41°N

RHODE ISLAND'S OCEAN AND COASTAL MAGAZINE • VOL 15 NO 1 FALL/WINTER 2023

WORKING THE COAST

A PUBLICATION OF RHODE ISLAND SEA GRANT & THE COASTAL INSTITUTE AT THE UNIVERSITY OF RHODE ISLAND • A SEA GRANT INSTITUTION

41°N

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COVER
Portrait of Meghan Gallagher by Jesse Burke

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41° N is published twice per year by the Rhode Island Sea Grant College Program and the Coastal Institute at the University of Rhode Island (URI). The name refers to the latitude at which Rhode Island lies.

Rhode Island Sea Grant is a part of the National Oceanic and Atmospheric Administration and was established to promote the conservation and sustainable development of marine resources for the public benefit through research, outreach, and education

The URI Coastal Institute works in partnerships to provide a neutral setting where knowledge is advanced, issues discussed, information synthesized, and solutions developed for the sustainable use and management of coastal ecosystems. The Coastal Institute works across and beyond traditional structures to encourage new approaches to problem solving.

Contact us at: 41° N, Rhode Island Sea Grant, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882-1197. Telephone: (401) 874-6805.
E-mail: allard@uri.edu

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BLUE ECONOMY, GREEN JOBS

I remember a career day at my high school when a forester came and spoke to a classroom full of sophomores about his job. I was convinced for a day or two afterwards that I, too, would become a forester, happily spending my days in the woods saving the environment. It's as well that I didn't, because in my imagination, it was always a pleasant fall day in which I was plying my trade. I'm not sure the forester ever described how he coped with freezing Januaries or sweltering Augusts.

Fortunately for our communities here in Rhode Island, the people featured in this issue are made of tougher stuff than I am. Whether painstakingly arranging hundreds of tiny shells to form a sailor's valentine, hauling oyster cages out of the water, boarding a ship at sea for an inspection, planting trees, captaining a sailing vessel, or advocating for their community, these folks are working incredibly hard. Yet they describe loving their jobs or the accomplishments they've made, as well as giving and receiving help along the way.

As always, I am grateful to our writers and photographers for taking us readers inside the worlds of activists, sailors, artists, oyster farmers, and so many others. I've learned how people in these varied professions and vocations are looking to the future and sustaining resources, communities, and our world.

Dive in!

—MONICA ALLARD COX
Editor

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TRAINING LANDS

THIS RHODE ISLAND AGRICULTURAL WORKFORCE DEVELOPMENT PROGRAM IS FOSTERING CAREER GROWTH WHILE HELPING SAFEGUARD RHODE ISLAND ECOSYSTEMS

CAPE STEWARDS

by **Annie Sherman** Photographs by **Jesse Burke**

THE SUN IS ILLUMINATING AN UNSEASONABLY warm November day, and LaKiesha Stromley of Wild and Scenic Fine Gardening and Horticulture (pictured on opposite page at lower right) is tending a client's waterfront yard in Westerly. Today, Stromley is hauling wheelbarrows full of weeds, digging holes, planting grassy shrubs, spreading mulch, and watering. She may take a momentary break to review a complex to-do list with her boss, Meghan Gallagher, pictured below, but she returns quickly to her labors.

Stromley obtained a paid, registered apprenticeship with the Rhode Island Nursery and Landscape Association (RINLA) Growing Futures R.I. program, which fosters workforce development in the state's $2.5 billion landscape, agriculture, farming, and plant-based "green" industries. Besides teaching proper field techniques, the program encourages environmental stewardship by increasing resiliency of built and natural landscapes with a focus on protecting Rhode Island's treasured shoreline and surrounding watersheds.

Respecting that important relationship is part of the lesson, says RINLA Executive Director Shannon Brawley. Brawley helped launch this program in 2021 in collaboration with the state departments of Labor and Training, Environmental Management (DEM),

"WE HAVE TO RECOGNIZE THE IMPORTANCE OF THE ENVIRONMENT AND OUR ROLE IN TAKING CARE OF IT."

and Education, and federal agencies. It is a direct response to multiple instigators: COVID and the havoc it wreaked on the workforce, former Gov. Gina Raimondo's Back to Work R.I. initiative, and President Joe Biden's pledge to reformulate the Civilian Climate Corps. The program takes participants through a bootcamp-style training on Rhode Island public lands before they earn a coveted apprenticeship in their chosen field with companies like Wild and Scenic.

The next stage is a voluntary five-week Career Catalyst rubric, which is a virtual platform offering technical training in the participants' chosen areas of instruction. Diverse topics include soil and turf management, horticulture, masonry, and land ethics.

"We believe in the 'earn while you learn' model. We brought companies together to define the skills necessary for the future, because in Rhode Island, there wasn't anything," Brawley says. There wasn't even a similar program elsewhere in the country, she adds. And the added focus on environmental responsibility is important too.

"We have to recognize the importance of the environment and our role in taking care of it, now more than ever. And the demand for these services will only increase as we respond to the demands of our climate," Brawley says.

* * *

Along with 60 others, Stromley applied to the program in June 2021 and completed the three-day bootcamp at Arcadia Management Area in Exeter. She cleared fallen trees and debris, repaired fire roads, hauled tons of materials, and installed erosion control devices, which she says was some of the most strenuous work she has ever done.

The former hospice nurse from Wakefield then participated in a speed dating-style interview series with potential employers, where she was hired by Gallagher, owner of Wild and Scenic, with the hopes that she'll stay on permanently.

"I worked with geriatric patients, and felt fulfilled, but there was a heaviness in my heart," she says, while peacefully tending little bluestem grass in the Westerly garden. "I was into gardening but wasn't sure my body could handle this labor. But now I'm planting flowers and vegetables and watching them grow. I can be happy about the work, and it's more freeing."

The layers of this heightened professional internship are intended to foster opportunity for would-be employees to explore a potential new career path, gain technical knowledge, discover how grueling the work is, and see if they are prepared. It similarly allows employers to test candidates' physical abilities and abolish the false stereotype that landscaping consists of blowing leaves and mowing grass.

This symbiotic assessment attracted Gallagher, who was expanding her one-woman startup since founding it eight years ago. The apprenticeship program allowed her to hire capable and committed employees, which helped her increase workload.

"The biggest issue in our industry is a shortage of labor. This program allows [participants] to be part of something bigger, it helps with employee retention, which helps me because then I'm not training every year. They're part of a community, they're learning, and they help each other too," Gallagher says. "My goal is to give them a career that can help them thrive."

DEM's district resource manager Jeff Arnold

agrees. Amid budget cuts and an Arcadia workforce that shrank from 13 people to one since he started in 1995, he says he can't maintain the 14,000 acres of the state's largest public management area without these extra hands. They're such a boon that between this bootcamp and the Career Catalyst program, organizers say 115 people completed roughly 6,100 labor hours, equaling more than $174,000 in income savings for the state. This is the equivalent of two full-time assistant district resource managers for one year.

"We are a densely populated state, and even during the pandemic, Arcadia never closed down. Some trails used to see 100 people a year. Now they're seeing that in a weekend," he says. "So we need this type of worker in Arcadia. Every one of them. It is so beneficial to be doing this work on state property. [The program is] a great way to get people into it, plus they can give back, and provide to a green industry."

While increased usage is eroding trails, the teams are trying to return Arcadia to as natural an environment as possible to promote its diverse flora and fauna, Arnold says, which impacts habitat and watershed stability. Doing this while sustaining public access is a delicate balance, he adds.

"Not only are we maintaining recreational trails, but we are harvesting trees to foster growth. They are a renewable resource that can be managed to create habitat for rare and endangered species here," Arnold says. "The benefits of the training, this work, and the environment go hand in hand for the industry."

Armed with a rake, Arnold stands on a bridge walkway at Arcadia's Upper Roaring Brook, surrounded by fir trees and deciduous varieties the shade of burnt amber and crimson. He is instructing RINLA participant David Shaw, who waded into the pond's frigid November water to dismantle a beaver dam that threatens the bridge it lies beneath, as well as the watershed habitat downstream. During the course of four hours, they pulled apart sticks, leaves, and other detritus that a family of beavers packed there repeatedly over 25 years. Near their beaver lodge, a "beaver deceiver" installed last spring provides an alternate location for the crafty animals to dam for food, while allowing water to continue flushing through. Arnold says this is imperative to maintaining a healthy ecosystem and public access.

Shaw, a former music industry executive from Smithfield who was laid off during the COVID pandemic, says, "I enjoy doing this. I love the leadership role and working with my hands." Seeking a new career path, he dove into this RINLA program. "I wanted to take my passion for landscaping to the next level, so I was looking for jobs in the green industry. And with this program, they heavily vet you and tell you it will be hard work. So it really works twofold: it helps people like myself get experience, but it helps the state park by keeping it updated, keeping the paths clean and repaired, and other tasks."

While Arnold and Shaw tackle the beaver dam, RINLA Education Coordinator Jordan Miller directs other participants. Some are middle-aged men and women not ready to retire, others are 30-something military veterans putting their carpentry skills to good use. All are unemployed or under-employed, which is a prerequisite for participation. Though their backgrounds and skills vary, they all arrive the first day with an eagerness to work and learn, and an appreciation for the impact their work will have on Arcadia, Miller says.

"The whole plan is to raise the caliber of our industry. It's a targeted investment that tries to improve the pipeline. It's not a random free market experiment. There is a reason to this," Miller says. "This is an audition. And usually they want to know what the next learning opportunity is. Ideally they do a bootcamp and can get a job right away with the skills they learned."

Attracting business to Rhode Island is another component of this dynamic RINLA program. DEM Director of Agriculture and Forestry Ken Ayars says multiple out-of-state and international companies have contacted him about launching or siting their business here because of the state's prominent workforce development platform.

