

Greetings Science Friends!

First and Foremost, I hope that this message finds you, your family, and your friends doing well.

Hope and optimism are a wonderful pair -- right up there with peanut butter & jelly, Bert & Ernie, and adenine & thymine. Although I'm very optimistic that the world will get better, I prefer to focus on the hope that stems from my belief that with cooperation we can make the world a better place.

I see hope everywhere I look; the renewal signaled by spring growth around campus, joyful faces at vaccine distribution locations, and school children realizing summer vacation is right around the corner. Hope also abounds in the Department of Natural and Applied Sciences. In the pages that follow you'll see why we're not just optimistic that tomorrow will get better, but we're hopeful that through our hard and thoughtful work tomorrow will be made better. We're hopeful because of the University's acquisition, through the generosity of a donor, of the Wolters Woods and Prairies. We're hopeful because of the amazing Grunenwald Gift to fund research in the sciences. And we're hopeful about all the wonderful things this year's great group of graduates will accomplish.

One of the things that brings me the most hope is our students. Thanks to all you students - past, present, and future – for all that you have done and will do to make this world a better place.

Yours in science,




Adam R Hoffman

Professor of Environmental
Chemistry
DNAS Department Head
ahoffman@dbq.edu

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Supporting the Sciences

Caroline Grunenwald (C'08) and her family generously provided funding to allow three DNAS research projects to incorporate some fantastic new components. We are hopeful these projects will continue to flourish!

With the generous funding from the **Grunenwald** family, we have secured a gel documentation system for the DNAS department. This is essential equipment for any molecular work including the orchid flower color project we have started. We are very grateful for this update for the molecular lab since it has a much broader impact on classes as well as on all molecular research projects. We were also able to purchase CRISPR/Cas9 plasmids and Agrobacterium AGL-1 strain to transform Dendrobium orchids.

Jenna Meyers (C'21) is working with me to clone the guide RNA to shut down the purple color to reroute the color pathway of orchids. We are excited about the possibility of making new knockout plants with altered flower colors (preferably bright red and blue). At right, Jenna is getting ready to extract flower pigments from a *Cattleya* plant and getting ready to pollinate a *Dendrobium* hybrid.

Rasika Mudalige-Jayawickrama
Professor of Plant Biology



With the support from the Grunenwald's, students research in the Grussendorf lab, has been able to incorporate a new tool called Base editing. Base editing is a technique formed from the concept of CRISPER-Cas9, a genome editing tool, that has been very widely used across different areas of science, and the scientists that discovered this technique recently won the Nobel prize for their work. With a student in the lab, we are currently working to address a genetic mutation that has been found in individuals that are diagnosed with the neurodegenerative disorder, Parkinson's disease.

We are hoping to, within the lab, determine if we can change the genetic mutation that is correlated to this disease back to the normal sequence. The support from the Grunenwald's has helped in purchasing various chemicals and materials for this project, as well as costs associated with sequencing of our samples. We are very appreciative of the support and look forward to our coming results.

Pictured left is **Zach Elias (C'22)**

Kelly Grussendorf
Associate Professor of Biology

Undergraduate students are assisting Kleinschmit with novel research investigating the prevalence of antibiotic resistance and the molecular mechanisms of antibiotic resistant gene transfer between microbes in local environmental soil communities. Products from this research project include the establishment of key experimental techniques that will be shared with a network of international researchers performing environmental surveillance with students. Applications encompass the establishment of standardized methods for gathering data, which is vital to uncover connections between environmental reservoirs and clinical threats needed to shape public policy and improve societal antibiotic stewardship efforts.

"The generous support from the Grunenwald family has been critical for obtaining reagents to allow students to move our research forward with contemporary tools. Not only has this support bolstered the quality of the research, but also has enriched the student experience as they will continue to use the skills they learned in graduate and professional school." remarked Kleinschmit.

