



BIOLOGY MEETS ENGINEERING SUMMER 2026 OPPORTUNITIES BOWLING GREEN STATE UNIVERSITY+

1. BOWLING GREEN STATE UNIVERSITY GREENHOUSE – KEVIN NEVES

Aquaculture is the fastest growing production method within agriculture, as our ability to capture fish from our oceans and lakes is currently at its maximum sustainable yield. Aquaponics, the production of fish alongside vegetables grown in the water to absorb nutrients produced by the fish, is a sustainable and environmentally friendly form of aquaculture. Currently, BGSU has a small (roughly 1250 gallons) demonstration recirculating integrated multi-trophic aquaponics system (RIMTAS) which adds crayfish to consume uneaten waste. This project will aim to look at using both ornamental plants (such as flowers) and species of conservation interest (marsh plants to help rebuild degraded aquatic ecosystems), as an alternative to vegetables. Students will help with day-to-day operations of the system including feeding, cleaning, water quality monitoring, and data collection as well as monitoring fish, crayfish, and plant grown regularly.

Website: <https://www.bgsu.edu/news/2024/06/aquaponics-research-at-bgsu-pioneers-sustainable-solutions-for-a-greener-future-and-gains-attention-from-pbs-series.html>

Duration: Project will start in June and run through until August

Hours per week: 5 – 10 hours per week

Other requirements: Ability to handle fish and crayfish

2. BOWLING GREEN STATE UNIVERSITY GREENHOUSE – EVILI MARTINS

The efficacy of organic fungicide and bactericide in flower and vegetable plants.

Justification

This project is designed to evaluate the efficacy of organic bactericide and fungicide products on controlling bacterial and fungal pathogens in ornamental and vegetable crops. The study will assess disease suppression and plant performance in Petunia (*Petunia × hybrida*), Begonia (*Begonia spp.*), Tomato (*Solanum lycopersicum*), and Pepper (*Capsicum annuum*) when challenged with *Fusarium*



oxysporum and *Enterobacter species*. Organic disease management is an important component of sustainable greenhouse production, and this project aims to provide practical data on the performance of commercially available OMRI-listed biological products.

The experiment will be conducted by students from Toledo Public High School during summer 2026, from June to August. Disease incidence, disease severity, and general plant vigor will be evaluated throughout the experiment.

Overview

Plants will be established in three treatments per crop, including a fungicide treatment, a bactericide treatment, and an untreated control. Each treatment will include 10 plants per crop species. Plants will be inoculated with either *Fusarium oxysporum* or *Enterobacter*, depending on the treatment group. Organic fungicide and bactericide applications will be made once per week according to label rates. Control plants will receive water only.

Method

Seeds for tomato and pepper will be sown in PGX growing media in the greenhouse until germination. After establishment, seedlings will be transplanted into 4.5-inch pots containing a custom greenhouse media mix. Seedlings for petunia and begonia will be purchased ready to transplant. Plants will be arranged in a randomized complete block design to reduce environmental variability.

Pathogen inoculation will occur after transplant establishment. *Fusarium oxysporum* will be used for fungal treatments, and *Enterobacter species* will be used for bacterial treatments. One day following inoculation, product applications will begin.

For *Fusarium* treatments, RootShield® Plus WP, containing *Trichoderma harzianum* strain T-22 and *Trichoderma virens* strain G-41, will be applied as a soil drench at 1.5 grams/gallon as label-recommended. For bacterial treatments, Actinovate® SP, an OMRI-listed product containing *Streptomyces spp.*, will be applied as a soil drench at the label-recommended rate of 0.5 teaspoon/gallon of water. Spray volume will be adjusted based on plant size to ensure adequate coverage.

Plants will be monitored weekly for symptom development, disease incidence, and overall plant health. Visual ratings and photographic documentation will be used to track disease progression and treatment efficacy. Data collected will be



used to compare treated plants with untreated controls to determine the effectiveness of each organic product.