"The labor shortage being what it is, coming to a place where you know you have an existing pipeline that has been developed, tested, and is working, is a big part of a company coming here. They want to hire local talent, and that's the value of programs like this," Ayars says. "The other thing it does is it adds value to the perception of the mission of DEM and the value of the resource. When we think about the vastness of Arcadia, and what that means for climate change mitigation, it's thousands of thousands of acres of natural woodland. Sometimes people don't recognize the value of protecting land and management areas."

* * *

Back in the Westerly garden, there are no power tools in sight, just shovels, wheelbarrows, and clippers. The six-woman team is extracting invasive plants and installing native grasses to create a natural meadow that will foster animal habitat and provide an ecological buffer with the nearby Quonochontaug Pond. They are discussing tree and shrub identification with Gallagher, who strokes the bark of an oak tree while discussing its leaf structure, and how microbiomes supplement soil health. Stromley and her colleagues ask about erosion, composting, and invasive species. Discussions like these, Stromley says, have deepened her understanding of the role gardens can play in ecosystems.

"It's very important that we say we want to help the earth, but when we dig a hole and fill it with cement for a retaining wall, are we really helping it?" she says. "Removing a native plant could be uprooting a family of hedgehogs, or maybe it's a field where deer live and feed. We don't remove a lot of leaves here because they keep mice and worms warm in winter .... But some people just want a garden."

Stromley was part of the program's inaugural cohort of 61 participants in 2021, Brawley says. Of that number, 53 individuals completed the Career Catalyst program, and 35 were hired. The 2022 program had a waitlist. Interest has skyrocketed, Brawley says, and businesses are recognizing the value of trained and educated professional labor. RINLA and the Rhode Island Food Policy Council have also unveiled a two-year associate's degree at the Community College of Rhode Island so that students may continue their learning in a field where jobs remain perpetually available.

"We have a responsibility to care for where we live, and our industry is stewards for that as first responders," Brawley says. "We need to look at the intersection between the built and green environment, between the green and blue environment. It's why we need to invest in green infrastructure definition to forests, where we're working on public lands and installing coastal adaptation projects. We are right there, implementing meadows, rain gardens, and capturing water where it falls to help with flooding .... Whether it's in your backyard or public lands, commercial facilities, or on highway medians that could be planted with pollinators, we are caring for Rhode Island."


US 22
WEATHERLY

WOMEN TAKE THE HELM

HOW A LOCAL SAILING COMMUNITY IS—SLOWLY—ELEVATING FEMALE SAILORS

by **Helena Touhey**

Photograph by Onne van der Wal

ON INTERNATIONAL WOMEN'S DAY, KELSY Patnaude posted a series of Instagram stories to her account, which began with "#InternationalWomens Day—Let's have a chat. I've seen a lot of posts today highlighting the many talented women in sailing," she wrote, "but not many discussing how we can encourage more women and girls to stick with the sport."

She then shared an article from *Sailing World*, headlined, "How to Get More Women in Competitive Sailing," with a subhead that read, "What's really driving women away from the sport is a culture within the sport itself. Think about it." The article, posted that day, was a column by Kelly McGlynn, a sailor who competed at Brown University before graduating in 2015 and who had talked to dozens of peers about their experiences on the water. And, according to Patnaude's Instagram story, McGlynn's piece was being shared among women in the sailing community.

"This article expertly discusses the importance of fostering confidence, tackling imposter syndrome, and creating visible role models in a majority male-dominated realm," Patnaude wrote. She then proceeded to annotate the article, highlighting passages she felt were especially noteworthy, such as: "In adult sailing, the most prevalent way women are overlooked is in crew decisions. It's too common for women to be asked to round out a team in a way where the men expect minimal contribution to the sailing from them."

She then underlined the next two sentences, in a soft pink color, a subtle but evocative choice: "When women aren't expected to contribute more than being the right weight, it's harder for them to develop the skills for other jobs. And it reinforces the misguided perception of women's limited role in the boat." This is in reference to race boats, where the crew collectively cannot weigh more than a certain amount, per the rules of the race, because of how it might impact the way the boat moves through the water.

In fact, when Patnaude and I met at a coffee shop the next day, she told me she was just coming off a few weeks of watching what she was eating because of an upcoming race—and had just learned the rest of the crew, all men, were not being nearly as vigilant as she. In other words, she was the only one who had, in fact, been watching her weight. As she eyed the cafe menu, she said this was frustrating, but also not all that

surprising. After all, she's a woman in a sport—and a profession—where women still have to prove their worth and demonstrate, literally, they are worth their weight.

In addition to crewing race boats, Patnaude is also the captain of *Onawa*, a position that puts her in the company of only a handful of other women working on Newport's waterfront. *Onawa*, at 68 feet, is a classic 12-Meter—a vintage wooden boat.

"I like being on the classic yachts because I like being a steward of something," she said. Her first captain gig was on *Columbia*, another 12-Meter circa 1928, which she described as a "gentleman's yacht." In Newport, she's noticed more and more women taking the helm of these vessels, which she said is progress but also a way for boat owners, usually male, to give women captain's jobs without giving them some of the bigger boat jobs.

"A friend said to me, 'This is their toy; this isn't a real race boat; they're only giving their toys to female captains,'" Patnaude recalled after she landed her job on *Columbia*. Her response: "If that's the way we have to get the visibility of females in sailing, [then] that's fine."

Patnaude, 32, didn't grow up in the sailing world. Her memories of sailing as a child include attending sail camp at Newport Yacht Club and crying the whole time. Something about the experience evoked a deep fear. She took up the sport later, in her mid-20s, when she wanted to stay in Newport. "I was way too rude to be a waitress," she said, laughing. So she landed a job on the harbor and has been working since then on boats for nearly a decade.

About five years after her first gig, Patnaude applied for her captain's license, which she says she pursued with "the intention of proving I didn't want to be a stewardess when I applied for jobs." In the sailing world, yachting in particular, stewardess is still an active term used to denote women working on boats in certain roles, especially roles that involve cleaning and preparing meals and greeting guests. Women, she noted, "aren't given all the same experiences [and often] end up making sandwiches."

The captain's license, she explained, was really something to put on her resume; it would be a distinguished credential, one that might help her earn more money and also more jobs. "I didn't intend to be a captain," she said, a thought that might have been rooted in the fact that women captains are few and far between. Or at least they have been—in Newport, in recent years, this dynamic has been shifting, slowly, with more and more women not only obtaining their captain's license but also getting jobs as captains.

"I HAVE TO NORMALIZE MY EXISTENCE BEHIND THE HELM."

Elise Huebner has been part of this shift. She's the captain of schooner *Adirondack II* and sloop *Eleanor,* a job she took up two years ago and one that marked her first time using her captain's license, which she had had for five years. Huebner, like Patnaude, originally applied for her license thinking it would be a useful credential, but without any plans to apply for a captain's job.

She's joined on the harbor by Shivani Sood, who she met several years ago through boat work. Sood is the captain of *Heritage*, another classic 12-Meter, which she owns with her husband, Zane. She applied for her license about four years ago, in part because she and Zane were entertaining the idea of going to Alaska, where he thought she could drive some of the smaller boats. Those plans didn't pan out, but Sood got her license anyway.

Once back in Newport and after working on other boats, Sood learned the captain of *Heritage* was leaving, which meant there was an open job. In fact, that captain, another woman, suggested Sood take over her job. "It was her first captain gig, too. If she did it, why couldn't I do it?" Sood said. "She passed the boat off to me. It was the right timing." Soon after, she and Zane were asked if they wanted to buy the boat, and they said "yes." This summer was their third season as owners, and Sood, 31, continues to work as captain.

Like the other women, Sood has been subjected to a fair share of skepticism from people onboard, who question whether she's equipped to captain the boat. "It happens so often, it's hard to recognize when it's not happening," she said.

Cassie Minto, 37, works as crew on *Adirondack II* and *Eleanor,* with Huebner as her captain, and freelances for a handful of other boats. "My main goal

Adirondack II has had several female captains and crew members, part of a gradual progression to greater equity in Newport's sailing community.
Photograph by Onne van der Wal

is to become the most versatile crew member," she said. For now, she doesn't plan to pursue her captain's license.

"I'm a supporting actress on these things," she said, with a smile. We were seated at a cafe table. To her left was Huebner and across from her was Sood. The three were talking about how they came to work on boats and also what it's like to be a woman working on the waterfront. "I find I have to defend [Huebner] when guests ask, 'Does she know what she's doing?'" Minto said. "You have to pick and choose when you respond."

"How do you make light *and* put people in their place?" Huebner asked, her tone indicating there is no obvious answer to that question, especially not when her job as captain is to make sure passengers have a pleasant experience.

The sailing community, Sood remarked in response, is traditionally male, still behind the times, and to be women existing in this space is controversial. "We are still trying to find equal footing," she said. "Just to be in [this space] is so much in terms of changing people's minds."

"I have to normalize my existence behind the helm," Sood said.

Huebner, 33, recalled being told she looks "too young to be a captain" and asked, "when are you going back to school?"

"[Some people] have no confidence that we can do the job we're there to do," Minto said in response.

"[And] if we don't laugh about it in the moment, then there's another stereotype put on us," Sood said. "I once had to tell a guy not to call me honey."

"How about Captain Honey?" Minto interjected, and all three laughed. Then, more seriously, she said, "I've been really, really proud to be on boats with all female captains."

All three agreed that there has been a visible increase in women captains in Newport in recent years. "Other women have paved the way for us," Minto said. She noted one person in particular, Rachael Slatterly, who was a captain of *Adirondack II* and *Eleanor* several years ago, at a time when there were even fewer women working on the harbor.

