

WINTER > SPRING 2019

TWINE LINE

Ohio Sea Grant + Stone Laboratory

Community Connections

*Extension Program Brings
Lake Erie Knowledge to the Public*

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LAB NOTES

Ohio Sea Grant
by the Numbers

6,424

STUDENTS HAVE ATTENDED
STONE LAB SINCE 1978

5,756

FOR COLLEGE
CREDIT

668

FOR
WORKSHOPS

Stone Lab has awarded

1,381

SCHOLARSHIPS

totalling
more than

\$1

MILLION

Since 2005, there have been

139

REU STUDENTS WHO HAVE
RECEIVED SCHOLARSHIPS
TOTALING \$482,000

IN THE LAST 5 YEARS, OHIO
SEA GRANT HAS PROVIDED

\$70,000

in workshops, courses and
stipends to teachers

Stone Lab teaches

TWENTY

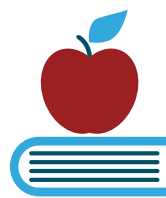
SCIENCE COURSES

> to high school +
college students
every year



SINCE 1978,
OHIO SEA GRANT
HAS BEEN AWARDED

45 GRANTS
for curriculum development



1,095

TEACHERS AND
PROFESSIONALS
have taken courses
and workshops
at Stone Lab

Ohio Sea Grant's 1st iTunes
U course on climate change
was watched by more than

77K
PEOPLE WORLDWIDE



20,380

K-12 STUDENTS HAVE BENEFITED

FROM TRAINING THEIR TEACHERS RECEIVED
FROM OHIO SEA GRANT SINCE 2009

DEPARTMENTS

Research

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THE ANNUAL
WATERSNAKE CENSUS

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INCLUDES FUNDING FOR
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Extension Educators Bridge the Gap
Between Lake Erie Knowledge and the Public

STORY BY
**CHRISTINA
DIERKES**



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ABOUT TWINE LINE

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> A current list of Ohio Sea Grant staff and Extension Agents can be found online at ohioseagrant.osu.edu.



Stone Lab Open House September 7, 2019

Save the date for the 2019 Stone Lab Open House held on September 7! We'll have free tours of Gibraltar Island and the lab, lectures and lab sessions that bring you closer to the Lake Erie science that takes place at Stone Lab, and information on all kinds of other opportunities for kids through adults.

LEARN MORE

go.osu.edu/SLopenhouse

Round 'Em Up

Annual Lake Erie Watersnake census brings volunteers back to the islands year after year

By Christina Dierkes

It's a hot summer day on South Bass Island. Near Scheeff East Point Nature Preserve, a small group of people are walking along the water, lifting rocks and looking intently at sunny spots. At a shout from one person, they converge and grab at a clump of writhing, black-and-grey scaled bodies, lifting the snakes up to stick them carefully into waiting pillowcases.

For most people, a day like that would prompt at least mild discomfort, if not a sigh of “why did it have to be snakes?” For Stone Lab’s education and outreach coordinator Dr. Kristin Stanford and her team of dedicated volunteers, it’s just another day of Nerodio.

Nerodio is a play on the Latin name for Lake Erie Watersnakes, *Nerodia sipedon insularum*, and refers to an annual census of watersnakes on the Lake Erie islands. First started as part of the recovery program for the federally threatened snake in 2001, the researchers continue to collect data on the islands’ snake populations today, despite gradual reductions in funding following their removal from the threatened species list in 2011.

“We still have a really significant and important long-term mark-recapture data set that we want to maintain and grow,” said Stanford. “In the grand scheme of things, as far as snake mark-recapture data sets go, we’re still poised to answer a lot of pressing questions about snake biology and life history that most other researchers don’t quite have the data for.”

› THE ISLAND SNAKE LADY

Northern Illinois University’s Dr. Rich King and Stone Lab’s Dr. Kristin Stanford played an instrumental part in the recovery of the native Lake Erie Watersnake.



That large data set includes nearly 35,000 captures of snakes over 38 years, with information on everything from population size and density to growth rates and survival in the tagged individuals that are found repeatedly over the years. Recently, the team has collaborated with researchers at the Wildlife Epidemiology Laboratory at the University of Illinois to monitor the spread and impact of snake fungal disease on the snake population, to help answer some long-term questions about how the disease functions in wild snake populations.

"We're testing every snake at certain sites, whether or not they look like they have the disease, to see if they have the fungus present," said Stanford. "Because our data set is so robust and we get really good recapture rates, we can then track individuals that test positive for the fungus through time and determine what happens to them in the years after that."

To collect that extensive data, Nerodio relies almost exclusively on volunteers, a model that isn't common in ongoing studies. From 2002-2012, 179 people from all walks of life – island residents, graduate students, conservation professionals, and many more – participated in Nerodio, catching wild snakes, scanning them for microchips and tagging the snakes that hadn't been captured in previous years. It's 570 hours of work that wouldn't have been possible without their dedication.

"One value of that diverse volunteer base is that a lot of those people are coming into your program with their own interests," said Stanford. "Once they learn



about the things that you're doing, sometimes they'll take what they learn and apply it in a way that you maybe haven't thought of."

With volunteers covering multiple study sites across the Lake Erie islands during the two-week census, they're bound to run into people asking them questions – they're picking up wild snakes with their bare hands, after all. Stanford usually reminds them to send anyone with complicated questions to her, but most volunteers are comfortable sharing program basics with interested passersby.

Sometimes, answering questions is what they do in their day job anyways. Matt Neff from the National Zoo heard about the census from a former Stone Lab research assistant, Sarah Bailey. "He's come out the past couple of years now, and part of what he does at the zoo is a lot of outreach

and education," said Stanford. "So he was very good at interacting with inquisitive tourists. Sometimes people come with their own talents, which is awesome."

