

STONE LAB

THE OHIO STATE UNIVERSITY'S ISLAND CAMPUS ON LAKE ERIE



*Summer science classes,
Ohio State credits.*

› stonelab.osu.edu



Who We Are



MEET STONELAB



Two and a half years. That's how long it takes for a single drop of water entering Lake Erie from the Detroit River to make its way out to Lake Ontario by way of Niagara Falls.

That's when that drop of water, completely unnoticed as it entered the lake, makes a huge splash.

One day. One week. Five weeks. That's just how little time it could take for your whole life to change after experiencing Stone Laboratory, The Ohio State University's island campus on Lake Erie.

For more than 100 years, Stone Lab has been making its mark as a resource for freshwater biology research, science education and outreach.



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For more than 100 years, Stone Lab has been making its mark as a resource for freshwater biology research, science education and outreach. As the research station for the Ohio Sea Grant College Program, the lab is a base for professional scientists from all over the Midwest as they work to solve the most pressing issues facing the Great Lakes, such as invasive species and toxic algal blooms.

In addition to hosting college-credit courses and resume-building workshops, Stone Lab offers field trips, public tours of the Aquatic Visitors Center and South Bass Island Lighthouse, and conference and event center space, putting Lake Erie science and history within anyone's grasp. Stone Lab's Gibraltar Island, just off the coast of South Bass Island in Lake Erie, is a full-service campus with dormitories, a dining hall, classrooms, a library and a computer lab.

Thousands of Stone Lab alums are making waves all over the world in biological and environmental sciences and even in science, technology, engineering and math (STEM) education. Someone who takes a 2018 Stone Lab class could be the next generation's greatest scientist. Will it be you?



WILL IT BE YOU?



GIBRALTAR ISLAND

1 > Bayview Office

2 > Peach Point Research Laboratory: Houses the Water Quality Laboratory and holding tanks for aquatic organisms

3 > Aquatic Visitors Center: Open June through August, this former fish hatchery has educational displays, aquaria filled with fish and a public fishing dock.

4 > Peach Point and Sycamore Cottage: Staff and faculty housing

5 > Glacial Grooves: Deep striations, remnants of the last great North American glacier more than 10,000 years ago

6 > Solar Pavilion: Forty-four 240-watt solar panels provide energy and shade a few picnic tables below.

7 > Stone Laboratory: This is the main instruction building on the island, and contains laboratories, classrooms, office space, a meeting room for special lectures, a library, a computer lab and the Stone Lab bookstore. Forty solar panels were added to the roof in 2013.

8 > Main Dock

9 > Dining Hall: Solar thermal installed on the roof in 2012 provides nearly all the hot water needed for the Dining Hall.

10 > Gibraltar House: Staff housing

11 > Research Buoy: Collects data including water temperature, pH and algae pigment and transmits it live to the Stone Lab website

12 > Stone Cottage: Faculty housing

13 > Harborview House: Student housing

14 > Barney Cottage: Additional housing

15 > Cooke Castle: Built in 1865 by Jay Cooke, a Civil War financier, this 15-room Victorian home is currently undergoing renovations.

16 > Swimming Beach

SMALL ISLAND BIG IMPACT

Stone Lab is located on Gibraltar Island, just north of South Bass Island's Put-in-Bay. Gibraltar is named for its resemblance to the famous British fortress at the western end of the Mediterranean Sea. Though it's no more than a few hundred yards from South Bass, the 6-acre island feels like a whole other world.





SOMEONE IS COLLECTING NEW SKILLS



In the shadow of cliffs along the Vermilion River, Julie Kastanis, a junior at Cleveland State University, flips over rocks. Spotting a planarian, she wades to shore and grabs some tweezers to transfer it to a jar, but it falls apart as she tries to move it.

"I already have a planarian, but this one was bigger," she explains. "Oh well."

Dr. Joshua Stone, a zooplankton ecologist and researcher at Ohio State's Aquatic Ecology Laboratory who is teaching the class, warns them that they may want to have a few extra specimens at the ready, in case they are unsure about any of their IDs. If they succeed, the payoff is two Ohio State University credits earned in just one week, transferrable to almost any U.S. college.

