

THE
UNIVERSITY
OF RHODE ISLAND
DIVISION OF RESEARCH
AND ECONOMIC
DEVELOPMENT

Momentum

Research & Innovation



SPRING 2020

Momentum

Research & Innovation



During this period of great challenge, uncertainty and concern for our loved ones, know that we are all one family. The University of Rhode Island is built by the community of our students, our alumni, by our athletes, artists and scholars, by our staff and by our talented faculty. It is as one community that we explore, discover, learn, imagine and create. It is as one community that we will do everything possible to protect and support each other. Our thoughts, empathy and affection are with you all. Imagine the beauty of our campus, of walking through our Quadrangle in the sunshine, and know that there will be a day soon when we welcome you home to Kingston, Rhode Island.



**“IT IS UNDER THE GREATEST
ADVERSITY THAT THERE EXISTS
THE GREATEST POTENTIAL FOR
DOING GOOD, BOTH FOR ONESELF
AND OTHERS.”**

- His Holiness the Dalai Lama XIV

FROM THE VICE PRESIDENT

Although I seriously regarded the last issue of *Momentum* (fall, 2019) as my favorite one since I arrived at URI two years ago, it is instead the one that you are reading now that I am most proud. I am sure that this will remain the case for at least the next seven months, until the fall 2020 issue has been published. There are articles in this issue that give us hope and highlight the special and powerful role that our professors and scientists have in training the next generations of scholars, in giving voice to the forgotten, and in improving our environment. In this issue, you will enjoy articles describing how our students and trainees are mentored in a unique manner that can be traced back to the first doctorates of philosophy awarded in medieval Europe about 900 years ago. You will read about the courage and tenacity of self-emancipated slaves creating community in Virginia's and North Carolina's Great Dismal Swamp in the late 18th and early 19th centuries. And, you will discover how chemistry Professor Matthew Kiesewetter, has teamed up with entomology Professor Steven Alm to merge his work as a polymer chemist with his home hobby of beekeeping. Kiesewetter has invented a potentially effective and safer approach to protecting the bee population from the scourge of varroa mite infestations that threaten the global health of bees. Anyone who knows me will appreciate how much I respect people who can defensibly mix work with their home hobbies!



But this issue also contains one very troubling article on a topic that I have been seriously concerned about for much of my career as a scientist, namely, how scientists and scientific data are repeatedly censored or distorted for political or socioeconomic gain. This is not a new story, but rather a recurring pattern. Every presidential administration has been guilty of this in some manner of form, and to varying degrees. Unfortunately, as I write this essay I only need to think back over the past few weeks for current examples of how important medical and scientific information had been withheld or distorted from the public over the first weeks of the spread of the coronavirus (COVID-19) across Asia, Europe and then North America. It was not until the World Health Organization declared COVID-19 to be a pandemic that the executive branch adopted a half-rational stance and pulled back on the directive that all public statements from our experts at the Centers for Disease Control (CDC) and National Institutes of Health (NIH) be filtered first by the vice president. Until this point in mid-March, the COVID-19 virus was still being referred to by the president, and on a certain television station, as a "hoax" and part of a witch-hunt.

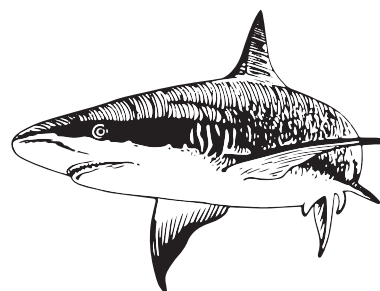
We are all now receiving clear and desperately needed scientific information and advice from the NIH and CDC, amongst other agencies and our own state government. We are in the midst of a massive population-level emergency response that has a good chance of "flattening the curve" of viral transmission to manage the looming burden on our emergency medical and intensive care facilities. As an entire population we are heeding excellent science-based advice that has led to very substantial behavior change, which is actually quite remarkable. Moreover, there already are early-stage human safety trials of novel vaccines in progress, which would not have been possible without the past few decades of public financial support for critically important basic research in immunology, virology and the genetics of coronaviruses. Academic research is immensely powerful, and in ways that we can not always predict or appreciate as scientists and scholars who pursue fundamental questions and ideas. The gains in understanding made across so many fields of study, these precious gems, should be conveyed to the public free of bias and censorship to benefit our health, our environment and our society.

A handwritten signature in black ink, appearing to read "Peter J. Snyder".

Peter J. Snyder, Ph.D.

Vice President for Research and Economic Development
Professor of Biomedical and Pharmaceutical Sciences
Professor of Art and Art History
University of Rhode Island

Scholar-in-Residence
Rhode Island School of Design



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A TINY MITE CAUSING A BIG PROBLEM: ELIMINATING A PARASITE HARMING BEES

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When the politicization and weaponizing of information leads to partisan rancor and flagrant attacks on truth, we have an obligation to defend and protect the primacy of scientific method and to press our government to set policy based on hard, defensible facts.

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SHE ACHIEVES. SHE INSPIRES.

The Fulbright recipient, undergraduate student at the University of Rhode Island racked up three published journal articles, a half dozen academic conference presentations, a teaching assistantship, a local TED Talk and accolades from the United Nations before ever earning her triple major in philosophy, communication studies and political science, and double minor in Ancient Greek and rhetoric, with honors.

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URI'S NEW INITIATIVE, *PLASTICS: LAND TO SEA AND THE GREEK LIFE GIFT*

URI is implementing a broad plastics and microplastics research initiative, which will span technology, oceanography, policy, community education, and both local and global strategic action plans. URI's Greek Life system collectively raised \$35,000 to support the initiative. It is a gift that will have a ripple effect on our world for years to come. This student-supported gift is a key element in solidifying URI's global efforts to address this issue.

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"Fur Seal on his Throne"
(the throne is a whale skull).

Photo by URI Assistant Professor Kelton McMahon.

Cover Story
Picture of a Honeybee
(*Apis mellifera*) on top of
honeycomb with a varroa mite
(*Varroa destructor*) on her thorax.

Photo by Casey Johnson '19

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ACKNOWLEDGEMENTS

Momentum: Research & Innovation is published by the Vice President for Research and Economic Development with editorial, graphic design, and production by the Office of University Research External Relations.

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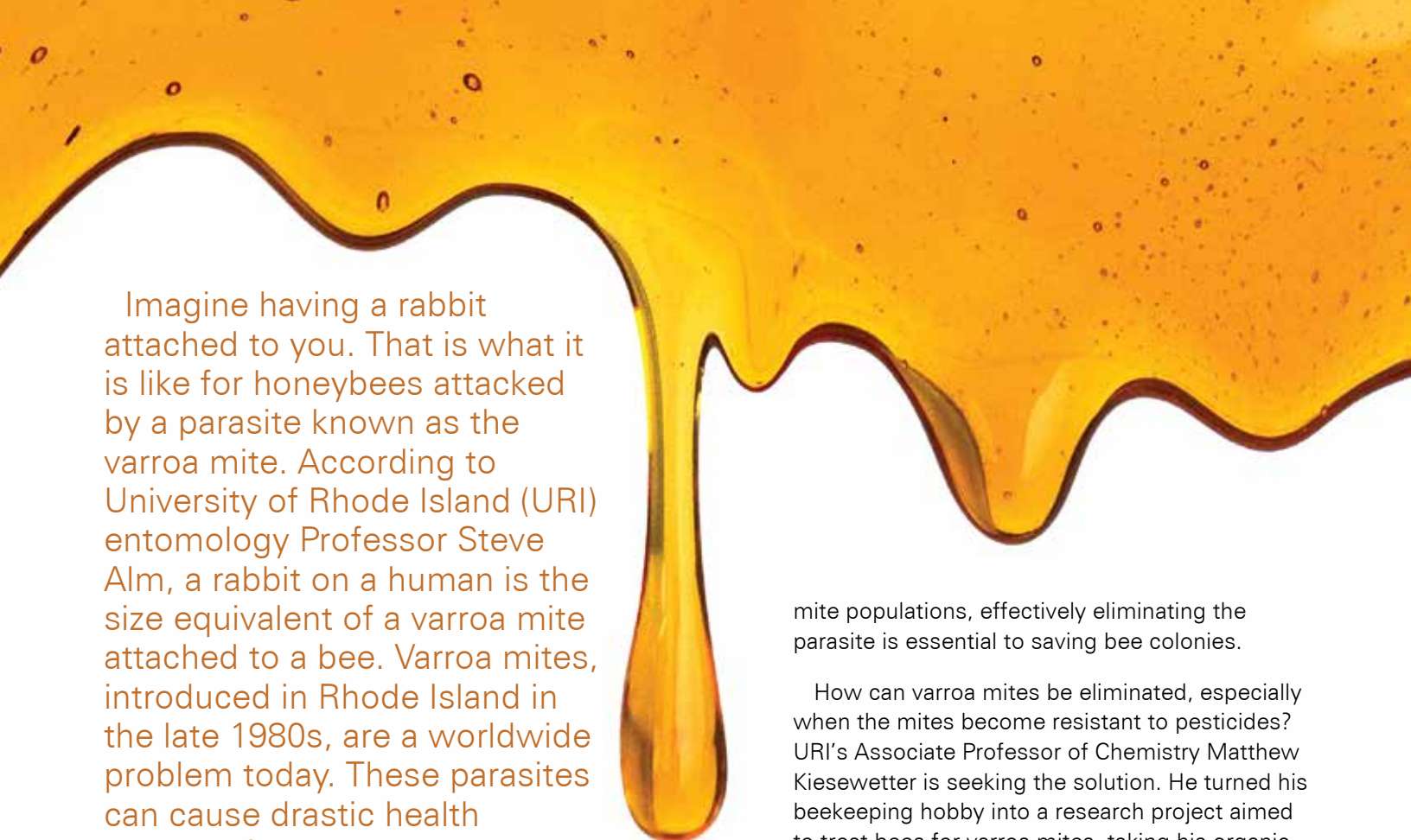
A TINY MITE CAUSING
A BIG PROBLEM:

Eliminating a
Parasite Harming

Bees

written by **BETHANY DELOOF '21**

Imagine having a rabbit attached to you. That is what it is like for honeybees attacked by a parasite known as the varroa mite.



Imagine having a rabbit attached to you. That is what it is like for honeybees attacked by a parasite known as the varroa mite. According to University of Rhode Island (URI) entomology Professor Steve Alm, a rabbit on a human is the size equivalent of a varroa mite attached to a bee. Varroa mites, introduced in Rhode Island in the late 1980s, are a worldwide problem today. These parasites can cause drastic health declines for bees, and they lead ultimately to untold numbers of deaths for entire hives.

Mites attach to the bee's abdomen and feed on fat, weakening the bees, and they transmit various viruses, such as the deformed wing virus, which renders a bee unable to fly. With rapidly reproducing and growing

mite populations, effectively eliminating the parasite is essential to saving bee colonies.

How can varroa mites be eliminated, especially when the mites become resistant to pesticides? URI's Associate Professor of Chemistry Matthew Kiesewetter is seeking the solution. He turned his beekeeping hobby into a research project aimed to treat bees for varroa mites, taking his organic chemistry knowledge out of the lab and into the field.

Bees play a vital ecological and economic role; not only do they provide honey but more importantly they pollinate fruit and vegetable crops, which is vital to maintaining our food supply.

"There are many problems, but the varroa mite is the single biggest threat to the honeybee," says Kiesewetter. "If you do not treat a hive to kill the mites, the hive will die. The mites are disease vectors, bringing along at least five and as many as 18 viruses that end up weakening and killing the hive."

Bees are a superorganism, they resemble a group of individual cells working together. Consequently, varroa mites impact an entire hive. And because the life cycle of a varroa mite goes hand in hand with the life cycle of a bee, the mites effect all stages of a bee's life from larva through adulthood.

While organic compounds have been previously used to treat bees, the toxicity of these compounds is a recurring problem that arises to either the bees or the people working with them.



Bees play a vital ecological and economic role; not only do they provide honey but more importantly they pollinate fruit and vegetable crops, which is vital to maintaining our food supply.



Casey Johnson '19

The goal, therefore, is to develop a compound that will kill varroa mites without harming their bee hosts. Kiesewetter is looking at polymer-based delivery systems and currently experimenting with the compound lactic acid. One option is making honeycombs out of lactic acid and inserting the synthetic honeycomb into the beehives.

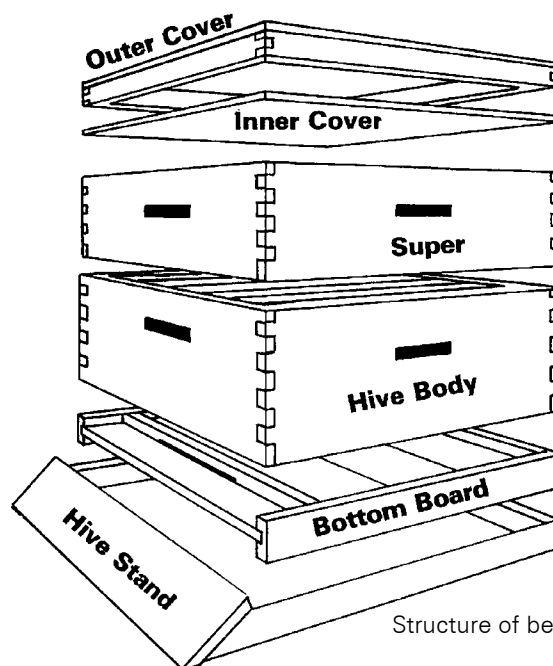
However, there are two sides to the problem, and finding new and effective pesticides comprises only half the battle. The other issue lies in actually treating the bees, and with the collaboration between professors Kiesewetter and Alm, both sides of the problem can hopefully be addressed.

"Because URI has faculty from such a diverse array of backgrounds and disciplines, I was able to find a colleague who is an expert on honeybees and pollination," says Kiesewetter. "Dr. Alm runs the East Farm and knows about the entire other side of this problem, and he is a wonderful collaborator."

Kiesewetter also speaks to the relevance of the work in Rhode Island saying, "I think the state has a very big interest in local, farm-to-table produce, and there are a lot of small honey producers in the state who really care about beekeeping and protecting the pollinator populations so it is easy to convince people this is something we should be doing."

(Continued on next page)

Beekeepers need to do their due diligence and know all the factors that pertain to beekeeping. Many may not know that varroa mites will attach to a bee, and stay attached during flight, thereby endangering other neighboring hives.



Structure of bee hive.

"Through this research we've been testing new chemicals and methods to eliminate mites from a bee colony, while not harming the bees."

- Casey Johnson

Matthew Kieseewetter

Associate Professor
Chemistry

Steven Alm

Professor
Entomology





The development of new compounds for varroa management starts in a round bottom flask.



Test vaporization of a compound to manage varroa mites.

As a relatively new project beginning in 2019, the bee lab received initial start-up funding from the URI Division of Research and Economic Development and has applied for funding from the United States Department of Agriculture (USDA). Both Kieseewetter and Alm remain hopeful for the future of the project, and Alm says he is grateful that URI provides him with a space work with the bees.

“You can’t do everything in the lab,” Alm says. “You need field space, and the University helps us by keeping East Farm available. We are very fortunate to have a facility so close to the Kingston Campus. That is huge.”

For Kieseewetter, the research offers a chance to do something different.

“The general public’s perception of what chemists do is not all that wrong,” he says. “It is a lot of flasks, a lot of beakers, you are in a lab, and you keep your nice healthy pale complexion. But to see the other side of this, spending time at URI’s East Farm with researchers who care as much about the science as we do, it is entirely different. They are in a field, in the flowers, it is sunny and there are butterflies and bees buzzing around you, and it is this wonderful life you are leading out there. It has been really exciting to get involved in that.”



Newly emerged honeybee bearing a varroa mite on her thorax cleans out the cell in which she developed.
Photo by Casey Johnson '19



Professors Kiesewetter and Alm inspecting the beehive with their students.



Sticky cards are used beneath beehives to catch and count varroa mites as they fall. A mite count above 15, like this one, indicates a dangerous mite level.



Completing the synthesis of a new compound for varroa management by performing a separation.

