

THE MARITIME SCIENCE CENTER

at MARITIME GLOUCESTER

A PROPOSAL



Our future needs science education today.

The daily disruption of the COVID-19 pandemic demonstrates the real impact of a global crisis. But an even more extensive global crisis faces us soon. The disruptions caused by climate change will have a devastating effect on our social and economic lives. Climate change problems need scientists and educators willing to take on that challenge and find solutions. That work begins with good science education and inspiration. Each successive generation is becoming more socially active and more environmentally aware. They yearn for more ways to understand the world around them and more ways to engage positively. The time for climate change studies has never been so critical.

How do we know this? For over 15 years, Maritime Gloucester has engaged local and regional students with hands-on marine science education and environmental stewardship programs. During our sessions with students we see their excitement. Their engagement with our curriculum and with our educational experiences is tangible. Our local teachers, counselors, and school administrators recognize the value of our personalized educational experience for their students. Our mission to inspire students and visitors to value marine science, maritime heritage, and environmental stewardship through hands-on education and experiences drive our commitment to meeting this growing need.

Toward this end, we are pleased to announce our plans for a new **Maritime Science Center at Maritime Gloucester**.

The Need

Located within our existing campus, The Maritime Science Center will be a hands-on, year-round educational space for the thousands of students and visitors we serve. A multi-faceted space, it will include

- a small outdoor aquarium,
- several indoor touch tanks,
- exhibit space,
- interactive audio-visual experiences,
- a lab with digital microscopes,
- functional animal storage tanks,
- a breakout research space,
- and multiple educational classroom areas, all with a maritime science focus.

Not only will this space celebrate our connection to the ocean through marine sciences, it will also celebrate our connection to Gloucester Harbor through our heritage and our local culture. Blending the culture, heritage, and science education creates a singular Maritime Science experience in the region.

How does a historically significant maritime heritage site become an award-winning environmental education platform? By listening to the needs of our community. When our local schools had science education defunded, Maritime Gloucester responded to the need and developed educational programs with a STEM focus. Maritime Gloucester is a historic working waterfront whose location on Gloucester's inner harbor is a unique science platform. Our innovative approach to science education blends marine science programming with sense of place curriculum at a one-of-a-kind maritime heritage environment.

This blended experience provides the participant a deeper engagement, more active retention, and a willingness to continue to learn. It personalizes the educational experience, driving home the importance of ongoing stewardship. This integrated approach and comprehensive impact won us the Gulf of Maine Council On The Marine Environment's Visionary Award in 2018. As Gregg Bach, Gloucester's Assistant Superintendent of Schools states it:

"Maritime Gloucester has been one of our most valued partners for many years, and has worked with the Gloucester Schools to continually refine and adapt its programs to the needs of our students... (Their program combines) lessons aligned to Massachusetts Curriculum Frameworks with hands-on marine and physical science experiences at the Maritime Gloucester learning laboratories and research vessel. I have attended several of these field studies, and have seen the level of engagement firsthand. Though our students have grown up next to the ocean, for many, these field trips are the first time they have ever accessed the harbor...

Though the level of student excitement and engagement is compelling, the greatest impact, from my perspective, is the embedded coaching the Maritime Gloucester staff provides to our teachers. Many of our teachers note that they never received science-specific training during teacher preparation, and have limited content knowledge and hands-on exploratory lesson planning experience. During classroom visits, Maritime Gloucester staff members fill essential roles as collaborators and coaches in lesson development, content knowledge, and instructional practice. Our district does not have a science coordinator, and has limited funds for materials and professional development.... **Every science opportunity provided by Maritime Gloucester is like gold**, and we would like nothing better than to continue and expand our partnership. Thank you for giving Maritime Gloucester's mission your utmost consideration. They are an extraordinary asset to our city and schools, and your support will help them provide even more extensive programming for our students." (emphasis added)

Over the past many years, Maritime Gloucester responded again to the community need and invested in a Sea Pocket Aquarium, continuing our efforts to actively support science education in Gloucester Public schools. This aquarium is an educational jewel for Gloucester. It allows students to engage with live animals and study their environment in a real and inspiring way. It quickly became a sought-after feature for school administrators, teachers, field trips, local college and organizational research entities, and tourists. While the current outdoor aquarium is in demand, its seasonal use severely limits our ability to deliver our programs when the need is at its highest: the winter school months. Scheduling school visits for aquarium work is restricted to September, early October, and April through May. Our current programs are often cut short, adjusted, or postponed by weather conditions during these months.