Volunteers also take what they have learned back to their jobs, or to other volunteer positions. Catawba Island resident Charlie Gunn has been a long-time regular at Nerodio. He's also a volunteer with the National Park Service, so when Perry's Monument on South Bass Island had to close down for repairs, Gunn worked with Stanford and the park's manager to put on watersnake outreach programming for visitors.

"Once he became familiar with the goals of our project, when the monument had to close down, he came over and talked to me about doing some watersnake outreach," said Stanford. "He would check out one of our outreach animals every day that he was volunteering, and stand in the plaza and talk about Lake Erie Watersnakes. And not because I asked him to, but because he knew part of what we needed to do was outreach and he wanted to do that for us."

That's the kind of dedication many programs hope to inspire in their volunteers, and Nerodio has successfully done so for almost 20 years now. ●



35,000
SNAKES CAPTURED
OVER 38 YEARS

From 2002–2012,
there have been

179
VOLUNTEERS

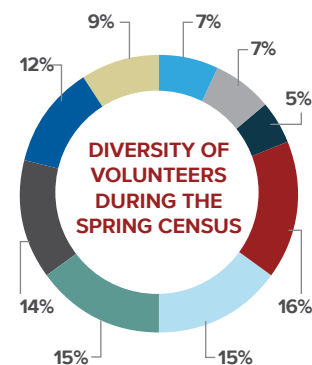


Contributing

570
WORK
HOURS

► VOLUNTEERS FOR LIFE

Sarah Bailey and Matt Neff are two of many repeat volunteers at the annual Nerodio watersnake census.



- Federal or Provincial Agency
- University Professional
- Post-Graduate
- Other*
- Undergraduate Student
- Regional Herpetology Society
- Resident
- Graduate Student
- Zoo Professional

*Includes State Agency (4%); University Professor (4%); High School Student (3%); Naturalist (3%); and Consultant (2%).

“Because our data set is so robust and we get really good recapture rates, we can then track individuals that test positive for the fungus through time and determine what happens to them in the years after that.”

DR. KRISTIN STANFORD



WATCH
THE VIDEO

go.osu.edu/Nerodio

Growing, For Science

Ohio Senate Bill 299 includes funding for a Stone Lab expansion

By Christina Dierkes

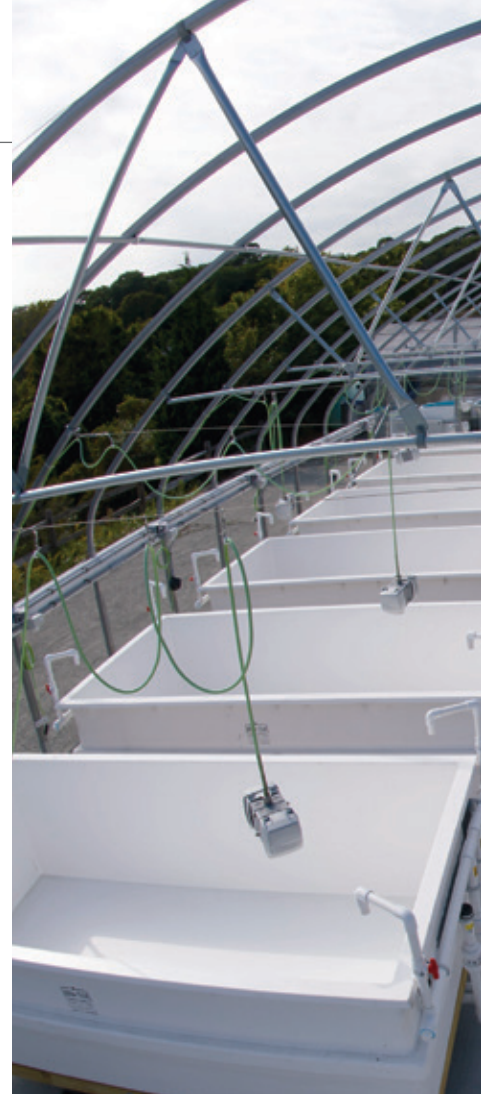
Stone Lab, Ohio Sea Grant's research and education facility on Lake Erie, has been a home for researchers studying the lake for over a century. Over the years, upgrades and renovations have made sure that the lab keeps up with modern science needs, but of course there's always more that could be done to make sure Stone Lab continues to be a resource for everyone studying Lake Erie.

A recent bill from the Ohio Legislature will help the lab do just that. Senate Bill 299, the Clean Lake 2020 Plan, was sponsored by state Senators Randy Gardner and Sean O'Brien, and allocates up to \$36 million in funding to water quality programs that help protect Lake Erie. Ohio Sea Grant and Stone Lab received \$2.65 million of that funding, which will cover a new building and equipment for the Lake Erie laboratory, as well as monitoring equipment that will be placed in the Maumee River this spring.

Clean Lake 2020's goal is to offer potential solutions to the lake's harmful algal bloom (HABs) problem and related issues. The blooms can produce toxins that lead to drinking water advisories, and an overgrowth of algae can lead to unsightly scums near the shore that can negatively affect tourism in the area.

"Stone Lab and the Sea Grant program are critical to our work toward a cleaner Lake Erie," said Gardner. "That's why, when I wrote the Clean Lake 2020 plan with Representative Steve Arndt, one of our priorities was upgrading lab facilities and funding real-time in-lake research through Stone Lab. The bottom line is that Stone Lab and Sea Grant are as important as ever to our efforts to make real progress to improve the health of Lake Erie."

The new building will be located on South Bass Island's Peach Point, just north of downtown Put-in-Bay. About 2,000 square feet of space will be split between a lab expansion that adds space for research and teaching and a set of outdoor flow-through tanks — also called mesocosms — that was specifically requested by Ohio researchers.