Slatterly grew up in Jamestown, in a mariner family, and started working on boats right out of high school for a company in Bristol that ran a small cruise line. She applied for a job as a deckhand and was told "we don't hire female deckhands," and was instead offered a job as a stewardess. She accepted that job, which was a great experience and took her around the world. Still, she wanted to work in the deck department, and she

Elise Huebner captains *Adirondack II*
Portrait by Jesse Burke


ADIRONDACK II
DESIGN & CONSTRUCTION BY
SCARANO
BOAT BUILDING

quit when she realized that would never happen. The company's reasoning for not hiring her as a deckhand was because of maintaining separate male and female sleeping quarters, which Slatterly said was "totally bogus—it would have been totally fine." But this was 20 years ago.

She left that boat and landed jobs as a deckhand on various yachts, working her way up the chain of command. Then she pivoted into the educational sector, which in the sailing world is the tall ship sector. Eventually Slatterly applied for her captain's license. "*Adirondack II* was my first command—it was a fabulous place to start," she said, explaining over the phone that "Newport Harbor is one of the busiest harbors in the world," and the experience of captaining a schooner is invaluable. Soon she was in charge of five sails a day, which involved "coming in and out of that tiny slip there in Bowen's Wharf 10 times a day."

That summer, Slatterly recalls, there was "just me and one other female captain" working on the entire harbor. "Other captains would comment that we didn't need to say the name of the vessel when we left the slip because they recognized our voices," to which she would respond: "Well, it's legally required that I say the name of the boat." She laughed—an exasperated sort of laugh.

Shivani Sood captains *Heritage*, which she co-owns with her husband Zane.
Portrait by Jesse Burke

"I think it's important for there to be women in command, for there to be representation at the helm," she said, noting that the scene in Newport was never hostile, but she certainly experienced her share of sexism during her sailing career. These days, Slatterly mostly farms in Exeter, where she lives with her husband and young child, although she still captains from time to time.

"I always say I am standing on the shoulders of giants—all of the women before me who paved the way," she said, agreeing that she has helped pave the path even further. "It's been proven time and again that women are capable mariners," she added.

Slatterly, along with Minto, Sood, and Huebner, all worked for, at some point, industry veteran Helen Vaughan, the manager of Sailing Excursions, which oversees *Adirondack II* and *Eleanor.*

"I always want one of our captains to be a woman—at least one," Vaughan said, explaining there is work for two full-time captains and one part-time captain. She was speaking on the phone from Florida, not yet returned to Newport for the summer season. She's been the manager at Sailing Excursions for a dozen years and a sailor all her life.

Vaughan remembers when she met Huebner, and how she had had her captain's license for about five years and still hadn't used it. "When you get your captain's license, you want to be a captain," Vaughan said. She hired Huebner and made sure she got the training she needed to become a captain.

When asked about the specific experiences of women captains working on the boats, Vaughan noted some tourists have been known to make offhand comments. "Older people, men, have more trouble with it than the community," she said. "I think it's a slow progression, but a progression to equality."

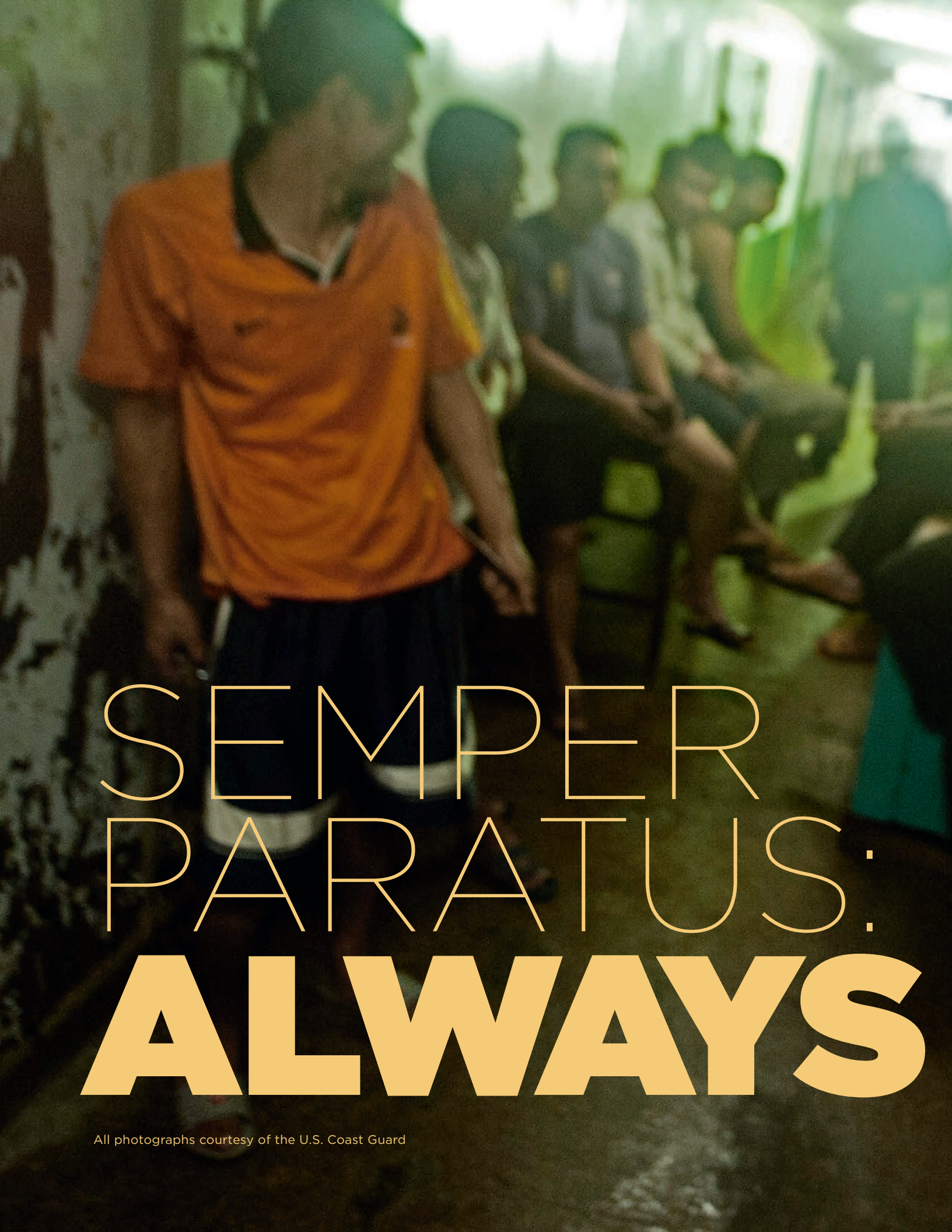
This past summer, *Adirondack II* hosted a group of Sea Scouts composed of women ages 14 to 20 interested in learning about sailing, who went out on the harbor with an entirely female crew. Vaughan said she hoped the young women would take from the experience that they too can work on boats.

"It's really fun to see [an increase of] female captains on Newport Harbor," Vaughan added, saying it indicates a changing culture. "You [also] see so many more women racing in sailing than you used to." She, like the others, isn't sure if this change is reflective of sailing communities everywhere, but it's certainly representative of Newport and the local culture.

"There is a part of me that says Newport is kind of unique," she said, recalling how, when she began racing many years ago, Newport was the first place she encountered women crews sailing together.

Patnaude, the captain of *Onawa,* says she's observed a shift in Newport, one where women continue to support and help each other gain and leverage new experiences and opportunities. Like Sood, Patnaude landed her first captain job because the outgoing captain was a woman, a woman who thought of her and suggested she take over. And since becoming a captain of *Onawa,* she has been able to hire more women. Currently, four of her 16 crew members are women.

"I may not have the most experience on the boat," she said, "but I have a position where I can put as many girls on the boat as possible."



SEMPER PARATUS: ALWAYS

All photographs courtesy of the U.S. Coast Guard

READY

By **Meredith Haas**

UNLESS THEY'RE IN ACTUAL NEED OF BEING rescued, most boaters may not relish the sight of an approaching U.S. Coast Guard (USCG) boat—wondering if they've done something wrong. More often than not, it's a friendly safety inspection, but for those who are fishing illegally in federal waters, a visit from the Coast Guard is less than ideal. Such activity has grown over the years as the Southwest Ledge off Block Island has become a premier fishing ground for large striped bass, an area that mostly lies in protected federal waters where it is illegal to fish them.

"There's been more poaching in the area, so we're really trying keep a thumb on that," says USCG Petty Officer Matthew Cavaco, as he and his four-member crew gear up for another early morning patrol before the sun is up. "We've got to keep up a presence out here."

It's the beginning of August at 5 a.m., and a steady stream of mostly recreational fishers leave Galilee and head towards Block Island, where fishing, like the weather, has been on a hot streak for everything from striped bass and fluke to bluefish, scup, and black sea bass. The 45-foot Coast Guard response boat follows in the same direction through the thick fog, leaving behind the eerie glow emanating from the Galilee docks. Cavaco says he and his crew have been more diligent about monitoring this area to deter poaching since last year, when they issued several thousand dollars' worth of fines to fishermen that were pulling striped bass from federal waters, where federal violations come with a penalty of up to $1,000 for each fish. Protecting marine resources is one of the Coast Guard's primary missions that distinguishes it from other military branches, and protecting striped bass and other species vulnerable to overfishing that could compromise their populations falls within that mission.

As the rising sun broke up the fog, Block Island and its famous wind farm came into plainer view as did more than a dozen or so recreational fishing boats. At the sight of the Coast Guard, many moved their position to make sure they were fishing within the 3-mile limit of the shore, keeping them in state waters. Over the course of several hours, only a few boats had lures out that seemed intent on catching striped bass either knowingly or unknowingly in federal waters, though none had produced any catches.

"Obviously we want to protect the fisheries, but we also want to build rapport with the community," says

The photographs on these pages show USCG operations in the Pacific to combat illegal, unreported, and unregulated fishing.

Cavaco, explaining how educating boaters on safety is an important part of their work, too, especially at a time of year when more accidents occur on the water. "I've had to pull more kids out of the water than I care to."

