinois State continues to prove itself to be a strong university where students thrive." Fred and Nancy returned to Bloomington-Normal recently for the funeral of Nancy's mother, Lucy Patterson. "Three of my father-in-law's former field trip students, one from as far away as California, attended Lucy's funeral," said Fred Lutgens. "It's truly a testament to the influence both James and Lucy had in their lives." Fred and Nancy are carrying on the Pattersons' influence, making sure the next generation of Redbirds can experience the life-changing field trips James Patterson once made possible for his students.

During the final year of Redbirds Rising: The Campaign for Illinois State (<https://giving.illinoisstate.edu/campaign/>), your support helps meet critical priorities related to scholarship, leadership, and innovation. To learn more about the campaign, or to make a gift that enhances your legacy, visit [RedbirdsRising.IllinoisState.edu](https://giving.illinoisstate.edu/campaign/) (<https://giving.illinoisstate.edu/campaign/>).

this trip helped me not only as a student, but as a person! e.k.



thank you. for making this trip happen! -m.l.



I would like to thank you for you contributions. J.R.



This trip wouldn't have been possible without your contribution. Thank you so much! - M.L.

without your generous donation, I most likely wouldn't have been able to afford it. So, from the bottom of my heart... Thank you!!! - J.H.

Thank you so much! -M.L.

This trip has inspired me to travel more and make connections with people from different cultures. Thank you! -K.C.

Roaming Redbirds Rock!



Thank you making this amazing experience possible! -E.K.



This trip has made a tremendous impact on my life. -E.K.

Thank you for all that you do to make this trip possible! -J.H.

Thank you so much for funding a trip that has changes so many students' lives, including my own! -Y.U.

These are lessons I will carry with me for the rest of my life YU



Celebration of Geology's 50th Anniversary in Cody, Wyoming

By: Dagmar Budikova



At the end of summer 2019, August 1-4, several Geology alumni met in Cody, Wyoming, at the A. L. Mickelson Northwest College Field Station, in celebration of Geology's 50th anniversary and Field Camp. We were joined by 23 of our alumni from over a dozen graduation years to reconnect, reminisce, and learn new things about the geology of the surrounding area. In attendance were Paul Meister, Dakota Csanda, Jacob Milton, Andrew Maas, Jacqueline Rowley, Katherine Erny, Kate Krischke, Matthew Kaufman, John Grabs, Eli Ortenberg, Brett Kenning, Brandon Agner, Evan Bowen, Amie Hinds, William Shields, Kelly Sanks, Kyle Schusler, Jason Rappe, Laura Sugano, Adam Trzinski, Bradley King, Audrey Happel, and Meredith Strow.

David Malone Honored as Distinguished Professor

By: Dagmar Budikova



The Department is proud to announce that Professor of Geology David Malone delivered the Distinguished Professor Lecture at 5 p.m. Wednesday, October 30, 2019. Malone presented his talk titled "From Fire to Ice: The Geologic History of Illinois as Told Through Sand" to a captive audience of almost 200. Malone's work focuses on how grains of zircon present in sand deposits are used to interpret geologic history. "Zircon is a mineral that is present in trace amounts in sand, and, along with the ubiquitous quartz, is among the most valuable of the sand grains for scientific investigation," said Malone whose scholarly record includes more than 100 peer-reviewed articles, geologic field guides, and geologic maps.

Passionate about teaching, Malone has taught nearly 3,400 students in 11 different classes during his years at Illinois State. He has served as an academic advisor for more than 400 undergraduate Geology majors and has mentored 74 of those students in research. He also has chaired the thesis committees of 25 Hydrogeology master's degree students.

Geology Welcomes Back Alumni to Celebrate 50th Anniversary

This year, 2019, marks the Geology Program's 50th anniversary! To celebrate, the Department welcomed back several geology alumni to give colloquium presentations. Here are the alumni who have visited so far.



Kara Haas

In 2000, Kara Haas graduated from Illinois State University with her bachelor's degree in Geology. She then went on to pursue her master's degree in Hydrogeology at Illinois State University and graduated in 2002. She is currently employed as a managing consultant at Ramboll, Inc. in St. Louis, Missouri.