"When we reached out to the people who use our facility to ask them what they wanted the new space to look like, everybody came back saying they wanted these mesocosms," said Dr. Chris Winslow, Ohio Sea Grant and Stone Lab's director. "So this could be from twelve to twenty tanks that hold hundreds of gallons of water, and we'd be able to pump water from Lake Erie into these tanks and do real-time experiments in actual lake water."

Construction on the expansion and mesocosms will likely begin in 2020.

The Maumee River monitoring equipment was selected in collaboration with Dr. Laura Johnson at Heidelberg University's National Center for Water Quality Research and Dr. Tom Bridgeman at The University of Toledo's Lake Erie Center. The sensors will be placed in the spring to collect nutrient data and other information about runoff into Lake Erie. That data, in turn, will help inform NOAA's annual harmful algal bloom forecast for the western basin, as



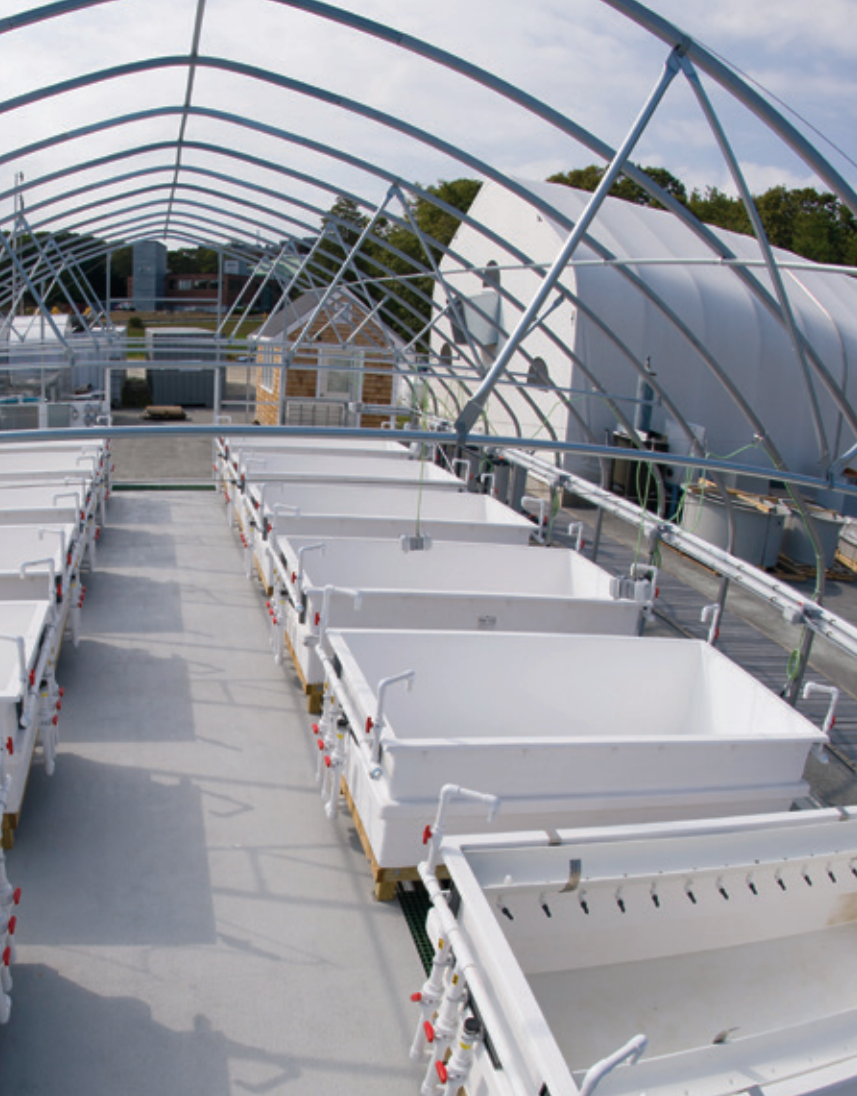
WHAT OHIO
SENATE BILL
299 MEANS
FOR STONE LAB

\$36 MILLION
in funding to water
quality programs

\$2.65 MILLION
for a new Lake Erie laboratory
building and equipment



2,000 SQUARE FEET
for a lab expansion and the addition
of a mesocosm facility



well as other projects monitoring the health of the lake. The Clean Lake 2020 Plan also provides funding for county soil and water conservation districts to hire staff who will work directly with farmers on adopting best management practices that reduce nutrient runoff into Lake Erie. That runoff contributes to harmful algal blooms, and state legislators and agencies have set a goal to reduce nutrient runoff by 40 percent by 2025.

“This bipartisan bill is an example of how legislators can come together to support policies that will truly make a difference,” said Senator O’Brien. “Keeping Lake Erie safe and clean is imperative to the well-being of not only my constituents on the lake, but the rest of the state.”

And with the planned updates, as well as continued research funding from programs such as the Ohio Department of Higher Education’s Harmful Algal Bloom Research Initiative (HABRI), Ohio Sea Grant and Stone Lab will continue to be leaders in this effort. ●

“The bottom line is that Stone Lab and Sea Grant are as important as ever to our efforts to make real progress to improve the health of Lake Erie.”

SENATOR RANDY GARDNER

➤ RESEARCH ADDITION

The addition of the mesocosms could include twelve to twenty tanks, similar to these in Massachusetts, that allow researchers to do real-time experiments with actual lake water.

Photo: Tom Kleindinst, © Woods Hole Oceanographic Institution



New Water Quality Buoy Donation to Expand Algal Bloom Monitoring

Donations to Ohio Sea Grant and Stone Lab can take many forms: financial support for scholarships allows more students to experience all that Stone Lab has to offer, funding for lab facilities and vessels lets researchers continue their work to study Lake Erie and other donations give staff the chance to tackle new things, from green energy projects to renovating historic buildings on Gibraltar Island.

