

MSU FISHERIES AND WILDLIFE

2024

# SPOTLIGHT



featuring...

Alternative silviculture treatments and the influence on

White-tailed deer behavior

Persistently Wet

A Field Season in Flowers

Meet the Artist: Collecting Fish



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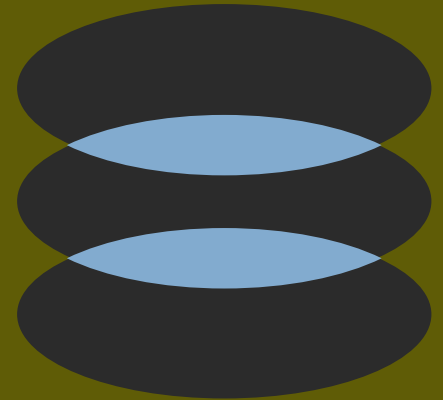
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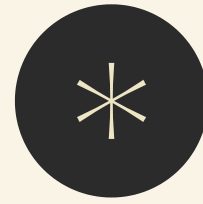
**Cover Photo:** Northern Saw-whet owl captured at Corey Marsh by Jen Owens

## **LAND ACKNOWLEDGEMENT**

Michigan State University occupies the ancestral, traditional, and contemporary lands of the Anishinaabeg – Three Fires Confederacy of Ojibwe, Odawa, and Potawatomi peoples. In particular, the university resides on land ceded in the 1819 Treaty of Saginaw. We recognize Michigan’s 12 federally recognized Native Nations, historic Indigenous communities in Michigan, Indigenous individuals and communities who live here now, and those who were forcibly removed from their homelands. In offering this land acknowledgment, we affirm Indigenous sovereignty, history, and experiences.

Spotlight recognizes that this land acknowledgment does not absolve the actions of settler-colonialists who founded this institution. It does not absolve the continued occupation of Native lands, nor the continued utilization of Native lands for our department’s research endeavors. We urge our department to develop an action plan of things to do that support living Indigenous peoples’ sovereignty to accompany land acknowledgments. In the meantime, readers can donate to MSU’s American Indian and Indigenous Studies at <https://aiis.msu.edu/donate/>.

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# THE CHAIR(S)

Welcome to the spring 2024 edition of Spotlight magazine. This year, the magazine coordinator asked me to reflect on my time as Chair of the Fisheries and Wildlife Department given that Dr. Dana Infante will take over on June 1, 2024. It is a little hard to believe that I have been serving as Chair for about 3.5 years now (when I took the job, we all thought 2 years maximum!). I never envisioned myself as an administrator (nor did I have ambitions to become one), but I felt so strongly committed to our department that the decision to apply for the Chair's job was easy. The fact that our department supported my application and trusted me with a leadership role is a highlight of my career. I inherited a great department (credit to prior leadership) that I am proud of; I hope our accomplishments while I was Chair also made a positive contribution. A couple highlights of recent accomplishments include the creation of the Glassen Undergraduate Fellowship program that offers new Fisheries and Wildlife undergraduate students paid position research, teaching, and outreach and



engagement to work for and alongside faculty, graduate students, and postdocs; arrival of the USGS Coop Unit; hiring of some great new faculty, staff, postdocs, and graduate students; development of new majors for our undergraduate program; and initiation of a graduate curriculum overhaul. We continued to make strides forward (but still have work to do) on advancing DEI in our department, and I am delighted that we earned a Platinum Badge (highest level) for our efforts from the college in 2024. For me, the experience of serving as Chair has had its ups and downs, but the “ups” far outnumbered the “downs” and that is because of the great people and organizations we work with. Thank you for entrusting me with a leadership role in the Fisheries and Wildlife department the last 3+ years and for the support you all provided.

Dr. Gary Roloff



I'm honored and so excited to begin serving as Chair of the Fisheries and Wildlife Department! As some of you know, I've been a professor in Fisheries and Wildlife since 2007, but I've been working in AgBioResearch (ABR) in MSU's College of Agriculture and Natural Resources since 2019. During my time in ABR, I've been privileged to see the achievements of Fisheries and Wildlife from a different perspective. Under Dr. Gary Roloff's leadership, we've strengthened partnerships with our stakeholders, we've hired new faculty and staff, and we've continued to recruit exceptional students and post docs, creating a rich community that works together to make Fisheries and Wildlife one of the most engaged and impactful departments on the MSU campus. Dr. Roloff acknowledges efforts of past leadership by noting that he inherited a great department – I feel exactly the same way because of his achievements! I plan to continue supporting the evolution of the graduate curriculum, I hope to strategically evaluate our research efforts to ensure that we remain competitive and impactful, and I also

plan to engage with our stakeholders in some new ways to maximize the relevance of our work. Most importantly, I will continue to promote DEI in Fisheries and Wildlife because I believe that a strong community is the foundation of our department. In closing, I wish to thank Dr. Roloff for his service and his vision! To all of you, here's to a future working collectively and effectively towards conserving fisheries and wildlife resources! Onwards and upwards!

Dr. Dana Infante



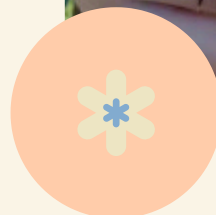
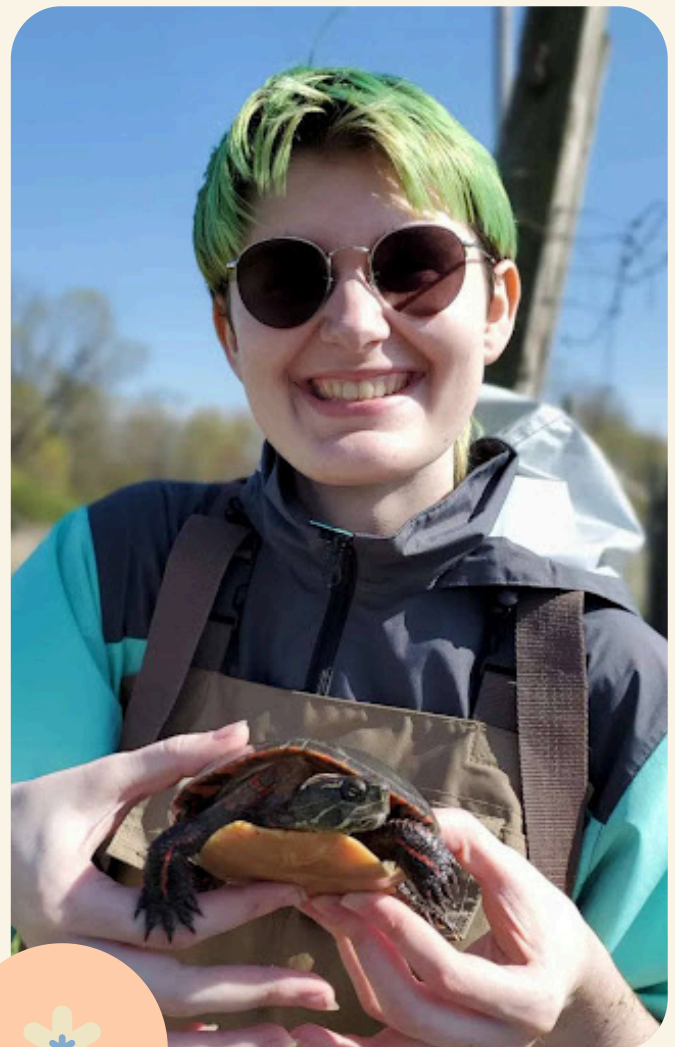
# UNDERGRAD SPOTLIGHT

