

Noyce River Region NEWSLETTER

A program for STEM educators funded by the National Science Foundation



Summer Research Immersion 2021 participants and program leaders at Giant City State Park exploring biodiversity in Southern Illinois by monitoring a rare plant under the guidance of Chris Benda (left).

Welcome to Fall 2021

In spite of a challenging year, the Noyce NSF River Region Environmental Sustainability program has much to boast about. Our year was filled with enrichment and research activities that centered around environmental issues unique to Southern Illinois. During the 2020-21 academic year, teachers took courses in leadership and implemented an environmental justice exercise in their classrooms. Cross school and classroom collaborations were important outcomes of the year as exemplified in the amazing video called “Water Quality Across Grade Levels” (<https://stemforall2021.videohall.com/presentations/2061>) that was produced by three Noyce master teachers. The 2021 Summer Research Immersion (SRI) was led by David Gibson and provided field experiences, research activities and curriculum planning on the biodiversity of tardigrades, diatoms and plants in our region. In the fall 2021, teachers translated their SRI experiences into innovative and engaging hands-on activities for their students.

With this newsletter we celebrate some of the most impressive accomplishments of our teachers. Our outstanding team of teacher leaders continue to surprise us with their creativity, energy and dedication to transforming STEM education in the river region.

Thank you to the teachers, staff and faculty who have made our program a resounding success. We look forward to a productive and exciting 2022.

Karen Renzaglia,
Director
SIU Noyce River Region MTF Program

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MEET OUR NEW TEACHER LEADERS

Join us in welcoming Michelle Asa and Angela Zier into the SIUC Noyce River Region Master Teaching Fellowships in Environmental Sustainability program.



Michelle Asa is a third-grade special education teacher at Carruthers Elementary School in Murphysboro, Illinois. She is the Vice President of Murphysboro Education Association and holds certificates in special education, elementary education, and English. She is a member of the Carruthers Green Team, School Leadership Team, and Math Curriculum Committee. Michelle is no stranger to the Noyce program.

She has participated in and benefited from our Summer Research Immersion (SRI) since 2017.

“My SRI experiences have completely turned my teaching around. I was a “by the book” teacher before. I teach special education and was always struggling to adapt the text to my students reading level. I would then make some type of written work that I could grade for the assignment. I have learned that excitement of providing materials to students and letting them experiment. They have risen to the challenge and have surprised me every time. Not only are they excited to experiment about a question given to them, they are excited to write about it! They even ask to read more about the topic. I cannot express the magnitude of the positive effects this program has had for my students.”



Angela Zier teaches biology, zoology, ecology, and physical science at Carterville High School in Carterville, Illinois. Angela also teaches an online undergraduate environmental science course at a community college in Arizona. She was the 2013 recipient of the National Science Division Adjunct Faculty of the year from Coastal Carolina Community College.

Angela is interested in providing her students with a variety of opportunities to make a connection with their environment that they will carry with them into adulthood.

After participating in the 2021 SRI, Angela stated that she “was in complete awe of the talent and diversity of ideas that the other MTFs bring to the group. These are the types of teachers that I have been seeking and want to surround myself with! Allowing me to be immersed in the research process was the best way to give me the skills and practices to teach my students to be scientists. Now I feel confident in translating that knowledge into research experiences for my students. When you feel like you are a part of something, you are much more likely to take action to take care of it.”



Group photo of MTFs, summer guests, group leaders, program leaders, and Erin Garrett during the 2021 Summer Research Immersion. Participants learned about mesophication in southern Illinois forests at the Cache River State Natural Area. Photo by Jason Henry.

2021 SUMMER RESEARCH IMMERSION RECAP

by Ingrid Felsl

The 2021 Summer Research Immersion took place from June 7th to 25th and focused on biodiversity. It was jam packed with microscopy, field collection, collaboration, and presentations. Overall, we had three program leaders, five group leaders, 13 Master Teaching Fellows, seven summer guests, and five guest leaders!

Using tardigrades and diatoms as our sample species, each group collected samples of each from multiple points along the Big Muddy River. Groups designed and implemented their own research plans, investigating biodiversity in tardigrades and diatoms. One of our most valuable resources was diatom expert Dr. Sarah Whorley from Daemon College in Amherst, NY, who aided us in understanding and identifying diatom samples. In the end, we pooled all of our data together to analyze tardigrade and diatom biodiversity along the entire Big Muddy River.

We also had a week of field work exploring mesophication in southern Illinois forests. Led by Erin Garrett from U. of I. Extension, we visited examples of forests where fire suppression has led to mesophication and forests that are actively burned. Groups collected and analyzed vegetation data from each to answer questions about how prescribed burning (or lack thereof) affects biodiversity in southern IL forests.