“You can’t do everything in the lab, you need field space, and the University helps us by keeping East Farm available.”

- Steve Alm



TRAINING THE NEXT GENERATION of Bee Researchers



written by **BETHANY DELOOF '21**

Photo above: Drone pupae have been uncapped to extract the varroa mites that multiply in the capped cells.

IN THE LAB

URI chemistry graduate student Thomas Wright investigates how to use polymers to deliver organic acids and synthesize pesticides that could potentially save threatened bee colonies from the parasitic varroa mites.

He developed an interest in chemistry late in his undergraduate studies and, looking to explore new opportunities as a graduate student, he began working with catalysts and polymers in the lab of URI's Associate Professor of Chemistry Matthew Kiesewetter in January 2018.

Wright started working on different molecular projects such as monomer design, synthesizing complex polymers, and designing new catalysts for molecular reactions. While working with catalysts, Wright looked at the ability of these catalysts to depolymerize polymers, which Wright says potentially could increase the working life of polymers made through chemical recycling. They began looking at new methods of delivery for organic acids. From their work with depolymerization they knew that PLA (polylactic acid, a bio-renewable/bio-degradable polymer) will release lactic acid as it breaks down. Lactic acid is a viscous liquid and presents some delivery issues to beekeepers that use it to treat varroa mites. This

research could help bees by making the treatment process easier while maintaining effectiveness in varroa mite control.

"Catalysis was something I wasn't exposed to until very late in my undergraduate career, and it piqued my interest in a way other branches of chemistry hadn't," he says. "And since I've started, Professor Kiesewetter has been working with me to do what is best for my research and my career goals."

From a more global perspective, Wright respects and emulates Kiesewetter's universal goal of applying chemistry to large scale, real-world problems. Making a difference, especially with an issue as important as threats such as the varroa mites to bee colonies, holds important meaning for Wright.

"When I first heard about colony collapse disorder, which is a significant loss of beehive colonies due to the use of neonicotinoids pesticides in agriculture, working with bees became a dream of mine," he says. "And this project has fulfilled the longtime goal of helping the honeybee population."

IN THE FIELD

A rewarding aspect of this project is that it is also conducted in the field in real time. Undergraduate



Thomas Wright '22
Graduate Student
Chemistry

Wildlife and Conservation Biology major Casey Johnson '19 of Warwick RI, has been a leader of the field work at URI's East Farm. Working with bees requires full-time dedication, Johnson is often seen early in the morning, at high noon in the hot sun, and late into the evening caring for the hives.

"My role is to conduct a variety of research experiments, take care of the hives, make sure there are healthy queens, and monitor mite populations in each hive," Johnson says. "We had seven hives last year and five made it through the winter, which is actually pretty good considering that most people lose about 40 percent of their hives."

Johnson has always been interested in environmental issues and was more interested in entomology than any other subject she studied. As an undergraduate student, she took URI entomology Professor Steven Alm's course, Biology of Bees and Pollination Ecology, which is where she learned how diverse and vital bee pollination is to the ecosystem. In the summer of 2019, her senior, year Johnson applied for the URI Coastal and Environmental Fellowship, which gave her hands-on experience with bees, hives and the research projects that Alm has initiated to combat varroa mites.

"One of the most useful things I have learned is how to test and treat hives for varroa mites," Johnson says. "Through this research we've been testing new

chemicals and methods to eliminate mites from a bee colony, while not harming the bees."

Johnson conducted a series of research experiments to evaluate the efficacy of lactide and lactic acid vapor to control varroa mites, she concluded that known treatments were more effective. Johnson is interested in using organic methods to treat bee colonies and hopes to continue her research as a URI graduate student this summer.

"I'm grateful that Professors Kieseewetter and Alm value my contributions to the research project," Johnson says. "I want to continue this research, specifically working with pollinators and pollinator conservation. Conservation is significant at this time in our history due to a bottom up trophic cascade that is under way, meaning the insect population is declining at rapid rates. Since they are a food source or pollinate the food source of other animals this has an impact on our ecosystem."

According to Johnson, beekeepers need to do their due diligence and know all the factors that pertain to beekeeping. Many may not know that varroa mites will attach to a bee, and stay attached during flight, thereby endangering other neighboring hives.

"It's not an easy hobby," Johnson says. "Beekeepers will need to monitor their mites and treat when and where appropriate."

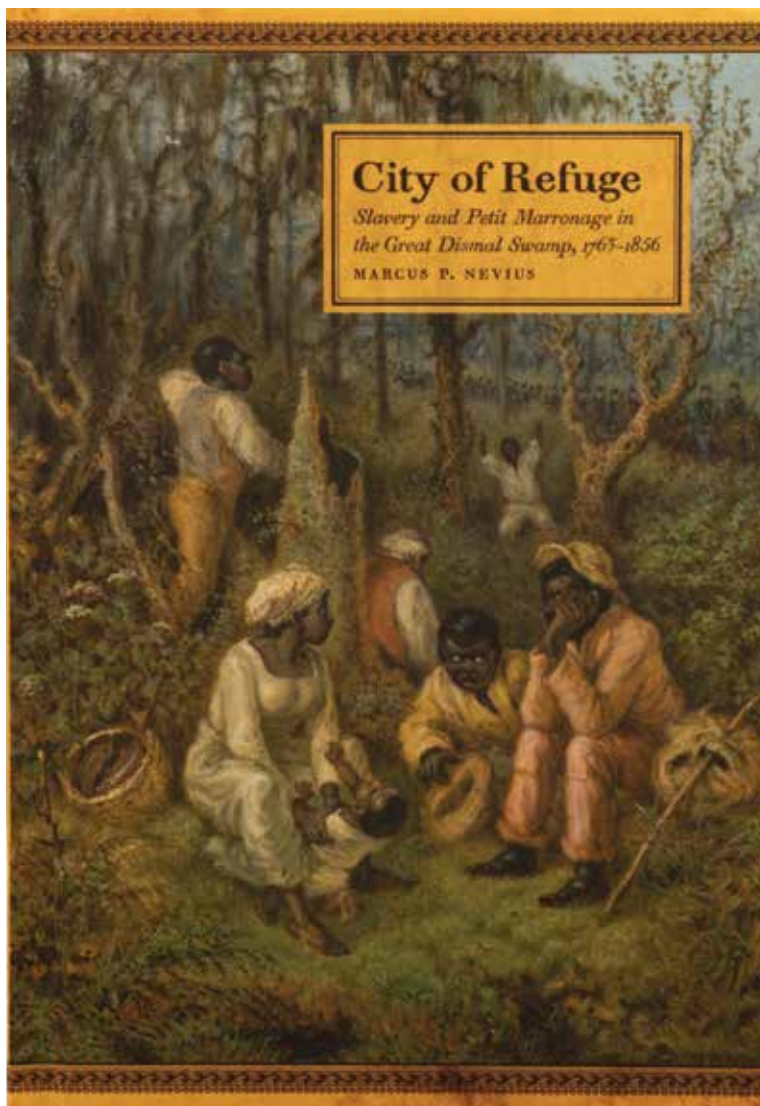


Casey Johnson '19
Undergraduate Student
Wildlife and Conservation Biology

EXPLORING

THE HISTORIES OF BLACK RESISTANCE AND SLAVERY IN THE GREAT DISMAL SWAMP

written by **HUGH MARKEY**



Some of the slaves not only escaped into the Swamp, but also created small communities that engaged in unofficial trade in goods and provisions with the neighboring companies, a process referred to as *petit marronage*.



Fifteen years ago, Marcus Nevius was an undergraduate student riding around North Carolina. As he explored the state, he wandered its vast pine forests and explored the long history of slavery in the United States.

Nevius, now a University of Rhode Island (URI) assistant professor of history, discussed just how complex the slavery and black resistance were with a scholar named Freddie Parker, professor emeritus of history, North Carolina Central University.

This discussion would be what Nevius calls the “seed corn” of a decade’s worth of work researching the complex relationship between self-emancipated slaves and nearby slave labor driven timber camps. The outcome was his new book, published in February 2020, *City of Refuge: Slavery and Petit Marronage in the Great Dismal Swamp, 1763 – 1856*.

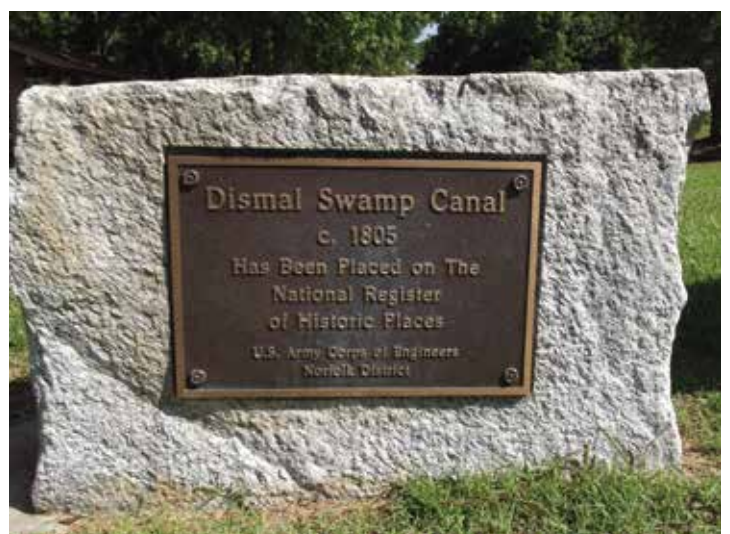
According to Nevius, well before the Civil War, there was a massive swamp that straddled two states: Virginia and North Carolina. It covered an area of approximately 2,000 square miles, roughly the size of Delaware, and was known as the Great Dismal Swamp. It was also a place of a small economy in early American history.

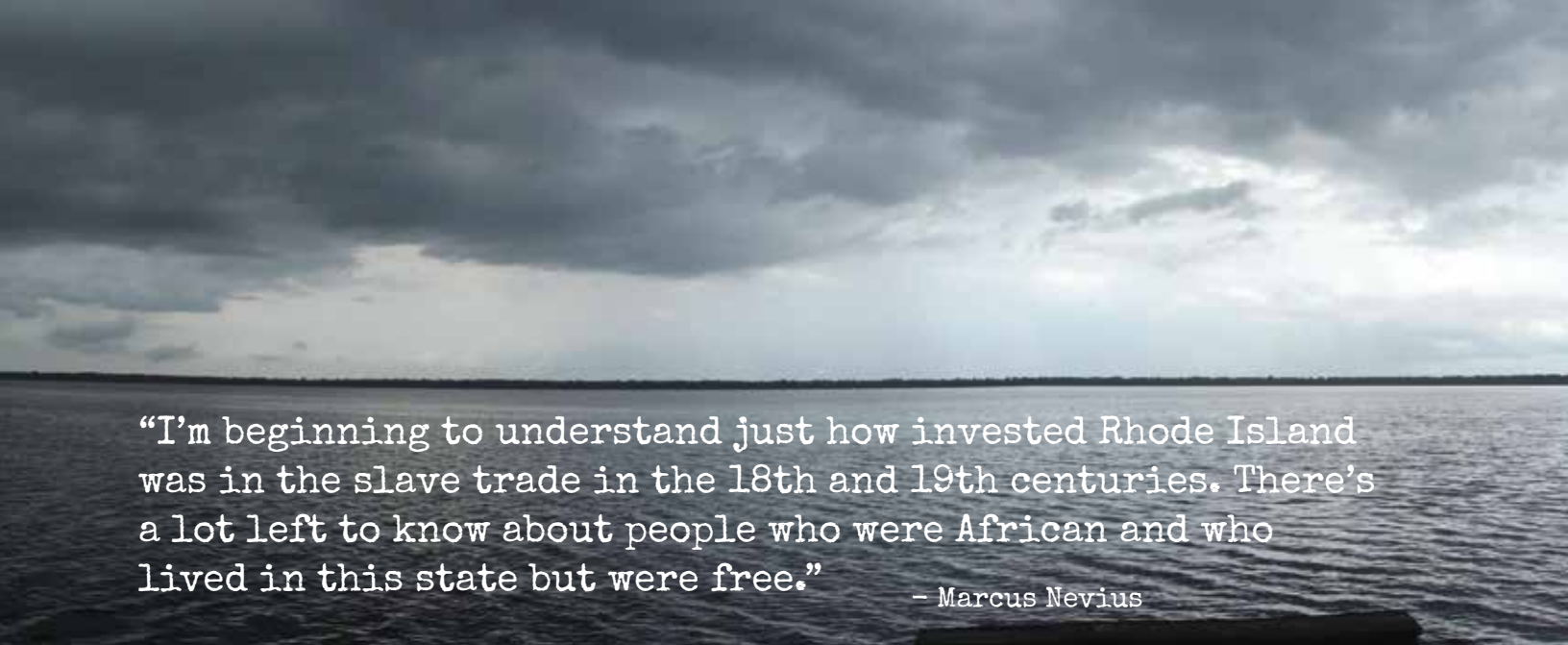
Nevius says that some of the richest men in America surveyed the area, including a young George Washington. Ultimately, the profusion of pine trees became the best source of income. Companies developing that timber industry were also among the region’s largest slave holders.

Nevius says he discovered that: “Any of the extractive enterprises that Washington’s generation and any of the successive generations sought to create in the Great Dismal Swamp were fully dependent on slave labor. This created a significant agency for the slaves.”

Some of the slaves not only escaped into the Swamp, but also created small communities that engaged in unofficial trade in goods and provisions with the neighboring companies, a process referred to as *petit marronage*.

Part of his research for *City of Refuge* involved joining a field school of archaeologists, led by Daniel O. Sayers, associate professor and Department of





"I'm beginning to understand just how invested Rhode Island was in the slave trade in the 18th and 19th centuries. There's a lot left to know about people who were African and who lived in this state but were free."

– Marcus Nevius

Anthropology chair at American University, who were exploring the region. Nevius spent a month making daily treks into the swamp.

"We entered the swamp by driving in on a WWII-era road for about 20 minutes," he says. "Then we'd enter the section of study, about three quarters of a mile away, on foot. Before we went in, we had to don elaborate protective gear to guard against snakes, ticks, mosquitos, deer flies, and an abundance of other critters. I had a crash course in the ecology of the Great Dismal Swamp.

"That experience taught me two things: First, it was really an experiential window into the challenges of resisting slavery in this way. The decision to resist slavery by escaping into this swamp was not one to be taken lightly. It was not a decision to be taken alone unless under the direst of circumstances. Second, it helped me understand the complexity of the Swamp's human history."



Nevius studied the documents of the Great Dismal Swamp Land Company and others, since those provided evidence of slavery in the swamp. He also found abolitionist writings by several authors. One, Edmund Jackson, wrote an essay called "The Virginia Maroons," which cited the Great Dismal Swamp as an example of slave resistance, but also as an example of marronage, a phenomenon of black resistance also found in Cuba, Jamaica, and Hispaniola. Frederick Douglass reprinted articles about "slaves in the Dismal Swamp" in *The North Star*, adding an element to his legacy of antislavery activism with which some people may not be familiar.

"Slavery's moral stains ran much deeper than criticisms of treatment of enslaved people, or much deeper than the ways we celebrate Douglass as one of the heroes of black history," Nevius says. "Really, one of the things Frederick Douglass was pointing to (in writing about the Virginia timber camps) was an economic story as well."

Several universities and research centers contributed to the completion of *City of Refuge*, including North Carolina Central University, the Ohio State University, and the Virginia Museum of History and Culture. Nevius found grant support from the University of Rhode Island Center for the Humanities.

"Since coming to URI three years ago, I have been very well supported by the College of Arts and Sciences, by the Provost's Office, by the Department of History, and by the Africana Studies Program."

At the same time, Nevius says he finds that his research also supports his teaching.

"Being on the faculty of a university creates an opportunity to teach courses in the history of slavery,



1763 - 1856

in African American History, and in early American history, all of which are useful in the way in which I frame lectures and in the ways that I can engage students' questions within lectures," he says. "When I'm teaching the history of slavery in America, for example, I'm charged with showing students not only the structure of slavery in Virginia, but the way in which slavery worked in the Atlantic world, or the way in which the early modern world changed over time. Students ask really compelling questions that force me to explain this in a general way."

