Smithsonian Environmental Research Center

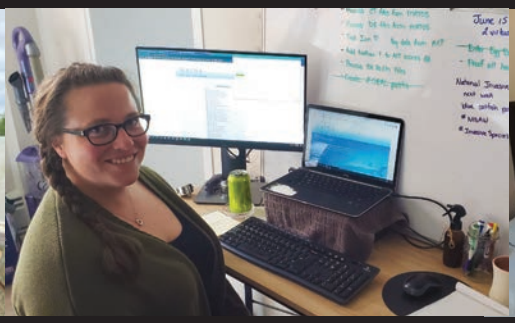
ON THE EDGE

News from the Smithsonian Environmental Research Center

Fall 2020

Environmental Research Isn't Caving to COVID

ALSO INSIDE:


THE DIRECTOR'S LETTER:

The Lights Stayed On

We shut our doors, but we didn't turn off the lights.

Closing the SERC campus this spring was one of the most painful decisions I ever had to make. We didn't know, back in March, whether most of our staff would be teleworking for weeks or for months. We didn't know how long working parents would need to balance educating their children and supporting their careers. We didn't know that months later, with the pandemic still surging, America would be forced to reckon with the deadly reality of its racial injustice. We didn't know when we would see our visitors or volunteers again.

OUR LIGHTS STAYED ON—in the courage of our facilities, maintenance and security staff. Working in smaller numbers, in fewer shifts per person, they kept things running so our essential experiments—mostly outdoors—could continue. We provided them the maximum protection possible to keep them safe on the job, and continued paying those who weren't able to come to work.

OUR LIGHTS STAYED ON—in the creativity of our scientists. Some were able to return as essential employees, keeping our long-term projects on climate change and Bay wildlife alive. Others worked from home, reinventing experiments and unearthing new discoveries in archived data.

OUR LIGHTS STAYED ON—in the faces of our two dozen remote interns, whom we can see only by computer screen. The intern class of 2020 is finding new ways to do research off campus, through backyard experiments and advanced data crunching.

Father-son duo Gary Peresta (front) and Andrew Peresta help maintain SERC's climate change experiments during COVID. (Credit: Gary Peresta)

OUR LIGHTS STAYED ON—in the ingenuity of our public engagement team. SERC's education staff reimagined their programs, bringing hands-on science into homes all over the country. Our popular evening lecture series also went fully virtual, reaching more people than ever before.

OUR LIGHTS STAYED ON—in the enthusiasm of our volunteers. Unable to come to SERC in person, they've still helped inject new life into our education programs, online lectures and citizen science. I don't know how we would have managed this transition without them.

There's still a great deal I don't know about what the future holds, for the duration of this pandemic and beyond. But one thing I have realized more powerfully through this crucible: We are not alone. I hope, wherever you are, that you also do not feel alone.

The Smithsonian is still here, whether you're looking for knowledge, inspiration or simply something beautiful to get you through the day. Our lights will stay on for you, however long the journey to recovery lasts.

— ANSON "TUCK" HINES, SERC DIRECTOR

Top photos, left to right: Evan Phillips finds a carp on SERC's Global Change Research Wetland during the pandemic. Kim Richie processes data for SERC's Fisheries Conservation Lab from home. Linsey Haram created an in-house lab to analyze plastic pollution. (Credit: Smithsonian)

Otter pizza illustration, created for SERC's virtual education programs. (Credit: Tom Kibalo)

Front Cover: Left to right: Jeff Blumenthal, Acy Wood, Chela Zabin and Corryn Knapp do field work in Point Orient, a study site in San Francisco Bay. (Credit: Ted Grosholz)

RESEARCH DISCOVERIES

UN REPORT PUTS SPOTLIGHT ON SEAGRASSES

BY ISABELLA ECLIPSE

Flounder in eelgrass (Credit: NOAA)

Seagrasses are biodiversity powerhouses, sheltering endangered species like manatees, sea turtles and sea otters. They even fight climate change, sequestering up to 18% of the ocean's carbon. Although seagrasses are rapidly declining, they're often overlooked in conservation efforts. A new report from the United Nations Environment Programme hopes to change that.