Treatment list:

#Plants/Trt	RootShield® Plus WP (Trichoderma harzianum strain T- 22 and Trichoderma virens strain G-41)	Actinovate® SP (Streptomyces spp.)	Control
Tomato	10	10	10
Pepper	10	10	10
Petunia	10	10	10
Begonia	10	10	10
Total of plants	120		

Website: <https://www.bgsu.edu/arts-and-sciences/biological-sciences/facilities-and-resources/greenhouse-facilities.html>

Total internship duration: 5 weeks; from June 8th to July 10th.

Internship hours per week: 13-15 hours. With 15 hours a week, Monday, Wednesday, and Friday, from 9 am till 2pm. But date and time can be adjusted to fit students' needs, in case a student wants to participate but has a restriction.

Other Requirements: None listed.

3. BOWLING GREEN STATE UNIVERSITY – MOORE LAB

Rusty crayfish (*Faxonius rusticus*) are one of the most invasive aquatic species in North America. The invasion success of rusty crayfish has been attributed to several aspects of their life history. Rusty crayfish are able to outcompete native species for food through aggression and boldness. Additionally, rusty crayfish have high plasticity when it comes to habitat requirements, further increasing the rusty crayfish non-native range. To better understand crayfish invasion capabilities, more focus is being placed on physical dispersal and invasion edge populations. This



project will determine how crayfish perceive other crayfish chemical cues and if this perception impacts their movement and dispersal. Students will create small scale mesocosms, expose crayfish to the chemical cues of other crayfish, and then monitor their behavioral patterns for changes in movement. Students will learn basic construction and plumbing skills, experimental design, the handling of animals, and basic behavioral ecology techniques.

Website: <https://pmoore7.wixsite.com/labsensoryecology>

Total internship duration: the internship will start in June and run approximately 6 weeks.

Internship hours per week: 16-20 hours per week, but this is flexible

Other requirements: some field work is necessary to collect crayfish. This will require that students enter streams (under supervision) that are slow moving and no more than a meter deep.

4. **BOWLING GREEN STATE UNIVERSITY – DR. MATTHEW PARTIN**

Coral Nutrition & Growth | Sea Urchin Aquaculture & Embryology

Are you a high school student who loves marine life, aquariums, or hands-on science?

This summer, join the **BGSU Marine Laboratory** for an immersive research experience focused on coral health and sea urchin aquaculture. Students will work directly with university faculty and undergraduate researchers on real, ongoing research projects in a professional marine lab setting.

Project 1: Coral Nutrition & Growth Research

Coral reefs are among the most biodiverse ecosystems on Earth, yet they face increasing environmental stress. Nutrition plays a critical role in coral growth, coloration, and resilience.

This research project investigates how different feeding strategies (liquid planktonic foods, particulate feeds, and control conditions) influence coral growth rates and overall health in a controlled reef system.

Students will:

- Assist with coral feeding trials
- Measure and record coral growth and polyp extension
- Monitor water chemistry (nitrate, phosphate, pH, salinity, dissolved oxygen)
- Help maintain life support systems



- Analyze and present data
Students will learn:
- Experimental design and hypothesis testing
- Marine aquarium life-support systems
- Coral biology and symbiosis
- Scientific data collection and interpretation

Project 2: Sea Urchin Aquaculture & Embryology

Sea urchins play a vital ecological role in reef systems and are increasingly important in conservation aquaculture efforts. This project focuses on culturing sea urchins and studying early developmental stages.

Students will:

- Help maintain adult broodstock
- Assist in larval culture and feeding
- Observe fertilization and embryonic development under microscopes
- Support phytoplankton culture systems
- Maintain aquaculture tanks and filtration systems

Students will learn:

- Basic aquaculture techniques
- Marine invertebrate embryology
- Microscopy skills
- Sterile technique and culture maintenance
- Team-based laboratory operations

Skills Developed

- Laboratory and aquarium husbandry
- Data collection and analysis
- Basic plumbing and life-support system setup
- Scientific communication
- Professional teamwork in a research environment

Program Details

Duration: Approximately 6 weeks (June–July)

Hours: 12–20 hours per week (flexible scheduling)

Location: BGSU Marine Laboratory



Eligibility: Motivated high school students (rising sophomores, juniors, and seniors preferred)

No prior marine biology experience required — just curiosity, responsibility, and a willingness to learn.

Why Participate?

- Gain authentic research experience before college
- Strengthen college and scholarship applications
- Work with university faculty and researchers
- Contribute to real coral and aquaculture research

Spots are limited. Apply early!

