

ROLLIN A. JONES AND JAMES E. LINDSTROM WORKING FAMILIES SCHOLARSHIP

THOMPSON FOUNDATION VISIT 2022



Michigan Tech

SERVICE HIGHLIGHTS

WHAT SCHOLARS HAVE DONE SO FAR THIS TERM.

I participate in the Portage Lake Seed Library. We focus on making sure people in our local area have access to free seeds and are able to choose what seeds they want. We also have several events a year where we create a space for people to swap seeds and share plant knowledge.

My favorite service I have done so far has been volunteering at the Houghton County Historical Society working on the small railroad they have there.

My favorite service event was working the Little Huskies Basketball camp. It was awesome to see kids enjoying and learning more about the game of basketball.

My favorite service event that I've done is volunteering at the color stations for the annual Color Run (multiple people!). Not only was dousing people in colorful powder fun, but I was also stationed with a guy who ended up introducing me to the boxing club!

My favorite service event that I have done this year has been the Career Closet. I had no idea just how important having access to dress clothes for interviews was until I came up to the UP. I believe that this event services students in various ways and makes everyone have the best opportunity to achieve success.

Special Olympics Basketball is always my favorite thing to volunteer for especially because my brother is special needs.

Helping set-up for the CareerFEST /
Volunteering at Career Fair and interacting
with different company representatives
(multiple people!)

I really enjoyed helping working the graduate student government last spring for evaluating campus to make it more accessible.

Harvesting cattails with the Wetlands Club to plant at Nara Nature Park.

My favorite service event so far was Adopt-a-Highway cleanup with my sorority. It's great to be able to clean up pollution in the environment by performing such a simple task.

I love walking dogs at the Copper County Humane Society (multiple people!)

I did an invasive species removal which was really fun.

My favorite service was individually coaching youth showing beef cattle over the summer.

I have been tutoring a student from Sarasota, FL virtually every week. It's crazy to hear what's been going on there and what level of academics they are at compared to when I was in middle school.

I enjoy volunteering at the HuskyFan [Food Access Network] food pantry.

Volunteering at the Parade of Nations event. / Helping make and sell spring rolls for SASE [Society of Asian Scientists and Engineers] at Parade of Nations was so enjoyable!



JENNA S.

SEMESTER STORIES

"TELL US ONE HIGHLIGHT OF YOUR SEMESTER."

ORGANIZATIONS

I joined the Huskies Pep Band and it has been awesome.

I have been pinned for the sorority Theta Chi Epsilon and I'm going through the process to become a member.

I enjoyed partaking in the cardboard boat race!

I have been working with the football team traveling as an athletic training student aide.

One of my highlights of my semester so far is joining the volleyball club. I found an interest in volleyball at gym class in high school and I've wanted to be part of a volleyball team since.

Every Saturday, I go off-roading with the MTU Four Wheelers club.

ADVENTURE

I have loved exploring Copper Harbor and other parts of the Keweenaw.

The highlight of my semester so far has been wakesurfing in the Portage Canal.

I have enjoyed my Forest Ecology Labs where I get to go to places like the Porcupine Mountains State Park.

All the camping I've been able to do with my friends this fall. I've been able to explore the Keweenaw, from Rocket Range to High Rock Bay, to Fish Cove and Hoar Lake.

One highlight of my semester so far has been seeing the northern lights and spending time with my friends. I find the U.P. full of amazing things to see and being able to live here and see all there is to offer with great people is a once in a life time opportunity.

ACADEMIC

The professors' office hours - they are helpful.

I really enjoy my class load this semester. My classes have become very major specific. One highlight is going out on the Agassiz research boat frequently for my surface water lab.

I'm managing my stress much better and making a comeback academically.

Many of my labs are held outside in the forest; it's a good learning environment.

I have done really well on all my exams so far despite having classes that are typically considered difficult such as thermodynamics and statics.

Getting a 100% on my Digital Logic practical lab exam.

PROFESSIONAL DEVELOPMENT

I recently have been chosen as a lab assistant for the Applied Chemical and Morphological Analysis Laboratory.

During this past CareerFEST/Career Fair I was lucky enough to be invited to a "Ride and Drive" event with Stellantis. I was able to take a convoy of 2023 vehicles up to Brockway Mountain and talk to various recruiters from the Stellantis team regarding potential internship positions.

One highlight of my semester so far has been attending the Career Fair (multiple people!)