Left to right: Diatom (photo by Tiffany Sulser), Trifolium reflexum (buffalo clover) at Giant City (photo by David Gibson), and a tardigrade (photo by Alyssa Weisenstein).

NOYCE SUB-GRANT RECIPIENTS

2021: A Year of Conservation and Creativity

Meteicha Green and April Bartnick were awarded the 2021 Noyce Sub-Grant to fund their project, A Year of Conservation and Creativity, at Carruthers School in Murphysboro. Their project incorporates school recycling initiatives, science-based artwork, and multiple field trips to encourage waste reduction, beautification, and collaborative thinking and action.

Beginning in fall 2021 and finishing in spring 2022, their students will complete a trash audit, work on art projects that will be publicly displayed, visit local natural areas, and more. You can view their timeline on Padlet: padlet.com/mgreen206/conservationtimeline.

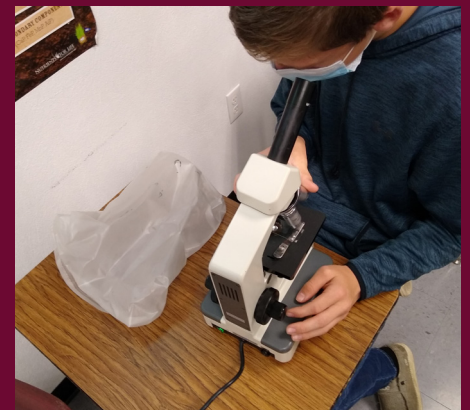
One of the student activities included learning about the Monarch butterfly lifecycle and creating artwork. The Carruthers Green Team then chose a winning art piece from each grade that will be turned into a mosaic to be displayed in the school's pollinator garden.

The Noyce Sub-Grant provided funding for materials and transportation. Meteicha and April will present a poster on their progress at the 2022 Noyce Midwest Conference.



Top: third grade art contest winner. Bottom: fifth grade art contest winner. These pieces will be turned into mosaics and displayed in the Carruthers pollinator garden.

NOYCE SUB-GRANT RECIPIENTS



Students performing labs in Tiffany Sulser and Craig Kirchner's classrooms.

A Sense of Place: Using Place-based Instruction to Teach Life, Earth, and Environmental Sciences in Rural Elementary and High School Classrooms

Tiffany Sulser and Craig Kirchner were awarded the 2021 Noyce Sub-Grant to fund their project, A Sense of Place, at Sesser-Valier Middle School and DuQuoin High School. Since their schools serve rural students, many who live in agricultural communities, their project utilized corn and soybeans, the predominant agricultural crops in the area, as the study organisms.

Students used digital microscopes, funded by the Sub-Grant, to better understand corn and soybean anatomy and physiology. They also explored sustainable alternatives for plastics, fuels, and crop production. In response to the COVID-19 pandemic and the introduction of remote learning in many classrooms, this project incorporated different communication technologies so that distance and in-person learners could collaborate.

Tiffany and Craig will present a poster on their progress at the 2022 Noyce Midwest Conference in Cave City, KY.

SENSORY GARDEN GRANT RECIPIENTS



Clockwise from top left: Jefferson Elementary courtyard; John Casebolt reviewing greenhouse plans; John demonstrating size of geodesic dome; Brian Cook putting together dome; John constructing the dome.

Sensory Garden

Jefferson Elementary (JE) has begun implementation of a sensory garden designed by Noyce fellow and JE fifth grade teacher John Casebolt and second grade teacher, Brian Cook. They began collaborating soon after Cook joined JE last spring. Working with Cape public school's foundation director, Amy McDonald, they wrote and were awarded a \$7000 grant to establish the garden.

JE serves an area that has some of the most concentrated black poverty in the country. Many students come to school with trauma that continually needs to be addressed. The garden will be a place for students to decompress and explore the wonders of nature through the five senses.

Casebolt's carpentry experience has been a major asset as they built raised planters for vegetable production. The most recent addition to the project is a geodesic dome greenhouse that will help extend the growing season.

Casebolt and Cook strive to make the project student focused in order to ensure the longevity of the garden and give the students a sense of responsibility and pride. By next spring, their goal is to have a water feature and establish perennial flower beds as well as a Chinese acupuncture foot path.

Volunteers, visitors and donations are welcomed and encouraged.

Photos and article courtesy of Brian Cook, an SRI 2021 guest. Check out the sensory garden's spotlight on local news: www.kfvs12.com/2021/07/26/jefferson-elementary-school-create-sensory-garden-students

Cairo Jr/Sr High School Students Explore Biodiversity

by Keith Cambell

An underlying goal I have when working with my students is to expose them to the world outside of the four walls of our classroom. As a part of the Noyce SIUC River Region Sustainability Cohort, I work with some of the top teachers and instructors from our region. This impressive and dedicated group has provided me with many interesting educational experiences that I then share with my students. One such experience my eighth-grade life science class is currently undertaking is setting up a nature walk and study area. This opportunity enables my students to learn how to identify local trees and plants, while developing an outdoor classroom for our school.