**Meet A. Proudfoot, an undergraduate in Fisheries and Wildlife studying herpetofauna at the university-owned Corey March Ecological Research Center.**

**What is your current research project/interest?**

My research interests are broadly related to herpetofauna and this is reflected in my research. I built the herpetofauna monitoring program at CMERC in my freshman year and I have been leading those sampling efforts since. The overall goal of the herp monitoring project is to establish a long-term data set to see how the herps at CMERC are responding to restoration efforts and general environmental changes. The immense data set that we are collecting at CMERC allows us to track those changes. I focus on the frog call data that we gather using Wildlife Acoustic SM4 Frog Loggers and Kaleidoscope analysis software.

Breeding times for early spring frogs like Spring Peepers and Wood frogs have already been shown to be affected by climate change. Focusing on when the frogs are calling at CMERC with this long-term data set is a great way to see how the frogs at CMERC are being affected and whether there is any change in breeding times in frogs at CMERC.





### **What were your motivations for starting this project?**

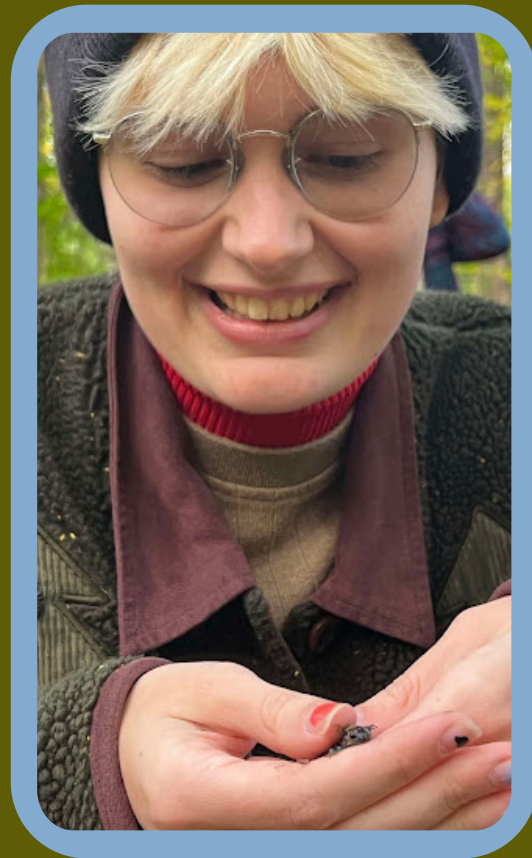
My passion is herpetofauna conservation, so when the opportunity presented itself for me to establish this monitoring program I was really excited. Amphibians are experiencing the highest extinction rates of any current animal group and reptiles are not doing much better. A lot of the time with conservation efforts and research we are reactionary, but monitoring efforts allow us to be proactive. The biggest goal of this project is to inspire and act as a template for other herp monitoring programs so that we can catch those conservation issues with these sensitive groups before they become too large. This is something that I am very passionate about and is what motivates me in this project.

### **What is your favorite aspect of your project?**

I, of course, love interacting with herps in the field, but even better is that my project allows other students to interact with these critters too. Seeing other people excited about herps, and learning about how to monitor them is my favorite aspect of my project. The first time anyone catches a turtle is always a great moment to see, and I'm really glad that this project facilitates those experiences.

### **What skills have you gained and how are these skills preparing you for your future?**

The project has developed my wildlife research skills like being able to work in adverse weather conditions, following procedures, recording, managing, visualizing, and analyzing data, safe wildlife handling, and scientific communication. These of course have obvious uses for my future research career (I do plan to go to graduate school) but the most valuable skills that I have gained from this project are a little less obvious. I started this project right when I entered



university and as it has grown, so have I. My leadership, communication, and decision-making skills have greatly improved and make me feel prepared to continue research into graduate school and also my general future life.

### **Who are you outside of your research?**

No surprise that I'm a huge nerd even outside of herps (but of course also with herps) and that shows in my hobbies. I have been playing Dungeons and Dragons since I was 12 years old and I love that it allows me to express my creativity in story-telling. Collecting old junk at flea markets and rummage sales is one of my favorite activities (I used to buy any frog under a dollar that I found, I had to stop that, I have at least 50 by now). Of course, I love the outdoors and hiking/camping. I also needle-felt! Which is basically stabbing some wool with a special needle that tangles up the fibers until you get whatever shape you want (I mainly felt animals - again, no surprise haha).

# A Field Summer IN FLOWERS

By Gia Haddock

In the summer of 2021, I worked as a herpetological technician searching wetlands across Michigan for rare turtles and snakes. This was also my first field season ever. I collected flowers and plants throughout the summer to remember this time and grieve through losing several people close to me. This is a collage of these tokens.

*All flowers and plants collected sustainably, mindfully, and legally*



Hooked

Science.

On

Where To Eat



Listen



THE PHOTO RESEARCHER



# SPOTLIGHT ON

The **Robert C. Ball and Betty A. Ball Fisheries and Wildlife Fellowship** provides graduate students with the opportunity to study fisheries, limnology, or water research



**Kyle Brumm**

Program: PhD Fisheries and Wildlife  
Advisor: Dr. Dana Infante

My research seeks to understand the ways in which human activities influence freshwater ecosystems, with an emphasis on identifying implications for stream fishes. I collaborate with colleagues in Asia, Europe, and North America to identify opportunities for enhancing conservation and management efforts. I have always been fascinated by the natural world and humbled by its complexity. I hope to support advancements in the fields of limnology and aquatic ecology to help address freshwater conservation needs. I am honored to have been named a recipient of the Robert C. Ball and Betty A. Ball Fisheries and Wildlife Fellowship, in addition to the Dr. Howard A. Tanner Fisheries Excellence Fellowship. These fellowships will enable me to engage with colleagues at two international conferences, namely, the Congress of the International Society of Limnology in Foz de Iguaçu, Brazil and the Annual Meeting of the American Fisheries Society in Honolulu, Hawai'i. Participation in these meetings will allow me to further refine my research questions and continue to expand my professional network.