Nevius continues his research, some of which may reflect the history of his new home.

"I'm beginning to understand just how invested Rhode Island was in the slave trade in the 18th and 19th centuries," he says. "There's a lot left to know about people who were African and who lived in this state but were free."

"I have a long-term interest in slavery in New England that I believe will round out my scholarship on the history of slavery. I don't know what form that project will take, but it's an interest I can't shake."



Marcus Nevius
Assistant Professor
History

THE MENTOR MENTEE RELATIONSHIP: THE SCIENCES

THE IMPORTANCE OF

Fostering
Inspiring
Developing
Encouraging
Supporting and
Nurturing the
Next Generation
of Scholars

written by
AMY DUNKLE



Brenton DeBoef

Professor of Chemistry

Associate Dean of the Graduate School

From online classes to real-time learning analytics and innovation incubators, higher education continues to keep pace with rapidly advancing technology.

But the future of academic scholarship relies on developing the next generation of scholars and researchers using an ancient training model that dates back to the Middle Ages remains critically relevant today - the relationship between a mentor and mentee.

Brenton DeBoef is the new associate dean of the University of Rhode Island (URI) Graduate School, where he oversees approximately 2,000 students as they progress toward graduate certificates, master's, and doctoral degrees. But the best part of his day revolves around the students in his own lab.

"I want to talk to my students as much as possible about their work," says DeBoef. "It's really fun to work with them, to watch them develop, and to try to collectively solve problems."

In addition to his duties in the dean's office, DeBoef

Developing the next generation of scholars and researchers relies on an ancient training model that dates back to the Middle Ages, and yet the relationship between a mentor and mentee remains critically relevant today.

is a professor of chemistry with an active research group. As synthetic organic chemists, DeBoef and his team of students build molecules that are of interest to biotech and pharmaceutical companies. His team doesn't make new drugs or find cures *per*



se, he explains. They invent new chemical reactions and build new molecular structures that will advance the field of pharmaceutical research.

DeBoef, who was appointed to his new position in fall 2019 says, “The job is all-consuming, but I make the time needed to work closely with the four Ph.D. students and six undergraduates who work in my lab.”

DeBoef’s lab currently works on projects that are funded by the National Science Foundation and the Rhode Island Research Alliance, but his students evoke his greatest sense of pride.

“Of course, the projects that we’re doing are pushing science forward,” he says. “But the greatest thing that comes out of my lab — the greatest product — is the people. It’s not the papers and patents and publications. It’s the people who can go on to launch exciting careers that push the field forward.”

URI chemistry major Paul Cesana, from Cranston, RI, graduated in spring 2019 and began his Ph.D. in physical chemistry at Massachusetts Institute of Technology (MIT), a path he had no idea he wanted to follow until he landed in DeBoef’s classroom and lab.

“I had him for a class in my first spring semester,” Cesana recalls of DeBoef. “He’s just crazy interesting and a really good teacher.”

Drawn in by the class, Cesana asked to work in DeBoef’s lab. Originally, he wanted to become a high school chemistry teacher, but found the research work compelling. With DeBoef’s guidance, Cesana realized a professorship would allow him to both teach and work on research.

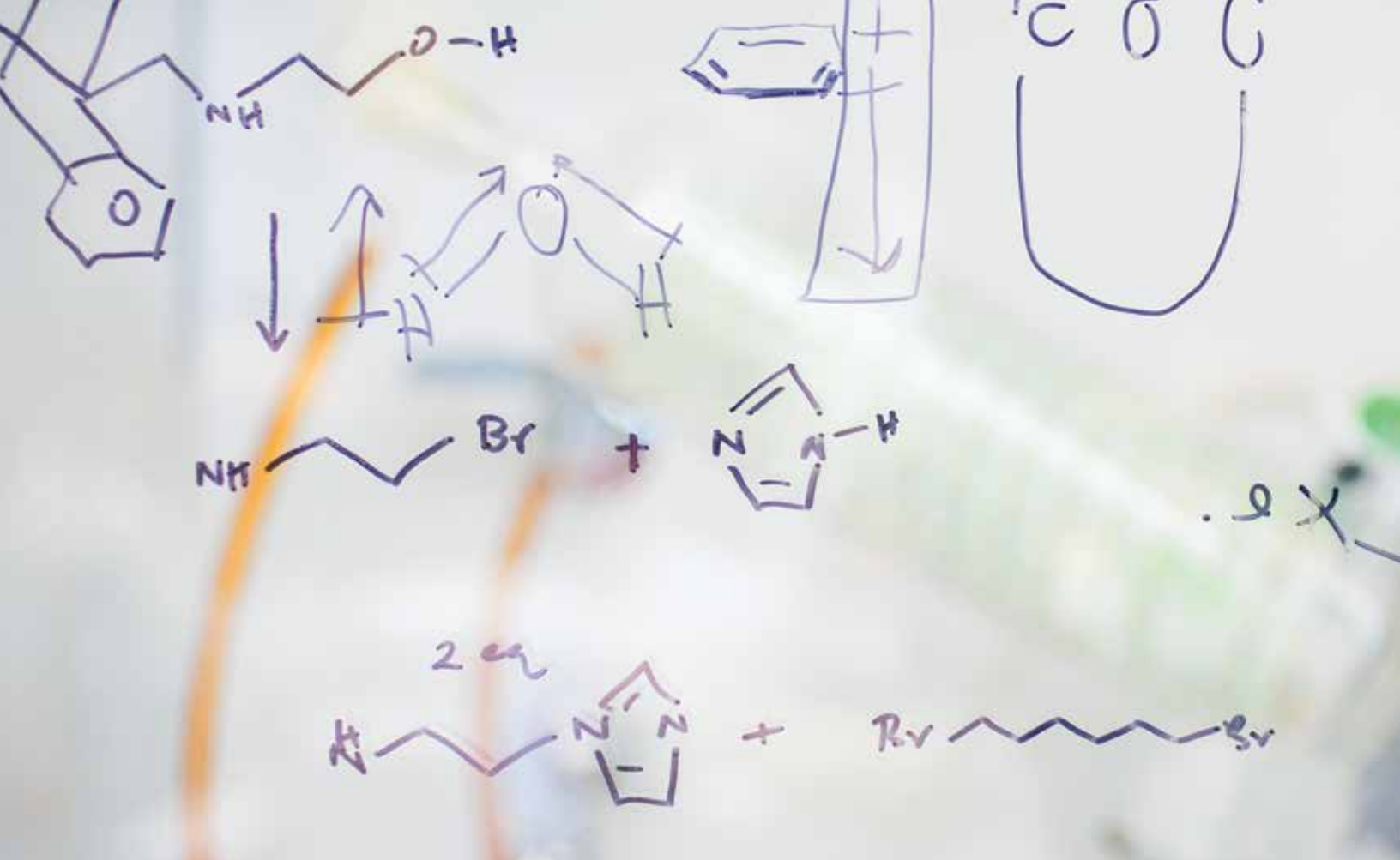
Without exposure
to a similar
program during
his undergraduate
years — learning
from mentored,
hands-on research
— DeBoef says
he would not be
where he is today.

“Brenton made a huge difference,” says Cesana. “He’s always excited about whatever topic you bring up to him. Whenever we’re not in meetings, he always welcomes a knock on his door. I always like to talk to him — he’s like an encyclopedia. He knows everything.”

Dave Robinson, a fourth year Ph.D. student, earned his bachelor’s degree in chemistry from Rhode Island College and met DeBoef through the Rhode Island Summer Undergraduate Research Fellowship (SURF) program. He says DeBoef’s work and personality drew him to the URI chemistry graduate program.

“He’s the kind of guy I really wanted to work for,” Robinson says. “He’s very kind, nice, funny, interested in science, and knows a lot about the field. Brenton is an excellent mentor — whenever you have a question, no matter what he’s doing, he’s happy to sit down with you for 20 minutes or two hours. You wouldn’t get that everywhere and I appreciate how he will do that. It’s helped strengthen what I’ve learned.”

DeBoef describes the matching of graduate students to faculty as an intricate dance that takes place every fall in the department. Students get admitted to the department and spend the early



weeks talking to at least three different professors and testing the waters.

Looking back on his own journey, DeBoef attributes his interest in academia to his undergraduate years, which is why he served as director of SURF for the IDeA Network of Biomedical Research Excellence (RI-INBRE) before moving to the Graduate School. Without exposure to a similar program during his undergraduate years — learning from mentored, hands-on research — DeBoef says he would not be where he is today.

“I crafted my lab out of my experiences,” he says. “As a postdoc at Columbia University, I ran many of the day-to-day operations of a research lab, which prepared me for doing this. When students needed help, they came to me. It was a good training ground.”

In his 14th year teaching and running a lab at URI, DeBoef has mentored 29 graduate students, most of whom have gone onto work in the biotech industry. Two entered academia and one started his own company. One former graduate student, who earned his Ph.D. in May 2019, is now a postdoc with the Army Corps of Engineers.



URI chemistry major Paul Cesana '19

“He emailed me today and wants to collaborate with us,” DeBoef says, grinning as he contemplates a former student now becoming a peer. “That’s the most satisfying part — getting them all of the way through.”

THE MENTOR MENTEE RELATIONSHIP: THE HUMANITIES

Paige Carmichael arrived on campus as an undergraduate engineering student, unsure about her path forward.

Then she took an introductory microeconomics course with Assistant Professor Smita Ramnarain. She liked the class so much that she switched majors.

"Econ seemed like a better fit for me than engineering," says Carmichael, a Warwick, RI resident. "Economics has consistently given me a coalescence of theory, practice, history, and social relevance that satisfies what I always desired from an academic program."

Carmichael spent summer 2018 as Ramnarain's research assistant through a College of Arts and Sciences Undergraduate Summer Research Fellowship. Carmichael progressed to an independent study project in 2019, which, in turn, led to her own research exploring the hypothesis that there are systematic gender differences in college students' attitudes towards time as an economic resource.

Set to graduate in spring 2020, Carmichael says, "I'm gathering the data now. The instrument is a computer survey designed to be administered to working undergraduate students."

Carmichael, who wants to pursue a Ph.D., teach and conduct research, says Ramnarain has played an

instrumental role in her growth and development.

"She's such a strong role model. I definitely wouldn't be where I am today without having her as a sounding board, getting advice from her, and helping guide me," says Carmichael. "In completing my own research, having a mentor who challenges me while also supporting me through the inevitable trials of the research process has allowed me to grow in invaluable ways. Dr. Ramnarain is a remarkable mentor who has been integral to my education."

In addition to general education courses, Ramnarain also teaches electives, including the Economics of Race, Gender and Class, and Economic Growth and Development. Fall 2018, she helped coordinate the Honors Colloquium on *Reimagining Gender: Voices, Power and Action* with URI Professors Helen Mederer, Kyle Kusz, and Rosaria Pisa. Fall 2019, Ramnarain taught a senior seminar, Poverty, Inequality, and Discrimination.

Ramnarain describes her research as using a feminist lens to examine issues in the economic development of countries in the global south, with a focus on South Asia. In particular, she explores post-conflict reconstruction, the feminization of poverty and female headship in post-crises contexts, peacebuilding, microfinance and women's cooperatives, climate and sustainability, women's reproductive work, and the gender division of labor. One current research project involves examining the factors behind women's declining labor force participation in rural India, and the role of women's unpaid work in rural areas.

Ramnarain says good mentoring relationships are grounded in mutual respect and learning, and centered on the mentee's goals, needs, and interests:

"I see the role of a mentor primarily as an advisor and facilitator in the progress of a student toward independent research, including bringing about accountability, pride in their own work, and ownership over it."

"The most important goal is to introduce students to the research process so that they may eventually formulate their own questions and hypotheses to explore, and start on the path to economic research."

- Smita Ramnarain



Smita Ramnarain

Assistant Professor
Economics

Paige Carmichael '20

Undergraduate Student
Economics

“In completing my own research, having a mentor who challenges me while also supporting me through the inevitable trials of the research process has allowed me to grow in invaluable ways.”

- Paige Carmichael

She adds that she prioritizes an interactive and open research environment where students can experience different opportunities without fear of failure, with an emphasis on process rather than end results. As a mentor, Ramnarain says she has four goals — exposing students to a wide variety of literature, theories, and methodologies in their chosen sub-field, seeing that mentees gain facility with research methods, encouraging students to apply to opportunities, and helping them deal with their successes and failures gracefully.

“The most important goal is to introduce students to the research process so that they may eventually formulate their own questions and hypotheses to explore, and start on the path to economic research,” says Ramnarain, pointing to Carmichael’s journey from the fellowship to an independent study and then designing her own project.

Ramnarain concedes that mentoring relationships

can be considerably time-intensive and require a significant commitment. But she quickly adds that in exchange mentors reap the great reward of seeing mentees develop into young researchers.

“Through mentoring relationships, we are simply investing time into developing future scholars and researchers,” Ramnarain says. “I have benefited from the generosity of my mentors at various points in my own career and recognize the ways in which mentors can have an impact, so I consider establishing such relationships one of the key responsibilities of an educator.

“Mentees aren’t simply research grease monkeys or drones; they bring new ideas and fresh perspectives into research. The skills they develop as part of this process are ones that they will use to further their areas of inquiry and perhaps make interventions that expand a body of knowledge eventually.”



THE MENTOR MENTEE RELATIONSHIP: HEALTHCARE

Peter J. Snyder, the University of Rhode Island (URI) vice president for research and economic development, understands the power and effectiveness of the mentor/mentee relationship from his own personal and professional experience. He strives to support the many opportunities for mentorship opportunities across the URI campus at all levels, from undergraduate student to post-doctoral fellow — including in his own lab.

“The training of doctoral level expert practitioners (Ph.D.s) in any academic discipline is based on an age-old apprentice/master training relationship that has been central to countless trades dating back to the beginnings of human civilization,” explains Snyder. “This deep, time-and energy-intensive working relationship between faculty mentors and graduate students is paramount in training scholars who will push boundaries to advance their fields, and this method of training has been central to the training of doctoral students since the first Ph.D. degrees were awarded in Europe about 900 years ago.”



Peter J. Snyder, Ph.D.
Professor, Biomedical and
Pharmaceutical Sciences and
Vice President for Research
and Economic Development

“I want my own trainees to excel in their work beyond the body of research that I have been able to produce, and to then train their own students.”

- Peter Snyder

The mentor's role is to provide opportunities to develop and test new tools and techniques, so that the fellows can then become valuable mentors themselves.

Snyder has mentored about a dozen Ph.D. students and about six post-doctoral fellows — an experience that he both enjoys and finds valuable. “It’s been wonderful,” he says. “I’m proud of the body of scientific work we have produced and I’m really proud to see former trainees launch very strong careers.

“We have to prepare the next generation to take over and push the boundaries of knowledge further. I want my own trainees to excel in their work beyond the body of research that I have been able to produce, and to then train their own students in a similar fashion. Training talented students to become independent principal investigators and to manage their own research programs requires passing on sets of skills that simply cannot be taught in a typical lecture setting or by group instruction.”

URI College of Pharmacy Assistant Professor Jessica Alber says that when she was looking for a post-doctoral fellowship, she sought certain qualities that would line up well with her vision of the relationship — a positive individual who imbued a supportive culture and nurtured her ideas. Alber chose to train in Snyder’s lab at Brown University and Rhode Island Hospital. Then, when Snyder moved to URI in 2018, Alber was able to do the same – moving into her new role as a research assistant professor – and the two continue to work very closely together.

“Peter is very supportive,” Alber says. “He’ll say, ‘Here’s what we can take out of what you just said’ and ‘Here’s how you can move forward in a strategic way.’ He’s open-minded and he is now helping me to grow my own successful career as an independent scientist.”

She says she also learned a lot by watching Snyder and having him hand off duties to her, whether arranging her invitation onto an editorial board or involving her in the organization of an international conference.

“He pushes me to try these new roles,” she says, “but I know that he is always there to advise and support me.”

Snyder agrees and says he has been transferring the lessons he learned from his mentor to his mentee, Alber: “She has closely observed and worked with me, learning how I manage complex projects, navigate the politics of science and interact with my peers, and how I oversee the journal that I edit.”



