



2021



SHOALS DIVERSITY SCHOLARSHIP IMPACT REPORT



Cornell University



University of
New Hampshire



Shoals Marine Laboratory (SML) is the largest undergraduate focused marine lab in the country. Jointly operated by Cornell University and The University of New Hampshire, our unique setting, expertise, and educational methodology combine to make us a leader in science education. Appledore Island, a 99-acre field station six miles offshore, and its surrounding waters are the classrooms in which students engage in coursework and independent research. In this setting, SML faculty draw upon over half a century of place-based scientific knowledge of the surrounding ecosystems.

Students who participate in experiential education programs—like SML—are much better positioned for long-term success than those who do not. The active learning modalities we employ at SML have been shown

to foster retention and success in science-related disciplines, especially amongst women and underrepresented students. This fact is especially critical as the United States struggles to adequately recruit and retain diverse students in STEM. Increasing and improving opportunities for underrepresented students to partake in experiential science education is a national priority, and it is a priority to which SML is posed to make significant contributions.

However, we face a challenge. Higher education is expensive, and as a result, roughly 85% of American students need some form of financial support in order to attend college—let alone participate in off-campus, experiential learning programs. We know many SML students must shoulder a heavy financial burden to attend. This challenge creates inequities in terms of access to important educational opportunities.

Nationally, over 60% of students come from families whose household income is less than \$30,000 and/or are first generation college students. On average, American college students graduate with \$36,000 of educational debt. This number is greater for students belonging to underrepresented groups, thereby increasing barriers to success.



To ask students to pay any additional amount for a residential summer program increases their financial burden. Donor support is pivotal and has allowed SML to provide awards to an increasing number of students over the last few years, but we need significantly more funding to make opportunities available to a greater number of deserving students.



The **Shoals Diversity Scholarship** was first offered in 2021 and supported 16 students from around the country. To continue recruiting students and building this opportunity, consistent funding is critical. As outlined by the data below, there is a lot of work to be done to continue increasing the accessibility of our programs; however, the Shoals Diversity Scholarship, as demonstrated in this report, will have immeasurable and lasting impacts on the lives of young scientists. This is just the beginning.

DIVERSITY AMONGST SML STUDENT BODY OVER TIME

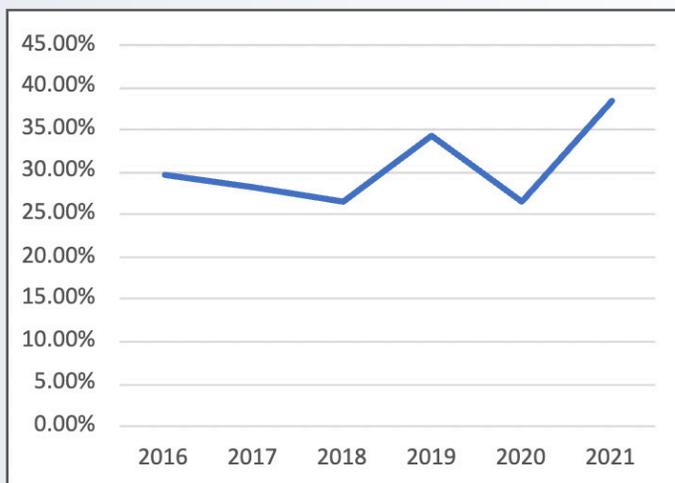


Figure 1. Percentage of students who self-identify as a person of color from 2016 to 2021.

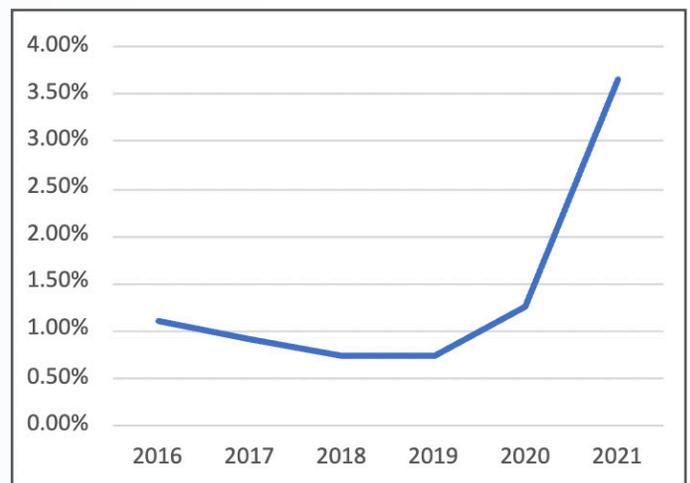


Figure 2. Percentage of students who self-identify as Black from 2016 to 2021.