But whether they're monitoring recreational or commercial fishing vessels or conducting safety inspections, these efforts for him are also about mentoring and motivating newer members of his crew, such as the three on this patrol. Cavaco says he wants to instill in his crew an understanding of the greater purpose of their mission to protect marine resources and safeguard the community on the water. "It's not just about the fish. It's more than that."

While Cavaco and his crew, who are stationed at Point Judith, may only be charged with patrolling the waters off Rhode Island, their training and efforts are enveloped into the Coast Guard's mission that extends well beyond federal waters. Best known for their search and rescue missions, the Coast Guard has 11 missions centered around maritime safety, marine conservation, and national security. Unlike other branches of the military that are more combat-oriented, the Coast Guard plays a critical role in enforcement and search and rescue on the water—both domestically and abroad. And many of these broader missions are accomplished via USCG cutters that are 65 feet or longer in length, which can support multiple missions.

"I was drawn to the Coast Guard because it's more humanitarian-focused and has more mission sets that are environmentally tailored," says Ensign Madeline Kaller, who is currently stationed in Charleston, South Carolina, aboard the USCG Cutter *Stone*, which, Kaller says, has "the capability to pursue eight out of those 11 missions."

Kaller, who graduated from the Coast Guard Academy last year, just returned from a two-and-a-half month patrol in the Caribbean and the South Pacific, where the Coast Guard conducted several different types of operations aboard *Stone*. "We were [monitoring] illegal fishing but then could also flip a switch and focus on drug interdiction," she says. "It's kind of like a taste of everything."

The Coast Guard is the only agency able to enforce federal regulations, such as fisheries and safety inspections, in U.S. federal waters and is the only agency able to enforce international laws on the high seas and where cooperative agreements are made with other countries like Ecuador or Ghana, which often lack resources. And as the ocean continues to change with shifting climate conditions and new and increased

uses of ocean spaces, the Coast Guard is refocusing its efforts and resources.

"My first tour was like drinking from a firehose," says USCG Officer Tara Pray, describing how when she first went afloat nearly 10 years ago, there was a lot of learning on the job in the various missions. Pray, who currently acts as the Coast Guard Liaison to the U.S. Department of State and who is a recent Marine Affairs graduate from the University of Rhode Island, says that her initial patrols were either in the Northeast, focusing on living marine resource protection, such as fisheries inspections, or in the Florida Straits, conducting migrant interdiction missions. **"**Now, you're seeing this huge shift towards IUU [illegal, unreported, and unregulated fishing] and the Arctic strategies," she says, referring to the Coast Guard's increased efforts in these areas.

Focus on IUU Fishing

Unlike standard commercial fishing, IUU fishing means fishing without a license or in a closed area, such as in marine sanctuaries, or using prohibited gear, such as drift nets or explosives to catch fish. This also includes fishing above a set quota or fishing prohibited species such as sharks or Chilean sea bass. But it also refers to fishing activities that are not reported or are misreported, or where there are no applicable conservation or management measures for a particular area or fish stock.

This is not to be confused with standard fishing patrols like Cavaco and his crew conduct within U.S. waters, says Pray.

"Fisheries patrols are really ensuring compliance with federal laws and regulations in terms of gear and catch," she explains, adding that it's important to make the distinction between these standard patrols and IUU fishing as two different types of fisheries-based enforcement roles of the Coast Guard.

IUU fishing has become a prominent focus for the Coast Guard in recent years since the passage of the Maritime Security and Fisheries Enforcement Act in 2019, says Pray. Under this law, the USCG jointly leads efforts with the U.S. State Department and the National Oceanic and Atmospheric Administration (NOAA) to counter IUU fishing and related threats to maritime security. IUU fishing has replaced piracy as the leading global maritime security threat, according to former USCG Commandant Admiral Karl Schultz. "If IUU fishing continues unchecked, we can expect deterioration of fragile coastal States and increased tension among foreign-fishing Nations, threatening geo-political stability around the world," he wrote in the USCG's 2020 strategic outlook report.

In a recent memorandum issued by the White House, IUU fishing has been recognized as one of the "greatest threats to ocean health" by harming the stability of marine ecosystems as well as the stability of global fisheries and food supply—undermining the country's economic and national security. As the only enforcement agency, the Coast Guard works with domestic and international partners by adding much needed surveillance capacity.

Cooperative agreements with other nations have allowed the Coast Guard both the authority and capability to enforce international law on the high seas, which includes everything from drug and human trafficking to IUU fishing, which are often linked. Weak fisheries laws and/or capacity to enforce laws have led some countries to be more vulnerable than others to exploitation by industrial trawlers from other nations. West African countries, for example, have lost over $200 billion to illegal fishing by vessels linked to foreign nations, amounting to 40-65% of the legally reported catch in West Africa alone, according to a report by *The Maritime Executive*. As part of the United States Africa Command, the Coast Guard works with other U.S. military branches and regional partners to provide training and support to combat IUU fishing.

"When you look around the world at some of the challenges that the … democratic order is facing … in so many places there is this creeping undermining of the rule of law," says Dr. Rebecca Pincus, an Assistant Professor in the Strategic and Operational Research Department at the U.S. Naval War College in Newport, who previously served for four years conducting research at the USCG Center for Arctic Study and Policy while teaching at the Academy.

The USCG Cutter Healy breaks ice in support of scientific research in the Arctic Ocean.

She explains that China, specifically, is the world's worst offender for IUU fishing and operates a highly destructive fleet that takes advantage of coastal nations that struggle to enforce fisheries laws or regulations. And helping these nations defend their resources is an important function of the Coast Guard.

"It's in all of our interests for the rule of law to be sustained at sea around the world … And the Coast Guard is at the forefront of that and will be more and more, I think, this century … it's sort of a nexus or constellation of missions that align with national security and environmental values … that's really exciting in ways that maybe weren't necessarily as visible 10 or 20 years ago, when we didn't think about IUU fishing as much as having these geopolitical and geo-security dimensions. And so, the ability for the USCG to go in and partner with coastal nations to help defend their living marine resources, help defend their fisheries, help prevent pollution, help combat slavery at sea; that has enormous benefits for the U.S. and the community of nations around the world."

Kaller, too, saw the effects of China-supported IUU fishing in the Pacific and says that the Coast Guard is helping "build very good international relations with our partners … if we're helping them preserve their fish stocks, especially from offenders like China," she says.

Samira Abdulai Yakubu, a visiting United Nations Nippon Foundation Fellow at URI, is studying policy frameworks at URI to support her role in combating IUU fishing as a fisheries manager for the Fisheries Commission of Ghana. "We do not have the logistics in terms of capacity. So, to have [the U.S government] impart knowledge [and support] is helping put us in the right direction."

About 1 in 5 fish taken from the ocean is stolen, according to the NOAA, which adds up to an estimated 26 million tons of fish annually or 1,800 pounds of fish illegally fished every second. A report by the U.S. International Trade Commission in 2019 estimated that the country imported $2.4 billion worth of seafood from IUU fishing and that the elimination of IUU fishing would increase the total operating income of the U.S. commercial fishing industry by $60.8 million. The report identified China, Russia, Mexico, Vietnam, and Indonesia as "relatively substantial exporters" of illegally caught seafood to the U.S. The Trade Commission also found that over 13% of wild-caught seafood imports were derived from IUU fishing, which was

most damaging to U.S. commercial fisheries that target warmwater shrimp, sockeye salmon, bigeye tuna, and squid.

This has implications locally as the Port of Galilee in Point Judith is one of the largest ports on the East Coast and is known for high volumes of squid landings valued at $103.3 million as of 2021, according to the Rhode Island Department of Environmental Management's Fisheries Report. The Town Dock, a major seafood wholesaler located in the Port of Galilee, is the largest purchaser of U.S. domestic East Coast squid and has joined with other U.S.-based squid producers and suppliers, as well as those in Europe, Canada, and Australia as part of a Squid IUU Prevention Working Group through the Sustainable Fisheries Partnership. The goal is to prohibit IUU-sourced squid product and labor and human rights abuses in their supply chains.

"We think it's important to participate because IUU fishing harms those fishermen that are accountable," says Katie Almeida, The Town Dock's fishery policy analyst, explaining that the group is in the early stages of tackling a very complex issue. "We understand this is going to take some effort, some of which needs to come from the government in order to support fishermen who can't take this on by themselves."

According to a 2014 report by the Marine Conservation Institute, Rhode Island may have lost as much as $24 million in revenue and as many as 400 jobs due to IUU fishing.

"There's a lot of work left to do to crack down on illegal fishing practices that pose a threat to our local fishing industry and we are going to keep pushing forward," said Rhode Island Sen. Sheldon Whitehouse in a recent press release responding to a new international agreement that curbs subsidies that contribute to IUU fishing.

But training and enforcement support from the Coast Guard is only one piece of a much bigger solution that's needed, says Holstead, who has been dedicated to fisheries-based missions his whole 19 years of service. "We have authority focused in law enforcement, that's really where we're trying to push, but it's not going to solve the problem. I think it takes a holistic approach from the Department of Commerce and NOAA, the Department of State, and the Defense Department to really focus on those economic and diplomatic impacts."

Shift to the Arctic

IUU fishing could also become an issue in the Arctic region, which holds some of the last relatively untapped resource reserves in the world for minerals and oil and gas, as well as fish species for which the area served as a de facto refuge (e.g., Arctic cod and haddock). What had protected this region from previous exploitation and activity was year-round or "multi-year" ice cover.

The central portion of the Arctic Ocean is considered the "high seas," which resides outside of the national jurisdiction of any country, says Pincus. "[Last year], a moratorium on fishing was signed that placed a hold on fishing in the central Arctic Ocean for a period of 16 years, until interested parties can negotiate some kind of fishing regime that is based on science because the fisheries is moving in response to climate change … there's a lot of science that needs to be done before those fisheries can be opened."