Edmund Arthur, O.D., Ph.D., post-doctoral fellow, biomedical and pharmaceutical sciences, Peter J. Snyder, Jessica Alber, assistant professor research, biomedical and pharmaceutical sciences

Snyder notes that training to be a scholar or a scientist in a specific discipline must be individualized and says his goal is to train mentees who can become true experts in a narrow discipline, poised for growth and impact. At the postdoc level, he says, the mentor’s role is to provide opportunities to develop and test new tools and techniques so that the fellows can then become valuable mentors themselves. In Alber’s case, she has made this transition seamlessly as she now serves as the primary mentor for Edmund Arthur, who was recently recruited to URI to work on a large multi-center retinal imaging study with Snyder and Alber.

Now, as she gets a toehold in her career, Alber says she thinks a lot about paying forward her experience and how that will inform her methods.

Snyder finds great joy in this circle of training and notes that “we just hired an exceptionally creative and skilled post-doctoral fellow in Dr. Arthur, and now Jessica is his primary mentor with me playing more of a back-up role. How cool is that!?”

SHARKS: THE MISREPRESENTED PREDATOR

written by **AMY DUNKLE**



Humans kill as many as 100 million sharks each year through bycatch, sport, or for delicacies such as shark fin soup. At the same time, in 2018, sharks worldwide killed a total of four people.



Summer shark sightings off the coast make for big headlines and fuel fears, closing beaches and sounding calls for protective measures.

And yet, says University of Rhode Island (URI) Assistant Professor Bradley Wetherbee, the chances of an actual attack are rare and growing slimmer as shark species suffer from heavy overfishing. While he fends off the irrational falsehoods, he welcomes the curiosity and the opportunity for educating people.

"A good consequence of the sensationalism is that people are really interested in sharks," says Wetherbee, who has been teaching introductory biology, ecology, marine biology, and the biology of sharks at URI since 2001. "The bad thing is that there are a lot of misconceptions. People want to control

the ocean, control predators like we've done on land. But the real risk is so minimal if you look at it logically."

Humans kill as many as 100 million sharks each year through bycatch, sport, or for delicacies such as shark fin soup. At the same time, in 2018, sharks worldwide killed a total of four people according to the Florida Museum of Natural History's International Shark Attack File.

Bycatch accounts for the greatest number of shark killings, Wetherbee says. Sharks often swim in the same place as fish like tuna or swordfish, seeking the same food, and they wind up caught on lines or in nets. Fishermen then discard the sharks dead or alive.

Wetherbee adds that as many as 70 million sharks get caught every year for their fins alone. Sport fishermen go after mako and thresher sharks because of the challenging fight and because they are good to eat.

Charlie Donilon, captain of *The Snappa* charter out of Point Judith, a boat Professor Wetherbee uses to conduct his research off the coast of Rhode Island, witnessed the cruel treatment of sharks during trophy fishing. He since vowed not to book such charters in the future, even though the decision decreased his business.

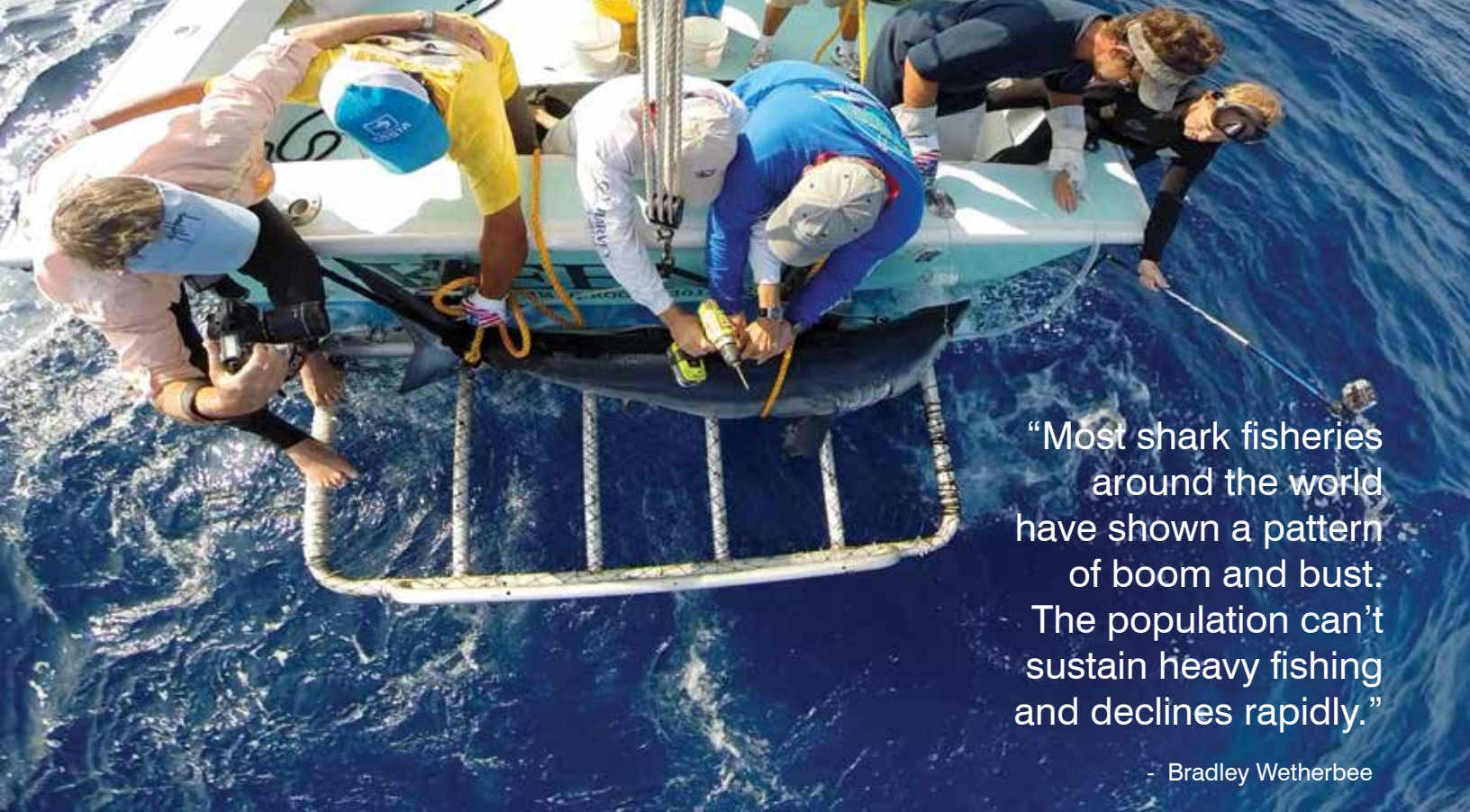
The overfishing, regardless of the purpose, carries an enormous toll due to the slow reproduction of the species. Similar to whales and turtles, explains Wetherbee, shark populations get knocked down and struggle mightily to rebound. Of the nearly 500 species of sharks, he says some are caught by the millions, with a heavy impact on their populations. Others are not encountered as frequently, and, thus, don't experience as much of a threat.

"Most shark fisheries around the world have shown a pattern of boom and bust," Wetherbee says. "The population can't sustain heavy fishing and declines rapidly. Then, they stop because it's not economically feasible to do anymore. It is now essential that these populations around the world be managed sustainably.



Assistant Professor Bradley Wetherbee tags a mako shark with a satellite transmitter in waters off the Yucatan, Mexico. The tags provide daily locations of sharks for up to two years.





“Most shark fisheries around the world have shown a pattern of boom and bust. The population can’t sustain heavy fishing and declines rapidly.”

- Bradley Wetherbee

“In the U.S. we’ve decided that these fisheries are going to be managed sustainably by law, which means that the number taken out must not be greater than the rate at which they are reproducing, so that the population doesn’t decline. With shark populations, that’s often not the case because they are so easily overfished and exploited.”

Wetherbee’s research — tagging and tracking sharks — aids in managing the populations. To come up with appropriate management measures, scientists must know the species’ geographic boundaries, the interactions they have with fisheries, and the specific country territorial waters through which they swim. Information about where the males, females, and large and small sharks swim — all are fished differently — directly influences best scientific advice for practices to protect their populations.

During the summer, Wetherbee conducts his research on shark movement and migration in Rhode Island waters and provides undergraduate students with inshore fishing experience and the offshore tagging of mako sharks. Given its seasonal weather, the Ocean State provides a narrow window of time for Wetherbee’s work, so he also heads to Mexico, Bermuda, the Bahamas, and the Cayman Islands to

pursue the longer shark seasons. He says in the last 10 years, he and his collaborators have tagged more than 100 sharks.

Offshore, Wetherbee’s team attracts bites using a rod and reel with chum. Once on board the boat, the sharks calm down, allowing the researchers to attach a transmitter to the dorsal fin in less than five minutes before returning the sharks to the sea. The number of sharks being tracked via satellite depends on the time of year. At the height of the summer, Wetherbee figures satellites probably pick up as many as 10 mako sharks that are carrying transmitters.

People can follow the sharks’ journeys through the tracking projects of Nova Southeastern University’s Guy Harvey Research Institute. Wetherbee has collaborated with the program for nearly two decades and serves as its assistant director.

While this research provides insight into shark populations and their interactions with fisheries, Wetherbee says much of the cascading ecological aspects remain unknown. However, lions on the Serengeti in Africa and wolves in Yellowstone National Park offer insight to the enormous influence of top predators on ecosystems. If you remove apex

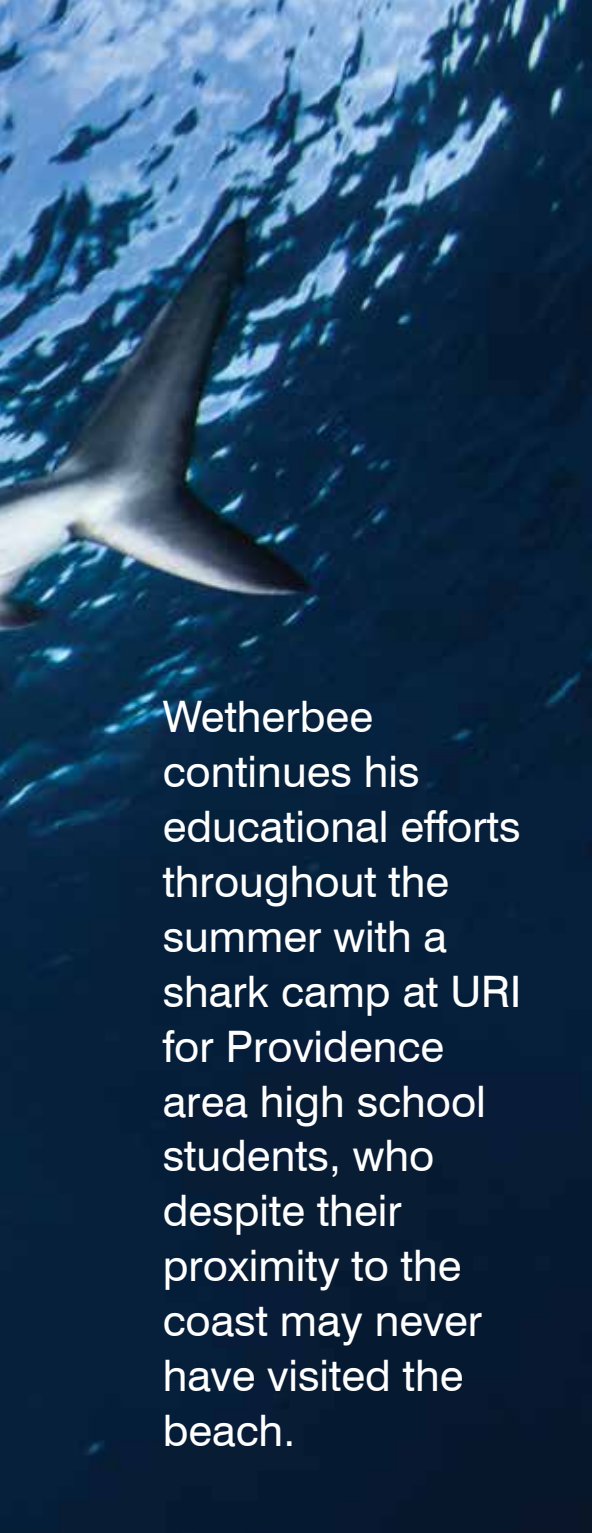


predators, prey species may reproduce and grow unchecked.

"Sharks' reputation is they're the garbage cans of the ocean, which means they're interacting with many different species," he says. "So, for example, if the shark population declines, the octopus population might explode and eat many more lobsters. Or, if big sharks get fished out, there may be a proliferation of small sharks, which will eat many commercial fish.

"The loss of sharks is bound to have a big influence on the ocean well beyond what we might imagine."

Some marine species spend most of their time in U.S. waters, so our country is the only one managing those fisheries. But for highly migratory species like sharks, which Wetherbee calls a fish without a country, the need exists for international cooperation. However, sharks tend to draw considerably less interest for management than, say, tuna, a catch



Wetherbee continues his educational efforts throughout the summer with a shark camp at URI for Providence area high school students, who despite their proximity to the coast may never have visited the beach.

estimated to contribute \$42 billion in end value to the global economy, according to a Pew Charitable Trust 2016 report.

Wetherbee continues his educational efforts throughout the summer with a shark camp at URI for Providence area high school students, who despite their proximity to the coast may never have visited the beach.

"Some of the kids in the camp are going to be first-generation college students and often don't know what



Photo by Bradley Wetherbee shows a shark with a transmitter on its fin.

opportunities are out there," notes Wetherbee of the diversity of the camp, now in its third year.

In part, the camp aims to give exposure not just to sharks, but also to marine biology and other related fields that they might not know about or consider to explore in college. The weeklong camp for 16 high school sophomores and juniors from underrepresented populations transports the students between their school and campus and they spend the days aboard the *Cap'n Bert*. They meet with URI faculty and staff, learn about fishing gear, and conduct trawl and long line surveys in Narragansett Bay. Other activities include close-up examination of marine life, a trip to Mystic Aquarium, and presentations on college admission and from natural science majors at URI.

"The question was how come they're not in my classroom, not majoring in marine biology," explains Wetherbee, talking about what led to creating the camp. "One of the answers is that they haven't had the experience. The camp is an opportunity URI provides to change that."



Swimming WITH THE SHARKS

“What you experience in the field adds another level to textbook material, providing real-life research experience that will translate to a future career in marine science.”


- Bethany DeLoof

When marine biology major Bethany DeLoof '21, walked on campus freshman year, she had no idea she would have the opportunity to swim with the sharks. With Bradley Wetherbee as her teacher, she literally dove into this fascinating field.

“From volunteering to go longline fishing with Assistant Professor Wetherbee on the research vessel *Wing* to taking his Biology of Sharks and Their Relatives course, I’ve immersed myself in this specific field of marine science,” DeLoof says.

Her most memorable experience at URI was a two-week summer class taught by Wetherbee.

Photo by Liheng Ma '18



The shark-filled expedition included one week longline fishing in Rhode Island and going out on the charter boat, *The Snappa*, to swim with blue sharks, and a second week traveling abroad to Isla Mujeres, Mexico, to get up close with the biggest fish in the ocean – whale sharks.

Academically, DeLoof says she learned a lot from the class, including presentations from internationally renowned shark experts and training in shark field research methods.

"I'll never forget the field experience, going out early in the morning, the sun still rising, and seeing the fins of hundreds of sharks circling our boat before jumping in with the gentle giants," DeLoof says.

Sharks have distinct life history characteristics, such as slow growth and reproduction rates, that lead to slow population growth. Consequently, negative human impacts on sharks can be detrimental to shark populations, and as an apex predator whose absence would lead to ecosystem collapse, understanding and studying sharks is of utmost importance.

DeLoof considers herself lucky to be able to participate in this effort and has since started a Shark Club at the University, with Wetherbee as the faculty advisor. She also spent a semester working with Wetherbee on analyzing tag and recapture data collected on Southern Stingrays in the Grand Cayman Island's Stingray City.