The proposed Maritime Science Center will repurpose 1,350 square foot of indoor space, providing year-round options for us that are desperately needed. While this space enables us to better serve our existing partners and mission, it also creates new opportunities for sustainable revenue and educational

outreach. We are excited to discuss new collaborative options with local partners as we advance more opportunities for their participation.

Analysis

We have studied the feasibility of this proposed campaign, including a dedicated review of our operations and our mission. Some long-term benefits of the project are:

- Increased and sustainable revenue streams during months we historically would not have generated field trip or programmatic income with our aquarium.
- Increased capacity allows us to provide simultaneous programming. Currently, we cannot adequately serve multiple classes at the same time due to class space limitation.
- Increased classroom space capacity allows us to break classroom groups into smaller focus areas and provide better hands-on options.
- Reduced monthly operational expenditures vs. our current all-outdoor aquarium.
- Increased dedicated research space for older student groups, an often-requested item.
- The ability to adequately handle field-trip demand. We have had to turn away field trip requests when school programming was using the site in previous years.
- A broader platform to demonstrate and engage the visiting public around our classroom curriculum.
- More space for new audience options, such as adult courses.
- Additional space for collaborative education programs with local non-profit partners

A cost-effective proposal was achieved by capturing current space that is inadequately utilized and designing a project that includes generous in-kind labor. We have a history of strong community partners and have explored this expansion proposal with positive feedback.

While community interest is high, we know that we need to be measured in our approach to funding this project before we advance. We are proud to say that in this fiscally cautious COVID environment, our proposal has received positive feedback from grant makers and foundations, including a multi-year grant from the Cummings Foundation. We have received an additional grant from Applied Materials Foundation to develop our Maritime Science Center curriculum further and make it accessible to more groups regionally.

We recognize the need but remain cautious of investing in capital improvements during this time. Long-term funding must be secured to operate and staff this Maritime Science Center for the coming years. We are confident in our analysis of the operational and financial requirements involved over the next few years, relying on our eight-year record of running a similar system. During the coming winter months, we anticipate not being able to offer our normal field trip schedule to local schools. This allows us to remain closed and complete the construction without the competing space constraints that might delay or increase the budget for the construction phase. Most importantly for our analysis, the new design for this space will decrease our existing monthly operational costs compared to our current outdoor aquarium. We are encouraged by the scalability of the project.

The Plan

We have planned for a multi-phased project, with each Phase being a distinct, functional use and design by itself. We are currently seeking funds for Phase 1: Renovation and Maritime Science Center. At the end of this Phase, we will have achieved 1,350 square foot of multi-purpose classroom and exhibit space with indoor year-round touch tanks.



Phase 1 is optimally located within our current campus plan, adjacent to the Sea Pocket Aquarium, Plankton Digital Microscope Lab, the Sarah Fraser Robbins Marine Classroom, and the Harriet Webster Pier. This accessibility is key to our functional use of the space.



Proposed site elevation from the Harriet Webster Pier:



The interior of the Maritime Science Center will create a full-time exhibit space for the general admission visitor. Current public outreach levels and marine science education programs are space-constrained by our existing exhibit areas and galleries. The new space will allow for additional docent interpretation, guided tours, educator-led field trip exploration, and ongoing educational program use.

Construction

The construction plan begins with removal of temporary walls, existing plumbing, and old marine animal storage tanks. The project will then move forward with features such as:

- A bank of new tanks for housing and viewing our animal species collection in the main space. These tanks will need to be plumbed, and mechanicals run through for operation.
- A new touch tank, along with necessary mechanicals.
- Areas of engagement that allow for small group breakout sessions.
- A design that allows most exhibits to be collapsed to classroom whiteboard and digital presentation screen.
- A new roofed structure with floor to ceiling glass entryway from the aquarium to replace the existing bay of windows.
- A separate storage area and mechanicals, visible to visitors as a behind-the-scenes exhibit experience.
- Interactive screens for content presentation to the visiting audience.
- Additional space for a possible virtual sandbox or living harbor habitat table.
- Moveable and collapsible displays to allow for increased education and classroom space.
- A full glass wall overlooking the Pier to allow for light in the new space and to entice outside visitors to come in.

Functionally, the Maritime Science Center will require new systems and mechanical components to ensure our animals' viability and viewing. Separate tanks with dividable compartments will allow for the easy creation of various habitats to adapt to the different animal needs, as necessary. This series of smaller tanks will allow us to control the water volume required to be pushed and chilled through the system, which will be a needed cost-saving feature. These can be plumbed together and allow for scalable system management. This indoor system will be comprised of a chiller, pumps for pushing the water, a protein skimmer, and multiple series of plumbed PVC components. The space will maintain an industrial appeal with painted floors, brick exposed columns, and wooden divided light windows.