Released June 8 on World Oceans Day, *Out of the Blue* compiles the latest findings from around the world on seagrasses and their valuable services. For example, new research suggests seagrasses can reduce ocean acidification and remove disease-causing pathogens. SERC biologist Emmett Duffy served on the steering committee and helped synthesize data for the report. He emphasized the health of seagrasses, coastal communities and people are inseparable. "The old expression is that no man is an island, but no habitat or species is an island either," Duffy said. "This is really the primary lesson of ecology: Everything depends on everything else."

The full *Out of the Blue* report is available at https://www.unenvironment.org/resources/report/out-blue-value-seagrasses-environment-and-people

WHAT'S DRIVING FLORIDA MANGROVES NORTH? HURRICANES.

BY KRISTEN MINOGUE

A black mangrove grows in a salt marsh close to St. Augustine, Florida, near the edge of the mangroves' northward migration. (Credit: SERC)

For the last half-century, mangrove trees have been staging a northward migration along Florida's coast, taking over grassy salt marshes in their path. But they aren't doing it alone. Powerful hurricane winds provide the critical push that propels them into new territory, a study published June in *Molecular Ecology* revealed.

Scientists in SERC's Animal-Plant Interaction Lab, led by Candy Feller, already suspected hurricanes were partly responsible. But not until Hurricane Irma in 2017 could they find proof. Combing the beaches after the storm, the team found up to 1,000 times more mangrove propagules (seeds) in 2017 than those same beaches held without hurricanes in 2014. Lead author John Paul Kennedy used genetics to estimate where the propagules had come from and how far they'd traveled. Hurricane Irma had pushed them a median distance of 45 miles from their parent trees.

Link to study: https://doi.org/10.1111/mec.15513

MOVING AGAINST THE CROWD: NORTHERN SEA SQUIRTS' CURIOUS SURVIVAL IN WARMER WATERS

BY ALIYA UTEUOVA

In a world that's getting warmer, with many sea creatures moving toward the poles, one organism defies the trend: the sea squirt *Corella inflata*, commonly called the transparent sea squirt. Native to the northeast Pacific, these transparent sea squirts often grow on floats, docks and piers. Scientists long thought their southern limit was Puget Sound, Washington. But in 2004, they discovered them even further south in Coos Bay, Oregon. In 2008 they appeared in both Humboldt and San Francisco Bays.

***Transparent sea squirt,* Corella inflata**
(Image courtesy of Christina Simkanin, University of Victoria, B.C. Canada)

From 2000 to 2017, scientists led by Andy Chang surveyed 28 different bays, ranging from central Alaska to southern California. So far, the sea squirt's southern migration has stopped in San Francisco Bay, they reported this spring in *Diversity and Distributions*. The scientists think human transport is likely fueling these sea squirts' unconventional southward march, via methods like attachment to ship hulls that carry them south. Once they arrive, they can reproduce and possibly outcompete native species.

Link to study:
https://doi.org/10.1111/ddi.13055

Science Amid COVID

Research at the Smithsonian didn't come to a full stop with the arrival of COVID-19. Throughout the pandemic, scientists found ways to reinvent their projects to get the data they need. Here are stories of four of the research projects that kept their lights on.

Plastic Cleanup Expedition Helps Research Stay Afloat | BY ISABELLA ECLIPSE

In nature, adaptation is key to survival. This year more than ever, being adaptable and resilient has also been essential to working as a scientist. Faced with a pandemic, researchers around the world have had to find creative ways to continue their work.

SERC postdoc Linsey Haram is part of the FloatEco Project, a research collaboration that studies artificial ecosystems made of floating ocean plastic. By hitchhiking on pieces of plastic, coastal organisms can drift into the Great Pacific Garbage Patch and survive in the middle of the ocean.

These rugged organisms have adapted remarkably well to their new environment. Scientists are concerned that they could outcompete species native to the open ocean or be carried on the floating plastics to distant shores. Understanding what species can survive on ocean plastic, where they come from, and how much they're reproducing is critical. Haram's job is to catalog the organisms that have colonized samples of plastic and artificial settlement plates, which scientists place in the ocean to get a snapshot of what species are in the Garbage Patch.