"I gained key skills in data analysis and making and interpreting graphs, and this research will be used to inform those working directly with the animals in the Cayman Islands, examining the outcomes of human interaction with the species," she says.

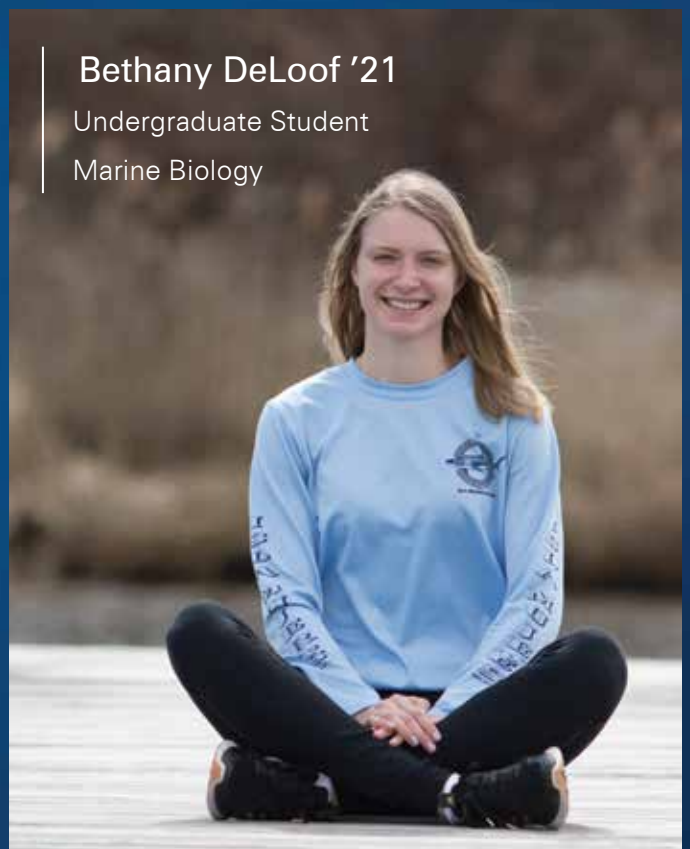
One of the most important lessons for DeLoof is that there is a lot that cannot be learned in the classroom.

"For me, working with Professor Wetherbee has been about the experience and getting my feet wet in the world of marine science, both literally and figuratively," she says. "What you experience in the field adds another level to textbook material, providing real-life research experience that will translate to a future career in marine science."

Bethany DeLoof '21

Undergraduate Student

Marine Biology





ENSURING EFFICIENCY IN HUMANITARIAN AID LOGISTICS

written by **TODD MCLEISH**

While working as a systems analyst for the United Nations Relief and Works Agency in Jordan in the early 2000s, Koray Özpolat saw the life-changing impact that humanitarian aid had on families and communities affected by natural and man-made disasters. He saw first-hand how it gave hope to people who were feeling hopeless.



A huge tree trunk on top of a vehicle in the eastern part of the Grand Bahama Island, where most of the devastation occurred from Hurricane Dorian.

The experience inspired him to earn a doctorate in supply chain management and devote his academic career to studying how to improve the delivery of goods to those in need.

“Disaster relief is 60 to 70 percent logistics,” says Özpölat, associate professor of supply chain management in the University of Rhode Island (URI) College of Business. “It’s about pre-positioning supplies in the right place, delivering it at the right time, getting the right quantities, and managing difficult conditions. Logistics matter even more in the humanitarian domain than in the business domain.”

But it isn’t easy, especially since the public is mostly unaware of the logistical challenges of supplying communities in crisis with what they need in a timely and efficient manner. As much as the public wants to help, the way many try to do so only makes the situation worse. Logisticians call it the second-tier disaster.

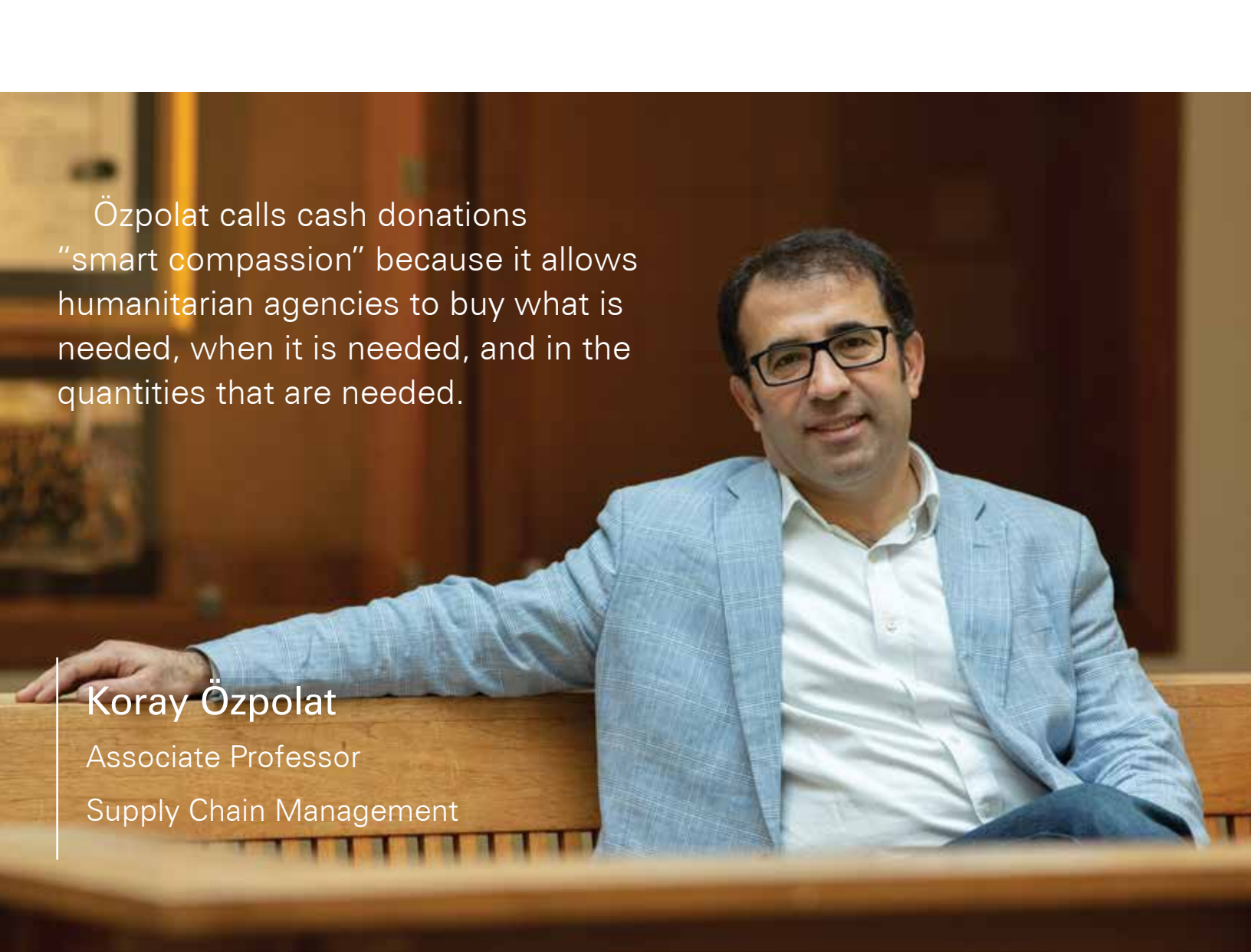
“In response to a disaster, people empty their wardrobes out of compassion in the heat of the moment. They donate unsolicited material goods to a disaster happening on the other side of the world, and all those unsolicited material donations are costly to collect, sort, pack, ship, get through customs,

warehouse in the ultimate destination, and distribute. Often, they aren’t the items that are needed,” Özpölat says. “These donations clog the supply chain, which delays the movement of urgently needed materials. Most in-kind donations are unfortunately sent to the landfill so the affected communities can get access to the items they really need.”

To illustrate the problem, he collaborated with URI Computer Engineering Professor Resit Sendag and led a team of URI students in the creation of a disaster relief calculator to serve as a decision-making aid to those who want to make a donation to support those in crisis. Now in use on the website of the United States Agency for International Development (USAID), it clearly demonstrates the logistical inefficiencies of donating materials and how much more can be provided when financial contributions

**“Disaster relief
is 60 to 70 percent
logistics.”**

– Koray Özpölat



Özpolat calls cash donations “smart compassion” because it allows humanitarian agencies to buy what is needed, when it is needed, and in the quantities that are needed.

Koray Özpolat

Associate Professor

Supply Chain Management

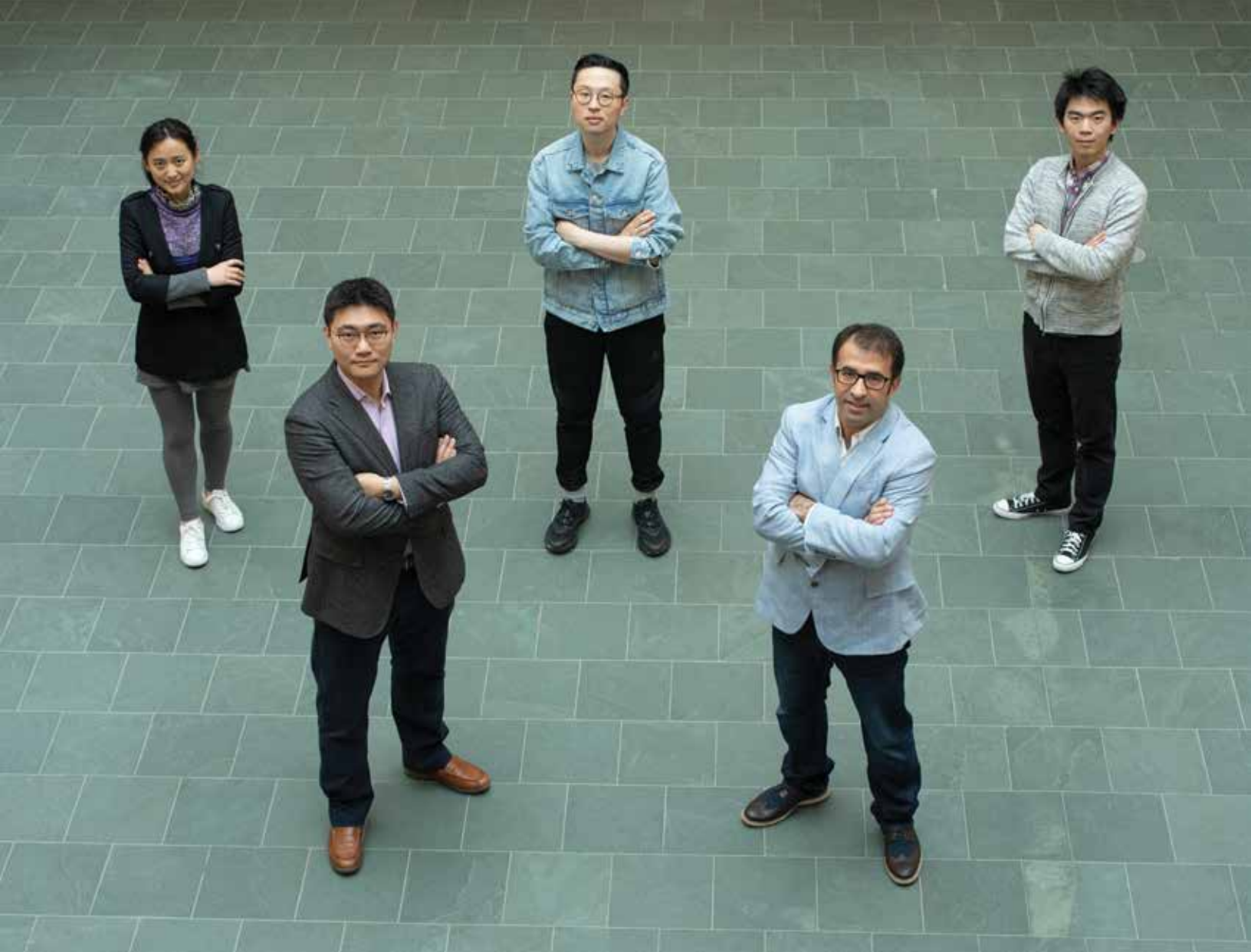
are made instead. Özpolat calls cash donations “smart compassion” because it allows humanitarian agencies to buy what is needed, when it is needed, and in the quantities that are needed.

“Many Americans will take their teddy bear or a pair of jeans and pack it up and go to FedEx and send it to the people of Haiti or the Philippines after a disaster in those countries, or somewhere else,” he says. “But our calculator shows that buying a pair of jeans and shipping it to the Philippines will cost about \$153. That money could be better spent buying 27,000 liters of clean drinking water or 20 blankets locally, which would be much more useful than a pair of jeans.”

Özpolat and doctoral student Hee Yoon Kwon are working to upgrade the donation calculator this year by using virtual reality technologies and gaming

principles to better engage potential donors in making the right donation decisions. In collaboration with doctoral student Lee Hong, he is also examining the cultural differences among humanitarian agencies and the beneficiaries they serve across the globe to learn whether these differences affect humanitarian operations.

A third research project involves a behavior called blatant benevolence online, or the sharing on social media about donations made or good deeds done. Doctoral student Jay Zhang conducted interviews with 120 people to better understand the motivation behind posting prosocial behavior online. How do others react? Does it create social capital by making more friends or deepening engagement with current friends? Özpolat and Zhang will conduct a laboratory experiment this year to search for a link between



College of Business supply chain management doctoral students with Professor Özpolat, (front left) Hee Yoon Kwon, (back left to right) Kara Li Liu, Leo Hong, Jiayuan Zhang.

blatant benevolence and social capital.

"If we can provide empirical evidence that posting prosocial behavior online is beneficial, then charities could use this to get the public to post more of their pro-social behaviors," Özpolat says. "In line with the holy books' recommendation of not letting the left hand know the right hand's merciful deeds, many people are humble and don't want to brag. But it could be a force for good if they share. Charities could reach out to their donor base to show that if they post about their donations, it has multiple benefits and generates more good will."

He notes that the study of humanitarian supply chains is 10 to 20 years behind that of business supply chains, so there is still a great deal to be learned and transferred from the business domain.

"Here at the College of Business, not only do we create knowledge to better understand and address societal problems, but we also disseminate knowledge to educate socially responsible business leaders and scholars of the future," Özpolat says.

"If we can provide empirical evidence that posting prosocial behavior online is beneficial, then charities could use this to get the public to post more of their pro-social behaviors."

– Koray Özpolat

THE SANCTITY OF SCIENCE: THE PUBLIC MISUSE of science

written by **AMY DUNKLE**

The process of scientific discovery is based on just a few cardinal principles, including the application of experimental methods to test hypotheses that have the potential to be refuted.

All scientists, regardless of discipline and area of expertise, adhere to the same essential steps. They seek to propose important relationships or processes and then plan experiments to test their ideas, prepared to correct their understanding and assumptions based on the success or failure of these experiments.

The application of the scientific method allows us to distinguish facts (based on observation and data collection, which are subject to correction as methods or understanding improve) from beliefs (based on imagination, bias, self-interest, or supposition).

The beauty of the scientific method is that standard mathematical approaches to interpreting data build in a high threshold for success. Statistically, experiments are less likely to result in successful

discovery than fail to find significant and meaningful results. What this means, in practice, is that the more times a theory or model is supported by additional experiments from differing research groups, the more likely the theory correctly describes real world phenomena.

For example, the leading climate change models showing the substantial impact of man-made greenhouse gases on the pace of global warming provide evidence now supported by thousands of studies of many different varieties and across multiple disciplines. These studies have been repeated and confirmed so often and reliably that to suggest otherwise is deliberately misleading and irresponsible.

Scientists build histories of supporting empirical research to either support or reject ideas. As the great English biologist and defender of Darwin's theory of evolution, Thomas Huxley (1825 – 1895), quipped in 1873, "The great tragedy of science is the slaying of a beautiful hypothesis by an ugly fact."

Huxley was trying to be provocative at the time, but his words put into context exactly what scientists

do. Hypotheses live or die based on the accumulation — or the lack — of factual evidence to support them.