JAIDA BUCHANAN, UMASS AMHERST '23

"Taking Shark Biology and Conservation at SML this year was easily the highlight of my summer. The experience of being fully immersed for two weeks with a group of people I had never met before was intimidating at first. However, after our first day, the intimidation turned to excitement when I realized for the first time in my life I was surrounded by people who have the same passion for marine biology as I do.



As a woman interested in marine biology, it seems rare to find many other women in this field. A bonus was having two amazing instructors for this class who inspired me to pursue a career in marine biology. Before this class, I had never been fishing, but the thrill of feeling something biting on my line has me dying to go back out. Looking forward, I am excited to continue spending time in the field, and I hope to be back at Shoals next summer. Thank you for providing me with such a meaningful and eye-opening experience!"

“Spending an entire summer on Appledore Island was a one-of-a-kind experience. Waking up every morning to the chatter of the gulls, the scent of the ocean air, and the sight of endless horizons was magical, to say the least. Every day was a new adventure that exposed me to countless learning opportunities, one of my favorites being my visit to the tern colony on White Island.”



JENNIFER ORELLANA, CALIFORNIA STATE UNIVERSITY '21

Under the guidance of residential researchers and from the safety of a bird blind, I found myself immersed in the middle of thousands of terns frantically flying about. From here, I observed what adult terns were feeding their chicks and successfully identified three different species of fish that the birds were commonly consuming. I had previously read about their diet in primary literature articles but observing the feeding process in person and identifying the consumed fish was a personal victory.

The individuals I met while at SML made my time unforgettable. In my three action-packed courses, I made many friends and memories that have taught me so much. And the staff was excellent! Whether we were heading out on the water or trekking the trails on the island, they always ensured we were prepared and safe.



I hope to return to Appledore Island in the future as a staff member so I can share a fantastic experience with incoming students, just as I received this past summer. I want to extend a special thank you for your support which made my time at SML possible. I will carry my newly acquired knowledge, memories, and connections with me for the rest of my academic and professional career.”



BECK KERDMAN, CORNELL UNIVERSITY '24

“Going into my summer at Shoals, I was nervous about my future academic career. Just before arriving to Appledore, I submitted my application to transfer my major to biology; however, I was unsure of my next steps or if biology was even the right field for me. My time at SML completely changed that.

In just a few short weeks, I learned an unbelievable amount about the field of ornithology. More importantly, I learned so much about myself as a young biologist. I discovered that I thoroughly enjoy and excel at fieldwork and hands-on data collection. I observed the complex and charismatic personalities of gulls. I found a new joy and passion in participating in the Gulls of Appledore project as a Field Ornithology student, a data collection assistant, and a volunteer bander.

During my time on Appledore, my major application was accepted, and a feeling of relief quickly followed. My summer encouraged me to make the most of my new field of study and the opportunities available at Cornell. This fall semester, I am taking ornithology, entomology, and animal behavior classes. I am also working in the Cornell Lab of Ornithology doing laboratory work with Mountain Chickadee blood samples. It’s been an amazing experience so far!

These pursuits are the beginning of a new path for me in biological sciences, and it’s a path I would not have been able to fully explore without my chapter at Shoals. Thank you for supporting this life changing opportunity! You have had an immeasurable impact on my academic career.”

"Studying at Shoals Marine Laboratory this past summer offered me an intimate understanding and appreciation for the natural environment. Prior to taking Ecology and the Marine Environment, I felt secure in my desire to pursue a career in environmental policy development. As I headed to Appledore Island, I hoped to develop a better understanding of ecological principles. After two short weeks, my interests and aspirations had transformed dramatically.

The diversity of life in the intertidal zone astounded me – I marveled at moon snails larger than the palm of my hand and colonial tunicates which required a microscope for close viewing.