*Kyle also received the Dr. Howard A. Tanner Fisheries Excellence Fellowship.*

The **Joseph Laurence Maison Fellowship for Wildlife Conservation** recognizes students who are committed to pursuing a career in wildlife conservation.

My research includes assessing camera-trap methodology, evaluating population-level impacts of a deer harvest regulation change, and simulating chronic wasting disease spread and growth under alternative harvest scenarios. Fellowships and scholarships allow me to do my best work and are an integral part of my success story. The fellowships provided me with additional resources, which in turn enhanced my professional development and my ability to make meaningful contributions to wildlife science and conservation—and I am very grateful to the generous donors for these opportunities.

*Steven also received the Hal and Jean Glassen Conservation Medicine Fellowship*



**Steven Gurney**

Program: MS Fisheries and Wildlife  
Advisor: Dr. Sonja Christensen



# FELLOWSHIPS

The **Hal and Jean Glassen Conservation Medicine Fellowship** recognizes a student committed to the study of fish and wildlife disease ecology and conservation medicine.



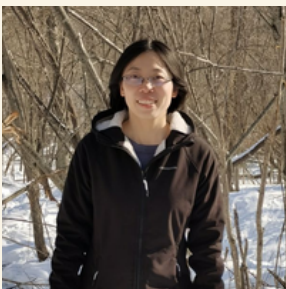
**Jack Magee**

Program: MS Fisheries and Wildlife

Advisor: Dr. Gary Roloff

The goal of my research is to improve Chronic Wasting Disease management through innovative and non-invasive survey techniques. I am working with the Michigan Department of Natural Resources (MDNR) to evaluate different wildlife survey methods that utilize unmanned aerial systems (UAS), commonly referred to as drones. We are comparing the detection probabilities of white-tailed deer in thermal and high-resolution aerial imagery to develop an optimal approach to surveying white-tailed deer. Additionally, I am quantifying white-tailed deer feces deposition rates at bait sites, food plots, and areas that deer congregated naturally. Understanding how feces bioaccumulate differently in these locations will help managers understand and communicate the risk of indirect disease transmission. I applied for the Hal and Jean Glassen Conservation Medicine Fellowship and the Vera M. Wallach Graduate Scholarship for Wildlife Ecology or Management of Wildlife to support outreach efforts and help disseminate my findings to a broader audience in the conservation space. These awards have allowed me to attend the first annual Wildlife Technologies and Drone Summit in Burnet, TX where I shared my research and learned from other scientists working on novel survey methodologies

*Jack also received the Vera M. Wallach Fellowship.*



**Dan Li**

Program: PhD Fisheries and Wildlife

Advisor: Dr. Jerrold L. Belant.

I am working on human-wolf conflicts in the western Great Lakes region, United States. The main reason I applied for the Hal and Jean Glassen Conservation Medicine Fellowship was due to housing issues last year. Thanks to this fellowship, I have now moved out of the previously unsatisfactory apartment and into a much quieter one, which has greatly improved my sleep issues. I am currently in my third year of the PhD program, and the academic pressure is quite substantial, so this scholarship has significantly helped my studies. Here, I would like to express my gratitude for the help and support provided by the Department of Fisheries and Wildlife and The Hal & Jean Glassen Memorial Foundation.

# SPOTLIGHT ON

The **Vera M. Wallach Fellowship** is awarded to students studying wildlife management, ecology, or natural resources management or conducting Arctic/Antarctic research with emphasis on the protection and preservation of wildlife.



**Michele Remer**

Program: PhD Fisheries and Wildlife

Advisor: Dr. Jack Liu

My research focuses on socio-ecological systems in the Arctic. Specifically, I'm studying how tourism facilitates species invasion and am exploring different methods to address this problem. My motivation to apply for both of these fellowships was to use the funds for travel to the Arctic and to fund travel to conferences. One of the main benefits of this fellowship besides providing funds is the opportunity to join other Fisheries and Wildlife scholars who have received this award in past years.

*Michele also received the John Peters and Marietta Peters Endowed Fellowship*



**Carly Andrews**

Program: PhD Fisheries and Wildlife

Advisor: Dr. Gary Roloff

Last year I was lucky to receive several FW fellowships, which have been instrumental in advancing my educational and career aspirations. My research delves into the nuanced effects of recreation on wildlife, challenging the assumption that protected lands can always provide both conservation value and recreational activities. We're addressing the critical need to bridge the gap between recreational development and ecological preservation. Collaborating with Michigan's Department of Natural Resources (MDNR), our team aims to inform trail placement decisions across protected areas in Michigan. Though my project is funded through MDNR, I found myself limited by my personal resources, and was encouraged to apply to the FW fellowships to bridge this gap. Thanks to fellowship funding, I've expanded my expertise through online coursework, workshops, and professional development events. I've also engaged in outreach activities to understand public perceptions of recreational use and development. I'm grateful for the opportunity to leverage these fellowships to make the most of my time at MSU and contribute to a more sustainable approach to outdoor recreation.

*Carly also received the Joseph Laurence Maison Fellowship for Wildlife Conservation and the Hal and Jean Glassen Conservation Medicine Fellowship*

# FELLOWSHIPS

The **Dr. Howard A. Tanner Fisheries Excellence Fellowship** recognizes students who are committed to fisheries research related to the Great Lakes of connecting waterways.

My research thesis is “Streamside vs Traditional: Evaluating Post-stocking Dispersal and Survival of Age-0 Lake Sturgeon (*Acipenser fulvescens*) in the Saginaw River Basin.” I applied for the Fisheries and Wildlife fellowships to assist with the costs of personal field gear and to attend various professional conferences and workshops. I was unfortunately able to attend the 154th Meeting of the American Fisheries Society in Grand Rapids and various statistical workshops. You are free to use the funds as deemed necessary and they provide some financial help with unexpected costs.



**Max Majinska**

Program: MS Fisheries and Wildlife

Advisor: Dr. Chris Vandergoot and

Dr. Chris Cahill

*Max also received the Robert C. Ball and Betty A. Ball Fisheries and Wildlife Fellowship*

The **John Peters and Marietta Peters Endowed Fellowship** recognizes a graduate student who seeks a career in aquatic biology related to fisheries and wetland resources.