“At its core, science is about telling factual stories that impact how we live on this planet,” says Peter J. Snyder, University of Rhode Island (URI) vice president for research and economic development. “Science is the framework by which we understand ourselves and both protect and improve our world.”

Long concerned about how scientific information can be deliberately misused or mischaracterized, often for the purpose of pushing a political or financial agenda, Snyder wrote a book in 2009, *Science and the Media*, with invited essays from an impressive list of scholars whose disciplines span archaeology to neurophysiology, economics and theology. In one of the book’s chapters, a leading journalist detailed how every presidential administration, to varying degrees, has used science in ways to advance their political aims.

“At the time we wrote the book, it appeared that the second Bush administration had a particularly disturbing track record with respect to the censorship of environmental sciences from its own federal agencies,” Snyder says. “Unfortunately, the goalpost has moved again and some of those concerns now seem a bit quaint by today’s standards.”

The threat to the integrity of science continues unabated, with the assault on climate change research serving up as a prime example. Multiple international groups, from the United Nations to the World Health Organization, have issued reports detailing the imminent and dire consequences of inaction on climate change.

Nonetheless, many scientists face restrictions on what they can pursue, say, and publish. In the United States, says Snyder, many thousands of scientists are funded by taxpayers through federal agencies to conduct vital,

credible research that should inform and guide public policy decisions. Yet, they are censored by political leaders and prevented from discussing the implications of their work in clear, plain language for public understanding.

Snyder adds, “That’s an affront to me as a funded researcher at a public university, and I’m really worried about how any censorship of science impacts how our government creates policy and responds to pressing needs. As a society and, frankly, as a species, we don’t have time to waste.”

“The great tragedy of science is the slaying of a beautiful hypothesis by an ugly fact.”

- Thomas Huxley (1825-1895)

A portrait of Jason Jaacks, a man with a beard and glasses, wearing a dark blazer over a light blue shirt. He is standing outdoors with a blurred background of trees and a building.

**“THE CAPABILITY TO
COMPLETELY ALTER
REALITY, IS THE MOST
INSIDIOUS THREAT
TO THE MEDIA
ECOSYSTEM YET.”**

- JASON JAACKS

Jason Jaacks

Assistant Professor

Multimedia Journalism

WEAPONIZING INFORMATION

URI Assistant Professor Jason Jaacks, who teaches multimedia journalism and film media in the Harrington School of Communication and Media, sees reporting on climate change as having been weaponized for political purposes, with scientific evidence being dismissed if not outright hidden or buried. At the same time, in what Jaacks calls “the shadow side of information in the digital age,” people can access information immediately, which may be either fact-based or fabricated, and without any independent verification of the information provided.

“If the fake information is instantly available, it’s harder to prove legitimate truthfulness,” Jaacks says, citing propaganda by the anti-vaxxer movement as an example where anti-vaccination proponents have spread “facts” with no legitimate underlying credibility, and yet far too many people have been influenced in their decision-making by such false information and uninformed belief.

Jaacks is an ardent believer in our constitutional First Amendment right to freedom of expression. Still, the politicizing and weaponizing of information has led to a brutal attack on the truth and either unproductive or harmful partisan political rancor.

In terms of achieving accuracy in telling science

Thousands of scientists are funded by taxpayers through federal agencies to conduct vital, credible research that should directly inform public policy decisions, and yet they are censored by political leaders and prevented from discussing the implications of their work in clear, plain language for public understanding.

stories, Jaacks says some degree of tension always has existed in the communication process — a struggle between journalists striving to engage a broad audience, finding the so-called hook to grab people’s interest, and scientists who want the focus to be on research data and the process. In some cases, collaboration can strike a balance, Jaacks says, but often the two perspectives can be at odds and important details get lost in translation.

“Scientists are always disappointed in the amount of background, context and qualifying statements that journalists are willing to provide, which makes sense because most journalists aim to write for the ninth-grade reading level,” Jaacks says.



Joëlle Rollo-Koster

Professor

Medieval History

BLOCKING ACCESS TO INFORMATION

Joëlle Rollo-Koster, URI professor of medieval history, points out that attempts to limit access or censor information extends beyond the hard sciences. For much of her research, she digs into the Vatican archives: "There have been occasions when I know one register exists on a specific topic, but I have been told that the archives cannot find it or they do not have it," she says. "That is a different and perhaps more subtle way of blocking research."

As an example of her scholarly work that she believes the Church may feel strongly about, Rollo-Koster describes her investigation into the pillaging of goods belonging to popes when they died, a practice she says was common from the early Middle Ages to the 18th century. Displeased with the Catholic Church's wealth, people would rob a pope's possessions upon his death because they felt ownership of the items.

"However," says Rollo-Koster, "the Church did not want me to write about this. They don't want to talk about it."

By denying the existence of the evidence by refusing to address the issue or allowing access to the documentation, she says the Church can alter history.

Undeterred, Rollo-Koster says she ultimately gets what she's after: "I know where to find the evidence."

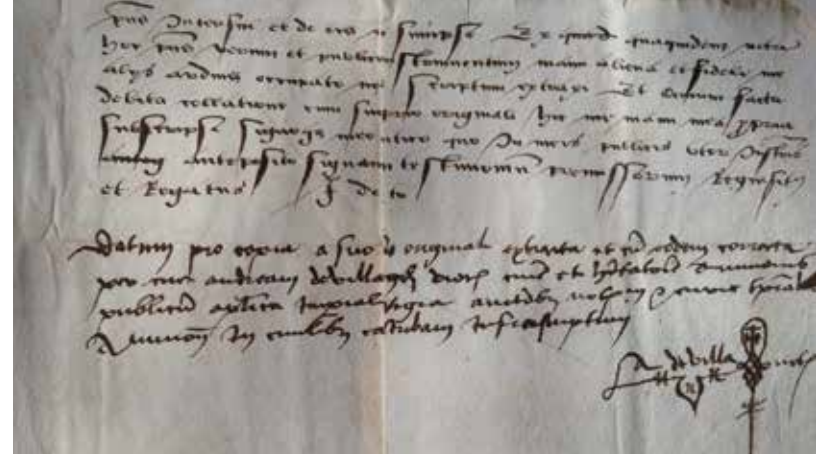
For both academic and historical purposes, people must be persistent and seek access to archives,



Register of a woman merchant (1532). A merchant record was her/his livelihood, to keep track of items, deposits, credits, debts, etc. If it was stolen there would be no evidence to prove a debt.



Signed letter of King François I of France (1528). There were a lot of forgeries in the Middle Ages. If a king's letter of remission could be forged, a person may not go to jail.



A last will and testament (1507). If the testament were to disappear last wishes were not respected because they did not "exist." In case of property transmission, it could be very important.

according to Rollo-Koster. That information, going back hundreds if not thousands of years, she notes, was archived with a specific purpose — to preserve the past — and their contents should be transparent and available.

Often, gaining access means waiting. In the U.S., says Rollo-Koster, papers may not be available to the public for 60 to 70 years.

"How long did it take us to have access to the Kennedy papers [National Archives, Kennedy Assassination Records Collection Act of 1992], the Nixon papers [opened in 1994]?" she asks. "There has to be a constant pushing for the opening of archives and shortening the time that archives can be restricted. But, preserving and archiving documentation is a political act. It eventually guides how events will be studied and understood. Governments and people chose what to archive and what not. So, the reality is already distorted from the start. This is why you must constantly cross-reference information."

Broadly, she continues, studying the past involves interpretation, which means people can revise whatever they choose to fit an agenda. The tools at their disposition (archives) also have been preserved with biases to fit the needs of the preservers.

"History is one of the purest examples of how people will try to alter what they want at will in order to change perceptions in the present," Rollo-Koster elaborates, pointing to the Holocaust as the most blatant attempt to distort facts.

"The people who protest that the Holocaust never existed can't be more blunt about the misrepresentation of the truth," she says.

On Monday, March 2, 2020, the Vatican secret archives opened its registers concerning Pope Pius II

(1939-1958), the pope of WWII — less than the 70 years quarantine required from the death of a pope. This will allow a total reexamination of the pope's actions during WWII, and his knowledge of the Holocaust.

"In fact, all of the discussion about the role of women, slavery, immigration — we cannot discuss history without having people misrepresent the past in order to change how we behave in the present," Rollo-Koster says.

USING TECHNOLOGY

Today, thanks to the massive proliferation of technology and social media, a new ability exists to generate completely false narratives that are entirely convincing and that can sway the opinions of masses of people.

Jaacks says the same artificial intelligence and computer generation used to create new dialogue with Carrie Fisher in the Star Wars movie, after her death, also can be used to put words in a politician's mouth. Even quick tampering with video can launch an entirely false narrative.

"Look at the Nancy Pelosi video that was widely circulated in 2019," he says of footage posted of the speaker of the House. "You can't even call it a deep fake. You slow it down and change the pitch and she sounds inebriated. That takes two minutes to do.

"The capability to completely alter reality," Jaacks continues, "is the most insidious threat to the media ecosystem yet. If you thought the 2016 election cycle videos were incredibly harmful, the incoming wave of false videos is going to be much worse. This absolutely has the definitive power to undo democratic institutions in ways that we never imagined possible."

Jason Jaacks sees reporting on climate change as having been weaponized for political purposes, with scientific evidence being dismissed if not outright hidden or buried.



SCIENTIFIC LITERACY

Snyder believes that URI is well suited in its role to conduct compelling research on such pressing issues as the impacts of human activities on hastening climate change, coastal ecology, and the safety of the planet's food web while also shouldering the responsibility to foster enhanced community scientific literacy. Both fronts, he says, are essential to ensuring that we continue to engage in the quest for information, understanding, and the truth while maintaining our commitment to our citizens as a public institution.

"It's important to understand the role of government political censorship of science and how that impacts the transmission of knowledge and why that's allowed to happen," says Snyder. "One of the core issues we face is that scientific literacy in this country is quite low. If we aren't teaching our children how to think critically, to evaluate data, to understand the difference between falsifiable models versus beliefs, and the false notion that these are equitable — that's a serious problem that we all have."

Snyder contends that the root enabling force behind political censorship and the weaponization of science lies in scientific literacy, or the lack thereof. He cites how GOP Senator Mo Brooks of Alabama claimed in 2018 that sea level rise was not due to global warming, but rather due to erosion and large boulders falling into the ocean.

"The only way I know to combat that is to educate the public so people know the difference between legitimate science and nonsensical beliefs," says Snyder.

Despite ongoing efforts to muzzle scientists or manipulate the outcome of their work, Snyder

remains hopeful and says the truth always, eventually, rises to the surface. And even though the federal government may fall short in addressing climate change, he points to non-governmental and nonprofit organizations, states, large and small companies, and universities that are tackling issues head-on.

Both Snyder and Jaacks cite the Metcalf Institute as a key player in the push for both scientific accuracy and literacy. Working from within the URI College of the Environment and Life Sciences, the Metcalf Institute engages with scientists to help them better tell their stories and with journalists to hone their science storytelling skills.

Jaacks notes that the institute gets to the crux of the issue, generating a greater understanding of who the audience is for a story, the science that is the story, and how to tell an engaging story with accuracy. At the same time, he adds, consumers also must verify the information they seek.

"Metcalf actually is enacting the first steps on a foundational level to get scientists and journalists together in the same place," Jaacks says.

Snyder says so-called fake news poses an enormous challenge and URI's support of the Metcalf Institute holds more importance today than it did previously: "This is where URI has taken a leadership role, and I think it's more imperative now than I had imagined when I first wrote about these concerns during the Bush years," he says. "We're grappling with political and partisan biases that are endemic, decidedly non-scientific and that are damaging in many ways. URI is one university that is pushing back on this false parity permeating public discourse, between rule by unsubstantiated beliefs versus testable scientific facts."



Bridging the Gap Between **SCIENCE AND COMMUNICATION**

written by **AMY DUNKLE**

Originally, Metcalf Institute set out to improve and expand news coverage of environmental issues.

However, Executive Director Sunshine Menezes says, this work only constitutes half of what the University of Rhode Island (URI) program does. With a small staff and big goals, Metcalf also trains scientists to better communicate about their research for broader audiences beyond the academic setting.

"We have a very proven product," says Menezes. "Anyone who knows what we do understands its value."

To better reflect its efforts, Metcalf updated the program's mission statement to engage more people in conversations about science and the environment.

Menezes explains that two equally important parts of the Metcalf mission revolve around journalists and scientists. Journalists from around the world come to Metcalf for science training while

researchers get training in communication.

For the journalists, Metcalf aims to improve understanding not just about scientific content on a specific topic, but also about how scientists work and think, why researchers typically don't provide simple "yes or no" answers during interviews, the essential role played by scientific uncertainty, and why these issues comprise an important part of the research process.

"On the flip side, researchers need to not only understand some specific approaches for communicating effectively, but also that they need to be strategic about their communication," Menezes explains. "This is something that a communications researcher would not blink an eye at, but a lot of scientists don't think about communication strategy. Why are they communicating? Are they trying to change opinions? Are they trying to change behaviors? Or, are they just trying to get people excited about a particular topic?"

As a scientist trained in oceanography, Menezes knows these challenges firsthand. She also wears the title of clinical associate professor of environmental communication in the Department of Natural Resources Science, College of the Environment and Life Sciences (CELS). As a clinical faculty member in CELS, she brings her practical experience in science and environmental communication to URI students, staff, and faculty.

"If you know what you are trying to achieve, you can tailor your communication activities toward that goal," Menezes continues, elaborating about getting scientists to communicate effectively. "Yes, it's about the language you use, but also about the medium you are using and the people you choose to be the messengers."

Just as most journalists don't have a background in science, most scientists don't have a background in communication, Menezes points out. This parallel void sets the stage for misinterpretation and misrepresentation of science, whether intentional or not. Menezes cites active disinformation campaigns both by groups and individuals about a variety of issues, from climate change to vaccines and evolution. These campaigns, she says, run on opinion masquerading as fact.

Metcalf works with journalists to help them discern fact from spin and empower them to ask probing questions about the implications of research. Better informed journalists translates into accurate, contextualized news consumed by viewers and readers.

"Hopefully, this leads to the goal we have of informed public conversation," Menezes says. "We don't want to tell people what to think, but to make sure they have access to accurate information."

At the same time, she adds, the increasing use of the label "fake news" leads to a greater need for researchers to be better communicators.

"There is ample evidence in the last 30 years that shows Americans have very high levels of trust in scientists," Menezes says. "When you dig into specific areas with specific people, the numbers vary, so context matters. But overall, there is a huge degree of trust."

"So, when someone has a mantle of credibility around them, as a Ph.D. or similar academic training, for example, we want them to be able to go out and in a very clear, concise, and compelling way, talk about their research."

"There is ample evidence in the last 30 years that shows Americans have very high levels of trust in scientists."

- Sunshine Menezes

Menezes says her dream is for scientists to talk not only about their research, but to be comfortable offering a broader perspective on how research is done and, therefore, give a greater than average level of informed comment on whatever the scientific topic might be.

"One of the ways we can address confusion about 'fake news' is for scientists to take on more of a role in public advocacy for science," she says. "Not for a particular outcome or policy, necessarily, but for the research process, for facts."



photo by Nora Lewis



SHE ACHIEVES. SHE INSPIRES.

URI'S 2020-2021 RECIPIENT OF
THE FULBRIGHT AWARD TO THE U.K.

written by **CHRISTOPHER BARRETT '08**

Aria Mia Loberti '20 wants you to know that research is not confined to graduate students.

The undergraduate student at the University of Rhode Island racked up three published journal articles, a half dozen academic conference presentations, a teaching assistantship, a local TED Talk and accolades from the United Nations before ever earning her triple major in philosophy, communication studies and political science, and double minor in Rhetoric: Theory and Practice, and Ancient Greek with honors.