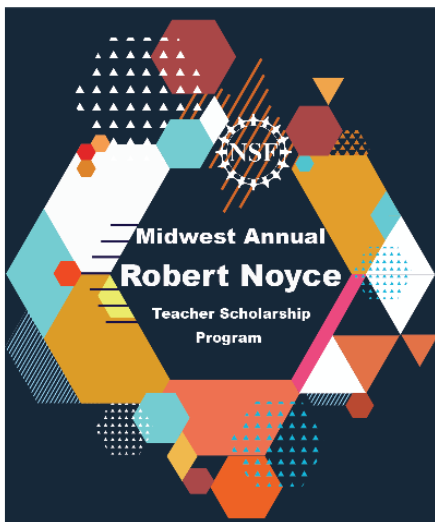
Keith Campbell and eighth grade students constructing nature walk at Cairo Middle School. Tires found at the nature walk were painted and transformed into seating.

Like many of today's youth, my students were not overly excited when they learned their class project would include outdoor assignments. But I am happy and proud to say they have responded with vigor and enthusiasm. The first step was to identify the project area and what needed to be done as far as making the site functional and accessible. With the help of Mrs. Barnhill-McCormick's Junior/Senior High class, and her husband Keith's lawn care equipment, we began the clearing process. After many hours of hard work, we had an accessible, functional area for our outdoor classroom. The next step was making a seating area to be utilized as a classroom. This project has given my class a sense of ownership and pride in their work. In addition, it has provided the whole school with an outdoor educational site and relief from the daily grind of education in a box. The old saying "if you build it, they will come" is appropriate. We built it. Now is the time to put it to use.

I used the site to conduct an "I've Got Nature on Me" unit of study. I taught about plant and tree structures and the process of photosynthesis. Students downloaded the iNaturalist app onto their iPads and learned how to take and post pictures for plant identification. They also used plant and tree identification field guides that are included in their work packets. My students will then be tasked to produce and learned to use dichotomous keys. Identification plaques and QR codes are being attached to posts at each tree or plant on the nature walk for informational purposes. The site provides endless opportunities for learning about the process of science and the natural world in which students live.

UPCOMING EVENTS

2022 Midwest Annual Robert Noyce Teacher Scholarship Program Conference



The theme of this year’s conference is Exploring Beneath the Surface: Going deeper into culturally relevant practices across the rural-urban continuum. It will be held in-person on February 3-4 in Louisville, KY and on February 4-6 in Cave City, KY.

Poster presentation is required of those who were awarded sub-grants in 2021.

For more information, visit cemast.illinoisstate.edu/teachers/noyceconference.

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2022 Science in the South

Due to COVID, the January Science in the South meeting was postponed and will take place at a later date to be announced in the spring of 2022. Check the website for further information at conferenceservices.siu.edu/conferences/science-in-the-south.php.

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2022 Spring Course

Continuing with biodiversity in Southern Illinois, we will conduct a research project using barcoding to identify mosses on different tree species. Laxmi Sagwan-Barkdoll and William Browning will lead this research experience.

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2022 Summer Research Immersion Dates

The 2022 SRI will take place June 13 - July 1. The theme will be Climate Change and the summer course will be taught by Dr. Leslie Duram. In addition, we will spend three days at the EarthWays Center, Missouri Botanical Garden in St. Louis.

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2022 Fall Family Sustainability Day

On October 16, 2022, the Noyce MTF program host a day that focuses on environmental and community sustainability activities for families. The event will be sponsored by the Innovations in STEM Education fund from our non-profit partner, the Southern Illinois Community Foundation.

SIU Noyce River Region Master Teaching Fellowship Program in Environmental Sustainability



MASTER TEACHERS

Alyssa Weisenstein	Marion High School
Amy Telford	Salem Community High School
Andrea Burzynski	Carterville High School
Angela Zier	Carterville High School
April Bartnick	Murphysboro Middle School
Craig Kirchner	Du Quoin High School
Emily Richbourg	Anna-Jonesboro Community High School
Eryn Wissler	Collinsville High School
Holly Dunderdale	Marion High School
Keith Campbell	Cairo Jr/Sr High School
Megin Rice	Marion High School
Meteicha Green	Carruthers Elementary School in Murphysboro
Michelle Asa	Carruthers Elementary School in Murphysboro
Tiffany Sulser	Marion Junior High School

PRINCIPAL INVESTIGATORS

Karen Renzaglia, David Gibson, Leslie Duram,
Michael Lydy and Judith Green

PROGRAM COORDINATOR

Renee Lopez-Swalls

GRADUATE ASSISTANT

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