While conditions are as such that it is still too difficult to operate in this area, there is growing concern about the future ability to enforce the moratorium as ice continues to melt and make remote areas more navigable. Today, about half as much ice covers the region as in the past, with sea ice melting at a rate of 13% each decade, according to NASA. This paved the

way, literally, for the first commercial vessel to traverse the Arctic's northern sea route during the winter of 2018—signaling a future of increased maritime activity within the region and raising environmental concerns regarding damage from oil spills, noise, and resource exploitation. It has also raised national security concerns as traffic and activity increases from various countries in a place where there is no real governance.

"The Coast Guard is going to be challenged with … increased use of the oceans," says Dave Hill, a retired U.S. Coast Guard captain who served over 30 years and is currently adjunct faculty in Marine Affairs at the University of Rhode Island. He adds that more marine activity in the Arctic will require some sort of enforcement for protecting marine resources and managing resource exploitation, monitoring travel through the area, and search and rescue operations. "And guess what, we've got one polar class icebreaker that works. Talk about a challenge … another [icebreaker] is being built, but we need a whole fleet to operate in the Arctic."

The outer rim of the Arctic Ocean adjoins eight coastal nations: Canada, Greenland, Iceland, Norway, Sweden, Finland, Russia, and the U.S. As new trade routes open—linking Asia, North America, and Europe—a new fleet is what top officials say is needed to not only limit resource exploitation but to stay competitive with China and Russia.

"We are an Arctic nation," said USCG Commandant Admiral Linda Fagan in a recent hearing with the House Homeland Security Committee's transportation and maritime security panel. "Getting the capability and capacity to create an enduring presence in the Arctic, in the waters off Alaska, are absolutely a priority."

The Arctic has been on the Coast Guard's radar for quite some time, according to Pincus of the Naval War College, because despite the political discourse, the Coast Guard—like other military branches—hasn't had the luxury of ignoring climate change.

"THEY ARE THE FOLKS WHO WILL RESPOND TO THE NEXT KATRINA"

"The Coast Guard is one of the leading federal agencies in the Arctic, and climate change is unavoidable," she says. "If you look back at the Congressional testimonies from a series of Coast Guard Commandants—even when climate change was not on the policy radar, when it wasn't necessarily something Congress wanted to tackle—they have all said, 'Look, up in the Arctic there is water where there used to be ice, and I have to deal with that because I'm the Coast Guard Commandant' … Climate change is political in this country, and the Coast Guard, I think, has generally stayed in the areas of bipartisan consensus, but it can't ignore climate change given its mission set and given some of the emerging areas where it's operating with increasing urgency like the Arctic."

Readying the Next USCG Leaders

To contend with new challenges emerging from climate change and evolving uses and technology that alter the ocean landscape and spaces, curriculum at the Coast Guard Academy has been adapted to better prepare future officers and senior leadership.

"When they hired me, they had never before had on the permanent faculty someone who specializes in marine environmental policy," says Dr. Tiffany Smythe, who joined the Academy's faculty in 2018 and also serves as adjunct graduate faculty in Marine Affairs and is a Senior Coastal Institute Fellow with the University of Rhode Island. She explains that while the Academy has always had a strong science, governance, and civics program, the curriculum has changed over the years in recognition of the connection between emerging environmental and national security issues.

"I really try to get the students thinking about the ocean, thinking about the environment … They're not just 'environmental issues.' These are all security issues. These are economic issues," she says. "To hear the Commandant and senior Coast Guard leaders talk about IUU fishing [for example] and say that it's not just about fish, it's transnational threats. It's international crime. It's human rights. It's economic issues. It's national security issues—we're talking about great power competitions with the U.S. and China. IUU fishing is caught up in all of that. So, it's connecting it to these other issues that are the priorities for the service."

Pincus, who taught about Arctic issues at the Academy for several years, agrees that the curriculum at the Academy has shifted to consider climate and environmental issues in a more focused way.

"The Coast Guard has a broad mission set and many of those missions are climate-impacted, whether it's fisheries, marine mammals, disaster response, et cetera," she says. "As climate change has become more and more [of a] glaring policy problem across the country, it's emerging more and more in the curriculum as well."

A Coast Guard petty officer deploys a life ring as part of search-and-rescue training in Sturgeon Bay, Wisconsin.

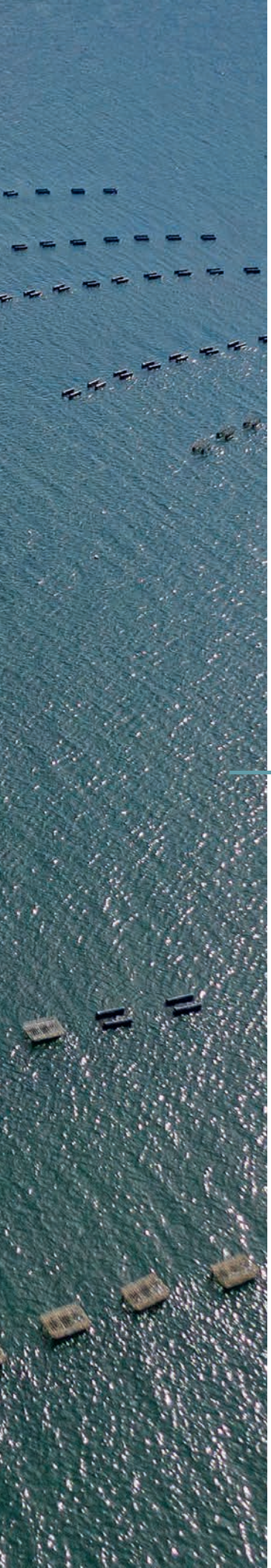
Shifts aren't only happening within the curriculum. Cadets and staff and faculty have also formed groups and clubs focused on environmental issues. When Kaller was at the Academy, she and other cadets as well as faculty reinvigorated the Sustainability Club due to growing interest in environmental initiatives.

"[We] put different activities together that got people outside, doing something good for the environment, and to show how rewarding it could be doing that type of work," she says of when she was president of the club. She notes she was cognizant to not "shove environmentalism down people's throat," but rather to instill a passion. "Once I did that, I could kind of start working with leadership at the command to make more environmental changes."

The potential influence graduating cadets may have one day as officers is another driver for Allison Ruth, a first class senior at the Academy, majoring in marine and environmental science. As co-president of the Sustainability Club, she explains the value of newsletters and activities the club provides that not only bring cadets and faculty together, but enhance an environmental mindset for future leaders in the service. "We're trying to educate everyone because all of the cadets are going to graduate to be officers and they can have all this influence on their cutters or writing policies someday."

Smythe, who helps to advise the Sustainability Club and leads environmental policy-related capstone projects for cadets, says that these efforts within the Academy are geared to both the interests of the next generation of Coast Guard leaders and immediate national interest needs.

"From where I sit, the Coast Guard is one of our most important environmental agencies. They are the folks who will respond to the next Deepwater Horizon or the next Katrina. There's few other services that are that important," says Smythe.



Dirty, Muddy, Cold, and Wet — And Loving It

OYSTER FARM WORKERS DESCRIBE THEIR CALLING

by **Pearl Marvell**

IT IS A SUNNY MORNING IN OCTOBER. The water is calm and sparkling in Wickford Cove. The fleet of pleasure yachts that normally crowd the bay during the summer have either made their way south or are hauled out for the season.

I meet Natalie O'Connor and Thomas Blank at the town dock. She has just dropped her kids off at the bus stop, and he's getting his boat and gear ready to go out. Moments later, Russell Blank, Thomas's uncle, shows up in his truck. The Blanks own Rome Point Oysters, while Thomas also owns Golden Nugget Oysters, which he will be harvesting for on this particular day since he has received an order for smaller oysters — Golden Nugget Oysters' specialty.

Russell has been in the business for over 20 years. Before that he was a quahogger but became tired of "looking for the product." He says he loves growing oysters because "my office changes every day," and the work keeps him in shape.

Six years ago, O'Connor was cleaning houses and doing other odd jobs when her husband showed her a TED Talk on aquaculture that she thought was "really awesome."

Aerial photograph by Pearl Marvell

"YOU CAN TELL WHICH ONES ARE GOING TO WORK OUT IN A COUPLE OF DAYS"

Around the same time, she received an email with an opportunity to study aquaculture from the Education Exchange, a nonprofit that provides training and career advancement.

O'Connor completed the five-week program, which included three weeks of in-class learning and two weeks as an "in-the-field" intern, an opportunity that not only gives students hands-on experience but also allows potential employers the opportunity to see who is the best fit for their farm.

Though she originally thought she would be working in a hatchery, O'Connor was immediately hired by an oyster farm, and she soon fell in love with being out on the water. But it's not just the scenery that makes the work enjoyable for her. It's the satisfaction of seeing something grow, which in turn feeds others. "At the end of the day, you just put food on a plate," she says. For the last year, she has been working for Russell Blank, and she appreciates that he makes sure she is back on land in time to pick up her kids from school, something that isn't a given working for other oyster farmers.

We move out on the bay on one of the boats and head to protected water just outside of the harbor where there are half-circle rows of cages filled with oysters. Blank and O'Connor tie up to one of the rows and start to haul the cages on board the boat. Inside, there are sacks filled with oysters. Hundreds of them.

The two get to work sorting the oysters, throwing back the ones that have been damaged by oyster drill snails or that are too small for harvest. They work nearly in unison, bantering back and forth. After each cage is sorted through, Blank moves the boat up to the

Natalie O'Conner calls oyster farming "good for my brain" and for the environment.
Portrait by Jesse Burke

next cage and starts the process again, hauling the cages up with the help of a mechanized winch.