**Sydney Waloven**

Program: PhD Fisheries and Wildlife

Advisor: Dr. Jack Liu

My research thesis is “Evaluating potential relationships between seal movement and behavior to presence of shipping vessels in Arctic Alaska.” Travel to Alaska can be costly but is necessary when engaging in a project that directly impacts Alaska communities and marine ecosystems. This fellowship ameliorates the cost of my travel needed to attend co-management meetings and relevant research symposia, which offer me opportunities to consolidate my research with different groups participating in similar studies in the region. This external support can also reduce the cost of expenses for community outreach to facilitate relationships with participating residents

*Sydney also received the Joseph Laurence Maison Fellowship for Wildlife Conservation.*

The **Annual Ambrose Pattullo Fund for Environmental Issues Graduate Fellowship for Literary Work** is awarded to students interested in current environmental issues.

My research thesis is “Evaluating potential relationships between seal movement and behavior to presence of shipping vessels in Arctic Alaska.” Travel to Alaska can be costly but is necessary when engaging in a project that directly impacts Alaska communities and marine ecosystems. This fellowship ameliorates the cost of my travel needed to attend co-management meetings and relevant research symposia, which offer me opportunities to consolidate my research with different groups participating in similar studies in the region. This external support can also reduce the cost of expenses for community outreach to facilitate relationships with participating residents.



**Emma Rice**

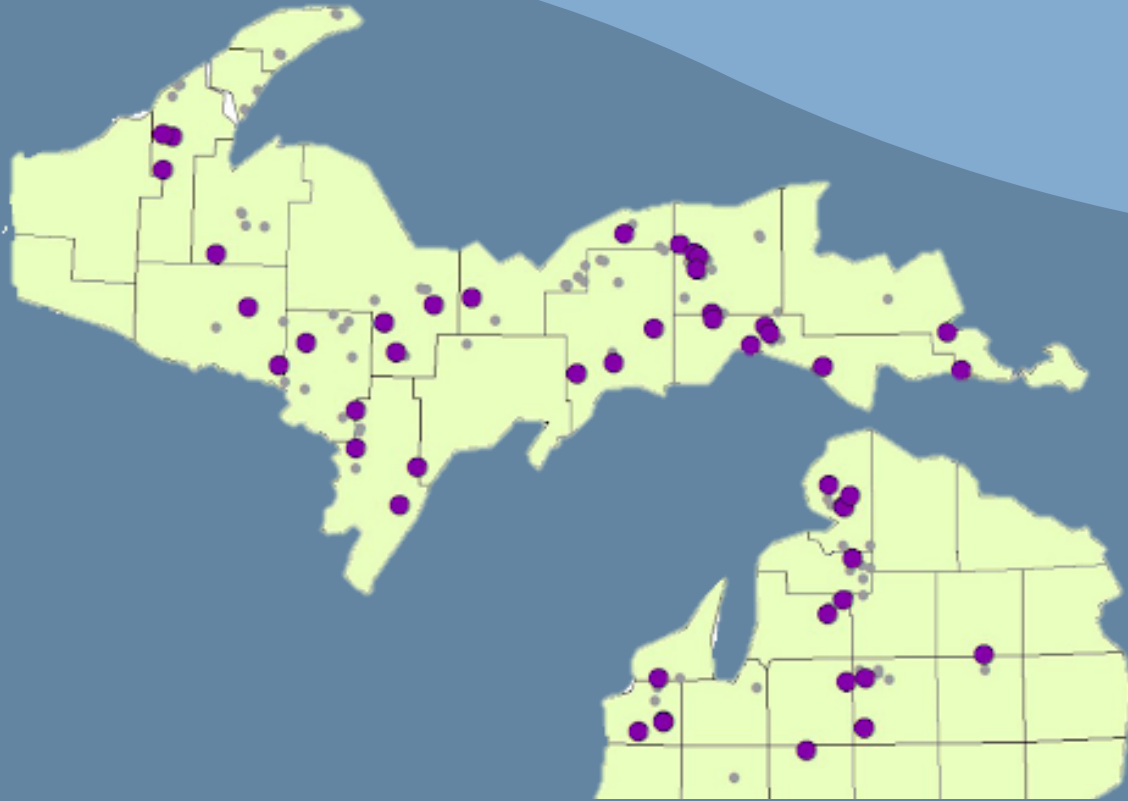
Program: MS Fisheries and Wildlife

Advisor: Dr. Abigail Bennet



# Alternative Silviculture Treatments and the Influence on WHITE TAILED DEER BEHAVIOR

By Melissa Starking, Advised by Gary Roloff



*Figure 1 shows northern hardwood forest research sites. Purple points represent the 48 wildlife focus areas, and gray points represent the 140 sites in total.*

Conflicts between herbivores and forest management vary depending on region and forest type. In northern hardwood forests of the northcentral United States, high herbivore abundances, specifically white-tailed deer (*Odocoileus virginianus*), often cause problems by limiting tree stocking and recruitment of diverse tree species. Beginning in 2017, a collaboration between the Michigan Department of Natural Resources, Michigan State University, and forest industry partners started to test alternative silviculture in northern hardwood forest types across the state. Foresters and wildlife biologists developed a long-term, large-scale, manipulative research project. We compartmentalized Michigan into three regions (eastern Upper Peninsula (EUP), northern Lower Peninsula (NLP), and western Upper Peninsula (WUP)). We randomly assigned overstory (shelterwood, seed tree, larger group/patch cuts, single tree/small group selection) and understory

treatments (herbicide/scarification, leaving treetops) to 12.14 ha forest stands (n=140, Fig 1). A randomly chosen subset of these stands (n=48) was monitored for white-tailed deer occupancy, residence time, and behavior such as movement. We asked 1) how leaving piles of treetops (leave tops) as an understory treatment influences deer movement and browsing behavior and 2) how well these leave tops act as a barrier to herbivory. We investigated these questions by measuring deer movement, survival and growth of tree plantings, and recruitment and regeneration of trees in wildlife exclosures. To promote the growth of diverse northern hardwood species in areas with high deer impacts, it is vital to understand the effects of silviculture methods on deer behavior and how interactions between forest management and wildlife management can work together toward sustainable ecosystem management.



Figure 2 Photo of a leave top in a northern hardwood stand.

## LEAVE TOPS

Leave tops are intertwined treetops left in a northern hardwood site after logging has occurred (Fig 2). Loggers were instructed to leave the portion of harvest trees smaller than 9” in diameter and arrange them to protect the volume of the tree crown (i.e., do not run over the crowns with logging equipment). Arranging multiple tops to increase volume was encouraged. At a minimum, we were looking for tops at least 2 ft tall; imagine a “fluffy” heap of branches with space underneath for trees to grow.