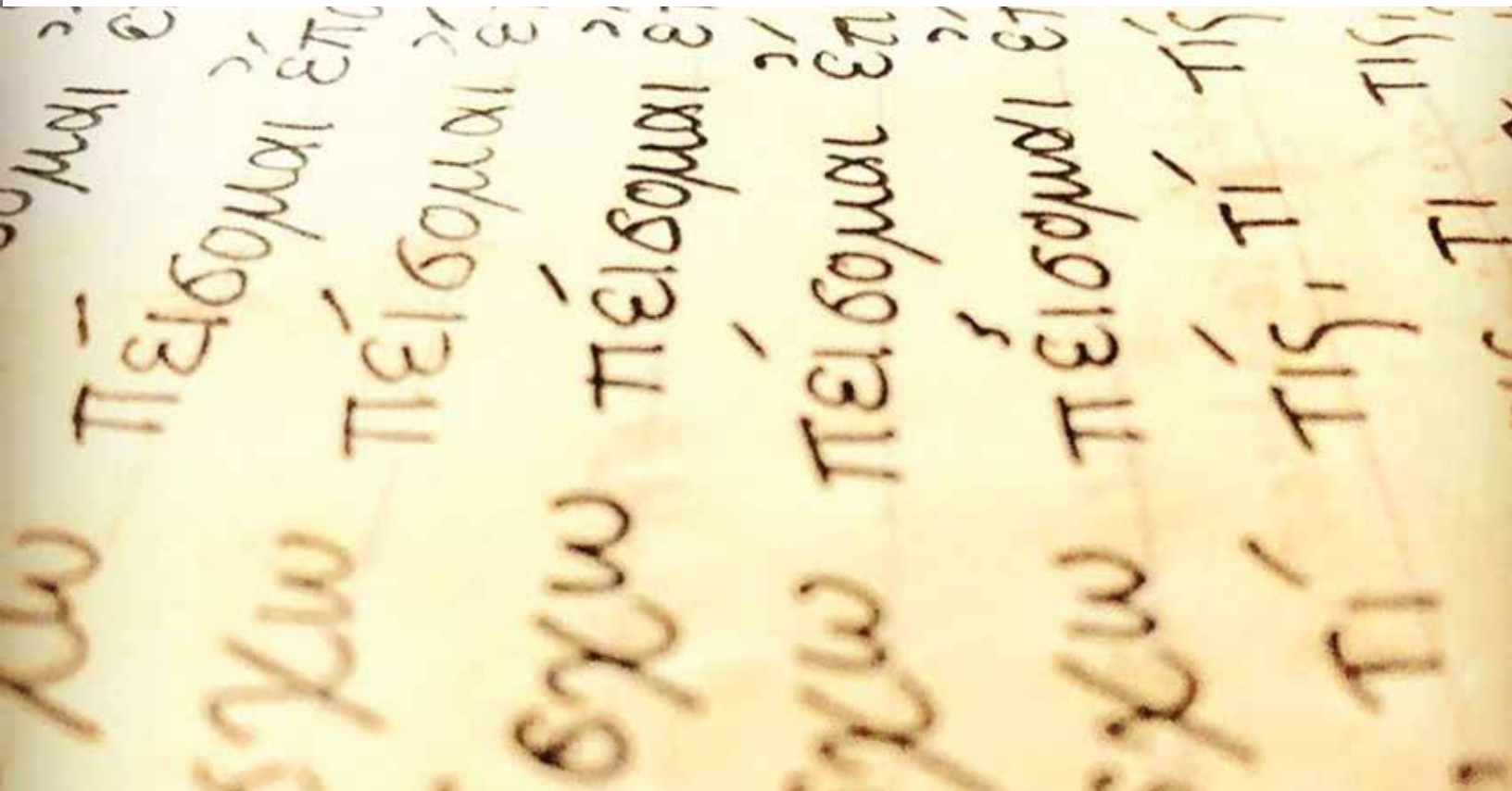
"I really want people to be able to find joy in their curiosity," Loberti says. "Students should take advantage of all these research opportunities here at the University."

For Loberti, that research started freshman year. Her biology professor Bryan Dewsbury saw an interest in researching the interconnection between teaching and inclusiveness of students from all walks of life. Before she knew it, Loberti was researching teaching pedagogies and drafting a paper that appeared, with her name listed first, in the *Journal of Microbiology & Biology Education*. By sophomore year she entered the classroom practicing what she researched as a teaching assistant in Dewsbury's class.

Simultaneously in her freshman year, while sitting on a couch in Davis Hall reading *Aristotle's Politics*, Harrington School of Communication and Media Associate Dean Adam Roth plopped down next to her inquiring about her book choice. That blossomed

"I REALLY WANT PEOPLE TO BE ABLE TO FIND JOY IN THEIR CURIOSITY. STUDENTS SHOULD TAKE ADVANTAGE OF ALL THESE RESEARCH OPPORTUNITIES HERE AT THE UNIVERSITY."

- ARIA MIA LOBERTI



PRACTICING ANCIENT GREEK by Aria Mia Loberti '20

The Greek meaning of this photo is "Endure" - *πάσχω*

While an undergraduate student at URI Loberti continued her involvement with the United Nations traveling to UN headquarters in New York to give speeches advocating for human rights.

Aria Mia Loberti '20

Undergraduate Student

Majors: Philosophy,
Communication Studies and
Political Science

Minors: Rhetoric: Theory and
Practice, and Ancient Greek

URI's 2020-2021 Recipient of the
Fulbright Award to the U.K.

into a research assistantship where the two explored if the traditional model of a four-year, on-campus higher education experience makes sense in the 21st century. A few months later they boarded a plane and Loberti presented her work at the Society of Philosophy and History of Education national conference, the work was also later published.

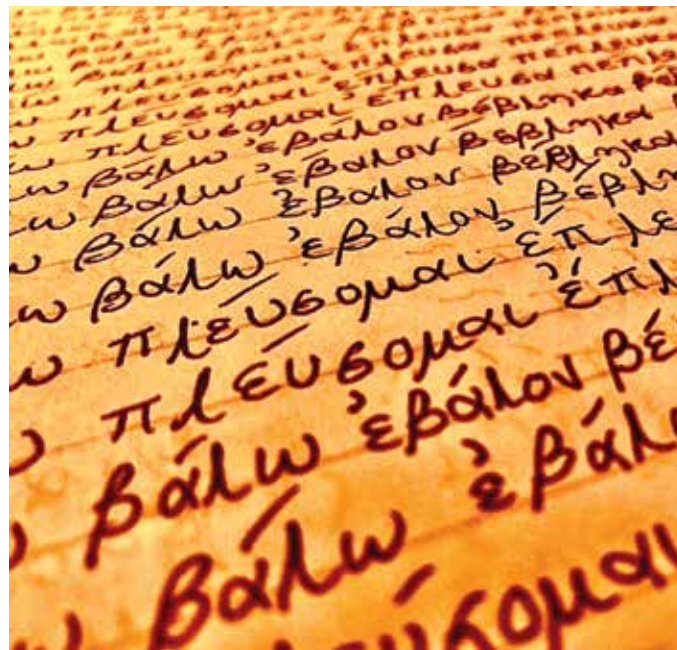
"It's very important to me to be a public philosopher," she says. "I don't want to be sitting at the top of the ivory tower."

Five more conferences followed, taking her from California to London to discuss everything from the intersection of philosophy and economics to women's rights. On the URI TED Talk stage, she spoke of her battle as a child with an educational establishment uninclined to accommodate her achromatopsia that leaves her legally blind. Loberti conducted research analyzing messages of trust, belonging, and self-identity of individuals who are blind or visually impaired and work with *Guide Dogs for the Blind*. This work, inspired by her relationship with her own guide dog, Ingrid, led to two different conference presentations, and was Loberti's first solo research project.

While an undergraduate student at URI Loberti continued her involvement with the United Nations traveling to UN headquarters in New York to give speeches advocating for human rights. She published another paper and penned two URI Honors projects. Her senior thesis under the tutelage of philosophy Professor Galen Johnson juxtaposed contrasting philosophical views of truth conveyance through language, semiotics and artistic expression, and provided a writing sample for graduate school applications. And throughout her academic experience, communication studies Professor Kathleen Torrens offered encouragement, feedback on Loberti's research and a guiding hand through the Honors Program. Loberti's next conference presentation, on the characters of Socrates and Diotima in Plato's dialogues, stemmed from a year of research with philosophy Assistant Professor Douglass Reed.

Her research endeavors at URI inspired Loberti to apply for the Fulbright Commission Postgraduate Student Award, for which she is a recipient.

Now Loberti aims to earn her doctorate. Then plans to find a professorship at a state land-grant institution like URI. Focused on bringing research to everyone, whether it's undergraduates, fellow academics, or the public she says, "I want to give to



PRACTICING ANCIENT GREEK by Aria Mia Loberti '20

The Greek meaning of this photo is "to throw" - ἔβαλον

my future students the attention and support that URI gave to me. I want to work at a university that is open to students from all social, racial, ethnic, economic and health backgrounds. URI pushed me to excel without consideration of any boundaries or limits."


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- ARIA MIA LOBERTI

An aerial photograph of a beach with waves crashing onto the shore. The water is a deep teal color, and the sand is a light tan. The waves are white and foamy as they break. The title text is overlaid on the left side of the image.

URI's New Initiative, ***PLASTICS: LAND TO SEA***

written by **KATHLEEN SHANNON AND AMY DUNKLE**

An aerial photograph of a beach. On the left, a large, white, foamy wave is washing onto the shore. The sand is a light brown color. Scattered across the beach, particularly on the right side, is a significant amount of plastic debris, including small pieces of plastic, bottle caps, and fragments of plastic bags. The debris is concentrated in a line along the water's edge.

Last fall, The Ocean Agency founder and CEO Richard Vevers queued up a slide in his keynote presentation that showed a credit card dipped into a coffee cup.

"Whether you know it or not," Vevers said, "you are consuming a credit card's worth of plastic every week."

The crowd of about 60 gathered at the University of Rhode Island's (URI) W. Alton Jones campus in West Greenwich, RI, audibly gasped in unison. The group comprised representatives from academia, government, industry, and non-profits, drawn together by the University's newly launched effort to address the grave environmental and health threats posed by the world's mounting accumulation of plastic.

Called the *URI Plastics: Land to Sea Initiative*, this comprehensive new major research initiative aims to tackle what no single institution can do alone.

Peter J. Snyder, URI vice president for research and economic development, opened the think tank meeting, noting that no singular effort "can make a large enough impact on the global production and environmental contamination of nondegradable plastics."

The issue, he added, is "highly complex and multi-faceted, and it is leading to serious challenges that face our state, our nation, and our world — challenges that are impacting our health, economy, environment and education."

To work across the spectrum, with governmental, non-profit, corporate, and international partners to address such a complex issue, Snyder said that in leading the charge, URI recognizes the need to harness the intellect of varied disciplines and talents that span the institution's colleges. At the same time, the work must be tackled in a coordinated manner that is both inclusive and creative.

Snyder said he envisions *URI Plastics: Land to Sea* as a first major research initiative that will bring together as many disciplines across the University's colleges as possible.

As a Land- and Sea-Grant institution, URI's fall 2019 plastics retreat focused on both land- and sea-generated plastics and included



Plastics issues are not restricted by borders or political agendas, presenting a pervasive challenge for all continents and citizens of the world.

Richard Vevers

CEO, The Ocean Agency

A non-profit foundation on URI's Narragansett Bay Campus.

diverse expertise on topics ranging from waste management to textiles production to marine biology and public education. The retreat included a series of keynote presentations and panel discussions, coupled with ample opportunities for people from the varied sectors to brainstorm together. The goals were



Demi Fox, NE Regional Coordinator, NOAA

to connect people and ideas, and to communicate about current plastics control efforts and perspectives with the intention of providing new collaborations that will accelerate research to address this challenge.

U.S. Senator Sheldon Whitehouse (D-RI) summarized his national efforts with Senate colleagues to “Save Our Seas” and detailed how his office and others might lend a hand to support collaborative work.

“My colleagues and I worked hard to pass the bipartisan Save Our Seas Act, and are working hard to pass Save Our Seas 2.0, because we see the effects marine plastic waste has on the health of our communities and the ocean,” says Senator Whitehouse. “But we can’t do it alone. I’m grateful for the work URI researchers are doing to reduce plastic waste in Rhode Island and beyond.”

A governance session followed Whitehouse’s remarks, exploring local to global solutions for marine plastic debris. The panel of experts discussed the plastics research landscape along with current data and available resources, and where stakeholders might prioritize efforts. They highlighted structures in place to help accelerate solutions, and what were some of the barriers to progress.



URI Vice President for Research and Economic Development Peter J. Snyder, URI Diving Safety Officer Anya Hanson, Director of URI Coastal Institute Judith Swift, URI Assistant Professor of Marine Affairs and Political Science Elizabeth MendeHall, URI Provost and Vice President for Academic Affairs Donald H. DeHayes, U.S. Senator Sheldon Whitehouse (D-RI), URI Assistant Professor Biological Sciences Hollie Putnam, URI President David M. Dooley, URI Oceanography Professor Susanne Menden-Deuer.

The local to global theme carried through all of the conversations as plastics issues are not restricted by borders or political agendas, presenting a pervasive challenge for all continents and citizens of the world.

As the lunchtime keynote speaker, Vevers addressed the global theme and spoke about how to best communicate about ocean plastics. He presented an innovative approach to catalyzing global action. He emphasized the need for meaningful science communications to raise awareness about marine plastic debris to engage and motivate audiences to bring about change.

Vevers also noted how widely shared images through social media platforms and traditional media outlets of wildlife ingesting plastics create public panic and outrage. He demonstrated a model that takes this outrage from powerful imagery and counters it with optimistic efforts that provide solutions and global investments to build excitement and engagement needed to spur people to action and support these efforts.

The retreat's afternoon sessions featured an interdisciplinary team of researchers, including biology, textiles, business, engineering, aquaculture, and journalism faculty working together on a Sea Grant effort to discover the implications of microfibers released into our waterways and the impact on marine life. An innovation session showcased three perspectives, including the Rhode Island textile industry, a regional blue tech innovation hub, and a research entrepreneur discussing how research and collaboration can translate to valuable and applied solutions to address plastics, and the regional support systems and partners willing to get engaged and make this happen.

Participants also gathered to build an action plan that would shape URI's initiative and continue to develop these connections and innovative ideas. The group divided into four teams and devised an



Peter J. Snyder, Ph.D., URI vice president for research and economic development

approach to expand collaboration. The goal is to advance research and public engagement, support education for the next generation, draft sustainable solutions, and identify paths forward. Their efforts resulted in four powerful approaches that are being integrated into a formal position paper by the University, which will be launched in the fall issue of this magazine.

Additionally, URI is providing seed grant funding to launch new research projects to identify solutions, develop policies and incentives to support public engagement and measure the scope and scale of impacts. A portion of this fund has been graciously provided by URI's Greek Life system, as a result of fundraising and concerns raised by our own students.

In launching this new initiative, the University of Rhode Island is positioned to build a local-to-global network relying on the mission of the University and its breadth of disciplines, expertise and collaborations that a major public research university can provide.



URI's New Initiative, *Plastics: Land to Sea* and the Greek Life Gift

written by **ARIA MIA LOBERTI '20**

From food wrappings and technology packaging, to disposable water bottles, straws, and grocery bags, our lives are overtaken by a tide of plastics — many of which we toss away with impunity after a single use. We have all heard harrowing reports of the effects of the increasing presence of plastics accumulating in our oceans. We have all seen heart-wrenching images or videos of marine life ensnared in or impaled by plastic debris. In reality, 8 million metric tons of plastic are dumped in the ocean annually, and this excess impacts at least 700 marine and wildlife species.

URI students Samantha Reynolds '20, Erin Yabroudy '21, and Aaron Shaheen '20, took these matters into their own hands and into the hands of their peers. For them, this issue is much more than another passing news story, and it has inspired a student community effort. Reynolds, Yabroudy, and Shaheen led a fundraising campaign within URI's Greek Life system to collectively raise \$35,000 to support the URI plastics research initiative. The three student leaders all possess philanthropic and fundraising experience, developed both prior to their arrivals at URI and during their work as members of their respective sorority or fraternity chapters on campus. Much of the fundraising took place during the 2019 Greek Life Philanthropy Week.