"It's good for my brain," says O'Connor about being out on the water. She knows that she won't be able to do this work forever. After all, it is a very physical job, but she plans to continue working in the industry for as long as she can. She envisions herself in an advocacy role later in her career, promoting aquaculture and "how great this is for our state," as well as talking to potential oyster farmers and employees about the importance of farming oysters, not just as a food source, but also for keeping waterways clean. "It's a really special animal," she says.

O'Connor works year-round for Rome Point Oysters, which isn't always the case for aquaculture employees, but between tending to the seeds (the tiny oysters that are bought from distributors) to repairing equipment, there is always something to be done.

Not everyone takes to the work like O'Connor did.

"It's definitely not easy," says Thomas Blank. He says that when they're chipping ice off the boat in the middle of winter, a lot of people have second thoughts about doing this for a living. Luckily, the Blanks seem to have an eye for those that will stay. "You can tell which ones are going to work out or not in a couple of days," he says.

Blank started this work when he was in high school and it seemed natural to him to continue once he graduated. He is well aware though, that for many people, this type of work doesn't come easily.

Some farmers do take on college kids in the summer to help with the extra workload. In fact, Blank himself took on Sam Brower, a freshman in college, for the summer. She had originally babysat for Blank and his wife, but "wanted to be outside for the summer and do something physical," after a year of staying indoors due to COVID-19.

Plus, the pay—$20 an hour for five hours of work, five days a week—wasn't bad. Brower says it's more than she would have made at a lot of other summer jobs. Although some of her friends thought it was strange work to be doing, Brower says she would definitely consider returning during future college breaks.

Brower might be more the exception than the rule.

Oyster growers regularly sort oysters by size and redistribute them to optimize their growth.
Photograph by Jesse Burke

A lot of farmers will steer clear of hiring college kids. Jennifer Harrington, for example, who owns Quonnie Siren Oyster Co. on Quonochontaug Pond in Charlestown, says that because of the difficulty of the work and the amount of training involved, many college kids are not cut out for oyster farming. Her ideal employees "are the ones that believe in the industry. Those are the people that last."

That's why she hired Jason Jarvis to be the manager of Quonnie Siren Oyster Co.

Jarvis is a commercial fisherman by trade, although he had previous aquaculture experience working at Watch Hill Oysters. In the spring of 2021, he was waiting on an outboard motor to come in for one of his boats. As with so many things during the pandemic, there was a considerable wait on the outboard, so Jarvis' boat was out of commission for a while. That was when Harrington offered him the management position.

He initially started part time but came on full time because Harrington couldn't find additional help.

"And that was that. I haven't stopped," he says. Jarvis describes the work as "kind of his dream job."

"The amazing part of it is watching these things grow and turn into food," he says. "You get bitten by it, so to speak, and you don't want to do anything else." In fact, he jokes, "I plan on retiring when I'm 96."

Unlike Rome Point Oysters, Quonnie Siren Oyster Co. does stop farming during the winter, which Jarvis is fine with as it gives him some much-needed rest. Plus, his wife is a silversmith, and he gets to help her with her business during those quiet months.

While the pandemic all but shut down the industry for much of 2020, last year saw the rebound of tourism in the state, which in turn brought the hospitality industry back to life, and with it, demand for oysters.

In 2021, says Jarvis, "I think [Harrington] had the best year that she had ever had. We actually sold out of oysters."

And Rhode Island oysters aren't just eaten locally either. According to Russell and Thomas Blank, their oysters ship as far away as Chicago.

Bob "Skid" Rheault, one of the state's leading specialists in aquaculture as well as the lead instructor for the Education Exchange training program, says there has been a doubling in oyster production in the past 5 to 10 years. While most of the farms are small and, on average, have fewer than five employees, he says there's strong demand for well-trained employees, and every state that has an aquaculture industry is looking for workers.

"The reason we started this program is that we had this incredibly high turnover rate," he says. "If you really don't love this job, you are quickly going to grow to hate it because it is dirty and muddy and cold and wet."

That is why he makes sure that students going through the program know what they are getting into. During one of the sessions, he will make the students carry a 5-gallon bucket of water up and down stairs, just to make sure that they are up to the job.

This year's training for 12 participants includes an online program and a four-week in-person program, including the internships.

Executive Director of the Education Exchange Jason Colonies says the program does not just focus on preparing individuals for work on a farm or in a hatchery, it also provides them with the skills often needed in the restaurant industry when it comes to safely handling and serving oysters. Many of the students that graduate end up working for catering companies or in restaurants.

The program also offers students the opportunity to train and test for their captain's license, another asset to oyster farmers who often offer eco-tours of their farms.

"We're all about taking down barriers for people now and getting people back to work and getting people into good places," he says.

Both Colonies and Rheault are committed to ensuring that the aquaculture program attracts people from a variety of backgrounds and communities, and they are working to get the word out in more diverse cities and towns throughout the state. Colonies says that there is an effort to recruit more from the northern Rhode Island area as well as in Newport and Middletown. All the programs run by Education Exchange and Real Jobs Rhode Island also provide incentives to their students. When O'Connor did the program, for instance, she was paid minimum wage for the duration.

According to the Coastal Resources Management Council, full-time and seasonal aquaculture farm jobs have steadily risen over the past decade, with only a slight dip in 2020. Both Colonies and Rheault expect those numbers to continue to increase.

After O'Connor and Russell Blank have harvested all the oysters they need to fill their quota for a delivery, we head back into the dock, but not without a visit from a few friends along the way. A seagull lands on the boat, and Blank feeds her peanuts. He affectionately calls her "Black Eyes" because of the black circles around her beady, unblinking eyes. She visits the boat nearly every day and has done so for many years. A loon comes over to the boat to see what snacks are available. O'Connor calls the loon "Puppy" because it acts just like a dog wanting a treat.

It feels good being on the water, O'Connor says. "It's beautiful out here. It kind of gets in your soul."

Once the boat returns to dock and she and Blank finish up their work, she will have just enough time to get to the bus stop to pick up her four kids and head home for the day—and do it all again tomorrow.

Taking Root

ENVIRONMENTAL ACTIVISTS GROW LOCAL EFFORTS

by **Amanda Valentine** Portrait by **Dana Smith**

UP THROUGH THE LATE 1800S, A COTTON AND textile manufacturing factory known as Riverside Mills operated on the Woonasquatucket River in the Olneyville neighborhood of Providence. As the Industrial Revolution slowed, so did business, and the owner filed for bankruptcy and sold the once-bustling 11-building complex by the end of the century. The site devolved into an unusable brownfield by the early 20th century, and in 1989, a fire burned the remaining buildings and rendered the area a dumping ground.

Thirty years later, the field is now Riverside Park, and it hosts a sizable playground, a stage, a fish ladder exhibit, and plenty of open space for families to picnic or play. It is what residents of Olneyville requested when the Woonasquatucket Greenway Project—now Woonasquatucket River Watershed Council (WRWC)—came to them and asked what they wanted to see in their community. Built not just for the community, but by the community, the park underlines the lasting effectiveness of community-driven environmentalism.

The park maintains the tradition of community involvement on which it was built by providing upcoming generations of kids with opportunities for hands-on experience. Nadia Grisaru, who worked with WRWC as a TerraCorps volunteer and youth education and community engagement coordinator, spent the last year helping kids at the Met School foster an appreciation for the environment and connect with nature in ways unique to them.

The Met School, which comprises six public high schools across Rhode Island, builds its curriculum around internships and long-term projects that are tailored to each student's specific interests. Grisaru's job was to help 10th grade students earn their science credit through a year-long research project that builds a connection between their specialized interests and the environment.

For younger grade levels, engagement might look like raising native trout in the classroom and releasing them into the Woonasquatucket at the end of the year, or making their own paper on which to write letters to the river. For all ages, Riverside Park and its array of educational and interactive signage is a frequent destination for field trips.

Monica Huertas, executive director of the People's Port Authority, works to ensure anyone in her community can participate in advocating for environmental justice.


Unstoppable
Woman

"We're more just trying to get the students to have fun outside and being along the river," explains Grisaru, "and kind of learn about some of the environmental issues related to the river, but in a very kind of hands-on, place-based way."

Grisaru's involvement in activism began in high school when an independent study with a teacher who had been an activist and written several books on environmental justice inspired Grisaru, who uses she/they pronouns, to pursue environmentalism outside of research.

"That was kind of a place where I was realizing that there needs to be a much broader effort to tackle climate change and kind of correct and help fix some of these systemic issues and injustices that happen," she recalls. "The environment is connected to all these other forms of injustice, and everything is really intertwined."

The Port of Providence is an illustrative case—it is located in the most diverse county in Rhode Island with the lowest income per capita, and its history of industrialization means residents face a variety of environmental hazards.

Of these, air pollution is among the most critical: the Rhode Island Department of Health's Asthma State Plan cites environmental triggers as a significant contributor to the state's asthma rates, which are well above the national average. Within the state, those most vulnerable to air toxics and respiratory hazards, and most likely to make an emergency department visit for asthma, live in or closest to the Providence area.

Frustrated with a lack of progress in addressing these issues, a growing number of residents near the port are demanding environmental justice.

A liquified natural gas facility was proposed for the Port of Providence in 2015. Fearing environmental health risks, Monica Huertas, who has been a resident of the city for 28 years, and a group of other Providence residents began a "No LNG in PVD" campaign. Though the facility was eventually approved, the grassroots effort survived and grew into the People's Port Authority, a nonprofit organization seeking community oversight regarding fuel and gas companies in the Port of Providence.

"THAT'S WHAT KEEPS ME GOING: KNOWING THAT WE HAVE DONE CHANGE"

They succeeded by "regular old door knocking and telling people what's going on and having them come out to meetings and tell their stories," explains Huertas. "Having activities that engages them and engages their children, that's it."

Huertas is a mother of four children—an immense responsibility that has not taken away from her position as director of the People's Port Authority, but instead guided it.