When asked how she felt about her time in the Geology and Hydrogeology programs Kara stated, "The Department impacted my life immensely. I didn't know where I wanted to be, but I knew as soon as I enrolled in Geology it was the place for me." Kara then went on to give some useful advice to current students on the programs: "Be flexible and willing to learn!"



Jamie Keneally

Jamie Keneally graduated in 1999 from Bradley University with a bachelor's degree in Geology. She then went on to receive her master's degree in Hydrogeology from Illinois State University in 2001. She is currently employed as a Senior Hydrogeologist at Clear Creek Associates in Tucson, Arizona.

Jamie was asked how she felt about her time in the Hydrogeology Program, she responded, "I learned a lot. The faculty was very supportive. There was a more applied aspect to the program that I found helpful." Her advice for current students of the program was, "Explore your options. Go to colloquiums and listen to what they are saying. You may learn something, and don't be afraid to reach out to the speakers."

Congratulations, Graduates!

Geography

Kendall Anderson
Katherine Barrett
Thomas Berard
Noah Bond-Cruz
Julianna Clausen
Hulda Desrosiers
Scott Diveley
James Eggers
Nicholas Harsted
Jordan Hawks
Taliyah Herron
Joseph Hill
Emily Homan
Bethany King
Jill Marlott
Matt Rahman
Adrian Ramirez
John Richard
Tim Riley
Rebecca Ringo
Brooklynn Scharwark
Jacob Southerd
Yael Uziel
Drew Wilson

Geology

Nicole Axtolis
Tony Bierman
Abby Chesser
Vicara Czajkoski
Holly Gregorich
Joshua Hufferd
Linnea Johnson
Emilee Lovejoy
Joseph Mcguire
Zack Rowatt
Taylor Schafroth
Cody Schmidt
Grant Shea
Joseph Syzdek
Jessica Tolmie
Andie Traub
Robert Wencil
Zachary Werber

Hydrogeology

Luis Martinez
Andrew Oberhelman
Prince Oware
Jacob Piske
Ian Rusthoven
Andrew Watson
Dongjae Kwon
Hannah Wirth
Nicolette Sheffield

Japan Explorations By: Kaci Crowley



Ichinoseki in the North and Kagoshima in the South. Being immersed in Japanese culture first hand was far different from learning culture in a formal classroom. There are so many parts of their culture that we learned by doing and exploring. We were able to try new foods,

travel around by bullet trains, experience a neighborhood festival, walk on Mt. Fuji, and so much more.

Not everyone on the trip was a Geography major, but since Geography is such a universal discipline, it was easy for everyone to connect to something they have studied to Japan. Personally, my interests are in Urban Geography. So, I was able to experience the density of Japanese cities, both urban and rural. On an urban side, Tokyo was truly a sight to see. I will never forget walking through Shibuya Crossing, the busiest intersection in the world. It really put into perspective the population density of Tokyo. More rurally, we saw rebuilding efforts in the city of Kessenuma after the 2011 tsunami. Dr. Rowley has done extensive research about the city's recovery process. We were able to learn how the city is building preventative measures, such as a sea wall. I hope to be able to travel back to Japan someday, but for now, I feel confident in exploring new places anywhere I can!



Baja California Sur

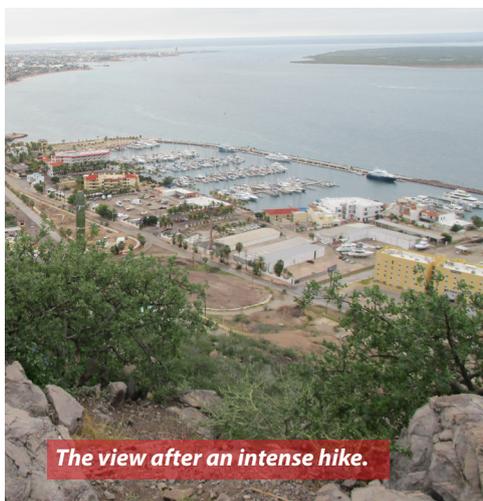
By: Jade Allen

At first glance, delicious and mysterious foods, Instagram-worthy photos, and a change of scenery all appear to be general motivators for travel, especially for college students, including myself. Though there is not an ill component to any of these ideals surrounding traveling, there are major shortcomings. Confidence and initiative when faced with a difficult situation. Thinking on your feet. Cognitive mapping skills. Acceptance of ways of life that seem erroneous, or a perception that it could be improved by American standards. Hands-on education. And of course, travel is the single most important thing a student can do to connect with a greater force in their life that inevitably makes the world a better place; exposure to new places allows for the development of tolerance and the blossoming of deeper meanings about what connects humanity despite geographic differences. One must experience those moments, not just hear or read them, to develop this enhanced view of the world.