To the right is research advisee **Zac Simanski (C'21)**

Adam Kleinschmit
Associate Professor of Biology



University of Dubuque's Wolter Woods and Prairies

The University of Dubuque recently acquired a 121-acre property in northern Dubuque County. The Wolter Woods and Prairies was purchased from **Mari and Gary Wolter** and will be the home for the new University of Dubuque Environmental Stewardship and Retreat Center. The property consists of approximately 21 acres of small prairies with the remaining 100 acres being a mix of upland and lowland forest. Highlights of the property are a spring fed creek, limestone outcroppings, and a diverse fauna and flora that includes several species listed as Federally and/or State *Threatened or Endangered*.

The Department of Natural and Applied Sciences has built the University of Dubuque relationship with the Wolter Woods and Prairies. For many years, DNAS students have journeyed to the Wolter property to gather data in pursuit of independent research. DNAS Class of **2013 graduates Elizabeth Bainbridge, Chelsie Cruise, Kyle Redmond, and Megan (Johnson) Sprague** were the first to journey to the Wolter Woods and Prairies to study wildlife as they surveyed bats and radio-tracked flying squirrels. Every year since, several UD science students have followed those first footsteps to continue studies on bats and flying squirrels or begin new studies on native orchids, native bees, snakes, soil chemistry, and prairie ecology.

DNAS students will begin a new relationship with the Wolter Woods and Prairies as **Grace Mayberry, Paige Peterson, Max Snowden, and Dillon Tierney** are the inaugural Land Stewardship Interns. Together, they will work with **Eric Nie** (Environmental Science, C'15), the property's Environmental Specialist, to implement controlled burns, remove invasive plant species, and pursue best practices for forest management.

DNAS science professors also have journeyed to the Wolter Woods and Prairies with students for field labs in classes ranging from Environmental Chemistry to Fish and Wildlife Management, from GIS to Ecology, and from Mammalogy to Environmental Toxicology.

The Wolter Woods and Prairies also will offer important learning opportunities for numerous academic and non-academic programs across campus. Already the Theology undergraduate program and the Physician Assistant Studies graduate program have scheduled activities and workshops in order to connect their curricula and students to the natural world.

Stay tuned to see how the Wolter Woods and Prairies helps shape the future of DNAS and the broader University Community. Get connected and schedule a visit by emailing WolterWoods@dbq.edu and follow on [FaceBook](#) and [Instagram](#).



"Wolter Woods and Prairies is the fruit of many years of investment made by UD faculty, students, and alumni in the area of environmental science. I'm excited to see how our educational offerings will strengthen and expand as a result of the work being done at Wolter Woods and Prairies."

Dr. Mark Ward, UD Vice President for Academic Affairs

"The Wolter Woods and Prairies has been an important place to bring students and introduce them to beauty of our natural world. It also is a model for showing how humans can manage a landscape in ways that are beneficial to the plants and animals that belong here."

Dr. Gerald Zuercher, Professor of Vertebrate Ecology and Director of the Wolter Woods and Prairies

2021 Faculty Hall of Fame



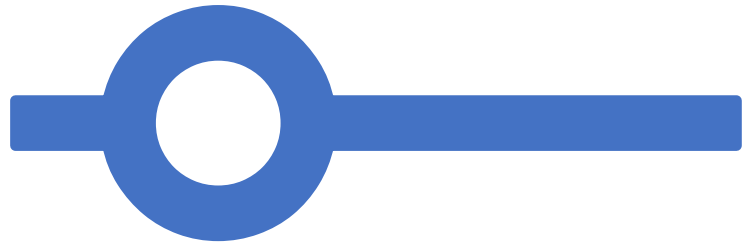
Kelly Grussendorf
Associate Professor of
Biology