"Being able to show up to the hearings, as a mother of four, where do you bring the kids, you know, where's the childcare?" says Huertas. "So, I've been able to set up these things so that anybody can participate, but it has been tremendously difficult to do that."

Globally and historically, despite often having to balance the demands of motherhood and family care, women have been disproportionately affected by environmental injustice. According to a 2021 report by the Organization for Economic Cooperation and Development, 75% of the millions of people vulnerable to displacement by climate change are women. Additionally, the 2011 United Nations Development Programme's Human Development Report found that areas of high gender inequality correlate to areas of high environmental degradation.

Defending themselves, their kids, and their communities, women have been the preeminent catalysts and leaders of environmental grassroots movements for decades.

"Women have always been involved in every single thing, especially women of color, especially Black women," says Huertas. "The people involved in the organization are … women of color, women who understand it at a deeper level than anybody, you know, than other people who don't have kids with asthma and respiratory diseases and have to spend time in the hospital … who don't have electricity, who don't have proper heat in their homes. They're the ones that know it at a deep, deep, core level."

Knowing a community's needs firsthand is the core tenet of community-led environmentalism. This principle motivated the development of "New Voices at the Water Table" or "Nuevas Voces" at WRWC. This program, now in its second year, seeks to build community among residents of Olneyville, a predominantly Latino community on the Woonasquatucket River with an extensive history of flooding and sea level rise. The program provides a place for community members to

gather and build engagement regarding the environmental issues impacting the area. Similar to the People's Port Authority, this resource enables community members to help direct and guide the environmental work going on in the area, including that done by WRWC.

"Especially as a predominantly white-led organization, working in a community that is people of color and also lower income, for the most part, that's kind of why [WRWC] decided to start this New Voices program, because they're trying to move in a community-led direction," explains Grisaru, who grew up in Brooklyn and came to Providence for the TerraCorps program.

Their experiences have included graduating from Yale in 2020 with a degree in geology and geophysics, interning for the Juneau Icefield Research Program in Alaska, teaching science to 11th-graders in Colorado, and farming in Maine. Over the course of their varied experience in both rural and urban areas, Grisaru has observed both effective and ineffective models of community engagement.

While the longevity of an organization matters, she says, it also matters "whether the organization feels like it comes from a community and is community-led or whether it feels like it's … kind of outside of the community and trying to engage with the community."

It can be hard for those outside the community to truly grasp the gravity of environmental justice issues, Huertas explains.

"Where other people think it's kind of nebulous, I'm literally fighting for my kids' life and for my neighbors," says Huertas. "I get, you know, the nebulousness, but it's like, I'm the one that's in the hospital when my kids have their asthma exacerbations, you know? … It's kind of hard to organize, to stop environmental injustice and environmental racism when you're looking at the injustice through the window of your child's hospital."

Despite the leadership of women, men are far more likely to hold high-level environmental decision-making positions and often become the faces of the movement.

Of women, Huertas says, "we don't get listened to as much. I can be saying something and then … a man says it and then it's like, 'oh, yeah!' and I'm like, 'I've been saying that!'" Or, you know, the newspaper or radio station will call me for a quote, and I will give them a quote. And you know, I'm the director of the organization, and they'll use a quote from a man who doesn't even work with the community."

Despite this, Huertas says, her organization has made a mark on decision making in the port area.

"It's small changes, but before, you know, seven years ago, before this all started, everything was going on," says Huertas. "It was like a rubber stamp, 'here, here you go, here you go,' for all the permits, for all the zoning changes, everything. It was just like, 'go, go, go.' But now, six years later, it's not like that anymore, and it's because of the work we're doing. And so that's what keeps me going: knowing that we have done change, and we will continue."

OCEAN ACTIVISM IS GROWING SIGNIFICANTLY

The People's Port Authority is just one of the organizations with an environmental focus that is growing across the state. Jill Chopy, a 2018 intern for Clean Ocean Access with a degree in marine affairs from the University of Rhode Island, says, "When I started in 2018, [Clean Ocean Access] was a small little office where we all shared like one really large desk, and I've seen their outreach everywhere now … Overall activism in the ocean world, you know, I think it's growing significantly."

Part of that growth is from increasing awareness and engagement among youth activists, influenced both by social media and improved environmental curricula in schools. Chopy notes the important role that social media had played in getting a younger relative of hers involved in internships and also in expanding Clean Ocean Access's outreach for open meetings and other events. Grisaru has observed improvements in academic curricula in just the past few years.

"I think most schools probably would not have been teaching environmental justice as part of a science curriculum, and I think that that's still not the case at a lot of schools, but it is increasingly being incorporated into a lot of curriculums," they said. "Also, I think that environmental justice is recognized as an integral part of environmental work and the environmental movement more and more often, which I think is really important."

In addition, similarly to women, some youth are finally earning recognition for work to which they have long been committed.

"Our youth, especially youth of color, they've always been active in the community," says Huertas. "They just haven't been put front and center for a long time. But I think a lot of that's changing, and they're organizing about countless things, whether it's Counselors Not Cops, or fighting for environmental justice, or fighting for an appropriate curriculum that involves their culture and their history. They've always been fighting."

SHELL COMPANY

THE PAST, PRESENT, AND FUTURE OF SELLING SEASHELL ART

by **Ellen Liberman**

MELONIE MASSA STARTS WITH A CAPIZ SHELL the size of a quarter. The flat, iridescent Capiz is the carapace of the windowpane oyster, which lives in the mud flats off the Philippines. They have been clustered in service to thousands of chandeliers, but Massa uses them as the foundation of her tiny shell sculptures. The work table in the studio-cum-bedroom of her Bristol home is a seemingly random hardscape of nerites, rose cups, abalone, cockles, limpets, and cowries. With the claws-first posture of a diving osprey, Massa's tweezers deftly pluck a tiny clam shell from the middens. Five outer petals cup four inner petals and in about a minute, a creamy apple blossom emerges. She aims her professional grade hot-glue gun at the center to affix a pearl—the stigma of her facsimile flower.

It is now ready to be dangled from an earring wire, or added to others on a hair clasp, packaged, and sold.

"Shell-work is my full-time salary, but I have to hustle," she says.

Humans have invested the exoskeletons of marine mollusks with value for literally thousands of years. In some cultures, shells were currency, such as the cowrie in Africa and China. The Phoenicians did a brisk trade in murex shells, crushed and boiled for the purple dye that became the color of royalty. But shells were also much prized as decorative objects to be collected and treasured for their own sakes or combined with precious stones and encrusted on other objects. The Dutch, who famously turned their passion for tulips into speculative fortunes, did the same for shells in the 17th century, when the era of exploration and east-west trade routes brought shell exotica back from Indonesia. Rare specimens were once so valued that they fetched a higher price than paintings by Dutch masters Jan Steen and Frans Hals at one 18th century auction. The Victorians were no less mad about shells. Conchylomania gripped collectors who filled their cabinets of curiosities with the wonders of marine life. Ladies scoured Britain's beaches for the materials to make decorative objects, such as shell flower bouquets, shell dolls and entire shell grottos; shell merchants supplied materials from far flung coasts.

"Seashells and the marine animals that make them have wound through human economy from the beginning of time," says Cynthia Barnett, author of *The Sound of the Sea: Seashells and the Fate of the Oceans*. "Shells were jewelry before gems, art before canvas, and money before metal coins."

Massa stepped into this historic lineage in 2009, when she opened her Etsy-based business, Mermaid's

AT LEFT, **"Skittle," by Gregg Roberts.**
Photograph courtesy of The Gallery at Tree's Place, Orleans, Massacusetts

AT RIGHT, **a sailor's valentine by Melonie Massa.**
Photograph courtesy of the artist

"SEASHELLS HAVE WOUND THROUGH HUMAN ECONOMY FROM THE BEGINNING OF TIME"

Baubles, selling sailor's valentines. Massa had always loved and collected shells, accumulating in glass jars to no particular design or purpose. Then, in 2007, on a visit to the New Bedford Whaling Museum it was right in front of her face—a kaleidoscopic picture made by hundreds of shells radiating under glass from the center of an octagonal wooden box.

"I stood in front of that exhibit, frozen," she recalls. "I thought: 'I want to do that.'"

Sailor's valentines, which often bear a sentimental message such as "Love the Giver" or "Home Sweet Home," were once romanticized as the handicraft of below-decks working men. They were actually made by the women of Barbados and sold to sailors as souvenirs. This myth persisted until about 60 years ago, when one was discovered with a label on its back: "B.H. Belgrave, Dealer in Marine Specimens ... Bridgetown, Barbados." Sailor's valentines circulated from the Caribbean during the latter half of the 19th century, riding the dramatic rise and fall of the whaling industry and coming ashore in ports like New Bedford, once the nation's whaling capital.

"This is the artistic blue economy," says Benedict Leca, executive director of the Redwood Library & Anthenæum, who curated a recent exhibit of contemporary sailor's valentines created by Newport resident Happy van Buren. "No sailor on a whaling ship was picking out shells with tweezers. In many ways, sailor's valentines represent the crossroads between long-standing Indigenous craft traditions and [Western]

"Star Heart" by Gregg Roberts.
Photograph courtesy of The Gallery at Tree's Place

commercialization. The octagonal shape and the rigorously geometric image come from the Western half of the equation, based on the shipping octagonal boxes for the compass and perhaps a relationship to colonial sewing boxes."

In the 1970s, contemporary shell artists began to revive the artform, says Anne Joffe, a shell dealer on Florida's Sanibel Island for half a century, and a frequent judge in shellwork competitions.

For the next two years, Massa taught herself how to make sailor's valentines, with the aid of library books so old they had to be pulled out of storage. She experimented with different glues and resins to develop the right combination for maximum durability and brushed up on her math skills to ensure that her "messages" were centered, equal and properly curved. Today, she sells the 9-inch versions for $350 apiece. As a matter of time and cost, sailor's valentines are break-even propositions—at best. They take hours to make and the wooden boxes alone can cost up to $150 a piece—if you can find a carpenter to build them. A self-described "wicked shell geek," Massa eventually decided that her flowers were far too beautiful to remain sequestered under glass, and began to turn them into shell wearables, fashioning jewelry and hair pieces. They now make up the bulk of her business, sold at local shops, online, and at craft shows.