My experience, shared with my classmates in La Paz, Mexico, as part of the environmental geography of Baja California Sur class, followed and expanded the objectives of travel. We felt the intimacy of the environment at the market, where the chaos of multiple sellers and diversity of options reflected an odd feeling of comfort. We used every muscle in our body to keep pace when swimming alongside a whale shark. We practiced our botched Spanish phrases, held meaningful conversations through Google Translate, and often wished we could talk with our eyes. We began an early morning adventure at a breakfast joint with a single bar and wondered who the women cooking our food were and where they learned their skill. We followed a primitive sign into a traditional-style ranch, where we rode horses through a canyon and beachside as dogs stayed alongside us for the entire three hours. We reflected in Cathedral

de Nuestra Señora de La Paz and took note of the prevalence of the Catholic faith. We swam in the rain, as no weather conditions could remove the enjoyment of the surrounding copper-colored mountains or the search for sea stars. We ate the fish, cooked at a local restaurant family-style with the entire class, fish that were caught after a day of boys against girls deep-sea fishing. We toured the water purification plants and considered the higher value of water as an alternative to the wasted energy of abundant water supply. We wondered "did this all happen just today?"

Throughout these amazing experiences, we emphasized and expanded upon the glories of travel that must not be cast behind its shallow cover. Perhaps we discovered a new one for each of us: the benefit of group travel. We all found the bond with our classmates was forever strengthened, as any of us went from strangers or mere acquaintances to friends that will always hold a special bond. We realized that as unique as an individual experience may have been, the collective feelings of the experience carry a power that would transcend the duration of the class. For current or future Geography students, stop reading and travel!



Scholarships and Awards

GSA Top Five Student Research Grants Awarded in the Hydrogeology Division:

Patience Bosompemaa

Louis Miglio Scholarship:

Katarina Kaplarevic
Victoria Edelman
Kylie Tunk

Harry Lathrop & Arthur Waterson Memorial Award:

Yael Uziel
Danika Mayback
Jacqueline (Jackie) Epperson

George R. Means

Geography Scholarship:

Tim Riley
Kaci Crowley
Dawson Council
Jade Allen

Margaret Means

Endowment Stipend:

Shaun Johnson
Olivia Bachtold

Eunice Blackburn

Scholarship:

Sara Chamberlin
Brooklynn Scharwark

Academic Excellence:

Sara Chamberlin

John and Susan Freed

Scholarship:

Jade Allen

Greg and Margaret Simpson

Scholarship:

Grace Stevens

Gamma Theta Upsilon:

Jessica Abdelnour
Sara Chamberlin
Dawson Council
Kaci Crowley
Shaun Johnson
Hailey Machnikowski
Abigail Shaver
Ethan Stoneburner
Alexandra Wilson

Illinois Geographical Society Outstanding Senior Award:

Yael Uziel

Student Research Contributions

- Bosompemaa, P.**, Peterson, E.W., Perry, W., Seyoum, W.M., (2019) "Nitrate transport in the unsaturated zone." *Geological Society of America Abstracts with Programs. Phoenix, AZ, Vol. 51, No. 6, doi:*
- Chabela, L. P.**, and Peterson, E. W., 2019, "Relationship between peak stage, storm duration, and bank storage along a meandering stream." *Water*, v. 11, no. 1688, p. 16, doi:10.3390/w11081688.
- DiVincenzo, A.**, Peterson, E.W., Hackley, K.C. (2019) "Using seasonal groundwater shifts in nitrate isotopes to examine the transport and fate of nitrate within a saturated buffer zone." *Geological Society of America Abstracts with Programs. Phoenix, AZ, Vol. 51, No. 6, doi:*
- Dooley, KB**, TJ Banik, CM O'Reilly (2019) "Recent Climate Change in Response to Volcanic Explosivity: Does VEI Matter?" GSA Annual Meeting, Phoenix, AZ, USA. 22–25 September.
- Dooley, KB**, TJ Banik, CM O'Reilly (2019) "Volcanic links to climate change." ISU University Research Symposium, Normal, IL, USA. 5 April.
- Konop, P.**, and Tranel, L., "Impacts of land-use change on the Menominee River in Jo Daviess County, Illinois." The University Research Symposium, Illinois State University Graduate School. (April 3, 2019).
- Maas, B.**, Peterson, E. W., **Honings, J.**, **Oberhelman, A.**, **Oware, P.**, **Rusthoven, I.**, and **Watson, A.**, 2019, "Differentiation of surface water and groundwater in a karst system using anthropogenic signatures." *Geosciences*, v. 9, no. 4, doi:10.3390/geosciences9040148.
- McGuire, SP**, TJ Banik (2019) "Silicic petrogenesis at Snæfell volcano, Iceland, revealed by zircon analyses." GSA Annual Meeting, Phoenix, AZ, USA. 22–25 September.
- Oberhelman, A.H.**, Peterson, E.W., and Twait, R., (2019) "Chloride signature and transport in an urban-agricultural stream." Joint Meeting Illinois Association of Groundwater Professionals and the Illinois Groundwater Association, February 15th, 2019, Peoria, IL
- Ohls, K.**, and Tranel, L., "Geomorphology of Matthiessen and Starved Rock State Parks." The University Research Symposium, Illinois State University Graduate School. (April 3, 2019).
- Sheffield, N.**, Godoy, E., Foster, A. "Chicago's Millennium Park: Finding Nature in the City." Poster. The University Research Symposium, Illinois State University, Normal, IL. (April 5, 2019).
- Sieggreen, G.**, O'Reilly, C.M., Perry, W., Peterson, E.W. (2019) "Relating nutrient uptake and metabolism in an urban cement lined stream, Illinois." *Geological Society of America Abstracts with Programs. Phoenix, AZ, Vol. 51, No. 6, doi:*
- Spooner, E.A.**, Peterson, E.W., Perry, W., **Ambrose-Igho, G.**, **Bosompemaa, P.**, **DiVincenzo, A.**, **Konop, P.**, **Martinez, L.**, **Oware, P.K.**, **Piske, J.**, **Salinas, C.M.**, **Sieggreen, G.**, **Ukpebor, O.** (2019) "Seasonal fish kill controls within a small lake in Bloomington, Illinois." *Geological Society of America Abstracts with Programs. Phoenix, AZ, Vol. 51, No. 6, doi:*
- Tranel, L., and **Rutte, M.**, "Analysis of anthropogenic and runoff erosion into sandstone canyon walls using repeat structure-from-motion." American Geophysical Union Annual Meeting, Washington, DC. (December 14, 2018).
- Tranel, L., **Rutte, M.**, and **Neundorff, J. A.**, "Post-glacial erosion of sandstone canyons in Central Illinois." Geological Society of America Annual Meeting, Geological Society of America, Indianapolis, IN. (November 2018).

Undergraduate and graduate students are listed in bold. Student participation in research and professional travel to conferences is made possible through generous gifts made to the Powell Fund, the Geology Excellence Fund, the Patterson Fund, and the Geography Excellence Fund.



Congratulations, Patience Bosompemaa!

Congratulations to Patience Bosompemaa. She was recognized by the Geological Society of America (GSA) as one top five student research grants awarded from the Hydrogeology Division in 2019 at the annual meeting in September. Patience received her bachelor's and master's of philosophy from the University of Ghana in Geology in 2011 and 2015 respectively. She is currently pursuing her Master's in Hydrogeology at Illinois State University.

Jeff Labahn: Another Geographer Makes a Name in Planning

By: Dr. Michael D. Sublett



Fresh out of graduate school and ready to dive into his career, Jeffrey B. Labahn (BS 1976) thought he had prepared well before convening his first public meeting as a Junior Planner in Fairbanks, Alaska. That was the meeting, however, where someone in the audience called him a Communist—

back during the Cold War and not all that far, across the Bering Strait, from Mother Russia. Alaskans took personally government interference (like land use zoning) with private property rights, a sentiment that Jeff says now has probably tempered “somewhat.” He survived the (false) accusation and the ice fogs of Fairbanks to continue working several years in Alaska, building his professional credentials and expertise before returning to the Lower 48 for the balance of his long and productive career, which now finds him the Director of Community Development & Inspections for the City of Kenosha, Wisconsin. Read on for details as to how a Geography degree at Illinois State fits into this picture.