Artistic Concept of Interior Design:



Project Financial Needs

Total Cost for Phase 1: \$111,910.

Needed to date: \$53,927.

The COVID-related closure of our aquarium eliminates the need to complete the project in phases. Under conditions when we are open to the public, precautions would need to be in place to protect and house existing animals. By raising these funds quickly, we will be able to expedite the project during our winter closure and, therefore, keep renovation costs significantly lower. Our projection is this expedited process shortens the construction timeframe by as much



as five weeks. Additionally, we are fortunate to have good community support in the way of **\$24,650 worth of donated in-kind labor to date.**

As noted above, this project has received major financial support from a Cummings Foundation grant. This multi-year grant allows for \$33,333 toward the first year's construction costs. As a primary stakeholder in our project, Cummings Foundation funding places our campaign on a good initial footing. In addition to the first year of construction costs, this grant includes two additional grant disbursements of \$33,333 in the following two years. That \$66,667 over the next two years are dedicated toward operational costs of this project. With these funds secured, we have a financial foundation upon which we can confidently build a successful project.

Once completed, the Maritime Science Center will need exhibit content and curriculum development to effectively open its doors to the public. We are pleased to have secured funding for exhibit interpretation and outreach costs through an Applied Materials grant of \$17,000. We have not included these costs in this case statement's Project Financial Needs projections as it is separate from the construction phase, but it is important to note that these costs have been identified and funds have been secured.

With this Case for Support, we are reaching out to the community to raise the final \$53,927 needed.

We hope that this proposal excites you about the opportunity we now face. We feel that this investment in capital improvements has real, tangible benefits to the mission of Maritime Gloucester and to the youth of Cape Ann.

Means of Support

There are many ways to support this project.

- Donations toward our construction costs to complete Phase 1 are the most time sensitive.
- An annual giving pledge to maintain the operations of the new Maritime Science Center, securing this opportunity for future generations.
- Leadership gifts in the range of \$10,000 or more.
- Sponsorship with recognition opportunities.
- Matching challenges.
- Naming options.

We would like to discuss any of these options with you. Please contact Michael De Koster, Executive Director, at 617-233-7016 or mdekoster@maritimegloucester.org for more information.

We appreciate your support.

PROGRAM IMPACT STATEMENT - Drew Sweet

"I started at Maritime Gloucester as a volunteer aquarium intern before my senior year of high school. Over the following five years, I remained involved at Maritime Gloucester and took on increasing responsibilities, from working as an educator to eventually supervising the summer internship program.



Drew teaching at Maritime

I also organized the weekly open plankton labs during the summer months, taught many of the summer camp programs, and helped develop curriculum for Maritime Gloucester's core education programs.

After finishing my undergraduate degree, I went on to earn a Ph.D. in ecology and evolutionary biology at the University of Illinois. I'm currently a postdoctoral researcher at Purdue University, and beginning in January 2021 I will be an Assistant Professor of Biological Science at Arkansas State University, where I will be starting my own research lab and teaching courses in evolutionary biology and genomics.

I look back on my time at Maritime Gloucester as being one of the most crucial experiences for my development as a scientist and educator. People at Maritime Gloucester taught me that being a good scientist is not only about asking good questions, but it's also about communicating ideas to people of all ages and backgrounds in ways that enable them to be part of the scientific process.

I had countless opportunities to learn new things about marine science and maritime heritage, and then teach what I learned to students and the general public visiting the Maritime Gloucester campus. Maritime Gloucester's location on Gloucester Harbor and access to unique education spaces (e.g., the aquarium, microscope lab, and the Ardelle) made this experience particularly powerful. For example, I could take students to collect their own samples from the harbor before teaching a lesson on marine invertebrates. This hands-on opportunity was invaluable both for my own education and for my ability to inspire others.

I cannot stress enough how much Maritime Gloucester has positively impacted my life.

The people at Maritime Gloucester invested in me and provided many opportunities for me to develop as a scientist and educator, and I think I have in turn been able to invest in students through teaching, mentorship, and research in higher education. I can say with decent certainty that I would not be where I am today without my experiences at Maritime Gloucester. It is my hope that they will be able to continue their work to inspire and engage young students in similar ways for years to come.



Drew "in the field" today. Science in action.

Sincerely,

Drew Sweet, Maritime Gloucester Alumnus