A group of students crouches along the shore of the river in the dappled sunlight, using sieves and dip nets. "I found a bloodworm," one calls out, and the others come over to examine it.

Farther upstream, Stone partners up with student Jackson Krejsa, a junior at Green High School, to pull a seine – a large net with weights on the bottom edge – along the river. When they reach shore, it is mostly empty, save for some small silver minnows, which they toss back.

“*I decided to come here to get more than a lecture. I wanted to really apply science and not just listen to it. So now I'm outside and I get to do all this really cool hands-on science and use the scientific method in the field.*”

— **Julie Kastanis**

Junior biology major, Cleveland State University

WILL IT BE YOU?

They go back for another try, recruiting other students to help free the seine when it gets caught and others to splash and hopefully scare fish into the net. Several of the students pick up the slippery minnows to examine them more closely. Some of them have never held a fish before this week; 12 of the 15 class members are high school students.

One group doesn't have this particular fish yet, so they put it in a glass specimen jar. Holly Schmenk, a senior from Patrick Henry High School, looks at the latest addition to their collection and smiles.

The students are cheerful as they head to the Ohio State vans. They have one more stop to make – a tour of the Castalia State Fish Hatchery and a brief chance to look for new species there – before they go back to Gibraltar Island for dinner.



Introductory Courses

Two credits

June 10-16

Intro to Biological Studies – Aquatic Biology
Ecology and Conservation of Birds
Field-Based Introduction to Oceanography
Lake Erie Sport Fishing

July 22-28

Intro to Biological Studies – Aquatic Biology
Intro to Biological Studies – Birds

July 29-August 4

Intro to Biological Studies – Aquatic Biology
Intro to Biological Studies – Local Plants
Introductory Insect Field Biology

Sunday-Saturday. Open to advanced high school students and current college students.

Need help paying for your class?
See page 14 for info on scholarships.



go.osu.edu/intro



SOMEONE IS GETTING **NEW** PERSPECTIVE



Green Island looks like it could be a movie set straight out of “Jurassic Park.” Dense green foliage lines the narrow walkway down the center of the small island, which is owned by the state of Ohio as a nature preserve. The ruins of a lighthouse and litter from trespassers are the only signs of human habitation the Behavioral Ecology students can see as they walk along.

For the most part, they crane their necks looking toward the tops of the trees, where scores of cormorants and herons are roosting. The birds’ calls are at once deep and squealing, a sound faintly reminiscent of the “dinosaur” noises we’ve heard in the movies.

The class is here, along with instructor Elizabeth Hoskins from Ohio State’s Department of Evolution, Ecology and Organismal Biology, to observe the nesting and parental behavior of these birds, one of nine field trips that are part of the five-week, 4-credit course.

After a short boat ride from Gibraltar, the students were ferried to the island on a rowboat, then donned their rain gear. Cormorants are infamous for their habit of vomiting when threatened; today there are two near misses when half-digested fish fall out of the sky.



go.osu.edu/upper

Hoskins gives her students some instructions – don't enter the lighthouse, observe the birds' behavior and answer all the questions for your field assignment – and then gives them free rein to wander the island alone or in small groups with their binoculars, pencils and worksheets. Ohio State students Tyler Nace, a biology major, and Joshua Hug, a zoology major, pick their way quietly through fallen leaves, still looking upward and whispering and taking notes as a few birds seem to fight.

Hoskins gathers the group to discuss what they've seen. Why do birds choose to roost here? What defensive behaviors do they exhibit when protecting their offspring? It's all part of examining the causes and consequences of animal behavior. Nace, Hug and the other students in the class will use the observational skills and reasoning they've practiced here for their own research project and present the results at the end of the term. These are skills that will be invaluable in their future careers as scientists.



Upper Level Courses

Five-Week Courses 4 credits

June 17-July 21

Aquatic Ecosystems – Ecology of Inland Waters

Behavioral Ecology

Ecology

Evolution

Field Biology of Aquatic and Wetland Plants

Field Zoology

Ichthyology

One-Week Courses 2 credits Sunday-Saturday

May 20-26

Field Herpetology

July 22-28

Field Ecology

Water Quality Management

July 29-August 4

Spider Biology

LIFE ON THE ISLAND

The wind rustles leaves of hackberry, maple and chinkapin oak trees on Gibraltar Island. Stone Lab's five-week courses are held three days a week (either Monday, Wednesday and Friday or Tuesday, Thursday and Saturday). Some students choose to take two classes during the term on alternating days. Others take just one and apply for a work-study position at the lab to cover their room and meals costs or find part-time jobs on South Bass Island.