Normally, Haram relies on nonprofits or private sailors to collect plastic debris for her to analyze. But because of the pandemic, no one was sailing towards the middle of the ocean. Enter Mary Crowley, founder of the Ocean Voyages Institute, a nonprofit that tags and removes plastic waste from the ocean. When plastic is entangling animals and polluting water every day, cleanup can't wait for a pandemic to end. Following the latest safety protocols, Crowley and her crew aboard the S/V KWAI gathered samples of plastic and retrieved settlement plates that had been floating in the Garbage Patch for the last year.

"They had all of their crew quarantine on the boat just off the coast of Hawai'i for two weeks before the expedition, and they all got tested as well," Haram explained.

Once the expedition began, the boat did not make any stops. 48 days later, the S/V KWAI arrived in Honolulu with a record-breaking 103 tons of plastic from the Great Pacific Garbage Patch. Crowley's team also found four of Haram's settlement plates. Against all odds, they were able to remove more plastic trash from the ocean and provide SERC scientists with the specimens they need to keep doing research at home.

"They've been really instrumental in us being able to do any research this year," Haram said.

In times of crisis, the power of teamwork is coming through more than ever.

Left: Linsey Haram, a postdoc in SERC's Marine Invasions Lab, studies how coastal organisms can survive transoceanic voyages by rafting on plastic. (Credit: Stephen Page); Right: Linsey Haram's settlement plates consist of stacked PVC disks, topped with a plastic mesh sponge and housed within a protective PVC sleeve. (Credit: Jenny Par/SERC); Top: Barnacles and seaweed raft on a plastic buoy, with fish sheltering nearby. (Credit: Justin Hofman/Greenpeace)

Repurposing Nature To Restore The San Francisco Shoreline | BY ALIYA UTEUOVA

Since 2012, scientists with the San Francisco Bay Living Shorelines Project have used a nature-based approach to reinforce shorelines, while restoring critical species like eelgrass, Olympia oysters and tidal marsh plants. Though the pandemic shook things up, it didn't halt the project in its tracks.

The Living Shorelines project is a California State Coastal Conservancy public works project. This means it falls under the category of "critical infrastructure," allowing socially distant fieldwork to continue amidst the global pandemic.

"The shoreline protection might not seem too critical in 2020, but will be critical in 2050," said Jeff Blumenthal, a technician with SERC's San Francisco branch.

Blumenthal works with SERC principal investigator Chela Zabin, who's leading restoration at a site called Giant Marsh on the East Bay shore. Zabin's team is focusing on Olympia oyster restoration. Olympia oysters live in the intertidal and subtidal zones along the Pacific Coast, ranging from Baja California in Mexico to British Columbia in Canada. The team is particularly interested in whether the rockweed algae *Fucus distichus* could help alleviate the heat stress native oysters face as the planet warms.

Principal Investigator Chela Zabin in the field. (Credit: Alison Haigh)

"To our knowledge, this is the first effort to add macroalgae into living shorelines restoration," Zabin said.

Like Olympia oysters, rockweed grows in the intertidal zone. This canopy-forming seaweed provides shade to oysters, and could help them retain moisture when exposed to hot air during low tides. With climate change increasing the number of hot days, rockweed could give oysters a better shot at survival.

The team had to scrap plans for a major rockweed transplant at their site due to COVID-19. But they adapted to new working conditions swiftly, and are set to do another transplant this fall.

For Zabin, the most exciting part of her work is reimagining restoration in the face of climate change.

"Traditionally, restoration has been a snapshot of what something used to look like, let's say the 1800s, and we'd try to bring conditions to what it was," Zabin said. "But as we face this unprecedented change, no conditions are ever going to be heading back toward what it was, and how we approach restoration now will make them resilient to extreme temperatures."

Carbon Cycling in the Time of Coronavirus | BY ISABELLA ECLIPSE

When the pandemic hit, many scientists' field sites closed down, bringing countless research projects to a screeching halt. Marc Rosenfield, a graduate student at George Washington University, found himself in this exact situation when the Virginia Coast Reserve shut its doors. An ecosystem ecologist, Rosenfield was studying the exchange of carbon between the land and the atmosphere. He had planned to deploy sensors to understand how this carbon exchange differs when moving from marshes to surrounding forests.