Kelly Grussendorf

Associate Professor of Biology

Recipient of the William L. Lomax Award



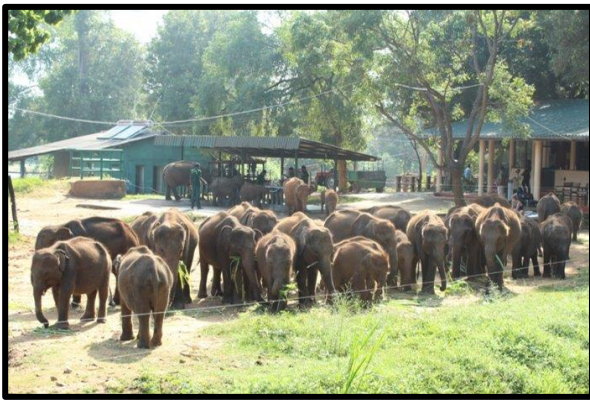
"While Dr. Grussendorf shines in the classroom, her super-power is mentoring research students in scholarly endeavors. Her students have collaborated with the Center for Disease Control on Lyme Disease research and are the only research group conducting research on tick-borne diseases in the state of Iowa. It is not hyperbole when I say that our DNAS students would not be as successful in reaching their post-UD dreams if Dr. Grussendorf were not at UD. She goes above and beyond in her dedication to student success. Dr. Grussendorf is a dedicated colleague, a hard-working teacher, and a fantastic role model of life-long learning for UD science students."

Adam Hoffman,
Professor of Environmental Chemistry
DNAS Department Head

From the Vault

Sri Lanka trip

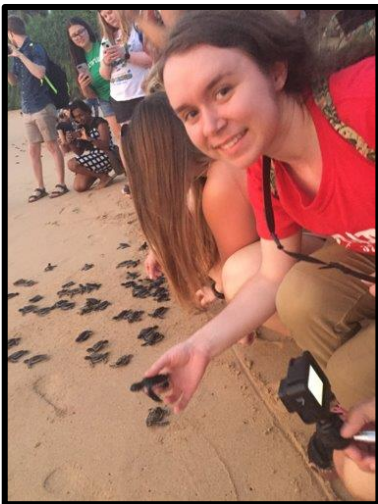
Every 2 years since 2012, students and faculty have traveled to Sri Lanka during J-Term. The 3 week trip spans from the coast to 8000 ft cloud forests to national parks and archeological sites. Environmental stewardship is the focus with tasks including planting trees to help Loris primate conservation and stream and beach cleanup. We donate funds for local conservation and books and supplies to local schools. We stay inside the national parks and at ecofriendly hotels and enjoy the wonderful local food. We hope to travel again for fun and research during 2022 May-term.



2019 - Baby orphan elephants were hand raised to be reintroduced back to wild. We donated funds for their conservation work.



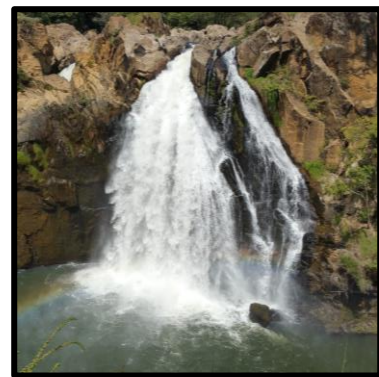
US-Sri Lanka Smithsonian Institution Primate research station. Field trips to study primate behavior and lectures.



2019 – Julia Rodewald (C'21) at the Turtle research station. Released 150 babies back to sea, saw an egg laying giant leather back turtle and saved 230 eggs for conservation work.



"Anhinga" Snake Head Darter

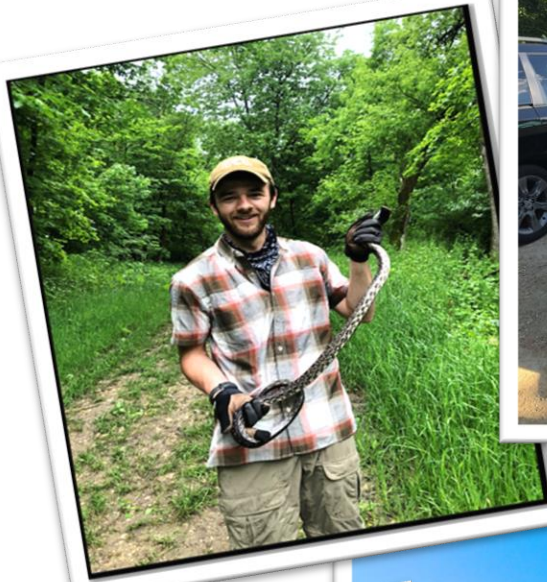


Waterfall
a must see on every trip!