On off-days and in the evenings, you can find students scattered across the island, studying in hammocks, swimming at the rocky beach on the eastern end of Gibraltar or laughing around a campfire near the shore.

As dusk settles, the beat of drums and bass guitar float across the water from Put-in-Bay, where bands play as vacationers relax. A water taxi full of students, returning from a dinner outing, arrives in the dimming light. Tomorrow, the cycle will start again.

Other Courses 1 day / 0.5 credits

Larval Fish ID Workshop

Open to college students studying biological sciences, education and natural resources, as well as science teachers.

Want to come to Stone Lab?

We want to help.
Scholarship details are on page 14.

WILL IT BE YOU?



2018 REU Topics

- › Botany
- › Fisheries Research + Management
- › Ichthyology
- › Limnology
- › Ornithology

SOMEONE IS DIVING INTO RESEARCH

WILL IT
BE YOU?

You might think “Nutrient limitations in the central basin of Lake Erie” sounds dry, but it’s literally the opposite of that.

The Ohio State University junior Madeline Lambrix has spent hours upon hours working with water for her project on limnology, supervised by Stone Lab’s Research Coordinator Dr. Justin Chaffin, as part of the Research Experience for Undergraduates (REU) Scholarship Program. And hanging off the side of a boat with a bucket to collect water samples is actually a pretty wet way to spend a morning.

Lambrix, an environmental science major specializing in water science, is studying what factors in the central basin limit the growth of the cyanobacterium *Dolichospermum* – and researching that requires water. Lots and lots of water.

Each sampling trip takes Chaffin and Lambrix to three or four locations. When she isn’t gathering water with a bucket, Lambrix uses phytoplankton nets, tube samplers and Van Dorn water samplers, which are designed for taking water samples in stratified conditions or near the bottom of water bodies.

Back at the lab later that afternoon, Lambrix pours the samples into a graduated cylinder and uses a vacuum flask and filter to check levels of chlorophyll a and phycocyanin (a blue-green pigment found in cyanobacteria). She runs other samples through the lab’s nutrient analyzer – a machine new to her at the beginning for the REU program that she’s now adept at operating. She’s also grown more comfortable using the FlowCam, a giant microscope that takes a few pictures each second as samples flow through it.





go.osu.edu/REU



Application Deadline: FEBRUARY 5, 2018

Five Reasons to Apply for a Stone Lab REU



Participate in hands-on research

In the lab or in the field, you're the one observing conditions, collecting data and interpreting your findings.



Learn from world-class scientists

The Stone Lab REU supervisors are at the top of their fields. Learn how to use scientific equipment, as well as how to collect and analyze important data, from the pros.



Make the most of your time

At Stone Lab, REUs get free tuition, room and meals. The program runs concurrently with our five-week term and is paired with one of the five-week upper level courses.



Present your findings

At the end of the term, you'll present your research. Many REUs have also written up their results and presented at conferences. Some have even been published in peer-reviewed journals.



Stand out from the crowd

Get experience that looks great on a graduate school application or your resume. Stone Lab alumni have gone on to master's and PhD programs and are working scientists in a host of fields.

But learning new equipment was far from the most valuable thing Lambrix is taking away from the five-week experience working in the Water Quality Lab. Working one-on-one with Chaffin has been especially rewarding, as was the chance to present her research to the other Stone Lab students at the end of the term. The talk she gives is practice for the presentations she plans to give on the same topic at conferences such as Ohio State's Undergraduate Research Forum, she says.

Ultimately, it's very validating to realize you actually enjoy the work you plan to do for the rest of your life. For Lambrix, that work is identifying drinking water contaminants and discovering new ways to get rid of them.

"I really like being out on the boat and enjoying the water and just collecting samples and knowing that we're helping the lake and the community," she says. "I'm looking at graduate schools in this type of field. I definitely want to continue to do research in water quality."