## DEER BEHAVIOR

To examine how leave tops may influence deer behavior, we recorded deer movements through sites with leave top treatments from December 2020 - March 2021 using snow-tracking surveys. A pair of observers would navigate the edge of the 12.14 ha treatment site until they walked the entire perimeter. If they encountered deer tracks in the snow, they would record a GPS track following the deer trail (Fig. 3). Observers would follow the deer trail through the site until it was lost or until the deer exited the site. Along the route, observers collected depth of snow at the beginning, at any leave top encountered, and at the trail's end. When a deer encountered a leave top, observers recorded the height of the tallest piece of wood, if the deer traveled through the leave top (Fig 3 – blue point), or if the deer changed direction (Fig 3 – pink point). A change in movement direction indicated that a leave top successfully altered the movement path, potentially prohibiting deer from accessing browse within the leave top. We used models to predict variables that influenced whether deer moved over or

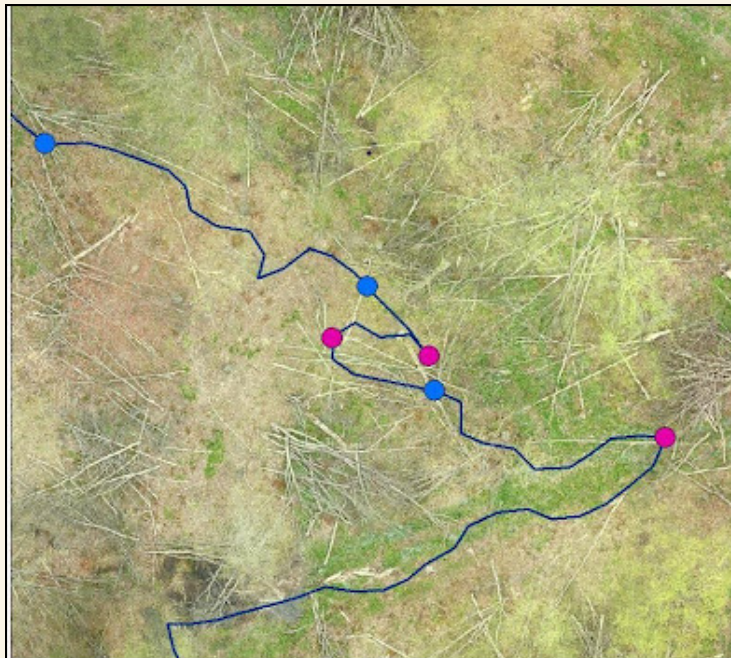


Figure 3 Recorded deer trail through northern hardwood site showing deer interactions with tops (blue point - deer went through leave top, pink point - deer changed direction at leave top).

through leave tops or resulted in change of direction. Variables included leave top height (cm), region (EUP, NLP, WUP), snow depth (cm), and overstory treatment. Because some sites were visited more than once, we included an offset in the model to account for the number of visits to each site. Four different observers visited 26 leave top sites, with an average of three visits per site, over the winter of 2020-2021. Each observer per site visit recorded an average of

three deer trails (Fig 4). Along recorded deer trails, leave top height (cm), region (EUP, NLP, WUP), snow depth (cm), and overstory treatment. Because some sites were visited more than once, we included an offset in the model to account for the number of visits to each site. Four different observers visited 26 leave top sites, with an average of three visits per site, over the winter of 2020-2021. Each observer per site visit recorded an average of three deer trails (Fig 4). Along recorded deer trails, observers recorded 546 leave tops encountered by deer. The average snow depth during site visits was 20 cm. The average leave top height was 68.9 cm, with average deer



movements going over or through tops  $\leq 50$ ; taller tops served as barriers to movement and caused a change in movement direction. Our top model included leave top height (cm), region, and snow depth (cm). Leave top height significantly affected deer movements, and this effect was different between the NLP and EUP. Snow depth was not significant. In the Upper Peninsula of Michigan (EUP and WUP), leave tops  $\leq 50$  cm tall have a  $\geq 75\%$  chance of deer going over or through them. Also, in the Upper Peninsula, leave tops  $\geq 100$  cm tall have  $\leq 25\%$  chance of deer moving over or through them. In the northern Lower Peninsula, leave tops needed to be  $\leq 70$  cm to have a 75% chance or greater for deer to move over or through them. In the NLP, leave tops  $\geq 120$  cm had a  $\leq 25\%$  of deer moving through them. Thus, taller leave tops were needed in the NLP to deter deer movements, likely corresponding to areas with higher deer abundances than most sites we studied in the Upper Peninsula.

## TREE PLANTINGS

In addition to measuring deer movement, we tested leave tops' ability to deter herbivory by planting desirable tree species within leave tops and pairing those plots with planting outside leave tops. In the fall of 2019 (October – November), we planted four different species of deciduous tree (yellow birch (*Betula alleghaniensis*), paper birch (*Betula papyrifera*), red oak (*Quercus rubra*), and American chestnut (*Castanea dentata* (Michigan and Pennsylvania varieties))). The trees were

planted within a grid pattern of 16. At each site, one grid of trees was planted within a leave top, and one grid was outside of the leave top; we did this on eight sites. Each site was seed tree or shelterwood overstory harvest as those treatments had the greatest amounts of leave tops. We focused on leave top sites in the NLP and EUP to measure if browsing behavior around and in leave tops differs in wolf-inhabited areas vs. in areas without wolves.

Our modeling results showed that the effect of being planted within vs. outside a leave top was significant. We checked to see if placement with the grids mattered, and it did not. Our results also indicated fewer trees were browsed within vs. outside of the leave tops. The region the trees were planted in did not influence growth but did impact the amount of browsing that occurred to the planted trees.

## EXCLOSURES

We built wildlife exclosures to test the ability of the leave tops to act as a barrier to herbivory for natural regeneration and recruitment (Fig 5). We would locate two comparable leave tops starting at the center of the hardwood sites, avoiding the permanent vegetation plots. We fenced in one leave top with a 5-meter square wildlife exclosure to exclude white-tailed deer and snowshoe hare (*Lepus americanus*) from accessing the plot. The second leave top was marked as the unfenced paired plot. Both leave tops in each site were of

*Figure 4 shows a photo of a deer trail in the snow with a camera trap on a tree in the northern hardwood forest study.*







**Figure 5** An enclosure surrounding a leave top in a seed tree overstory treatment.

comparable size and structure. The five most common species found growing in leave tops in our hardwood sites were white ash (*Fraxinus americana*), black cherry (*Prunus serotina*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), and sugar maple (*Acer saccharum*). Exclosure results show similar numbers of saplings naturally occurring inside the leave tops, whether fenced in or not. For these five tree species, we also measured if they were recruited, meaning they reached above 137 cm tall and were above the deer browsing zone. Results showed no difference in recruitment counts, whether they were fenced or not. These results indicate that leave tops act similarly to wildlife exclosures in our northern hardwood sites.