2012 Trip next to Giant Bamboo plant

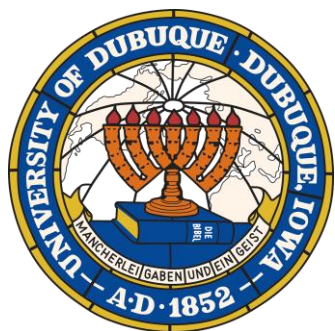
In The Field



Clockwise starting at top left

- **Levi Buchholtz (C'21)** holding a snake
- **Reegan Sturgeon (C'20)** holding a mouse
- **Madison Bowers (C'22)** collecting water samples at the Dubuque Resource and Water Plant
- **Jenna Meyers (C'21)** holding a rat snake found on a log at Swiss Valley Nature Preserve and Nature Center
- **Jenna Meyers** looking for butterflies at Miller McGrath Wildlife Area
- Picture of a mouse on a post
- Upper corner – Eastern Tiger Swallowtail Butterfly

DNAS 2021 HONORS



THE WILLIAM N. BERG AWARD FOR EXCELLENCE IN STUDENT ENVIRONMENTAL RESEARCH

Julia Rodewald

ENVIRONMENTAL SCIENCE STUDENT LEADERSHIP AWARD

Hayli Wolf

THE ROBERT M. MILLER AWARD FOR EXCELLENCE IN BIOLOGY/ ENVIRONMENTAL SCIENCE

Sam Zebarth

THE DR. RICHARD E. COWART AWARD FOR EXCELLENCE IN BIOLOGY

Zac Simanski

AWARD FOR EXCELLENCE IN STUDENT BIOLOGICAL RESEARCH

Jenna Meyers

Zach Elias

AWARD FOR EXCELLENCE IN STUDENT CHEMISTRY RESEARCH

Livia Schutz

WILLIAM C. AND MARY HELEN NEUMEISTER SCHOLARSHIP

Katelyn Howe

DR. CARL OSUCH SCIENCE SCHOLARSHIP

Callie Dutton

Butler Fellows

Dillon Tierney

Environmental Science

Grace Mayberry

Environmental Science

Max Snowden

Environmental Science

Paige Peterson

Environmental Science/Biology

Congratulations 2021 Summer Fellowship Recipients!



Chlapaty Fellows

Ahrend Raab

Biology

Allisen Hallahan

Environmental Science

Brady McIntyre

Biology

Carlee Benzing

Biology

Hanna Blumhoff

Biology/Chemistry

Hanna Horsfield

Secondary Education

Jacob Whitbeck

Biology

Kayla Breunig

Biology/Chemistry

Lauryn Behrend

Biology

Luke Bullock

Math/Chemistry

Tyler Ramey

Environmental Science

The Chlapaty and Butler Summer Research Fellowship Programs provide students with the opportunity to engage in tailored scholarly and professional development activities to position themselves for success in post-graduate studies and employment.

Upon approval of their research proposal, Fellows in each program commit to 400 hours towards their proposed research over a 10-week period during the summer. Fellows receive a \$4,500 stipend and \$500 for research associated supply and travel costs. Fellows are required to present the results of their research during the following academic year at a local, regional, or national conference.

"The University is humbled by the generosity of Joe and Linda Chlapaty and John and Alice Butler for their financial support of these important and transformative student programs. With that support, the University is able to provide students with extremely valuable research experiences, professional development skills, and one-on-one mentoring that prepares them for success in future post-graduate studies and employment."