Instead of giving up, Rosenfield switched gears and transformed his research into a citizen science project. He, along with his dedicated undergraduate assistant Leona Neftaliem, reached out to colleagues in Washington, D.C., to see if anyone would allow the setup of carbon sensors in their backyards. To his surprise, an overwhelming number said yes. Soon, strangers were asking him to set up sensors on their properties. Today, Rosenfield has 30 sensors in locations across D.C., from private backyards to the U.S. Botanic Garden. There's even one at the famous 9:30 Club.

The carbon sensors, designed by SERC scientist Roy Rich, measure temperature, pressure, humidity, CO_2 and other carbon-based compounds. They run continuously, storing data on an SD card which volunteers can remove and send to the scientists for analysis every few weeks. Rich's compact design is cost-effective and creates a detailed picture of the variation in carbon levels across a landscape.

"The best way I can describe it is by thinking of a camera with higher resolution," Rosenfield explained. "Where most studies try to maximize the area a single CO_2 sensor can measure, we minimize the area and deploy a larger sensor network."

The sensors have only been in place for a few months, but Rosenfield hopes the data will reveal how plants, buildings and car traffic affect how carbon cycles in and out of the atmosphere. The pandemic also offers a rare opportunity for Rosenfield to observe how the environment reacts to drops in human activity.

Rosenfield plans to keep the sensors running for at least a year. Ultimately, he thinks his research could help inform city planning. For example, if nearby plants help mitigate the effects of human pollution on the carbon cycle, urban planners could plant trees strategically near areas of concentrated pollution.

Left: Marc Rosenfield sets up a carbon cycling sensor outside the U.S. Capitol Building. (Credit: Megan Wilkerson); Right: This carbon sensor, designed by SERC researcher Roy Rich, is one of over two dozen across Washington, D.C., taking continuous measurements of carbon dioxide and other key climate variables during the pandemic. (Credit: Marc Rosenfield)

A Match Made In Soil: Decoding Fungi for Orchid Survival | BY ALIYA UTEUOVA

When it comes to orchids, delicate, rare flowers with striking colors and shapes might come to mind. But did you know that orchids make up 10 percent of the world's flower species? With roughly 30,000 known species, they're found on all continents but Antarctica, ranging from the tropics to the Arctic Circle.

Orchids grow on soil, trees and even on rocks. And like so many plant species in the world, orchids are vulnerable to habitat loss. While they can grow wherever there are fungi, the key is to have the *right* fungi.

To gain nutrients and survive the early stages of life, orchids must form symbiotic relationships with fungi. But this relationship, it turns out, is extremely one-sided. With all the nutrients that orchids take from fungi, they give nothing in return. Orchids do, however, play a vital role as indicators of environmental health.

"When the plant habitat starts changing, orchids are usually the first ones to go," said Melissa McCormick, who heads SERC's Molecular Ecology Lab.

This year, McCormick and her team are looking at orchid hybrids to better understand how fungi influence orchid diversity, and how orchids adapt to new environments. They're focusing on naturally occurring hybrids of the widespread *Platanthera* genus, or fringed orchids. These studies may help predict which species and populations will be most vulnerable to changing conditions.

Hybrids, because they're so unique, are in high demand among plant collectors and gardeners. But with their rarity comes the challenge of locating *Platanthera* hybrids. To find them, SERC is collaborating with the Atlanta Botanical Garden. The scientists are collecting orchid and fungal samples from various sites in Maryland, New Jersey, Pennsylvania and North Carolina.

"Geographic variation can tell us a lot about the genetic flow, and whether there's hybridization in one area over the other," said postdoctoral fellow Ida Hartvig.

Hartvig dissects the orchid roots in lab to extract the small balls of fungal tissue called **pelotons**. Her goal is to identify the DNA barcodes of the fungi and attempt to cultivate them. Meanwhile, the scientists are also creating hybrid orchid seeds to test whether these fungi will enable the seeds to germinate and grow. Knowing which fungi orchids need will be key to conserving the flowers.

"I hope this research will contribute to better conservation plans for threatened species," Hartvig said. "Understanding the requirements for orchid habitats could help sustain viable populations in the future."