But sometimes, a connection is made with a donor who can offer something unique. Fondriest Environmental, already a partner on a number of water quality projects, did just that, equipping Stone Lab staff with a second water quality buoy, similar to the one already bobbing in the water just north of Put-in-Bay.

“The new buoy allowed us to expand the range of real-time algal bloom monitoring. There are several buoys in the western basin but this is the only one east of the Lake Erie Islands,” said Dr. Justin Chaffin, Ohio Sea Grant and Stone Lab’s research coordinator.

The buoy, located about 10 miles north of Huron, measures basic water quality information such as water temperature and pH, along with turbidity, which indicates how clear – or not – the water is. That turbidity could be caused by suspended sediments or by algal blooms.

The sensors also detect chlorophyll, the green pigment used to measure total algae in the water, and phycocyanin, a blue-green pigment specific to cyanobacteria, to help researchers keep track of algal blooms in Lake Erie.

An additional measurement, specific conductivity, indicates how much electricity the water conducts, with higher conductivity indicating that there are more chemicals (commonly referred to as “salts”) dissolved in the water. Because most aquatic plants and animals are adapted for a certain range of salinity, values outside of a particular range can negatively affect the ecosystem.

“We deeply appreciate what our donors contribute to the work we’re doing for Lake Erie,” said Dr. Christopher Winslow, Ohio Sea Grant and Stone Lab director. “If someone is thinking about a non-traditional donation like this buoy, we encourage them to contact our office to talk about the details.” ●



MORE TRADITIONAL DONATIONS CAN BE MADE ONLINE

A gift of any size qualifies donors as a member of the Friends of Stone Lab (FOSL), a non-profit group dedicated to supporting Stone Lab and its work.

go.osu.edu/slgift

Stone Lab Field Trip Photo Album

By Daniel Combs



Field trips at Stone Lab give students from fifth all the way to twelfth grade the chance to experience the hands-on work of a scientist. In 2018, students from Bataan Memorial Intermediate School in Port Clinton, Ohio, came to Gibraltar Island for a day of Lake Erie adventures.

➤ SCIENCE CRUISE

(Right) All Stone Lab field trips include a Science Cruise. To begin the Science Cruise, biological field station assistant Tyler Nace discusses the five Great Lakes and what makes Lake Erie and its islands unique. Nace also introduces the data the students will collect and the instruments they will use.



➤ FIELD WORK 101

Students use a kick net and turn over rocks to collect macroinvertebrates from the rocky shoal of Alligator Bar on Gibraltar Island. A field station assistant writes down what the students find and guides them on interpreting the results.





► HANDS-ON LEARNING

(Above) Tyler Nace teaches students about Lake Erie fish and how to identify them. Fish are collected from the lake floor using a large bottom trawl net. After students help pull in the net, the fish are put into a bucket where they can easily be seen by the group.

(Left) A student uses a limnology data sheet to record data about conditions on Lake Erie. The measurements are added to a long-term data set that allows limnologists to study the lake.

(Right) Stone Lab field trips bring students close to Lake Erie and its inhabitants, instilling a lifelong appreciation for this valuable Ohio resource.



► UNIQUE EXPERIENCES

(Above) Students learn about fish dissection, including how to properly identify and dissect a fish, along with fish anatomy.



Great Loraxian Work

There's Nothing Smeary About Lake Erie Anymore

By Dr. Rosanne Fortner

Dr. Seuss
7301 Encelia Drive
La Jolla, California 92037

January 27, 1986

Dear Claudia Melear and Margie Pless:

You must think me terribly rude for not answering your very pleasant letter of December 6. The fault, however, is not mine. It just arrived this morning, having been somewhat circuitously forwarded from New York via pony express.

Although I will be unable to accept your kind invitation to come to Cleveland, I do agree with you that my 1971 statement in the *Lorax* about the condition of Lake Erie needs a bit of revision. I should no longer be saying bad things about a body of water that is now, due to great civic and scientific effort, the happy home of smiling fish.

I can assure you the process of purifying my text will commence immediately. Unfortunately, the purification of texts, like that of lakes, cannot be accomplished over night. The objectionable line will be removed from future editions. But it could possibly take more than a year before the existing stock of books has moved out of the book stores.

In the meantime, thank you for your letter and for all the great Loraxian work you have been doing.

Dr. Seuss
Theodor S. Geisel

A

t the time of the March for Science in 2017 a very special t-shirt came out. It had a row of colorful truffula trees and the big word UNLESS. People familiar with Dr. Seuss' *The Lorax* know what that means. In Seuss' words, "Unless someone like you cares

a whole awful lot, nothing is going to get better. It's not!" The word was a call to care, and to act on the caring.

The Ohio Sea Grant Education Program [OSGEP] has always cared – about the science curriculum's relevance, about teachers' preparation, about students' engagement, about making a difference where we are. In the OSGEP office in 1986 [Ohio's Year of the Lake] were two graduate students who acted to make a difference. We invited Dr. Seuss to speak at the Lake Erie Symposium as part of the National Marine Educators Association meeting coming to Cleveland. Claudia Melear and Marjorie Pless had watched in workshops as we talked about the positive changes in Lake Erie, but how one person like Johnny Carson could influence millions of people's opinion of the lake with a casual quip, "isn't that where fish go to die?" They saw that children reading *The Lorax* were also encountering a view that no longer fit the better environment. Because of pollution the humming fish were leaving the pond "in search of some water that isn't so smeary." Dr. Seuss rhymed that with, "I hear things are just as bad up in Lake Erie."