I attended my first professional conference to present some research I've been doing over the past year! It was an awesome experience and I ended up receiving an award for my poster presentation.



SERENITY S.

REFLECTIONS

THOUGHTS ABOUT THE PROGRAM'S IMPACT.



THIS SCHOLARSHIP HAS IMPACTED MY COLLEGE
EXPERIENCE BY **HOLDING ME ACCOUNTABLE FOR**
HELPING THE LOCAL COMMUNITY. THIS HAS BEEN AN
AWESOME WAY TO CLEAR MY MIND AND KNOW THAT I AM
MAKING A POSITIVE IMPACT.



MARLEY H.

THIS SCHOLARSHIP HAS IMPACTED MY COLLEGE EXPERIENCE BY ALLOWING ME TO GET INVOLVED WITH MICHIGAN TECH. INSTEAD OF HAVING TO ADDRESS MY COLLEGE FINANCES BY GETTING A JOB TO PAY FOR TUITION, I'M ABLE TO USE THAT TIME TO GET INVOLVED WITH THINGS AROUND CAMPUS SUCH AS HALL COUNCIL, GREEK LIFE, ATHLETICS, CLUBS, AND OTHER EVENTS. **IT'S BEEN A BLESSING TO HAVE THAT WEIGHT LIFTED OFF MY SHOULDERS** WHICH HELPS ME KEEP A POSITIVE AND MOTIVATED MINDSET TO SET MYSELF UP FOR SUCCESS.



ELAM M.

THIS SCHOLARSHIP HAS IMPACTED MY COLLEGE
EXPERIENCE GREATLY, BEING AT SCHOOL AND NOT HAVING
THE WORRY OF GOING DEEP INTO DEBT IN ORDER TO
FURTHER MY EDUCATION. I FIND IT IS MUCH EASIER JUST
TO FOCUS ON CLASS WORK AND EXPLORING THE BEAUTY
THAT THE AREA HAS TO OFFER.

Relationships Between Humans and Insect Families

Valoree S. Gagnon, Tara L. Bal

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Marshall



Natural Solutions: Development and Deployment of a Native Polypore as a Myco-biocontrol on Invasive Buckthorn Sprouts

Abraham Stone^{1,4}, Sigrid C. Resh^{2,3,4}, Lindsey Dolinski², Christopher Webster^{2,3}, Tara L. Bal^{2,3}

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³Michigan Technological University, ⁴Ecosystem Science Center, ⁵Coordinator, Keweenaw Invasive Species Management Area

Invasive Buckthorn Background

- Two well-established invasive buckthorn species in Upper MI
 - *Fraxinus alnus* (green buckthorn)
 - *Rhamnus cathartica* (common buckthorn)
- Grows rapidly, outcompetes native flora (Fig. 1)
- Prolific, resprouting and seedbank germination with removal of mature stems = management conundrum

Help from a native pathogenic fungus, *Chondrostereum purpureum*

- AKA silverleaf disease, a weak saprotrophic polypore with a crust-like fruiting body (Fig. 2)
- Hosts in Michigan include trees of Rosaceae family
- Causes high mortality (80-100%) in trials involving fast-growing tree control!

Previous MTU Research

Dolinski, L., Bal, T. L., Webster, C., Resh, S.C.*

- Master's thesis testing *C. purpureum* control success on invasive buckthorn
- C. purpureum* as effective as glyphosate at reducing stump sprouting by 80% relative to untreated control after one year
- Applying inoculant to girdling and cut stump injury were equally effective application methods (Fig. 3)

Creation of Viable Spray

- 2% malt media inoculated with *C. purpureum* isolate DR-365, collected in Hancock, MI
- Distilled of 1:10, 1:5, 1:2, 1:1, 2:1 DI water-culture tested through commercial sprayer at various spray-head adjustments
- Did not measure inoculum load, measured for most homogenous fine droplet distribution with successful growth
- 2:1 DI water-culture dilution set at finest spray-head adjustment selected for treatment (Fig. 4)

Setup of Fungal Treatment Plots

Plot Locations within Houghton County, MI

Fig. 5: Map showing sites within the Upper Peninsula of Michigan. All sites are located within Houghton County, MI.

Legend: Sweetbriar Trails, Maasato Hiho Trail System, Tech Trails System

Fig. 6: Example plot detailing different treatments within subplots. Plot boundaries include Maasato Hiho Trail System, Sweetbriar Trails, and Tech Trails System.