Mark Sinton, Ph.D., Director of the Chlapaty and Butler Summer Research Fellowship Programs.





CONGRATS!

LOOKING TO THE FUTURE

2021 DNAS Spring Graduates

Levi Buchholtz will be a commissioned medical service officer of the Iowa Army National Guard. Following his training, he plans to have a civilian career with the Iowa Park Rangers focused on park management.

Taiana Butler will be an educator at the National Mississippi River Museum and Aquarium in Dubuque. She plans to attend grad school in the future.

Josie Coglianes will attend St. Louis University in the dual program of Behavioral Science and Epidemiology.

Olivia Costley will attend graduate school to earn her Masters of Healthcare Administration.

Natalie Dienstbach will be working at Washington University in St. Louis as a Clinical Research Coordinator in the Medical Oncology Department with the gastrointestinal team.

Lyndy Holdt has been accepted to the Environmental Health MS program at the University of Iowa.

Dylan Hundley will be looking for employment in the fisheries biology field.

Megan Kennedy plans to attend Vanderbilt University next fall to pursue a doctorate degree in Biomedical Science.

Sally Lambie is taking a gap-year before applying for graduate school.

Jenna Meyers will attend Vanderbilt University Medical Center as a surgical research assistant in Nashville, Tennessee.

Joshua Nsenga plans to take the MCAT and apply to schools and find a job.



CONGRATS!

LOOKING TO THE FUTURE

2021 DNAS Spring Graduates

Nathan Pauli is working as an environmental educator for the City of Davenport, hoping to become a Naturalist in the future. He enjoys educating the public about the environment.

Julia Rodewald will take a gap year to work and gain more experience and then apply to graduate school to pursue studies related to avian ecology.

Livia Schutz has been accepted into the PhD. program in pharmacology at Stony Brook University In New York.

Hannah Selfridge will be working in the family business.

Zachary Simanski is looking for a job in the medical field with the long-term goal of applying to medical school. He plans to move to Chicago and immerse himself in the city's various healthcare and service opportunities.

Allissa Stallman has been accepted into the Master of Science in Physician Assistant Studies program at the University of Dubuque. She hopes to work as a PA in critical care or pediatrics in Iowa – ultimately at the University of Iowa Hospitals.

Sydney Steivang is moving out to Denver, Colorado for employment in a science laboratory.

Fazli Sulaj plans to attend Dental school.

Isaiah Williams has been accepted into the Biology master's program at the University of Wisconsin-LaCrosse.

Samuel Zebarth has been accepted into the University of Iowa in their Geoscience program with a graduate assistantship. He will be completing research on paleoclimates, focusing on 10,000-year flooding cycles with computer modeling. He also gets to spelunk down in Missouri cave systems for research!

CLASS OF 2021 REFLECTIONS

I will miss...

..the ability to sit down with a warm cup of coffee or tea and talk about life with those I cherish

..the community and relationships created here

..the connections I've developed with my peers and professors

..the community of professors that are always willing to help

..my professors! I couldn't have done it without them. They were always there to help with school or just to chat about life. They made this school really enjoyable because of how much they cared about their students

..living with my best friends and being able to see them every day

..the relationships I have built with the professors here and the all the many friends I have made

..being a part of many organizations including Campus Ministry and the Women's Soccer Team

..the educational environment that UD provides. The smaller class sizes and passionate professors allowed me to build lasting relationships and optimize my education towards my personal goals.

..the camaraderie of the DNAS department, all the students were a pretty tight-knit group, and we could talk to our professors with ease. It felt like I was learning with family more than learning with teaching staff and fellow students.

..my lab team!! We have spent so much time together!

..all the amazing professors I've had here at UD.

..Turner bringing a different kind of Oreo cookie every week to chemistry tutoring.

..being able to walk down the halls of the science building and the different professors saying hello and asking how everything is even if you never had them as a professor.