Our results show that the structure of individual leave tops influences deer movements. As a result, leave tops may prove an effective strategy for deterring deer herbivory by regenerating trees. We found that tops with more volume, i.e., >50 cm tall but < ~100 cm tall, appeared to act as movement barriers. Hence, we recommend that leave tops be left intact, not be feller-bunched, and not crushed by logging equipment to function as deer barriers. At the site level, preliminary results indicate that leave tops can be used to control deer movements, potentially funneling them away from tree regeneration areas like harvest gaps.

In our planting experiment, more trees showed no signs of browsing inside the tops than outside of the tops. Conversely, more trees outside the tops showed signs of browse after the second growing season. Three years post-planting, results show that the species and whether they were planted in or out of the leave top were significant, along with what region the plots were in. Planted trees were taller and browsed less when planted within a leave top. Woody vegetation measured in the paired exclosure plots shows no difference between the number of saplings and recruited trees in the leave tops with or without fencing. No difference here is good! It indicates that leave tops act like exclosures where herbivores are fenced out. While it's too early to know about tree recruitment for planted trees, early indications of our three experiments are that leave tops protect trees from deer herbivory and influence deer movement through harvested sites. That interaction is pronounced in regions where wolves share the landscape.

*Melissa Starking is a PhD candidate investigating the wildlife responses to varying silviculture in Northern hardwoods in Michigan. She was a Future Academic Scholar in Teaching and completed the Graduate Certificate in College Teaching and Spatial Ecology Graduate Certificate at MSU. She has a Master of Science and Bachelor's in Wildlife Biology from the University of Michigan-Flint, along with a Geographic Information Systems certificate. She has taught wildlife management, ecology, and evolution as faculty at UM-Flint. She has worked with state, federal, and NGO partners on Regional Species of Greatest Conservation Need, assisted in writing State Wildlife Action Plans, and is an active member of The Wildlife Society.*

*Her contact information is: [szyman87@msu.edu](mailto:szyman87@msu.edu)*

# The USGS Michigan Cooperative Fish and Wildlife Research Unit



**Dr. Brett DeGregorio**

My role as leader of the new Michigan Fish and Wildlife Cooperative Research Unit is to mentor graduate students while building an applied research program concerning the wildlife issues of importance to our cooperators, the Michigan DNR and Fish and Wildlife Service. I'm particularly interested in understanding how wildlife behaviorally responds to human development and activity and leveraging this knowledge to minimize conflict. I'm also very interested in conserving imperiled wildlife, particularly reptiles and mammals. My students and I study a wide range of taxa and issues including non-lethal management of beavers, wildlife community response to oak woodland management and the presence of wild hogs, improving survey techniques for massasauga rattlesnakes, and modeling the range expansion of (my favorite species) the nine-banded armadillo.

*This past year, our department welcomed a new partnership with the USGS to conserve Michigan's natural resources. This unit is led by Dr. Brett DeGregorio and Dr. Mike Booth. Meet the members of this exciting new lab!*



**Dr. Mike Booth**

My lab focuses on aquatic systems, particularly how the movement and behavior of organisms influence ecosystem processes. We are interested in questions ranging from basic natural history (e.g., fish movement and dispersal) to ecosystem dynamics (fluxes of sediment and nutrients) and we use creative, technological approaches to address these questions at a variety of scales. We seek to provide data and conceptual understanding of biological processes that can inform better resource management in aquatic systems.

# Lab Spotlight



**Clay Wilton**

I am a Ph.D. student in the Michigan Cooperative Fish and Wildlife Research Unit and an ecologist at Michigan Natural Features Inventory (MNFI). My dissertation research seeks to understand plant and animal community responses to various management treatments in upland oak ecosystems across southern Michigan. My work at MNFI focuses on the estimation of animal population abundance and occupancy, particularly how landscape metrics shape animal distribution. I also delineate and classify land cover using GIS and field inventories to document landscape features, rare species, and high-quality natural communities throughout Michigan.

**Gabby Nielson**



I'm a master's student studying beaver's response to the installation of flow control devices. These devices are gaining popularity across the country as a potential solution to beaver-human conflict. However, little is understood about beaver's response. To accomplish this, I will be using radiotelemetry to evaluate their movement patterns and game cameras to observe their behavioral response. I hope to provide wildlife managers with information regarding the efficacy of these devices. In the future, I hope to work with various stakeholders to promote non-lethal methods of coexistence with wildlife.





**Azana  
Cochran**

I will be starting my Masters this coming Fall 2024 in the Michigan Cooperative Unit with Dr. DeGregorio as my advisor. In partnership with the United States Fish and Wildlife Service (USFWS) my project will focus on using the “adapted-hunt drift fence technique” (AHDriFT) to better understand the ecology of the Eastern massasauga rattlesnakes. Specifically, I will be studying patterns in occupancy, identifying hibernacula locations, and using cameras and spot patterns to identify individual snakes in Grayling, Michigan. My research interests include understanding how threatened and endangered species interact with their environment and medium to large mammal ecology.



**Griffin  
Bandler**

My name is Griffin Bandler, and I’m a freshman at MSU double majoring in Fisheries and Wildlife and Zoology. I work with Dr. DeGregorio as a Glassen Undergraduate Experience intern that assists with the management, uploading, and tagging of game camera images from sites in Michigan for Snapshot USA--a nationwide coordinated camera trap project in which camera taggers from around the country upload, identify, and tag wildlife photos for research use. Currently, I am using the data collected from Snapshot USA to research animal response to and recovery from disturbance among different species and habitats.