The students asked if Dr. Seuss would consider changing that line since it was not accurate. To everyone's delight he answered and agreed to remove the line in future editions of *The Lorax*. He also thanked the writers "for the great Loraxian work you have been doing." UNLESS these young women cared, the change would never have happened. We hope that all children who read *The Lorax*, like the boy in the story "care a whole awful lot," so things will keep getting better in the environment. ●



› A CALL TO CARE

(Right) Dr. Rosanne Fortner, Ohio Sea Grant's former education coordinator, wears the t-shirt inspired by Dr. Seuss' book.



WATCH THE VIDEO AT go.osu.edu/lorax



“ We met the summer of 1976 at Stone Lab. ... We got married in May 1977 and have had 41 wonderful years together. We never have lost track of what we learned at Stone Lab and our love of the aquatic environment.”

JIM AND ANN KORBAS MULDER



“ I met my husband the summer of 1991 at the Lab. ... So many awesome memories! Gibraltar has a special place in my heart because of the people I met and the experiences I had. We’ve been married for 21 years.”

TARA SHENOI BARCZA



I met my husband on Stone Lab the summer of 1991. We have spent every summer together on the islands since we met in 1991, and have raised our three daughters summering on Middle Bass. Two summers ago, our oldest took a one-week class on Stone Lab as a high school student and plans to major in biology in college next year. Talk about full circle! To say it is a special place to us is an understatement. I am thankful for the friendships, amazing education, and of course my husband and family. Thank you, Stone Lab!



CONNECT WITH US

Keep up with current classes, research and events on social media.



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Read more stories on our Facebook and Twitter pages.



RACHAEL JENKINS STAFFORD

*Extension Educators
Bridge the Gap Between
Lake Erie Knowledge
and the Public*

COMMUNITY CONNECTIONS

BY CHRISTINA DIERKES

The Ohio Sea Grant Extension program connects the needs and concerns of Lake Erie communities with the people who can help address those needs, bringing new knowledge to their stakeholders through education and outreach programming and finding new ways to address problems through research and publications.

The team of five Extension agents covers a lot of ground, and each agent brings a different set of background experience and expertise to the table, but all of them work together under an umbrella of providing needed, science-based information to the communities they serve.

"We're a trusted resource that's really non-biased," explained Tory Gabriel, Ohio Sea Grant's Extension program leader and fisheries specialist. "We can find the data to inform decision-making and present that data in a way that our clientele can understand and use."



► HANDS-ON JOB

Extension Specialist Dr. Scott Hardy (at right, with Erin Monaco) lends a hand in fish sampling for a wetlands restoration project.



LEARN MORE

ohioseagrant.osu.edu

Making Connections

For Gabriel, it's all about finding ways to make people care about Lake Erie, because when people care about something, they're more likely to protect it. In his case, he develops that connection through fishing.

"It connects you to the outdoors, and it's a really easy and cheap way to hook people," he said. "Caring about the lake makes people want to be more informed, and that obviously makes them better able to make decisions that would impact Lake Erie."

With programs in youth fishing education, college courses and business development conferences for charter boat captains, Gabriel tackles Lake Erie issues for all ages, from the hundreds of elementary school kids who might catch their first fish at one of his programs to the 700 captains that run fishing businesses on Lake Erie. And most of his clients not only report learning something new at these events, but also that they plan to continue to adjust their behavior according to what they learned.

Ohio Clean Marinas Program Manager Sarah Orlando agrees that meeting people where they are is an essential part of Extension work. The Ohio Clean Boater Program, an offshoot of the Clean Marinas program that engages boaters who may not dock at a Clean Marina, takes advantage of boaters' love and appreciation for clean water to educate them about ways to keep it clean on a daily basis.

"We're able to capture that passion for clean waterways to get boaters involved in the program, and we now have regular ways to educate them on best practices," Orlando said. "A lot of those practices are written for a boating setting, but the reality is that many of those practices can be applied at home, at work and in their community."



“Caring about the lake makes people want to be more informed, and that obviously makes them better able to make decisions that would impact Lake Erie.”

TORY GABRIEL



> CONNECTING THROUGH HOBBIES
Fisheries specialist Tory Gabriel uses Lake Erie fishing to connect with his clients, using a hobby they may have enjoyed since childhood to instill in them an appreciation for the lake and its resources.



A Clean Lake, Now and in the Future

Lake Erie faces a number of challenges when it comes to its health, and one place where those challenges can be particularly prominent is at marinas. The Ohio Clean Marinas Program, a partnership with OSU Extension and the Ohio Department of Natural Resources Office of Coastal Management, Division of Parks & Watercraft and the Lake Erie Marine Trades Association, helps both coastal and inland marinas prevent pollution and act as good stewards of the waterways on which their businesses rely.

"In many ways, industrial marinas are like autobody shops on the water," explained Orlando. "They're doing engine maintenance, oil changes, fueling, sanding and painting, all in an area that's very close to either Lake Erie or to an inland waterbody. So what we do through our program is make sure marinas are at the very least compliant with environmental regulations, and we also provide extensive technical education and assistance on best management practices that go above and beyond those regulations to help marinas do a top notch job of minimizing pollution into our waterways."

That education and assistance doesn't just come over the phone or via email either, although those are some of the ways in which marina owners can ask for help with environmental concerns. Clean Marinas staff spend a lot of time at marinas, conducting site visits, talking owners through potential ways to keep waterways clean, and just generally making sure they've built relationships and can be trusted sources of information for this Ohio industry.

"It's a big part of what we do, being out there and available for the marinas and helping them out," said Orlando.

But marinas aren't the only places where education on preventing pollution can have a big impact. Extension specialist Jill Bartolotta focuses much of her work on marine debris, which in the Great Lakes consists mostly of cigarette butts, pieces of plastic or foam, and bottle caps.