SOMEONE IS SPREADING THE LOVE OF SCIENCE



You became a teacher to share your own love of knowledge with your students. The light in their eyes and the smile on their face when they're learning something new is priceless.

It's the same look that educators have during Stone Lab courses designed for educators of all stripes.

Earn continuing education units (CEUs) or college credits toward your advanced degree as you participate in a fish trawl on Lake Erie, wade in rivers with dip nets or canoe through a maze of lotus flowers.

On a science cruise, the Water & Wildlife Training for Educators class breaks up into groups to practice the activity "Sweetness and Light" – dropping different colored chocolate candies into Lake Erie and timing how long it takes them to sink deep enough that they're no longer visible. On the shores of Old Woman Creek estuary, students look through a pan full of macroinvertebrates and practice identifying the tiny creatures.

At the end of the week, the educators will return home, bags full of materials and heads full of ideas for the coming year.

Educator Scholarships

A variety of scholarships are available for those taking Stone Lab education courses. Educators are encouraged to apply for Alphyl and Center for Great Lakes Literacy Scholarships. Ottawa County, Ohio residents may also be eligible for a special scholarship.



go.osu.edu/slscholarships

WILL IT
BE YOU?

Educator Courses

2 credits

July 14-20

Field Geology for
Educators: Geologic
Setting of Lake Erie

July 29-August 4

Water and Wildlife
Training for Educators

Educator Workshop

July 26-28

Enhancing Earth
Science Education with
Educational Technology

*Open to both formal
and informal educators
and college students
studying education.*



TEACHERS SAY ...



go.osu.edu/educators

"I have never been to a professional development that was so well-structured. This was so helpful and well worth my time and energy."

"I was never bored, which is good because it means my kids won't be. I can actually do this. I am so excited and that excitement can be contagious if properly channeled."

"I really needed this to recharge for my own teaching. It is one of the few workshops I've taken where I feel I have been treated as a professional who wants to really grow."

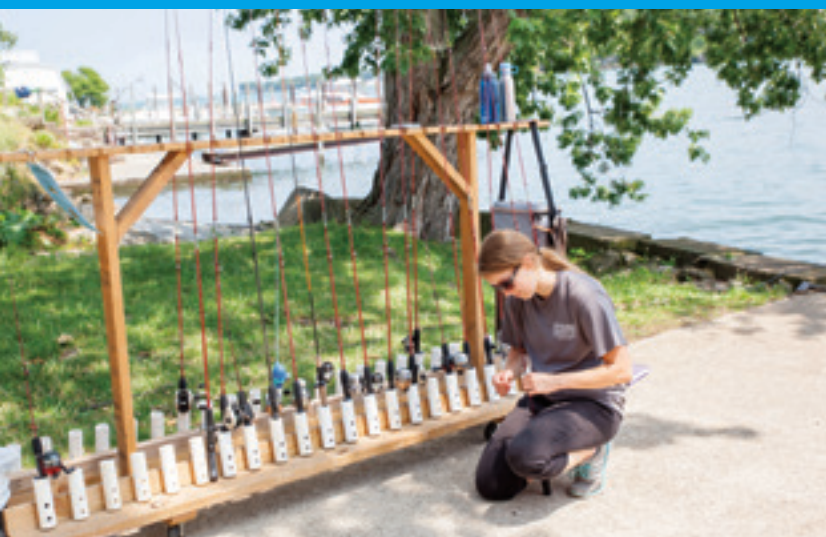
"I learned an incredible amount of material, and I have literally dozens of new activities and ideas to use with my students."



IT'S POSSIBLE



go.osu.edu/slscholarships



Because the opportunities at Stone Lab are so valuable, our network of alumni, donors and partners give generously to allow as many students as possible to experience a Stone Lab education.

Each year we award more than 40 scholarships to those with superior academic records and financial need. Anyone taking a for-credit class (and some workshops) is eligible to apply. Last year high school students were awarded \$433 on average and undergraduate students were awarded an average of \$910.

You'll indicate your interest in scholarships as you complete the online Stone Lab application. Deadlines vary, but most are in early to mid-March. Initial recipients will be notified in early April.