..all the friendships and relationships I have built with students and professors.

.. the professors and the amazing people I have met here.

..the community, the love and the science that keeps you wanting to learn more and get involved

.. miss the teachers who inspired me and my peers from UD

Memories!

Freshman year, eating breakfast every morning after 8am class and earning my nickname "Sunshine" – it stuck!!

Taking a tour of UD my senior year of high school and thinking the research posters in the University Science Center were very impressive.

Dr. Zuercher's influence freshman year to pursue a Biology major.

Molecular biology class with Dr. M.

Taking the long ride down to Ghost Ranch for a week-long environmental writing trip with Dr. Dale Easley, Dr. Koch, and Prof. Andrew Jones.

My first trip to the Sylvania Wilderness with Vic Popp and Dr. Hoffman.

Working outside with butterflies all summer long for my research! It's something I am never going to forget.

Spending a very rainy fall break at Pikes Peak for an environmental science trip with classmates and professors.

The J-Term trip down to Cuba - I'll never forget!

Meeting one of my good friends in class one day and then ending up working with her in the same hospital for 2 years! From studying together, to doing research, working, and attending her wedding I'm not sure what I am going to do without her constantly by my side after we graduate.

Coffee Hour every Friday!

I was looking for worms for research and found a European worm 10 times as big as the other worms I was collecting. It freaked me out but I wanted to do more research on what type of worm it was.

Hearing about an Aegla crab research project my freshman year, and then having the privilege to work on that project for the next 3 years.

The research days from last summer, the intensity, the successful failures and the success that came with it. It was an opportunity that I am glad to have been a part of.

Working on my research project, Dubuque's Microclimate Changes, for the Chlapaty Fellowship.

"I cannot possibly pick one memory to represent my time here. I would rather give thanks to all the professors who have made me into the man I am today. Under your tutelage, I have grown academically and mentally into someone who can make a difference in this intense, scary, and wonderful world. Through continuing work and dedication to my craft, I hope to make all of you proud as an academic and a good man. Thank you for everything."

Past



Eric Nie Class of 2015

Tell us a bit About yourself. I am Eric Nie, I graduated from UD in 2015. I work as the Environmental Specialist at the recently purchased University of Dubuque Wolter Woods and Prairies. I love spending time in the outdoors managing land, hunting, fishing, and photographing nature.

What are your goals? My future plans are to continue doing what I love, which thankfully aligns with my career path, working as the Environmental Specialist at the University of Dubuque. I will continue photographing nature and spending lots of time in the garden!

Why UD? UD is full of opportunities and amazing people to connect with and grow.

How has education shaped the person you are? My education has allowed me to connect with so many wonderful friends, and faculty that feel like family to me. My education at UD was a great steppingstone, to get to where I am now. I feel learning is a lifelong process and that there is always something new to observe and learn, especially in nature.

What is one book you would recommend everyone read? Dirt to Soil by Gabe Brown- It is a simple read that tells a beautiful story of one family's agricultural journey of transitioning their farm to be regenerative. The soil beneath our feet is so vital and where everything starts. It does a good job of showing that everyone can take part in healing our planet. I couldn't agree more as they say healthy soil makes healthy plants, which makes healthy animals, and ultimately a healthy human!

Present



Hayli Wolf Class of 2021

Tell us a bit about yourself. My name is Hayli Wolf. I live in Galena with my husband and my two dogs, Kal and Finn. I am a senior majoring in environmental science and biology. I started going down the PA track and after taking zoology, I decided I would rather work with animals. I like tomatoes.

What are your future plans? I still have one more semester at UD. After that, I plan to apply to graduate programs. I would like to continue to do field work and maybe teach in the future.

Why UD? I love the small sizes of the classes and how you can establish a one-on-one relationship with the professors which really enhances the experience. I wish more people knew about the environmental research that is done here, like water sampling or flying squirrel surveys, and not only is our data useful on a local level, but gets students involved on a global level as well.