"What we're really trying to focus on is 'what do you do in your everyday life that involves plastic or improper disposal of these items, and what can you do to change your behavior so that less of these plastics are used or end up in the natural environment,'" said Bartolotta.

With few other programs doing this kind of work, the articles she has published with fellow Extension specialist Dr. Scott Hardy have garnered them attention from other states and even a few international researchers. Their research was supported by the City of Cleveland, which is now using the information to develop a plastics pollution prevention campaign.

Between curriculum development, outreach activities like festivals and classroom visits, and beach clean-ups, Bartolotta's efforts have reached almost 24,000 people through more than 200 events. She also helped create marine debris educational displays for a number of partners that have been seen by 266,600 visitors at outreach centers like the Lake Erie Nature and Science Center in Cleveland.

A new project will now extend that reach by getting local businesses involved: Bartolotta and Stone Lab education specialist Sue Bixler are collaborating with restaurants and other Put-in-Bay businesses to reduce plastics consumption and reach customers with messages about reducing plastics pollution. "Businesses are seeing that it's in their best interest to be more environmentally friendly, so we've had great buy-in from those partners," said Bartolotta.



Businesses are seeing that it's in their best interest to be more environmentally friendly, so we've had great buy-in from those partners."

JILL BARTOLOTTA



people have learned about marine debris through educational displays

266,600



COMMUNITIES
have adopted sustainable economic + environmental development practices



PEOPLE HAVE BEEN REACHED THROUGH MORE THAN 200 EVENTS

including curriculum development, outreach activities like festivals and classroom visits, and beach clean-ups



18

COMMUNITIES

implemented **hazard resiliency practices** to prepare for, respond to, or minimize coastal hazardous events as a result of Sea Grant activities.

The Clean Marinas Program has helped recycle over



2.29
MILLION

POUNDS OF BOAT SHRINK-WRAP, KEEPING IT OUT OF LANDFILLS

> BEACH CLEAN-UP

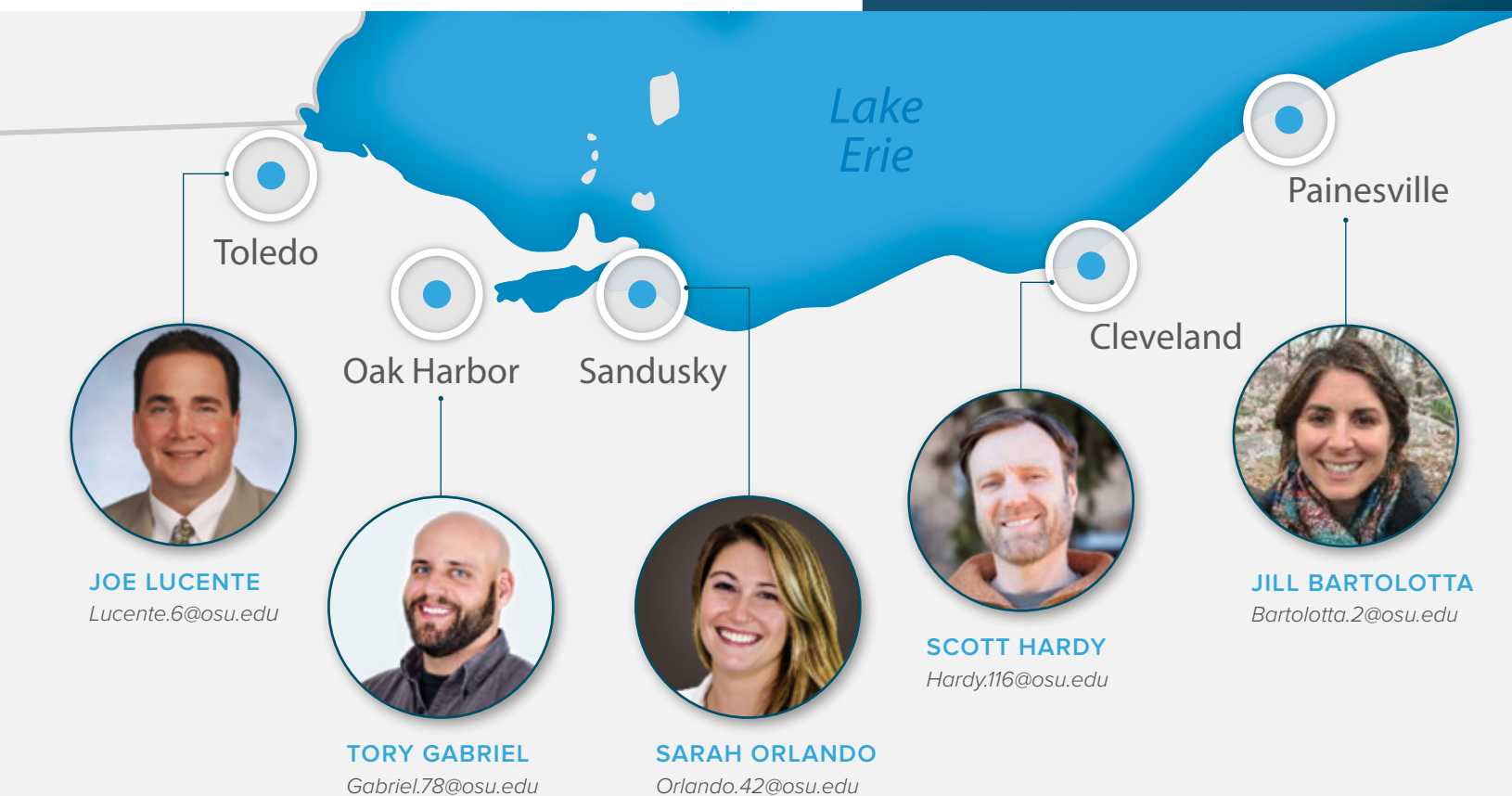
(Left) Beach clean-ups are an easy way for Extension educator Jill Bartolotta to show her clients what kinds of plastics are most likely to end up in the environment.