The environmentally conscious nature of Shoals inspired me, too. Between composting my food waste and limiting my water use alongside my classmates, I truly felt as though I was acting in a way that aligned with my own environmentalist values. Interacting so closely with the marine environment and adjusting my daily practices to be more environmentally conscious sparked a newfound interest in conservation biology.

Without your generous support, I would never have been exposed to this latent interest of mine. After this transformative experience, I hope to minor in conservation biology, eventually completing a senior practicum that focuses on a phenomenon within this discipline that excites me. However, that project is still years away. In

the meantime, I hope to continue exploring conservation biology through my coursework and future summer programs (perhaps at SML!).

I cannot thank you enough for your financial support, as it gave me valuable hands-on experience and sparked a new interest I might have never discovered otherwise. For that, I am forever grateful!"



TARA GANGULY, UCLA '25





"The six weeks I spent taking classes at SML are ones that I'll cherish for the rest of my life. Some of my fondest memories were getting to know my classmates and professors, learning about their personal and professional paths, and having lively discussions about our shared appreciation for marine life. I met so many people with varying backgrounds and interests, and this diversity is something I found to be incredibly valuable."

One of my favorite aspects of the Shoals learning experience is the amount of time spent outdoors, either trekking the island (being mindful of the boisterous gulls) or traveling on a boat as we explored the Isles of Shoals and other parts of the Gulf of Maine. It was on these boat trips I witnessed my first in-person whale (an unforgettable moment) and was introduced to aquaculture – something I'm now seriously considering as a potential career path with the bioengineering degree I'll receive after graduating. When we visited New Hampshire Sea Grant's AquaFort during my Sustainable Fisheries class, I was blown away by the concept of aquaculture. I found the idea of using kelp and mussels to filter out the waste produced by farmed fish absolutely amazing, even dedicating my final project for the class to the topic. My professors were supportive of my interest in aquaculture, answering any questions I had and pointing me towards relevant sources they knew I'd be interested in.

I'm incredibly grateful for your generous support which helped fund my enrollment at SML. Thanks to you, I've made unforgettable memories on a beautiful island and have found a new passion for aquaculture. I hope that those who visit Appledore next summer and every summer after are able to enjoy the experience as much as I did and grow their love for our oceans."



"I've always had a great interest in animals. This interest eventually morphed into wanting to understand more generally how organisms interact with each other and their environment. What I have been unable to do to date, however, is identify a particular group of organisms or an ecosystem that I want to study in depth. My summer at Shoals, made possible by your contributions, both introduced me to a group of organisms I'd never paid much attention to, and gave me a new outlook on the indecision I was experiencing.

Before taking the Marine Parasitology course at Shoals, my knowledge of aquatic organisms was limited to the more eye-catching: marine mammals, cephalopods, sharks, and other flashier fish. Parasites, especially the microscopic ones, were something I only ever thought about in passing. And yet they can have tremendous effects on their hosts, species interactions, and the environment. Here was an area of study I'd never truly considered!

This revelation, in addition to the career night SML hosted, where staff and faculty from varying backgrounds spoke about their professional journey, reminded me that there is not one specific route to success. I

discovered that almost all of the scientists at Shoals floundered at some point in their careers. They also were uncertain about their path at one point, and their experiences encouraged me to take more risks as a young scientist.

I'm now exploring new biology classes at Cornell, and I recently began working as a research technician in a freshwater ecology lab. My experience at Shoals was the push I needed to put myself out there. Thank you!"



PERI COOPER, CORNELL UNIVERSITY '24





Since 1966, SML has offered undergraduate students a unique opportunity to study marine science in the field with world-class scientists. Research has shown rigorous training paired with hands-on experiential learning prepares students for long-term success in STEM. Through donor support, and as evidenced here by these quotes, our programs offer unique learning opportunities that inspire students from diverse backgrounds to pursue careers in science and sustainability. Together, we are building the next generation of environmental ambassadors. Central to SML's vision for the future is to improve inclusivity throughout our student body by increasing the accessibility of our programs to underrepresented students. By providing scholarships aimed at supporting these students, we can ensure access to life-changing, experiential learning opportunities at SML.



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