Left: Hybrid orchid Platanthera x canbyi *(Credit: Melissa McCormick); Right: Ida Hartvig hand pollinates the orchid* Platanthera blephariglottis*, the White Fringed Bog Orchid, to create a hybrid orchid. (Credit: Melissa McCormick); Top: Melissa McCormick samples a root of* Platanthera cristata*, the Crested Orange Bog Orchid. (Credit: Simone Evans)*

Footstone with the initials A. S., thought to mark the grave of Anne Sellman, a 19th-century inhabitant of the property. (Credit: Tuck Hines)

Grave HUNTERS

BY KRISTEN MINOGUE

On March 19, 1685, a major named Thomas Francis took his wife on a boating trip across the Rhode River, to a plantation called Tulip Hill. He never returned. Francis drowned on the way back, at the age of 42. His tombstone bore a poetic inscription urging his family not to mourn. One snippet read: *"For tho grim death thought fitt to part us here/Rejoyce & think that wee shall once appeare/At that great day when all shall Summond be."*

Thomas Francis's tombstone is thought to be the oldest in Maryland's Anne Arundel County. Today, he and dozens of others—enslaved laborers, plantation owners and veterans—lie buried on land now belonging to the Smithsonian Environmental Research Center (SERC). But while some of their final resting places are known, most remain a mystery.

This year, a team of human and canine researchers are on the brink of rediscovering them.

REVISITING THE PAST

SERC program specialist Christine Dunham and director Tuck Hines began the search this June. They're designing an exhibit at the 18th-century brick house on the former Sellman plantation, and wanted to return to the site of three known Sellman graves. Hines also remembered visiting Francis's tombstone 10 to 15 years earlier. However, over a decade's worth of leaf litter made it tricky to find again.

Dunham spotted Francis's tombstone first, almost entirely concealed by fallen leaves. The tombstone had broken in two, but bits of the 335-year-old epitaph remained visible.

They also rediscovered a footstone at the presumed Sellman family cemetery, with the letters A.S. Could it have been for Anne Sellman, granddaughter of Revolutionary War veteran General Jonathan Sellman? Jonathan, Anne, and Anne's father, Colonel Alfred Sellman, are the only Sellmans whose burials Dunham has records for. But those records indicate their descendants moved the three graves to All Hallows Church.

Jim Gibb, head of SERC's citizen science Environmental Archaeology Lab, knows that grave removals often don't get everything, especially with bodies over a century old.

"They pick a few larger bones that are obvious—you know, the skull," he said. "It's not like we usually have intact coffins that can be simply picked up and moved."

UNMARKED GRAVES OF THE ENSLAVED

Rediscovering the Francis and Sellman gravestones gave the team only a small piece of the land's history. They revealed nothing about the dozens or hundreds of enslaved who spent their lives working the land, largely without recognition.

"We know some of the names of some of the people that were enslaved, but not all," Dunham said. Names like Tom Watkins, who ran away from the Sellmans in his mid-30s, and Dennis Simms, who worked on the neighboring Contee farm shortly before the Civil War. As an elderly man in the 1930s, he gave an oral testimony recalling the brutality on his former plantation.

Lyndra Marshall, a historian and genealogist with the local Black community, is helping Dunham track down more names of the enslaved for the exhibit. But to find their resting places, the team needed something that could pick up invisible clues.

Enter Heather Roche and her cadaver dogs. Roche works with the nonprofit Bay Area Recovery Canines, or "BARC." She trains her dogs to find possible graves by exposing them to odors of human decomposition, like bones and blood.

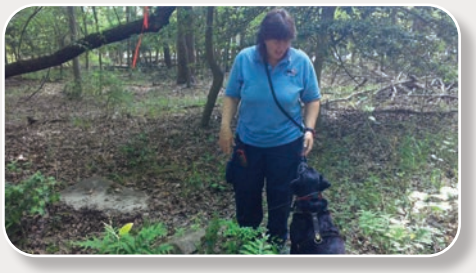
"It takes longer to train a person. Dogs are easy," Roche said.

On a cool June morning, Roche brought two black Labradors to SERC: 10-year-old Penta and 3-year-old Partner, who flunked out of FEMA's program because he wouldn't bark when he found something. Fortunately, Roche doesn't need her dogs to bark—after circling and sniffing an area, they lie down when they've detected something.