Jeff came to Illinois State in 1972 out of Riverdale, Illinois, an inner-ring southern suburb of Chicago, undeclared as to his college major field of study and looking for “a level of familiarity and comfort,” as he put it recently. The fact that his sister was attending Illinois State did add to his comfort level. In his first semester, fall 1972, filling his general requirements for the BS, he took Geography 100, Earth Science, and earned the first of many excellent grades. From Earth Science, he moved through other lower division Geography courses and eventually declared the major in the fall of 1973. A year later he took Urban Geography, 336, and then, in spring 1975, went to Austria for a study abroad semester. While there he penned for volume 4 of *Glacial Deposits* what would be his first published article, “Salzburg: The Gateway to the Austrian Alps and Central Europe.” Already thinking like a regional geographer, Jeff commented therein about population, transportation, agriculture, and tourism. His Salzburg sojourn and Geography 336 got him thinking about planning as a career option, encouraged that Geography majors from State had for years been finding jobs in urban and regional planning.

Knowing that a master’s would increase his planning career options, Jeff, as he reported in his volume 5 *Glacial Deposits* article (“After ISU??”), “investigated many graduate school planning programs” before deciding on Kansas State University. There the “offerings in rural, community, and regional planning” appealed to him more than what he might have found in an urban-oriented curriculum. His successful completion of Geography 370 at Illinois State, Urban and Regional Planning, prompted Kansas State to waive a typical first semester course for him. He quickly got involved with classmates in the comprehensive plan process for Riley County, Kansas. In his second Wildcat semester he completed an internship in Lee’s Summit, Missouri, as a staff member in the Community Development Department with a focus on regulation of development. They also put his cartographic skills learned at Illinois State to good use.

Eager to apply his BS and MS degrees somewhere other than the Midwest, he pounced on an advertised opening in the Fairbanks North Star Borough, a civil division somewhat analogous to a county but approximately the same size as Connecticut. Though only there half a year, due to severe budget cuts, perhaps the result of locals not taking kindly to planners suggesting how they should manage their real property, he survived two straight weeks of low temperatures below minus 40 Fahrenheit, the crackling noises and static electricity of the Northern Lights, and those ice fogs. Of the ice fog, Jeff wrote in a third *Glacial Deposits* article (volume 7, dated 1978, and entitled “Alaska...The Challenge of Planning in the Last Frontier”) the fog (ice crystals) was a product of air pollution from space heating and vehicle emissions, the topographic basin where Fairbanks stands, and extremely low temperatures. The planning challenge, not unlike what planners still face everywhere, was to suggest to decision makers a strategy that “promotes the individual lifestyle within the context...[that] promotes the welfare of the entire area.” Even though he lost his planning job in the foggy basin, he liked Alaska enough to build a life there by moving to the Kenai Peninsula, at Soldotna, as a Senior Planner and later Land Manager, and then to remote Dillingham as City Planner and City Manager. While in Soldotna, Jeff met and married Barb, his wife to this day. Memories of the Kenai include moose scratching themselves against his house and caribou blocking roads as he traveled the countryside. Dillingham (population then about 2,000) was so remote that regular supplies, like most groceries, came in by airfreight; and big items arrived via barge from Seattle. Everybody went down to the dock on barge day to see what their neighbors had ordered, like mobile homes or building supplies.