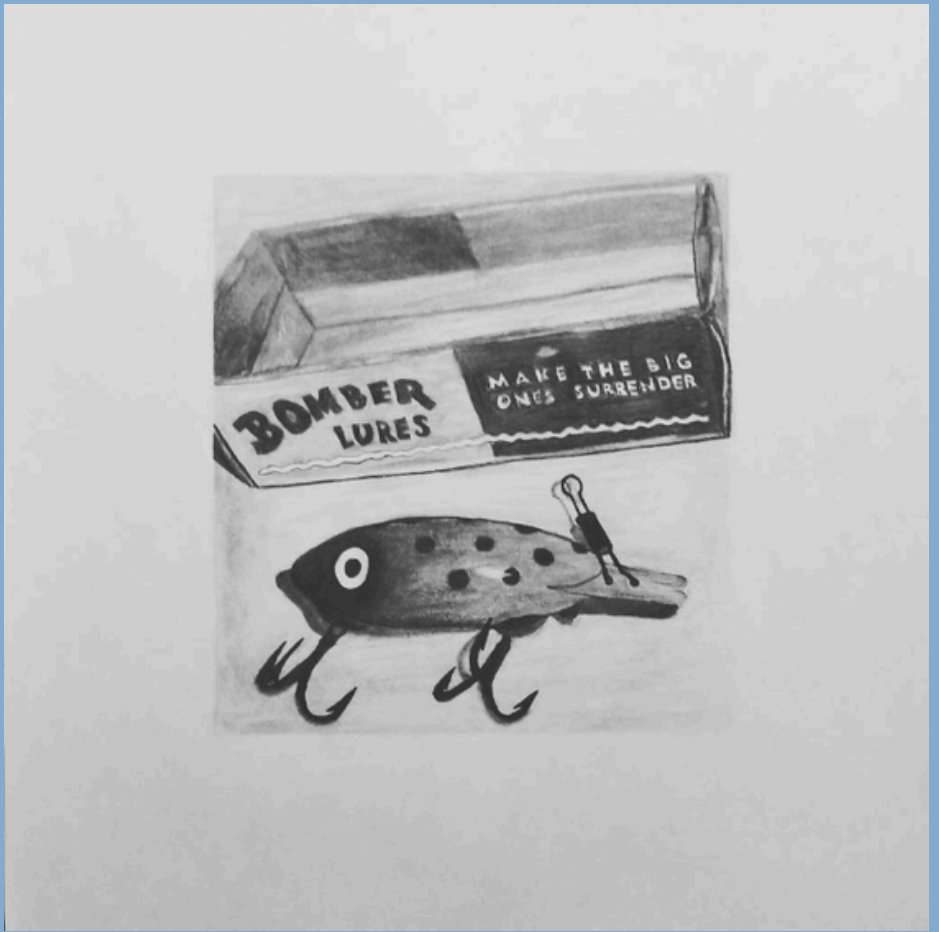
*Measured in Fall's Reflection by Max Majinska*

# COLLECTING FISH



# Meet the artist

Max Majinska grew up in Lowell, MI. From early on, he was always playing in the water, chasing minnows and crayfish. Eventually, it matured into an obsession with fish and fisheries. In high school, he took several art classes including drawing and pottery. Inspired to combine his passions, he created a small series of fish related drawings. Now self described as an "artistic fly bum", he mostly sticks to fly tying as a creative outlet.

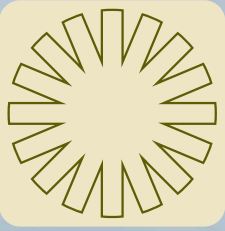


*Bomber Lures "49ers" Bomber #542 by Max Majinska*



*In the Eye of Salmo trutta by Max Majinska*





Since co-founding a queer and trans gardening collective in Lansing back in 2017, I've tended to plant-friends at four different locations, each more marginal than the last. Our collective was kicked out of the first lot because it was being developed for housing. We vacated the second because we realized we were infringing on a low-income neighbor's yard for her family. The third move was because the nature conservancy hosting us in an abandoned bison paddock gave us the boot. Finally, we landed at our fourth and final location, which we purchased last year. When I tell farmers we purchased our land they're in awe of our fundraising efforts. Land ownership is something most marginalized farmers and urban gardeners can only dream of. The truth is, it was cheap. It was cheap because we're growing on land that no one wanted since development there was impossible. It's impossible because its a flood-



# PERSISTENTLY WET

by Morgan Doherty

TWO VOLUNTEERS WORKING AT TENDER  
HEARTS GARDEN IN LANSING, MI



plain; what should rightly be a riparian buffer near the Red Cedar River.

Margins can be many things. The word recalls edges: peripheral spaces between one thing and another. Plants that grow in the liminal space between water and land are called marginal. Human communities that exist on the wrong side of binaries of power are called marginalized. In humans, marginalization is a thing done to us: a consequence of unjust social structures. We are pushed, violently, to the edges. Wetland plants operate differently. They are not dryland species who have been forced to struggle in the muck. The margin is where they belong, where they thrive. They are adapted to this changeable environment and know how to straddle worlds.

The neighborhood I grow in, about a mile from my house, is full of scrappy little farms and gardens. There are many vacant lots on every block, and almost all of them are being tended as private or community gardens. It's an old neighborhood in a 100-year floodplain, but climate change has progressed to where we expect a significant flooding event at least once per decade. New development is prohibited. Land has been rezoned for "agricultural" use, and it's shockingly cheap, which is how a group of queer and trans part-time gardeners could afford to buy it in the first place. It's on the periphery of the habitable city. Above us runs the highway; next door is the lot the land bank uses as a composting site. Deer frequent the neighborhood, along with groundhogs, rabbits, possums, and feral cats. Some days it feels less like a city and more like the ruins of one.

My growing collective has spent time learning what likes to live on the margins. What plants can survive in a space that alternates between drought and flood. We plant basket willows alongside wild cultivars, knowing while they can grow in dryland gardens, they thrive on riverbanks and marshes. We selectively move spring ephemerals from the natural area down the road, seeing what emerges annually from the receding banks of the river.

This past New Year's Eve, some garden friends and I visited another marginal space. We went on a walk at Corey Ecological Research Center (CMERC) only 20 minutes

away. Maggie, a former Fisheries and Wildlife student, used to do research there and wanted to show us one of their favorite places. Corey Marsh is on 350 acres that used to be a muck soils research farm. Maggie is going to get after me for probably-incorrectly paraphrasing them here, but what I gather is that it was a site for the Agriculture department at MSU to research farming on the muck soils remaining from draining a wetland. Most of the Lansing area was a wetland, pre-colonization. It wasn't home to much in the way of permanent settlement, but the convergence of rivers<sup>1</sup> served as a site for trade between upland communities. Sections of Corey Marsh are easily walkable, thanks to ceramic drainage tile drying out the wet soil. However, large portions of the natural wetland still remain, and this is what is being studied there now.

It wasn't exactly an academic talk. There were six of us wandering the marsh that day, low clouds hovering over us, and it was unseasonably warm for the last day of the calendar year. In explaining the distinctions between wetlands, bogs, marshes, swamps, and fens, Maggie kept referring to these ecosystems as "persistently wet" and we howled with laughter, begging Cait, an artist, to design a shirt with that slogan. We made dirty jokes about the squelching sounds we made as we meandered through progressively wetter and sloppier trails. It was cold and uncomfortable and none of us wore appropriate footwear. Ava led a call-and-response campfire song while she walked, slowing down so



Nicole could harvest willow and dogwood for the basket they were weaving, stopping so Spence and Julia could pet moss and take photos of lichen. Maggie ad-libbed a song for us: “My shoes are full of water / but my toes are full of love.”