Three 8 x 4 m plots established within very dense, small stem diameter (<2 cm) buckthorn sites. All sites are located within heavily-trafficked trail systems adjacent to walking trails (Fig. 5, 7). Within plots, three 2 x 2 m subplots will be designated into the following areas for treatment (Fig. 6). All subplots subjected to native woody species survey in addition to treatment.

- ❖ **C: Control** – weed-whacking buckthorn ~20cm from ground with 20 spray application
- ❖ **O: Observation** – cutting as above with spray (Fig. 8), reserved for long-term study
- ❖ **S: Sampling** – cutting as above with spray application, reserved for destructive sampling
- ❖ **N: Natives** – survey of native trees for non-target damage.

Preliminary Data

Fig. 10: Depth of wood staining from inoculated wound in buckthorn over growing season. Staining caused by fungal infection (Koch's postulate verified). Linear regressions are per plot.

Fig. 9: Depth of Discoloration from inoculation over time. Linear regressions are per plot.

Genus	Common Name	% Stems of Total Plot
Tech Trails System		
<i>Fraxinus</i>	Buckthorn	95.3
<i>Prunus</i>	Ashes	2.4
<i>Rubus</i>	Brambles	0.8
<i>Alnus</i>	Alders	0.4
<i>Ulmus</i>	Elms	0.2
Sweetbriar Trails		
<i>Fraxinus</i>	Buckthorn	72.1
<i>Sorbus</i>	Mountain Ashes	14.1
<i>Acer</i>	Maples	8.8
<i>Prunus</i>	Cherries	2.1
<i>Crataegus</i>	Hawthorns	0.7
Maasato Hiho Trail System		
<i>Fraxinus</i>	Buckthorn	90.8
<i>Populus</i>	Aspens	1.9
<i>Salix</i>	Willows	1.8
<i>Rubus</i>	Brambles	1.2
<i>Prunus</i>	Ashes	1.0

Non-Target Damage Evaluation

- Evaluation of all plots eight weeks after treatment showed no signs of silverleaf disease present on any native plants
- Only native tree mortalities observed were accidental injuries during weed-whacking and potential tramping during data collection

Continued Evaluation & Future

- Buckthorn resprouting significantly in small-stem diameter treated plots – resprouts similar in height to pre-treatment two months after cutting
- Resprout counting, height/diameter measurement in both fall 2022 and spring 2023
- Next trial phase will test wounding/cutting at the base of root collar after cutting with brush hog machinery

References & Acknowledgements

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Abraham Stone

THIS SCHOLARSHIP HAS MADE ME REALIZE HOW GRATEFUL
AND LUCKY I AM TO BE ABLE TO ATTEND MICHIGAN TECH
AND FOCUS ON MY ACADEMICS. IT HAS PUSHED ME TO
STRIVE FOR THE BEST AND WORK HARDER AT EVERYTHING I
DO. I HAVE SPENT MORE TIME BEING INVOLVED AROUND
CAMPUS AND THE COMMUNITY IN MY FREE TIME. I ENJOY
BEING ABLE TO GET TO KNOW MORE PEOPLE THROUGH THESE
EXPERIENCES AS WELL.



BAILEE W.

I'M GLAD I GOT [THIS SCHOLARSHIP] BECAUSE THE FRIENDS I
HAVE MADE HERE HAVE MADE MY LIFE SO MUCH BETTER AND
I FEEL LIKE I FOUND THE PLACE I FIT.
THE PEOPLE ARE NICE AND THE AREA IS ONE OF MY FAVORITES.
IT ALSO PUT ME INTO A REALLY RESOURCEFUL CLASS THAT IS
LABELLED UN 1000, AND IT HAS TAUGHT ME A LOT.



MACI D.

BEING A RECIPIENT OF THIS SCHOLARSHIP HAS MADE ME MORE
GRATEFUL FOR THE THINGS IN MY LIFE THAT OTHERS MAY NOT
BE FORTUNATE ENOUGH TO RECEIVE AND THAT I CAN'T TAKE
ANYTHING FOR GRANTED. IT ALSO GIVES ME MOTIVATION
BECAUSE **I KNOW THAT SOMEONE BELIEVED IN ME ENOUGH TO
GIVE ME THIS SCHOLARSHIP** AND I CAN TAKE ON ANYTHING
THAT MY CLASSES THROW AT ME.

THANK YOU!