Today, and since 1987, Jeff has been working not for 2,000 souls but eventually 100,000 bosses as he has moved up the planning pole in Kenosha, Wisconsin, which is just across the state line from Lake County, Illinois. He began as Assistant City Planner (1987-2006) and moved to Director of City Development (though 2011), and then to Director of Community Development & Inspections. He has been able, time and again, to call on his Geography background, as well as training/experiences as a planner, to help transform Kenosha, as his resume states, “from an industrial-based ‘rust belt’ city to an economically diverse location characterized by an excellent quality of life for both residents and visitors.” Jeff and his roughly 25 staff members handle matters of monitoring property maintenance, enforce building codes, work with developers who want to invest in the community, and carry out the customary duties related to planning and zoning. Among his many contributions to the Kenosha rebranding has been the implementation of a new slogan, “Chart a Better Course,” which connects with the nautical flavor of Kenosha’s location on Lake Michigan. Some days he feels like the “writer” of Kenosha’s future or even an “actor”; but on other days he, like most of us, is just a “reader,” along for the ups and downs of the ride.

Jeff has many initials that he can append to his name: BS, MS, APA, AICP, and CPM. In 2020, however, he is very likely to add RET as he plans to retire from active duty while he is still at the top of his game. We wish him well as his successful venture into the planning field comes to an end.

Exploring Cuba

By: Shea Grehan



When I started college, I was undeclared. It wasn't that I had no idea of what I wanted to do, but in fact too many ideas. How could I pick between all the paths before me? To decide among art, politics, biology, sociology, anthropology, and environmental science? I knew I wanted to do something related to each of those fields, but I wasn't quite sure how to navigate combining them

all—that is, until, I found the Geography Program at ISU. Geography has truly helped me blend together all my interests in the world, opened opportunities to me, and given me new ways of seeing. I'm not only a Geography Major, however; I'm also pursuing a Studio Arts Photography major and an Environmental Studies minor. Due to my programs of study, I've felt split between the worlds of art and science for most of my college career, that is, until recently, where I've had some life-changing opportunities open my eyes to ways I can bring both fields of study together.



This Spring (2019), I had the rare opportunity to travel to Cuba with the ISU Honors Program. Our trip lasted about 10 days, and over the course of it we learned about and observed many facets of Cuban society through trips and lectures. A few of the topics we covered were the Cuban healthcare system, school system, economy, national history, art and culture, agriculture, and religion (particularly Cuban Santería). As a Geography major, I went to Cuba with a certain perspective in mind: What kind of place is Cuba, and what is a Cuban's sense of place like? How can I capture this sense of place and share it with others? I felt that it was particularly important to address that last question—Cuba is a place that not many Americans know much about, and even fewer get to visit the country. Furthermore, Cuba is a nation that has a history of being isolated from the outside world; this is particularly true for the time it's been under the American embargo placed on it. Because of this, I felt a desire to capture Cuba and bring to light the aspects of its society that aren't regularly shared with the world. I sought to do so in a couple of ways. First, through my photography. When people view my photos from Cuba, I want them to feel as if they are in the place they were taken, and through taking people to these places, give them a greater understanding of Cuba's sense of place. I tried to capture everything that I could:



people, landscapes, cityscapes, the sea, wildlife, stray cats and dogs, monuments, performances, activities, art, and even agricultural practices – thus allowing viewers to piece together and understand Cuban society through the sum of its parts. Second, I researched and wrote a paper on Cuba's unique agricultural system, as part of my GEO 334 (Political Ecology) seminar. Without diving into the details too much, Cubans have developed an agricultural system within the last couple decades that embraces principles of agroecology; these principles can be characterized by things like polyculture, using natural pesticides and fertilizers, and communal labor. It is often referred to as the Movimiento Agroecológico de Campesino a Campesino (Farmer to Farmer Agroecology Movement, or MACAC). What made the MACAC movement such a great topic to research was how much its conception and growth is influenced by much more than agriculture. My research covered the social, political, economic, historical, and cultural influences that gave rise to the MACAC movement within Cuba, making my research of Cuba's agricultural system more of a window into the workings of Cuban society at large. As a part of this paper, I used the photos I took at Cuba's largest urban farm in Havana, as well as from a farm-to-table restaurant that we visited, to illustrate these agricultural practices.



I'm continuing this line of work as I finish up my senior year at ISU. This winter, I'll be travelling with the Alternative Winter Breaks program to Ecuador to work on a sustainable farm and restore indigenous trails. I'm already working on research on Ecuador that I hope to turn into an honors thesis upon my return. I'm slowly learning how to bring together my photography and geography skills to create pieces of work that expose people to other parts of the world, all while teaching them

something they didn't know. What I'm aiming to do is something along the lines of environmental photojournalism, in which I show the impacts of climate change on different communities around the world and how they adapt to these changes. I have hopes of pursuing graduate school in a topic related to this interest soon after I graduate from ISU, and the dream of having my work published by the likes of National Geographic one day.