Roche had each dog explore the sites separately, without watching each other, to ensure independent results. The first site they zeroed in on—a flat, forested patch of land—wasn't on anyone's radar as a possible cemetery.

"We had no suspicion there were graves at this site," Hines said. But both dogs were drawn to it. Perhaps, this could mark the burial sites of some of the enslaved.

The dogs also correctly identified Thomas Francis's grave and the Sellman footstone. At both places, they laid down at unmarked sites nearby, which may contain more potential graves.



The team needs more tools to get a clearer picture. They began working with the Maryland Historical Trust to use ground-penetrating radar, a noninvasive technique that can provide radar images of any underground graves. Gibb also hopes to repair Thomas Francis's broken tombstone.

In the meantime, SERC is rehabilitating the main brick house on the Sellman property to turn it into a historic exhibit. Soon, the nearly 300-year-old house will tell visitors stories of all the cultures that passed through the area—and what footprints they left on the land today.

SERC is keenly interested in finding more descendants of the Sellmans, Contees, enslaved Black families and others who lived on the property, to compile as many histories as possible of those who inhabited what is now the SERC campus. If you wish to be part of documenting our shared history, please send information to editor Kristen Minogue at minoguek@si.edu.

Photos: L-R Christine Dunham, Heather Roche, Jim Gibb and two cadaver dogs, Penta and Partner, explore the SERC campus for potential graves. (Credit: Tuck Hines); The tombstone of Thomas Francis from 1685, now split in two. (Credit: Christine Dunham); Heather Roche watches her cadaver dog, Penta, at the broken tombstone of Thomas Francis. (Credit: Christine Dunham)

SERC Brings SCIENCE to Your Living Room

BY
ISABELLA ECLIPSE

Education intern Samina Soin-Voshell presents an online lesson on shark migration. (Photo courtesy of Samina Soin-Voshell)

In spring, the SERC campus comes alive. Snow thaws, peeper frogs start calling, and troops of schoolchildren descend on campus and experience science in the field. For some students, this could be the first time they've seen the Chesapeake Bay, walked through a forest or spent time in nature.

This year, the pandemic forced schools to close and SERC had to cancel all its spring and summer programs. However, thanks to the efforts of the SERC education team, the pandemic hasn't stopped science education—just changed it. Karen McDonald, SERC's education specialist, is working with her staff, interns and a dedicated volunteer team to develop virtual programs that bring SERC science into the homes of eager learners, from elementary students to adults.

During the spring, SERC offered a three-day virtual homeschool course on the ecology of river otters for 4th- through 7th-graders. Students attended class through Zoom and sent in their "homework"—food webs and otter diagrams—using Google Classroom. Encouraged by the success of this short program, the education team developed a four-week course on "The Science of Biodiversity" for middle school students in June. SERC also created a Summer Science Series for the public and several workshops and certificate programs for teachers looking for professional development during the pandemic.

This fall, SERC is offering virtual field trips for schools. The team has also organized a hands-on "Science To Go" activity in October, with DNA extraction kits families can pick up at Anne Arundel County Public Libraries or assemble on their own.

Adapting an outdoor curriculum which is inherently hands-on and experiential has been challenging, McDonald acknowledged.

"We're having to be very creative about how to conduct hands-on science in meaningful ways, virtually," she said.

One way to engage students is to encourage them to take a break from the computer screen and rediscover nature in their own backyards and neighborhoods.

"I think especially since everyone is home right now, it really gives us an opportunity to connect to a sense of place and the environment around us," explained education intern Samina Soin-Voshell.

Charlie Schmidt, a student in SERC's virtual river otter class, poses with his poster presentation. (Photo by the Schmidt Family)

Soin-Voshell helped lead middle schoolers in the virtual homeschool course through a "bioblitz" survey, which challenged them to catalog every living species they could find outside in 20 minutes. The students had fun while learning critical science skills, like analyzing data and identifying trends.

Despite the challenges of online learning, McDonald sees a silver lining in this experience and believes science education will ultimately be all the better for it.

"We can reach different audiences, which is exciting," she said. "Places that we've never taken SERC science, we can now go."

To learn more about SERC's virtual education programs, visit http://serc.si.edu/education

Don't Stop Me Now!