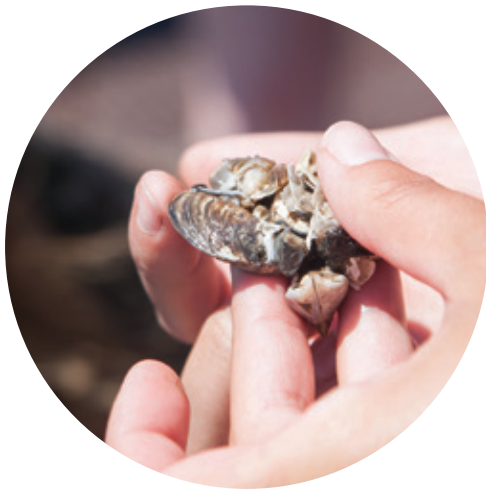
> KEEPING IT CLEAN

(Opposite page) Clean Marinas Program Manager Sarah Orlando (left) routinely visits Lake Erie marinas to provide technical guidance and support the implementation of practices that keep the lake clean for all boaters.

> Sharing the Shore

Ohio Sea Grant Extension educators live and work in the communities they serve, bridging the gap between university research and the needs of their clientele.





*The Cuyahoga River AOC
Advisory Committee aims
to have the river completely
delisted as an Area of Concern by
the end of 2025.*

► **TAKING CARE**

*Extension agents and their partner organizations
work hard to make sure Lake Erie and its tributaries
are healthy and available for future generations
to enjoy.*

Building Healthy Lake Erie Communities

Because of Lake Erie's industrial past – and present – a number of rivers along the coastline were declared Areas of Concern (AOCs) under the Great Lakes Water Quality Agreement and the U.S. Clean Water Act. Ohio Sea Grant staff are involved with restoration committees on three of the major Ohio AOCs, providing science-based information to the groups carrying out projects to remove pollution and help the rivers thrive again.

Dr. Scott Hardy is particularly involved with the Cuyahoga River AOC Advisory Committee, and chairs the public outreach subcommittee. They recently were able to remove a third beneficial use impairment related to fish consumption and aim to have the river completely delisted as an Area of Concern by the end of 2025.

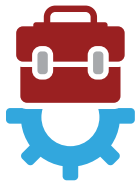
Hardy attributes some of the success of his involvement to living in Cleveland as part of the affected communities. "The watershed and AOC work is a really huge part of my background going back almost 15 years," Hardy said. "It's all about networking and partnerships, right? I absolutely could not do what I'm doing now if I was based anywhere else."

Helping coastal communities thrive is also the goal of economic development and leadership specialist Joe Lucente. He runs business retention and expansion (BR&E) programs for local governments and business communities that want to ensure they're doing what they can to help grow their local economy and provide employment opportunities for their residents.

"This whole thing is about building relationships between government and the business community," Lucente said. "It's the small to medium-sized companies in all the communities that we work in that create up to 80 percent of most jobs in that community. That's why it's so important to have this process, to let businesses know that they can turn to their local government to help with their needs."

A 2017 BR&E survey in Perrysburg, a city of 21,500 people just south of Toledo, offers a good example of how impactful the business community can be when it has the resources and guidance it needs. Firms were planning to add between 58 and





.planned new jobs
in Perrysburg is
estimated to bring
an additional

**\$2.2-\$6.7
MILLION**

IN PERSONAL INCOME TO THE LOCAL ECONOMY

177 new full-time equivalent jobs, and based on income tax rates and pay scales, those jobs would translate to an additional \$33,000 to \$100,000 in income tax revenue for the city and add \$2.2 to \$6.7 million in personal income for the local economy.

Lucente also runs the Local Government Leadership Academy in Toledo, which has taught nearly 400 graduates since 2002 how to become better elected and appointed officials, industry leaders working with local governments, and citizen volunteers. The 10-week course teaches everything from how to conduct an effective public meeting to government finance and media relations, and curriculum is adjusted every year based on feedback and organizer requests.

The push to start the academy came from a phone call Lucente received from the Toledo Chamber of Commerce, asking whether Extension had resources available to help public officials expand their decision-making capacity.

"And it was that simple," Lucente remembered. "We were able to take what OSU Extension was just starting to work on at the state level and adapt it to the local level. And that's what we've done, and it's been a big success ever since."



Safe Recreation, Safe Living



Listening to community needs is essential to all Extension work, and it's especially important when it comes to the safety of coastal residents. Those concerns can range from personal actions and behavior changes to community- or statewide projects that address larger concerns.

Bartolotta works with other professionals in the Great Lakes region on paddling safety, including kayaking and paddleboarding. Through events like the Spirit of America program, which teaches boating and water safety to middle schoolers, she's able to educate the next generation of Lake Erie residents about enjoying the lake safely as well as environmental education like not littering and carrying reusable water bottles.

She's also part of regional task forces both in Ohio and in the larger Great Lakes region that educate paddlers about safety issues from dangerous currents to sharing a river with freighters, as well as train local lifeguards and kayak rental businesses to ensure that people on the beach are prepared to deal with all kinds of emergencies.

But safety isn't just about reacting to a problem. Sometimes, it's about planning for future concerns.

Hardy works with the Cleveland Climate Action Advisory Committee and other organizations to prepare local communities for the impacts of a changing climate, which includes more frequent storms and more rainfall with those storms. He recently used data from the Northeast Ohio Regional Sewer District to pinpoint communities that could benefit most from education about these hazards to reduce flooding and other impacts of heavy precipitation.