PART-TIME JOBS

Taking a five-week course? Consider applying for a part-time position as a student lab assistant to cover housing and meals costs. On the days you aren't in class, you'll work with researchers, help run the Stone Lab bookstore, cook and serve meals in the dining hall or assist with programming at the Aquatic Visitors Center and South Bass Island Lighthouse.

Applications for student positions must be received by March 1, 2018. Interviews will be held March 6-8, 2018 at the Stone Lab Columbus office.



go.osu.edu/studentjobs



APPLICATION TIMELINE

Workshop deadlines are typically 4 weeks before the workshop date.

How to **Apply**

SUBMIT YOUR ONLINE
APPLICATION AT

stonelab.osu.edu/applynow



HOW MUCH DOES IT COST?

Tuition is charged per credit hour and is based on The Ohio State University tuition. Most courses charge an additional lab fee per course. All costs are subject to change. For fees, room and meal costs and updated information, visit go.osu.edu/costs.

FIND US ON SOCIAL MEDIA



stonelaboratory



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stonelab



stonelab

“It’s part networking and part gaining skills.”

– Matthew Sarver

Fish Sampling Techniques workshop participant

NEVER STOP GROWING



Not all Stone Lab students are in college. Many are working professionals or those hoping to develop resume-building skills.

Workshop facilitators include professionals from state agencies such as the Ohio Department of Natural Resources Division of Wildlife and the Ohio Environmental Protection Agency and the activities are specifically designed to help job seekers get a basic knowledge of common field techniques.

For example, Matthew Sarver, a 2012 Ohio State graduate who attended the

Fish Sampling Techniques workshop is now a research associate at the Midwest Biodiversity Institute and takes five to six fish sampling trips each year.

A water treatment plant operator who attended one of our algae workshops in 2014 put his knowledge to use within one week, correctly identifying a harmful algal bloom in the reservoir at the Norwalk water plant and averting a potential drinking water crisis.

In addition to the offerings listed here, nearly any of our for-credit courses can be taken as a non-credit workshop with the permission of the instructor.

Workshops

- › *Algae Identification*
- › *Dealing with Cyanobacteria, Algal Toxins and Taste & Odor Compounds*
- › *Enhancing Earth Science Education with Educational Technology*
- › *Fish Aging*
- › *Fish-Sampling Techniques*
- › *Intro to Bird ID and Banding*
- › *Lake Erie Island Wetland Plant Field Identification and VIBI*
- › *Lake Erie Sport Fishing*
- › *Larval Fish Identification*
- › *Outdoor Photography*
- › *Planning to Prevent the Spread of Aquatic Invasive Species: AIS/HACCP*



go.osu.edu/workshops



HANDS-ON LEARNING



go.osu.edu/fieldtrips



AVC ADVENTURES

These half-day field trips available during the summer are shorter, but no less sweet. AVC Adventures are four-hour summer field trips for up to 30 people and are held at the Aquatic Visitors Center (AVC), just a short walk from downtown Put-in-Bay on South Bass Island. Choose up to four, one-hour activities from the following: Erie Island Cruise, AVC Tour & Fishing Fun, Birds for Beginners, Water Quality Walk, Ins and Outs of Lake Erie, Reptiles & Amphibians.

Students in grades 5-12 or groups of adults (up to 80 people) can make reservations for Field Trips in April, May, August, September and October.

Each group spends two hours aboard a Lake Erie research vessel collecting data. Afterward, they return to Gibraltar, where they don lab coats to dissect fish and examine the lake's microorganisms through microscopes.

Groups can choose from up to 10 additional specialized activities to create a one-day trip lasting up to eight hours or a two-day overnight trip, including a stay at the island dormitory and meals at the Dining Hall.

Activities:

- › *Invertebrate Collection Walk*
- › *Exotic Species Slide Show*
- › *Insect Collecting*
- › *Island Geology Tour*
- › *Herpetology Overview*
- › *Ornithology Hike*
- › *Fish Seining*
- › *Climate Expedition*
- › *Aquatic Visitors Center Tour*

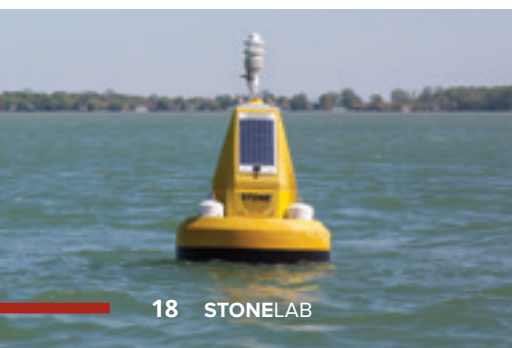
To arrange use of the facility or equipment, contact Research Coordinator Dr. Justin Chaffin at chaffin.46@osu.edu.