5. REEF SYSTEMS CORAL FARM

Location: Reef Systems Coral Farm

8459 Peter Hoover Rd.

New Albany, OH 43054

Please note the location. You must have your own transportation.

Research Title: Effect of potassium on corals ability to handle higher light intensities in an aquaculture setting. Research Description: Reef Systems Coral Farm is interested in the potential benefit of adding potassium and magnesium to indoor aquarium systems in addition to alkalinity and calcium. This research experience will involve (a) detailed data log tracking of water chemistry, coral husbandry and health observations, (b) tank and equipment maintenance, (c) performing detailed analyses and weight measurements on various genus, species, and subspecies of coral at consistent intervals (e.g., timeline photos, polyp extension measurements, evidence of growth, coral color, etc.).

Website: <https://reefsystemscoralfarm.com/>

Total internship duration: 8 weeks

Internship hours per week: 13-15 hours

Other Requirements: Must have own transportation and be able to work within the following schedule: Wednesday-Friday: 12pm-7pm; Saturday-Sunday: 10am-5pm

6. TOLEDO ZOO AND AQUARIUM – MATT CROSS

Position: T.U.R.T.L.E. Internship



Duration: 10 weeks (June – mid-August)

Hours per week: 24 – 32

Website: <https://www.toledozoo.org/mission/internships>

Description: The Toledo Zoo & Aquarium’s Conservation Department is hiring high school students for our T.U.R.T.L.E. (Teens Understanding Research Techniques & Learning Ecology) Program. This project is designed to give students interested in field conservation experience prior to entering the workforce. Work will be based out of Toledo and involve travel to field sites. Transportation to-and-from field sites will be provided, and to the zoo on a case-by-case basis. Students will be provided footwear (work boots, rain boots, and waders), lunches, PPE (i.e., sunscreen, bug spray, etc.), water bottle, hat, t-shirts, and a backpack. Students will participate in a variety of our local conservation initiatives and work with our partners to gain a breadth of experiences. Students are encouraged to develop complimentary summer research projects, pending supervisor approval.

Essential Job Functions:

- setting and checking aquatic funnel traps;
- radio-telemetry;
- nesting surveys;
- collecting demographic and morphometric data;
- collecting blood samples;
- inserting passive integrated transponders (PIT);
- using a GPS unit;
- assessing habitat;
- assisting with Blanding’s Turtle head-starting;
- Lake Sturgeon rearing;
- Copperbelly Watersnake propagation and rearing;
- recording data; and,
- additional zoo-related tasks as required.

Required Knowledge, Skills, and Abilities:

Knowledge of:

- wildlife and sustainability, such as the origins, behavior, diseases, genetics, and life processes of animals and wildlife
- protecting wildlife habitats

Skills:



- attention to detail
- analytical thinking
- data collection
- cooperation
- adaptability/flexibility

Ability to:

- work long hours in inclement weather (heat, cold, rain, etc.) with exposure to mosquitoes, biting flies, ticks, and noxious plants
- commit to maintaining a safe work environment
- collect data accurately and thoroughly
- be self-motivated with a positive attitude
- be respectful and professional in interactions with other team members, partners, and the public

Other:

- Must be willing to work with snakes

Learning Outcomes/Competencies:

- **Career & Self-Development** - Proactively develop oneself and one's career through continual personal and professional learning, awareness of one's strengths and weaknesses, navigation of career opportunities, and networking to build relationships within and without one's organization. The intern will have the opportunity to work in conservation and to foster an interest in the environmental field as a career. This internship opportunity is intended to provide real-world experience, enable mastery of technical and soft skills and build a network of contacts.
- **Communication** - Clearly and effectively exchange information, ideas, facts, and perspectives with persons inside and outside of an organization.
- **Critical Thinking**- Identify and respond to needs based upon an understanding of situational context and logical analysis of relevant information.
- **Professionalism** - Knowing work environments differ greatly, understand and demonstrate effective work habits, and act in the interest of the larger community and workplace.



- **Teamwork** – Build and maintain collaborative relationships to work effectively toward common goals, while appreciating diverse viewpoints and shared responsibilities.