How has education shaped the person you are? I realized that I am an eternal student. Learning isn't just pulling information out of a book, but it includes observing the world around you. It's asking questions like "why" or "how" and then attempting to answer those questions. The classes and textbooks simply aid you in trying to understand the world we live in.

What is one book you would recommend everyone read? Sixth Extinction and Braiding Sweet Grass. The Sixth extinction to open peoples' eyes to the problems we are facing and Braiding Sweet Grass to remind people how we used to and should be interacting with the world.

Future



Taylor Sperfslage Class of 2026

Tell us a little bit about yourself. My name is Taylor Sperfslage and I'm a senior at AGWSR High School. My hobbies include reading, baking, playing volleyball, lifting, going on walks, roller blading, and enjoying the outdoors.

What are your future plans? My future plans are to major in chemistry and play volleyball. Then, I want to work towards a higher degree in a health profession that best suits me. I would love to someday work in a children's hospital.

Why UD? After visiting UD for the first time, I fell in love. The campus is beautiful and the city of Dubuque feels like home. They have a great science program and the volleyball coaches and team are amazing. I knew UD was the place for me.

How has education shaped the person you are? I have learned how to ask questions and think critically. I've also learned that even if you don't think you can figure out a problem at first glance, embracing the struggle and working through it will often get you further than you think. My education has shaped me into a hardworking person.

What is one book you would recommend everyone read? Everyone should read the book "Resisting Happiness" by Matthew Kelly. It's a Christian book about why we sabotage our own happiness and how we overcome that so we can be the best versions of ourselves. It is an amazing book.

Catching Up With...

Chemistry Club



Coffee mugs were raffled for the Chemistry Club Fundraiser



Jenna Bidlingmaier (C'24) and Maryn Winders (C'23) – Bath Bomb Experiment

Spring Events/Projects

- Fundraiser - Chemistry themed prizes were auctioned in an effort to raise more awareness of the Club
- Chemistry Club T-Shirts
- Bath Bomb Experiment

The Chemistry Club is a student run organization whose main focus is to inspire a passion and appreciation for chemistry within the student body and the community. We meet biweekly to plan events on campus, fun experiments, and community outreach events!

Web of Life

Spring Events

- Earth Day Celebration
- Birding Outing



Birding Outing 2021

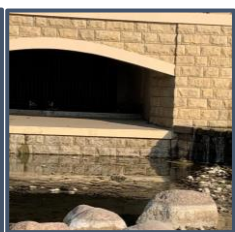
Red-winged Blackbird spotted at Web of Life's and Web of Life's President Hayli Wolf at UD Wolter Woods and Prairies



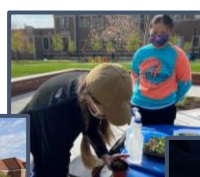
Earth Day 2021: L-R: Dr. Zuercher, Julia Rodewald (C'21), Dr. Hoffman, Hayli Wolf (C'21), Forrest Martin (C'22), Dylan Link (C'22), Dillon Tierney (C'22) picked up 83 lbs. of trash at the Bee Branch Creek



Before



After



Earth Day 2021 Plant Sale

L – R: Julia Rodewald, Dillon Tierney, Hanna Blumhoff (C'22), Sally Lambie (C'21), Forrest Martin, Hayli Wolf, Livi Schutz (C'21)

Web of Life is UD's environmental awareness club. We aim to educate everyone on environmental issues and inspire members to be more environmentally conscious through public outreach, clean-ups, and outdoor adventures! If you live on the earth, then you are welcome!

Goodbye Graduates ... Good Riddance Pandemic



1st Row: Left to Right: R. Mudalige- Jayawickrama, A. Kleinschmit, K. Grussendorf, A. Hoffman; 2nd Row: A. Arora, M. Zuercher, G. Zuercher, M. Sinton; 3rd Row: K. Turner, R. Smith, L. Jayawickrama, D. Koch, D. Easley

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