Hands in the Water: Hydrogeology Students Investigate Local Fish Kills

By: Rachel Hatch (Originally published on news.illinoisstate.edu)



(Left to right) Preston Konop, Emmett Spooner, and Eric Peterson discuss where to find the sensors along the lake.

To say oxygen is important to life on land is an understatement. Yet dissolved oxygen in water is vital for aquatic life as well. A group of Illinois State University's hydrogeology students from University Professor of Geology Eric Peterson's class found real-world experience—and a bit of detective work—by exploring whether depleted oxygen levels impacted fish at a local lake.

"It's not an uncommon problem with small lakes," said Peterson of the phenomenon known as "fish kills" where dozens of dead fish can appear overnight at the edges of a lake. "Generally, it is because the fish do not have enough oxygen." Dissolved oxygen levels can be impacted by such factors as temperature, concentration of nitrates, algae, or how well the water is mixed, or the phenomenon where deeper, cooler water that lacks oxygen mixes with the upper in a lake that is rich in oxygen.

"We're working on a small scale to discover the bigger picture of what is happening to the fish," said Emmett Spooner, a graduate student in Illinois State University's Hydrogeology Program. "It's a small window into understanding what can keep ecosystems healthy."

On a mild day in September, Spooner and fellow graduate student Preston Konop headed out in a red canoe, paddling their way to the location of several sensors along a small lake at an area country club. In the spring, Peterson's class dropped weighted rope with multiple sensors at points to gather data. The once pristine rope is once again hoisted onto the shore, now encased with the smell of lake water and deep, green algae.

Even something as small as algae can impact oxygen levels for fish. "Algae perform photosynthesis in the day—taking in carbon dioxide and turning it into oxygen—but they reverse the process at night, and take up oxygen from the lake," noted Peterson.

The country club initially contacted Joan Brehm of the University's Center for Sustainable Water Future to examine the water. "It seemed like a perfect fit to involve Dr. Peterson and his students," said Brehm, who noted the goal of the center is to encourage cross-disciplinary engagement and collaboration among faculty, students, and community partners. "The students have a chance to not only learn the science of water quality, but they can also make a difference for a local community asset. This is the type of experiential learning that the Water Center is working to promote and support."

On the lake's shore, Spooner and Konop labeled empty bottles for water samples, as Peterson and Professor Bill Perry cleaned off the muck gathered on the cases of sensors along the ropes. Peterson, hoping the data will provide a clue, plugged each sensor into a cord connected to a laptop. "It's doing a pretty good job," said Peterson of the fountain that serves as one of the aerators mixing lower and upper levels of the lake. "We'll need to do more analysis to see if it is a nutrient or mixing problem."

Investigations into problems with bodies of water is just one aspect of the work of the hydrogeology program, which intersects research, theory, and application within courses in the Department of Geography, Geology, and the Environment.

"This is the epitome of real-world experience," said Peterson. "All the methods we are using are applicable to jobs students would perform



Students in Eric Peterson's class place sensors along the lake to measure temperature and oxygen levels. Photo by Joan Brehm

for consulting firms or other work." The class also worked with the City of Bloomington on nitrate removal from the city's source of drinking water, Lake Bloomington. Peterson noted the hands-on experience has led to nearly 100 percent of the program's students finding placements in the field or graduate school.

"I knew the program at Illinois State was really good," said Konop, who had the program recommended during his undergraduate studies in Wisconsin. "Water is a vital resource we can't live without. And the need for those who understand the challenges the water supply faces is only growing."

Back in Peterson's lab at Illinois State, the data revealed the possible problem. "By September, dissolved oxygen content dipped below sub-optimal levels for aquatic life," noted Peterson. "This is likely the cause."

The country club will continue studies on the lake to determine what might have caused the drop in oxygen. For Peterson and his students, the investigative work provided not only beginning answers, but a learning experience. Several of the team presented their findings at the national Geological Society of America conference early this fall.

"This is a chance for students to be scholars and practitioners," said Peterson.

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