"Climate resiliency and understanding how climate change is impacting our coastal waters is a foundational piece of knowledge that helps me better operate in all these other spaces," Hardy said. That also includes marine debris work with Bartolotta, where an understanding of where runoff is most likely to pick up plastic debris and wash it into the lake can really help connect the dots on how to best prevent that from happening.



› SAFE PADDLERS

As dangerous paddling incidents have increased in the Great Lakes, Ohio Sea Grant has worked with other programs in the state and region to educate paddlers and lifeguards on safe paddling practices and rescue techniques.

It's All About Shared Experience



A major factor in the success of the Extension program is the fact that agents are embedded in their community – they could run into clients at their offices, but also at the grocery store or the local diner.

"You really have to be in that community to be able to serve it the way we like to do, but also to really understand the community you're serving," Gabriel said.

Bartolotta agrees: "I'm able to hear the needs of the community, or I experience them myself, so that's information that I can share with the people who can do research or make a difference about it, because I'm actually living it."

In the end, it's all about taking care of a shared resource that can have major impacts on people's lives, health and happiness. That's the goal for all of Ohio Sea Grant's outreach and education activities, and Extension is an essential part of it. ●



Student

SPOTLIGHT >>

HARRISON FRIED '19

*Environmental Policy and Decision Making Major
School of Environment and Natural Resources
The Ohio State University*

Shaping a Policy of Success

By Joy Snow

You wouldn't think that an island laboratory would be where someone interested in government policy would find their calling, but you haven't met Harrison Fried. Harrison first went to Stone Lab to improve his fish knowledge and get some applied education with an aquatic biology class, but he found that studying up on Lake Erie gave him so much more than class credit.

He returned to the island a year later as part of Stone Lab's donor-funded Research Experience for Undergraduates (REU) Scholarship Program, where a student works with a professor to design and conduct their own research. Harrison tested what effect harmful algal blooms (HABs) and sedimentation in Lake Erie are having on the fish that call the lake home. Much of the research surrounding HABs is concerning the toxins they produce, and, while important, it is far from the blooms' only effect. He was specifically curious how turbidity, in other words, the cloudiness or haziness of the water, affects fishes' swimming ability.

For Harrison, the REU program was an opportunity like no other. "It covered all costs associated with staying on the island, including tuition, room and board, which allowed me to focus on my classes and research. It was hard, but rewarding work," he said, remembering the 8 a.m. boat ride each morning to conduct his research. "I was amazed at all of the resources I had access to on the island, from professors and peers to the local charter captains; there were always people around with strong knowledge of the lake."

"I was amazed at all of the resources I had access to on the island."

HARRISON FRIED

How does this all fit into policy work? Harrison is pursuing a career in environmental policy with a focus on Lake Erie management. Environmental regulations help protect Ohio's natural resources, and the best way to create good policy is with a strong knowledge base of what's being regulated. Harrison formed that base at Stone Lab, along with strong connections with scientists that will carry into his career and help inform policy decisions.

Stone Lab helped Harrison jump-start his career and delve deep into his interests. "I learned much more at Stone Lab than I have throughout all of college," he said. "I couldn't have gotten that in Columbus."

Harrison's next step is graduate school at Ohio State and then possibly law school. He plans to use the expertise he got from Stone Lab to bridge the gap between science and law, ensuring that environmental policies are scientifically supported and sound. ●

On the Island



VIEW VISIT
DETAILS ONLINE
ohioseagrant.osu.edu/visit



STONE LAB / EVENTS

1 > SAVE THE DATE FOR THE 2019 HARMFUL ALGAL BLOOM FORECAST

Ohio Sea Grant and Stone Lab will once again host NOAA's Harmful Algal Bloom Forecast for Western Lake Erie on July 11, 2019. Details about media attendance and the public webinar will be available on the Ohio Sea Grant website closer to the event.

More information is coming soon at go.osu.edu/habsforecast

2 > LAKE ERIE SCIENCE FIELD TRIPS

Bring science to life for your students with Stone Lab's Lake Erie Science Field Trips for grades 5-12 and groups of adults. Participants spend time on a research vessel collecting data and sampling water and organisms before returning to the lab to analyze their collection. Ten additional activities customize each field trip for a great learning experience that's aligned with Ohio's Science Academic Content Standards.

Learn more and register at go.osu.edu/fieldtrips

3 > WILD TUESDAYS AT THE LAKE ERIE ISLANDS NATURE & WILDLIFE CENTER

Stone Lab staff and instructors are part of Wild Tuesdays at the Lake Erie Islands Nature & Wildlife Center, which run June 18 through August 6, 2019. Stone Lab's Dr. Kristin Stanford will bring Lake Erie Watersnakes and other slithery island residents to the event on July 16. Lisa Brohl of the Lake Erie Islands Conservancy will cover dragonflies and damselflies on July 10, and Dr. Doug Kane of Defiance College will talk about plankton and its role in Lake Erie on July 23.

For more information, visit lakeerieislandswildlife.com



DEADLINES

Submit your application online at

stonelab.osu.edu/applynow



GRANTS

June 27, 2019

2020-2022

Large grant proposal deadline



SCHOLARSHIPS

May 1, 2019

Final Alphyll Scholarship for Educators deadline



COURSE AND WORKSHOP APPLICATIONS

May 31, 2019

Other college student, educator and high school student application deadline

July 15, 2019

Current Ohio State student deadline



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EDUCATING EDUCATORS

When Mary Beth Hoffman signed up for a Stone Lab educator workshop, she expected to come home with new activities to bring back to her classroom. But at the end of the week-long workshop, the teacher at Sylvania Timberstone Junior High School walked away with so much more than that.

"Stone Lab is different from any other professional development I've done and it was exactly what I needed. The class was full of inquiry activities that challenged me to think, and I didn't realize how much I was learning because I was having so much fun."



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