I thought of all the filthy, unpleasant work we’ve all done together since we met through the garden. We’ve shoveled tons of mulch, rooted through dumpsters, hauled ancient tarps up from under many inches of heavy clay soil. We’ve killed poison ivy, harvested nettles, squished potato beetles by hand. I’ve loved it all. I would do anything with these friends, and I will. One of the things I believe queers have to teach the world is how to thrive together in marginal environments. This isn’t unique to queers, of course. Most marginalized people are pushed to the geographical edges of their homes in one way or another. But queer people - and when I say queer, I do not simply mean those of us with non-normative genders and sexualities: I mean people who have been radicalized by those identities, who have built social structures different from the ones they’ve left behind, exist in marginalized spaces well.

We thrive as scavengers and excel at creative reuse. We can see beauty in a space beyond its potential for growth and reproduction. We shiver with joy and laughter at the wet squelch of muck on our boots, and instead of draining the water from a wetland, we wiggle our toes (full of love) in it.

This particular group of friends I was walking

with is all white. We’re all settlers, and we’re collectively landowners now, which is an uncomfortable set of identities to hold when talking about ecological degradation and marginalization from land. Settlers drained the marsh. We built a low-income neighborhood in a floodplain under a highway (itself running through a displaced Black neighborhood).<sup>2</sup> We have a great deal of work to do to become better neighbors to both the humans on our block and to the plants and animals who were there before us. We have much to learn from all the

communities that are born into marginal lives. Just as we learn from the willows that teach us resilience and adaptability, we owe it to ourselves to become students of the resilient, adaptable human communities of color around us.

This is the special assignment given to all white queers: we are lucky enough to have been granted a window showing us truths our cis het (cisgender, heterosexual) white relatives might never see. If our queerness can show us what is broken in the world, our whiteness creates in us the responsibility to deliver those messages to the people we can reach. Marginal spaces

are their own ecosystems, and learning to live well in the margins is a critical act of humility and collectivism that may well save us as those margins widen in the approaching polycrisis.

<sup>2</sup> <https://www.fox47news.com/news/state/the-legacy-of-interstate-496-how-a-highway-displaced-lansings-largest-black-neighborhood>

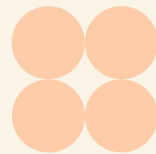


*Morgan Doherty (they/them) is a queer and trans youth advocate in Lansing, Michigan. They are a PhD student in Community Sustainability at Michigan State University, working with Dr. Lissy Goralnik and studying queer and trans relationships to land and non-human nature. They are the cofounder of Tender Heart Gardens, a queer and trans gardening collective on the eastside of Lansing.*



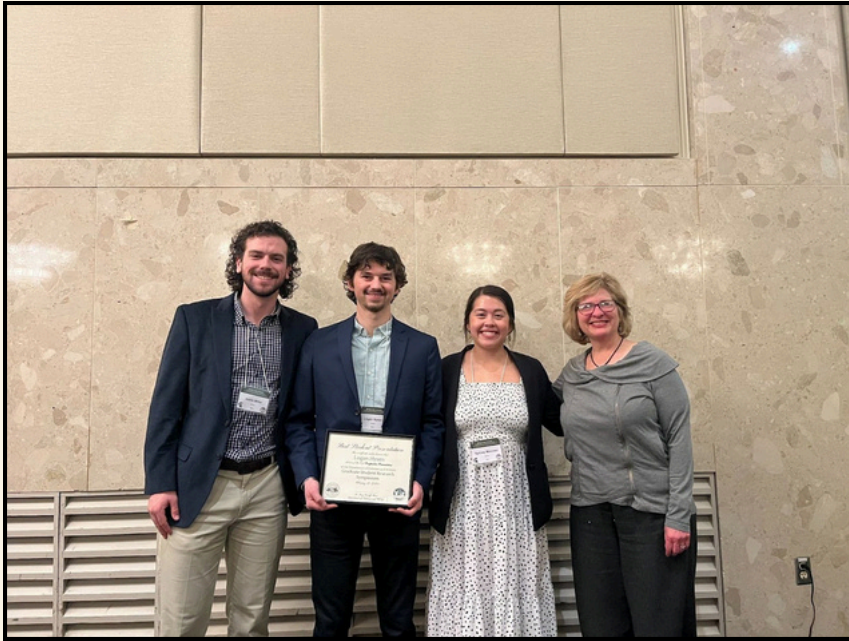


# 2024 FW GSO SYMPOSIUM



*The 19th Annual GSO Research Symposium was a success, boasting 22 presenters, over 90 in-person attendees, and over 20 online attendees from several states! The 2024 GSO Symposium consisted of presentations from both undergraduate and graduate students, a wonderful plenary address delivered by Dr. Neil Carter from the University of Michigan, and great conversation, company, and food. Thank you again to the incredible committee members, moderators, donors, venue and audiovisual staff, and presenters for making this year's symposium one to remember.*

*-Symposium Co-Chairs Justin Miller and Sydney Waloven*



BEST PROSPECTIVE  
TALK:  
Logan Hysen



BEST RETROSPECTIVE  
TALK:  
Sean Lennox

**Faculty Advisor:**

**Co-Chairs:**

**Budget:**

**Fundraising:**

**Programs:**

**Invitations:**

Dr. Jen Owen  
Justin Miller &  
Sydney Waloven  
Kyle Brumm  
Max Majinska &  
Caleb Branam  
Edith Gondwe  
Matt Nelson

**Invitations:**

**Food / Venue:**

**Judging:**

**Name Tags:**

**Registration/Website:**

Matt Nelson  
Gia Haddock & Carly  
Andrews  
Nick Alioto  
Michele Remer &  
Katie King  
Nick Boucher



## **Fauna**

*Maple River State  
Game Area Triplets*

Dr. Jeremy Hartstock

# THE WINNERS OF THE FW Photo Contest







**Landscape**  
*Winter Storm at  
Little Presque Isle,  
Marquette, MI*

Maxwell Majinska

**Flora**  
*Always Sunny in the  
Cosmos*

Carrie Meier





**Field Work**  
*Northern Saw-whet owl  
captured at Corey  
Marsh (cover photo)*

Dr. Jen Owen



**Community Engagement**  
*Banding saw-whet  
owls at Corey March*

Dr. Jen Owen

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