Her colleague and mentor, Cape Cod shell artist Gregg Roberts, is also self-taught. A retired pharmacist, he developed a sudden desire to create sailor's valentines after a dream recalling a real-life childhood encounter with one at a museum. From his first valentine—created with $60 worth of macaroni—Roberts' works now command as high as $20,000 for a private commission. In 2008, he created what has been billed as the world's largest sailor's valentine for Roger Williams University. Hanging in the campus' Global Heritage Hall, it is 48 inches across —"as big as a card table" Roberts says. Comprised of about 1,000 shells arranged in an intricate design, it took Roberts over five months of full-time work and features his signature fancy nautical knotwork. Roberts also lectures about the history of sailor's valentines and teaches classes in how to make them.

"Making sailor's valentines has a lot to do with sizing, design, inventory, creativity. It encompasses all different kinds of talents," he says. And oddly, as one of his doctors once observed, its repetitive activity resembles pill-dispensing in a pharmacy. "You have to do the same thing a million times over, precisely and accurately. It's tedious work, but the gist [of it] is working on a micro level and being able to envision it on a wall from five feet away. It's a maritime art form. But, it's difficult to sell because it's expensive."

More commonly, shellwork is a part-time job. Grace Bramhall of East Greenwich, sells oyster shell ornaments, gilded on the back and decoupaged in the concave interior. This past holiday season she featured vintage maps of Rhode Island coastal towns, which she created using a computer graphic program. Bramhall, who graduated from the University of Rhode Island with a degree in art and art history, works full time as a behavioral technician for special needs children, but she had always had a side business selling other crafts. Today she markets her shellwork at her Etsy store, The Tilly House.

"I got the idea from living on the Cape—oyster shells were so easily accessible, and during COVID, we spent a lot of time on the beaches," she says. "The shells took off."

Sarah McClutchy was an oyster connoisseur, whose fascination with the bivalves ranged from the nuances of terroir to their role in the marine ecosystem. Like Bramhall, she turned them into a cottage-art ornament business during the COVID lockdowns of 2020.

"I had so much anxiety—spending way too much time watching television and doom-scrolling. I needed a hobby that was safe, and [I needed] an escape. We had all these shells left over from buying oysters from oyster farmers that went into selling directly to consumers," she recalled. "I started decoupaging shells, and as the weeks dragged on, I thought 'what am I going to do with all these shells?'"

She starts by scrubbing them clean and soaking them in a beach solution to kill any decomposing organic matter. McClutchy then sources the most unusual and colorful rice paper napkins she can find to become the decoupaged center. Last winter, her Newport-based business, Gilded Oysters, shipped more than 275 ornaments to 23 states as far as the West Coast, and to seven countries for $20-$25 apiece; she donated some of her profits to Save The Bay.

"People love these things, and there's a real market for them," says McClutchy, a full-time writer and marketing consultant. "For me, it's a way to feel like [I'm] doing something productive and give back. I love the circular aspect of it—upcycling and using the whole animal."

Increasingly, the marine animals that produce shells are protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Also known as CITES, the multilateral treaty protects more than 38,700 endangered plants and animals from exploitation in international trade—including many varieties of shells.

"There are two major types of the shell business: the specimen trade—where shells fetch as much as $25,000. Then there is the bulk trade, where shells are sold by the bag," says José Leal, science director and curator of the Bailey-Matthews National Shell

Museum. "In some cases, there is habitat destruction. For example, some cowries are associated with coral, and they will turn the corals upside down to get the shell, which kills the colony. It's like cutting down the tree to get a bird."

Most bulk shells are exported from the Pacific Ocean's Coral Triangle—between Papua New Guinea, Indonesia, and the Philippines—where some countries have tried to clamp down on the black market. In March 2021, for example, Philippine law enforcement seized $3.3 million worth of illegally harvested giant clam shells discovered in a remote village in the Palawan archipelago, likely destined for China, where they are carved as a substitute for ivory.

Over 50 years in the business, Joffe has seen the shell trade change radically. She once bought her inventory directly from dealers all over the world—enough to stock her four shell shops. But in the last decade, environmental degradation, rising shipping costs, and species protection laws have greatly diminished shell exports from source countries. She's now down to one shop, with lots of non-shell items, such as t-shirts, to fill the shelves.

"I'd go out with the shell dealer and the fisherman in boats and haul them up in nets and pack as much as I could in my suitcase. I also started importing 40-foot containers—that's a lot of shells," she says. "Then regulations started coming, and the CITES list. I cannot get a lot of things—like a chambered nautilus—because it is against the law. Shells I used to buy for a $1 are now $5 apiece. A lot of us in the shell business are seeing the end coming."

Saving the shell trade from over-collection will require more than bans, says Barnett. Shelling is a survival strategy for the fishers, who typically come from impoverished communities. Rather than take away their livelihoods, a better approach is to "empower them," she says. A pilot aquaculture project, supported by the National Oceanic and Atmospheric Administration, is working with the fishers of Naguabo, Puerto Rico, to raise Queen Conchs—desirable for their meat and shells.

"They are training the fishers themselves to run the hatcheries," says Barnett. "And that could be part of the solution—a sustainable way of growing the Queen Conch and helping to restore the population."

Massa is mindful of these threats as she hunts for the raw materials of her art.

"I look for people selling older stashes of shells, and I'm very careful about what I pick up," says Massa. "I make it a rule never to pick up live specimens. I want to make sure these things get a chance to reproduce so I can keep doing what I'm doing. The sustainability of our art is a concern. We are dealing with something natural. It's not an infinite resource."

"I MAKE IT A RULE NEVER TO PICK UP LIVE SPECIMENS. I WANT TO MAKE SURE THESE THINGS GET A CHANCE TO REPRODUCE"

A shell hair clasp by Melonie Massa.
Photograph courtesy of the artist

You've Arrived!

GUIDE TO RHODE ISLAND'S SHORELINE GETS AN UPDATE

by **Monica Allard Cox**

HOW COMFORTABLE DO YOU FEEL scaling a cliff to get to the shore?

The answer for me is, not very.

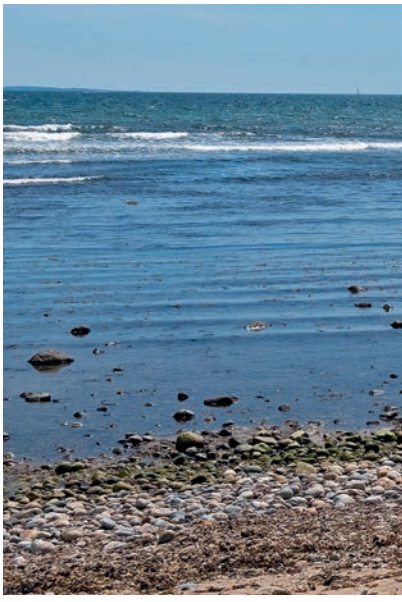
This matters because over the summer, graduate student Erica Meier and I visited hundreds of Rhode Island's public shoreline access points from beaches to boat ramps to narrow paths to the shore and discovered that a number of them are surprisingly precarious.

Our task was to update shoreline-ri.com, a listing of such sites that provides descriptions, photographs, and routable directions. But first we had to evaluate whether to include some of these sites at all—were they visible, overgrown, or would we be sending unsuspecting kayakers or anglers to certain death?

One site in Jamestown had us scrambling down a human-sized rabbit hole, the entrance to its steep and slippery dirt path largely obscured by shrubbery. The payoff at the end was a beautiful view of Narragansett Bay from the top of a rocky drop-off of perhaps 15-20 feet. Could you rappel down the rocks to actually get to the water? Would not recommend.

After some debate, we decided to keep that site on the list. It is a Coastal Resources Management Council (CRMC)-designated right-of-way, after all, and to remove it would bring it one step closer to being lost altogether.

Another CRMC site on Aquidneck Island, however, was quickly rejected. Though it even appeared as a public access site on Google Maps, it was a grassy path to a steep escarpment so far above the water that no real access, even for angling, seemed remotely possible.



Clockwise from above, public shoreline access sites in Portsmouth, South Kingstown, and East Greenwich.

We found out later that some sites—this one was a stormwater outlet—that are publicly owned had been designated as public access sites years ago, though they may not be particularly desirable as such.

But many more sites turned out to be hidden gems—nondescript paths between houses leading to beautiful ocean vistas, rocky outcroppings hosting handfuls of anglers fishing after work, and 18th century coastal batteries tucked into residential neighborhoods reminding visitors of Rhode Island's Revolutionary War history. Some of these sites, primarily those that are simple paths to the shore, are designated by CRMC. Others are managed by the Rhode Island Department of Environmental Management, and still more are owned by municipalities, the federal government, or private entities.

Meier, a Rhode Island Sea Grant-University of Rhode Island Masters of Environmental Science and Management Communications Fellow, has been working to update each of the site listings with the information and photographs collected over the last several months. We invite you to check out the website and explore some of the sites this fall and winter—as the locals will (or won't) tell you, offseason is the best season!

Enjoy!

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A PUBLICATION OF RHODE ISLAND SEA GRANT
& THE COASTAL INSTITUTE AT
THE UNIVERSITY OF RHODE ISLAND
A SEA GRANT INSTITUTION

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An emperor penguin poses for a photo in front of the Coast Guard Cutter *Polar Star* in McMurdo Sound near Antarctica. The ship was participating in Operation Deep Freeze, a project to install satellite communication at McMurdo Station, a U.S. Antarctic research facility.

Photograph courtesy of the U.S. Coast Guard