AVAILABLE EQUIPMENT:

High-speed centrifuge	Filter manifolds
Spectrophotometer	Automated nutrient analyzer
Fluorometer	Flow-through microscope
-80° C freezer	Walk-in environmental chamber
Drying oven	Flow-through lake water
Temperature and light-controlled incubators	Multi-sensor sondes
96-well plate reader	Water sampling equipment
Micropipettors ranging from 0.2 microliters to 10 milliliters	

DISCOVERY STARTS HERE



Location, location, location. Stone Lab's position in the western basin of Lake Erie has made it an ideal spot for scientists conducting Great Lakes research for more than a century. As part of world-renowned research university Ohio State, Stone Lab has the connections and well-stocked facilities needed for scientific discovery.

The Water Quality Laboratory, which opened in 2013, allows researchers to identify plankton, measure chlorophyll content and cyanobacteria toxins, analyze organic and inorganic suspended solids, and test for nutrients such as phosphorus and nitrogen. These tests enable scientists to tackle the issue of nutrient loading and harmful algal blooms in Lake Erie better than ever before.

The lab also has several research boats:

- › **R/V Gibraltar III:** A 42-foot research vessel for open-lake sampling and trawling
- › **M/V BioLab:** A 37-foot trap-net style vessel for open-lake sampling and trawling
- › **R/V ErieMonitor:** A 25-foot research vessel ideal for SCUBA, towing underwater equipment and light water sampling
- › **R/V GS-3:** A 28-foot research vessel ideal for SCUBA with an electric winch and davit for medium-sized bottom sampling equipment

Two cottages near the research laboratory on South Bass Island are available for visiting researchers who are planning overnight stays. Housing is also available on Gibraltar Island and in the Aquatic Visitors Center.



go.osu.edu/researchfacilities

To book, contact:

Kelly Dress
419-285-1800
dress.3@osu.edu

Dr. Kristin Stanford
419-285-1847
stanford.147@osu.edu



Hold your next event, retreat or meeting at **Stone Laboratory**.

MEET ME AT THE LAKE



Secluded meeting spaces on Gibraltar Island and at the South Bass Island Lighthouse offer spectacular views of Lake Erie. Stone Lab staff can help you incorporate field trip activities such as a sampling cruise on a research vessel, historical tours and other team-building activities.

Stone Lab can accommodate 50-75 people with a conference room that can be set in classroom, theater or U-shaped styles. We also offer indoor and outdoor reception facilities.

Dormitory-style double rooms accommodate up to 40 people for overnight stays. A full-service dining hall provides meals and breaks for guests, if desired.

The South Bass Island Lighthouse offers meeting space and reception facilities. A kitchen, living room and two porches provide comfortable living space for guests.

Presentation support includes:

- › Computer and projector with audio
- › Teleconferencing/web conferencing
- › High-speed wireless internet
- › TV displays



go.osu.edu/conferences



Experience the Greatness of our Great Lake



Tours of Stone Lab facilities are available from mid-June through August/September. To learn more, visit go.osu.edu/tours.

AQUATIC VISITORS CENTER

Examine Lake Erie's ecosystem up close, including live fish. Children under 16 can borrow gear and bait and fish for free off our dock.

go.osu.edu/aquatic

SOUTH BASS ISLAND LIGHTHOUSE

Scheduled tours are available from April through November. Lighthouse grounds are open to the public daily from dawn to dusk.

go.osu.edu/lighthouse

GIBRALTAR ISLAND TOURS

Tours are held each week for up to 70 people on a first-come, first-served basis. Groups tour the island, including Perry's Lookout, the glacial grooves and the outside of Cooke Castle before learning more about the research being conducted at Stone Lab.

go.osu.edu/gibtours



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