This extraordinary gift from the URI Panhellenic Society and Interfraternity Councils to the URI Plastics Initiative will support an overarching, multidisciplinary plastics and microplastics research project. The funds directly support URI academic researchers working to establish a standardized method for testing for plastics from shore to the sea floor. The work will start on a small scale, in Rhode Island's Narragansett Bay, but the scientists involved are already thinking

URI undergraduate students, Michael Ludwig and Erin Devin, participating in a J-Term field school course in St. George's Caye, one of the many barrier islands off the coast of Belize. Taking a break from their marine archaeology and research diving course, they and their classmates took time to collect plastic trash from the nearby beach. The athletic sneaker in the foreground is especially problematic - if not impossible to recycle - as it is constructed from multiple types of non-degradable plastics that are permanently bonded together. Photo by Peter J. Snyder.



SAMANTHA REYNOLDS '20
Undergraduate Student
Supply Chain Management
Vice President of Philanthropy and Service
for the URI Panhellenic Society

ERIN YABROUDY '21
Undergraduate Student
Health Studies
Chair of Philanthropy and Service for the
Panhellenic Society

AARON SHAHEEN '20
Undergraduate Student
Political Science and Environmental Studies
Director of Service and Involvement for
URI's Interfraternity Council

big: a second phase of the project will include field-testing in the Philippines, in the hopes of eventually establishing a global system with the aid of partner institutions.

Reynolds, a supply chain management major and the vice president of philanthropy and service for the URI Panhellenic Society, describes how the Greek Life system is especially suited to tackle issues like this one, which range in scope from local to global.

"Being in Greek Life," Reynolds says, "comes with an underlying responsibility and a larger purpose than just a social life. You have a chance to leave a mark, a legacy."

She hopes that this gift and the work that stems from it will not only make groundbreaking research possible, but will also inspire individual community members to understand the potentially harmful effects of single-use plastics and make lifestyle changes accordingly. Reynolds, who just last year worked with the Panhellenic Society to raise money to build a school in Mali, explains that such fundraising projects are fueled by willpower, intellect, and the efforts of a large student community striving for the common good.

URI's Interfraternity Council, the issue of microplastics and plastics in the ocean is an especially salient one.

"I think a lot of environmental science is politically biased and is questioned a lot, even though it is based on real, tested scientific data," says the political science and environmental studies double major and student environmental researcher.

He hopes that, through these funds, URI's research efforts will subsequently communicate the urgency of the problem to government leaders and offer the start of a sustainable resolution.

"If we are going to convince a policy maker to change how we use plastics, we have to convince them that the problem is there," Shaheen says. "URI's plastics initiative is not a solution yet, but it can help show that this is a problem."

Yabroudy, a health studies major and the philanthropy and service chair for the Panhellenic Society, references that this fundraising endeavor required organization of both fraternity and sorority organizations on campus is no small task. This level of dedication, in turn, demanded a passion for the issue.

"We had to get 3,000 people on board with something they think is important," Yabroudy says, referencing that her experience as a member of her sorority inspired her to make philanthropic work a major part of her lifestyle. Of URI's Greek Life system, she says, "we all want to make a difference and work together to reach larger goals."

URI is implementing a broad plastics and microplastics research initiative, which will span technology, oceanography, policy, community education, and both local and global strategic action plans. This student-supported gift is a key element in solidifying URI's global efforts to address this issue.



URI President David M. Dooley

"We wanted to try to do something that has not been done before, emphasize this prominent issue, and give it the funding that it deserves," Reynolds says.

For Shaheen, the director of service and involvement for

RESEARCH HIGHLIGHTS

COLLEGE OF ARTS AND SCIENCES



The awarding-winning poet, Associate Professor of English **Peter Covino**, received a Literature Translation Fellowship from the National Endowment for the Arts (NEA), one of 25 projects this year to receive a total of \$325,000 in grants to translate works from 17 countries. Covino is the first to translate more than 100 poems, a significant number of the Italian poet Dario Bellezza's best work, which provides an overview of Bellezza's distinguished career. The NEA project has awarded 480 fellowships since 1981, funding the translation of works from 83 countries. The awards this year were selected with consideration given to the translator's skill and the importance of the proposed work to English-speaking audiences. Covino is also working on a new collection, "Armies in the Blood."



Kathleen M. McIntyre, assistant professor of Gender and Women's Studies, participated in the National Endowment for the Humanities "Women's Suffrage in the Americas" Summer Institute. McIntyre specializes in religion, indigenous peoples, and gender in modern Latin America. Her book, *Protestantism and State Formation in Postrevolutionary Oaxaca*, examines religious conflict and traditional governance in Native communities of southern Mexico. McIntyre's new book project, *Protestant Women and Political Activism in Mexico, 1900-1955*, explores the interrelated themes of educational reform, sports culture, suffrage, and transnational women's rights organizing.

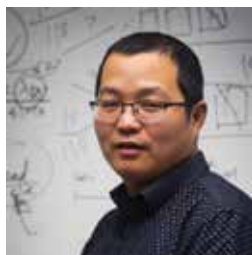
COLLEGE OF BUSINESS



Dean **Maling Ebrahimpour** was awarded the highest service honor in 2019 from the Decision Sciences Institute, a global society of university professors, graduate students and practitioners who apply qualitative and quantitative research to problems faced by individuals and groups. Dean Ebrahimpour, was also named the National Chapter Advisor of the Year by the professional business fraternity Delta Sigma Pi in 2019.



Kathryn Jervis, professor of accounting, was awarded a Distinguished Service Award at the American Accounting Association Meeting. Professor Jervis is currently serving as an American Council on Education (ACE) Fellow. This enrichment program is designed to prepare senior leaders to serve American Colleges and Universities.



COLLEGE OF ENGINEERING

Bin Li, assistant professor of electrical, computer, and biomedical engineering, received the Google Faculty Research Awards and the prestigious NSF CAREER Award. His CAREER project is "Wireless Collaborative Mixed Reality (WCMR) Networking: Foundations and Algorithms for Joint Communication, Computation, and Learning." WCMR merges both real and virtual worlds to create new environments and visualizations, and aims to provide an interactive and immersive experience for people. The project has many applications, such as collaborative mission, critical training, education, and manufacturing systems. This CAREER project aims to develop joint communication, computation, and learning algorithms that support emerging WCMR applications.



The **Shimadzu Engineering Research Core Laboratories** is a multi-user materials characterization facility that enables cutting-edge research and education through access to advanced imaging and analytical techniques. More than \$8 million of high-end instrumentation was received through state and federal funding, as well as the Fascitelli-Shimadzu private donation that diversified the instrument portfolio and fit the Analytical Core with state-of-the-art Shimadzu instrumentation. The Shimadzu Core Facilities main goals are to support research across URI and to provide scientific training for graduate and undergraduate students at URI. Additionally, the services of the Shimadzu Core Facilities are also available for industrial research partners, and several local companies benefit from the expertise at the College of Engineering.

COLLEGE OF THE ENVIRONMENT AND LIFE SCIENCES

Associate Professor of Environmental and Natural Resources Economics **Corey Lang** received \$1.3 million from the United States Department of Agriculture (USDA) to research the value people place on natural amenities such as open space and how the siting of renewable energy may affect those values. While not directly observable, values can be estimated by observing people's choices in the real estate market, when voting on public goods, and in hypothetical scenarios. During the past nine years, Lang's research has brought more than \$2.7 million in grants to the University.



COLLEGE OF HEALTH SCIENCES



Professor **Jing Jian Xiao**, in the Department of Human Development and Family Studies, received the 2019 Best Financial Education Paper Award issued by the National Endowment for Financial Education and American Council on Consumer Interests for his paper titled, *"Financial Education and Confidence in Financial Knowledge."* Additionally, he received the 2018 Program Excellence through Research Award issued by the National Extension Association of Family and Consumer Science for his papers on consumer health and financial behaviors.



Assistant Professor **Alessandra Adami**, in the Department of Kinesiology, was awarded a research grant from the National Heart, Lung, and Blood Institute in January 2020 to study skeletal muscle dysfunction in patients with chronic obstructive pulmonary disease (COPD), the fourth-leading cause of death in USA. This NIH/R01 grant will allow Adami to identify clinical, behavioral, and molecular mechanisms associated with muscle function decrease in COPD. She was also awarded a research grant from the Rhode Island Foundation in 2019 to study lower limb muscle oxidative function in children and young adults with cerebral palsy.

COLLEGE OF PHARMACY



Anita Jacobson, project director, (clinical associate Professor, College of Pharmacy) in collaboration with **Diane Martins** (professor, College of Nursing) and **Deborah Sheely** (associate dean, College of the Environment and Life Sciences). The Community First Responder Program is a collaboration between the College of Pharmacy, College of Nursing and Cooperative Extension to offer opioid use disorder education and overdose prevention to rural communities. Specifically, the program offers health screenings on the Mobile Health Unit, educational modules for healthcare professionals and the public on the Cooperative Extension website, and overdose response training seminars with naloxone distribution in rural communities across Rhode Island.



Assistant Professor and Co-Investigator, **Jyothi Menon** (College of Pharmacy) in collaboration with Principal investigator **Arijit Bose** (professor, Engineering), **Jodi Camber** (associate professor, College of the Environment and Life Sciences), **Vinka Craver** (professor, Engineering), **Brett Lucht** (professor, Chemistry) **MRI: Acquisition of a Scanning/Transmission Electron Microscope for Materials Research and Education** The NSF-MRI is a Major Research Instrumentation grant, and the funds will be used to purchase a state-of-the-art 200kV field emission scanning transmission electron microscope (S/TEM), with Energy Dispersive Spectroscopy (EDS) and Electron

Energy Loss Spectroscopy (EELS) detectors, along with a Direct Electron Camera (DEC). This instrument will support research in the areas of Nanomedicine, Environmental Science and Engineering, Biotechnology and Structural Biology, Energy Materials, and Materials Dynamics at the Nanoscale at URI.

COLLEGE OF NURSING



Assistant Professor **Diane DiTomaso** won the Association of Women's Health, Obstetric and Neonatal Nurses' premier award for an article based on her groundbreaking study in which she challenges expected patterns of infant weight loss after birth. DiTomaso hopes the findings from this review will support changes in feeding recommendations for new mothers from the leading infant health care organizations, encouraging them to continue exclusive breast feeding even if an infant loses more than 7 percent of his or her birth weight.



Professor **Diane Martins** was inducted as a Fellow in the American Academy of Nursing in recognition of her work as an advocate for the homeless population. Martins provides health care to homeless and runaway teens and pioneered an important change to the Rhode Island food stamp policy, allowing homeless, elderly and disabled people to use food stamps for prepared foods.



Professor **Mary Sullivan** was named Nurse Scientist of the Year by the Rhode Island State Nurses Association. Sullivan is the lead investigator on a 30-plus-year study of premature babies, tracking the challenges and difficulties premature babies continue to have well into adulthood.

GRADUATE SCHOOL OF OCEANOGRAPHY



Assistant Professor **Roxanne Beinart** was named a 2019 Simons Foundation Early Career Investigator in Marine Microbial Ecology and Evolution. The three-year award is intended to help launch the careers of outstanding investigators in this area. Beinart will study patterns of specificity and maintenance in microbe-microbe partnerships.



Karen Wishner, professor at the Graduate School of Oceanography, was named an Association for the Sciences of Limnology and Oceanography (ASLO) Sustaining Fellow for "having sustained excellence in her contributions to ASLO and the aquatic sciences," and consistently contributing to the society through journals, conferences and committees. Wishner teaches an undergraduate class in Deep-Sea Biology. Her current research concerns how zooplankton cope with the effects of ocean deoxygenation.

URI Research & Scholarship

PHOTO CONTEST WINNERS 2020



1ST PLACE

MIGRATING SOCKEYE

By Assistant Professor of Journalism
Jason Jaacks

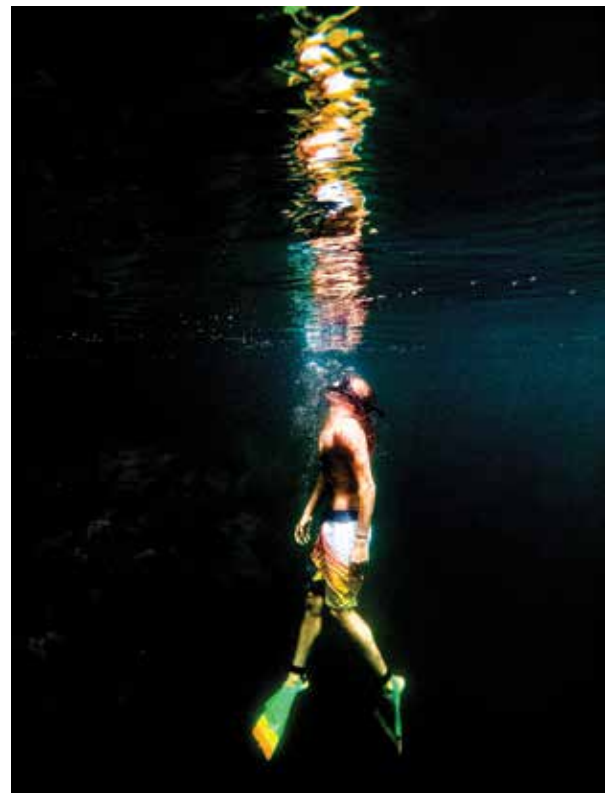
Bristol Bay, Alaska is home to the most productive wild salmon fishery on the planet. Every year, millions of salmon return to the pristine watersheds of western Alaska to spawn, including this sockeye salmon on the Kanektok River. This photograph is from a long-term visual research project that investigates the conservation status of Pacific salmon across their range. The photographs are being built into an archive documenting the challenges that salmon populations face including the effects of dams, climate change, commercial and recreational fisheries, and threats such as mining, logging, and agriculture.

2ND PLACE

COMING UP FOR AIR

By Marketing Undergraduate Student, Laird French '21

This photo was taken during a free dive while exploring a quarry last summer. At a certain angle, amazing abstract reflections can be achieved using the surface of the water. As a photography minor and outdoor enthusiast, French often attempts to capture special moments in nature. This photograph is part of his documentary portfolio of work involving water and nature.





3RD PLACE

PENGUIN POLAR PLUNGE

By Assistant Professor of Oceanography Kelton McMahon

This photo was taken during an NSF-funded research cruise to the Antarctic to study how warming waters and disappearing sea ice as a function of rapid climate change are impacting the food webs supporting krill predators in the Southern Ocean. Penguins are “canaries in the coal mine” for the health of the ecosystem in order to better predict future responses to growing environmental change. This gentoo penguin leaps off a floating iceberg in the frigid waters of the Antarctic Peninsula in hopes of finding krill to eat while avoiding being eaten by a hungry leopard seal or killer whale.

HONORABLE MENTION

FROM REEF TO MARKET

By Biological Sciences Ph.D. Candidate Elaine Shen '23

With the sunrise, a fisheries collector prepares a freshly-caught triggerfish for sale at the local market. As part of her research in Biological and Environmental Sciences, she was able to get a first-hand glimpse of how small-scale fisheries in Lombok, Indonesia operated, oftentimes meeting fishermen at landing sites right as they arrived. Their boats were filled with colorful coral reef fish that were designated for personal consumption or sale, depending on the species.



HONORABLE MENTION

WHERE DOES THE TIMBERDOODLE GO?

By Natural Resources Science Graduate Student Colby Slezak '22

During the last 10 years, tracking birds using radio-telemetry has produced detailed probability of use maps and has influenced forest management conducted by the RI state department of environmental management. This research is contributing to the Eastern woodcock migration collaborative by recatching radio-marked birds in the fall prior to migration and attaching state of the art GPS transmitters. These provide detailed location data as the birds migrate to their wintering grounds.

HONORABLE MENTION

NATURE'S UNDERWATER 3D PRINTER: THE PARCHMENT TUBEWORM

By Ocean Engineering Doctoral Student Kotachi Liu '23

Mr. Kotachi's research at URI is focused on developing autonomous underwater vehicles through bio-inspiration. This image is from a transmission electron micrograph showing the



housing tube of a marine parchment worm. It shows a cross section of the material, made of highly organized nano-fibrils. These nano-fibrils are able to assemble rapidly underwater, making the material a potential template for novel 3D printing and underwater repair.