MEET THE VIRTUAL INTERN CLASS OF 2020

SERC's intern class of 2020 included 30 remote students working in 13 labs and departments. Throughout the summer, they've done workshops together on Zoom and networked with scientists in different environmental fields. Here's how three of them navigated the all-virtual internship experiment…ahem, experience. Profiles compiled by Aliya Uteuova, one of SERC's remote science writing interns.

Rachel Gordon

RACHEL GORDON
ST. JOHN'S COLLEGE

SERC Lab: Ocean Acidification

A Chesapeake native, Rachel Gordon investigated how well Maryland's Rhode River can buffer itself from rapid acidity changes, which can harm shellfish and other life underwater. However, the current software was made to measure buffering capacity (or "alkalinity") in the open ocean, which has vastly different chemistry than the coast. This can lead to improper estimates and skewed views of what's happening in coastal waters. By studying coastal water chemistry, Rachel's work can help the lab find better methods to measure alkalinity closer to shore. *(Photo courtesy of Rachel Gordon)*

Carlie Hansen

CARLIE HANSEN
BRYN MAWR COLLEGE

SERC Lab: Biogeochemistry

A biology and political science student, Carlie Hansen's main interests lie in invasive species management. For her senior thesis she's studying the invasive reed *Phragmites australis*. She did her remote internship from Chicago, analyzing porewater data from Phragmites experiments on SERC's Global Change Research Wetland. After graduation, she plans to combine her passions with a career in science and policy. *(Photo courtesy of Lipi Paladugu)*

Andressa Viol

ANDRESSA VIOL
RICE UNIVERSITY

SERC Lab: Quantitative Ecology

For her remote internship, Andressa Viol explored the inner workings of trees at the microscopic level. She analyzed photos of micro-cores — thinly sliced sections of a tiny core extracted from the bark of trees. Her job was to count the numbers and sizes of sugar-transporting tubes in the wood. By uncovering how trees respond during years of showers versus years of drought, scientists can figure out how trees can be resilient to global change. *(Photo courtesy of Andressa Viol)*

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Coming in October...

SPYING ON WHALES: EARTH OPTIMISM WEBINAR SERIES FINALE

Tuesday, Oct. 20, 7pm Eastern
Speaker: Nick Pyenson, National Museum of Natural History

The first whales on Earth were certainly not like the ones that you see today: They lived on land, had four legs and were the size of dogs. How do we know about the deep past of whales, and what does that tell us about how evolution works? In the finale of SERC's 2020 Earth Optimism series, get a closer look with Nick Pyenson, author of "Spying on Whales" and curator of fossil marine mammals at the Smithsonian's National Museum of Natural History. Dive in for the surprising backstory and a glimpse of our shared future with these enigmatic giants.

This webinar will be recorded. Sign up online to watch live or to receive a link to the on-demand recording: https://serc.si.edu/visit/eveninglectures

SERC SCIENCE TO GO: ALL ABOUT DNA

A take-home science project with Anne Arundel County Public Libraries

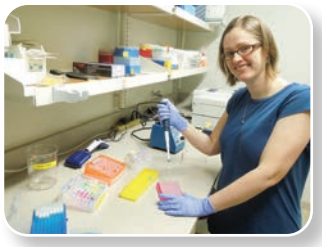
Instructional webinar Saturday, Oct. 24

Join us to learn about DNA! Pick up one of our free science kits at your nearest Anne Arundel County Public Library. Then, on Oct. 24, meet SERC molecular ecologist Katrina Lohan, go on a virtual tour of her lab to get a closer look at how she studies DNA...and do a real DNA extraction at home with the materials in your kit. Don't live nearby? Don't worry – we'll have a list of materials on our website for you to build your own DNA extraction kit and join the fun.

More details coming soon!

Check our website in October at https://serc.si.edu/education/science-to-go

Special thanks to the Smithsonian American Women's History Initiative and The Brick Companies for supporting the project!



Photos L-R: Tagging humpback whales in Antarctica's Wilhelmina Bay. (Credit: Nicholas Pyenson under NOAA permit); Nick Pyenson with whale bones on Cuverville Island, Antarctica. (Credit: Martha Stewart); Science To Go Designed by Cosette Larash/SERC; Katrina Lohan (Credit: Kristen Minogue)

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ON THE EDGE
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