



21st Century Museum Professionals

Sample Application 21MP-260161-OMS-26

Bald Head Island Conservancy

Amount awarded by IMLS: \$424,582

Amount of cost share: \$818,809

The Bald Head Island Conservancy (BHIC) will create and implement a structured workforce development pipeline to prepare participants for careers in museums, conservation organizations, and informal STEM (Science, Technology, Engineering, and Mathematics) education. BHIC will create a vertically integrated program that combines high school volunteer engagement, undergraduate internships, and post-baccalaureate residencies and fellowships with professional development, mentorship, and applied research opportunities at a hub for coastal conservation research and informal education. The project bridges early exposure, hands-on experience, and long-term career preparation to provide hands-on training and mentorship for participants, ensuring participants develop the STEM, research, communication, and leadership skills required for science-based careers at museums and informal education centers. Through structured mentorship, immersive fieldwork, and applied research opportunities, the project will equip the future museum workforce with technical, leadership, and communication skills and provide a living laboratory for experiential STEM learning for high-school students and early-career professionals in STEM and museum workforce pipelines.

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of Completion

When preparing an application for the next deadline, be sure to follow the instructions in the current Notice of Funding Opportunity for the grant program and project category to which you are applying.

Proposal Narrative: The Living Coast: An Immersive STEM Museum Workforce Pipeline Initiative

Project Justification

The Living Coast: An Immersive STEM Museum Workforce Pipeline Initiative addresses the 21st Century Museum Professionals (21MP) program goal to recruit and train future museum professionals, advancing the objective to expand pathways into the museum field by adapting higher education programs to be more responsive to the needs of the museum workforce.

By leveraging Bald Head Island Conservancy's (BHIC) unique barrier island setting, we will integrate coastal conservation, animal handling, field research, and public-facing environmental education experiences into the in-depth training program. Participants will gain immersive, hands-on STEM training, community engagement experience, and research opportunities that are rarely available elsewhere. This initiative bridges academic preparation with applied museum workforce competencies while responding to national and local gaps in STEM and museum workforce readiness.

Need. Science-based museums and environmental institutions face a growing shortage of professionals who can combine STEM expertise with leadership, curatorial skills, and effective public engagement.¹ Despite national priorities emphasizing workforce development, cross-disciplinary training, and career pathway expansion, the workforce pipeline for informal science education centers—from first exposure through career advancement—remains underdeveloped, limiting institutions' ability to cultivate the next generation of professionals.

Early exposure to informal science education helps students increase their likelihood of pursuing STEM careers.² Students who participate in museum volunteer programs pursue science careers at higher rates than the national average while gaining professional skills. These experiences are especially impactful for students from rural and coastal communities, who may face geographic or financial barriers to STEM career pathways.

Similarly, temporary, seasonal, and part-time museum roles provide valuable early-career experience but often include limited training and professional development, resulting in isolation and underinvestment.³ Addressing these challenges requires structured mentorship, applied training, and career scaffolding to support the museum workforce at each stage of their professional journey.

The Living Coast STEM Museum Workforce Pipeline Initiative responds directly to these needs by creating a vertically integrated program that combines high school volunteer engagement, undergraduate internships, and post-baccalaureate residencies and fellowships with professional development, mentorship, and applied research opportunities at a hub for coastal conservation research and informal education. This approach bridges early exposure, hands-on experience, and long-term career preparation, ensuring participants develop the STEM, research, communication, and leadership skills required for science-based careers at museums and informal education centers.

Primary Audience. Students and early-career professionals are the primary audience for the program, including:

- High school students – approximately 25 students per year engaged in early exposure volunteer programs.
- Brunswick Community College biology students – 6 students per year participating in our *Sea Turtle Scientists in Training* field program.
- Undergraduate interns – 12 students participate in 3-month residential, field-based internships in marketing, environmental education, sea turtle conservation, or coastal environmental science annually in the summer. 4 students participate in 4-month residential, field-based internships in environmental education annually in the fall.
- Post-baccalaureate field technicians – 4 recent graduates per year in 9-month immersive positions.
- Sustainability Program Fellowship – 3 graduate students seeking Masters or Doctoral degrees supported in collaboration with the BHIC Johnston Center for Coastal Sustainability and the students' individual universities.

Ultimate beneficiaries include the participants themselves, the leadership of STEM museums and environmental institutions that will employ these trained professionals, and the public visitors who benefit from engaging, scientifically informed programming. By strengthening this workforce pipeline, the project delivers lasting impact on both emerging professionals and the audiences they serve.

The Living Coast STEM Museum Workforce Pipeline Initiative will produce professionals with applied STEM expertise and public engagement skills. By combining immersive field training, mentorship, and professional development, participants enter the workforce with the competencies and confidence needed to fulfill the missions of museums and informal education centers. Collaboration with BHIC and partner institutions will expand professional networks, while program alumni will bring their skills and best practices to museums and STEM organizations nationwide, strengthening the field and enhancing public programming.

Project Work Plan

Activities and Sequence. Upon notification of funding, project leads will coordinate schedules and responsibilities for high school engagement, *Sea Turtle Scientists in Training*, undergraduate internships, post-baccalaureate technician residencies, and sustainability fellowships. Staff will coordinate logistics for daily responsibilities, fieldwork, educational programming, and professional development sessions to ensure participants progress along the workforce pipeline. Students from the different programs will interact with each other through our programming, allowing younger students to benefit from mentorship of older students while giving older participants mentorship experience.

High school program. High school students will be recruited through established relationships with local high schools, social media outreach, and in-person marketing at community events. Students will participate in a range of hands-on volunteer activities, building on traditional

opportunities such as supporting summer camps and field trips, and expanding to include trail maintenance and conservation fieldwork. Through these activities, participants will receive training and mentorship from BHIC staff, gaining foundational STEM knowledge and leadership experience. Students will be introduced to conservation, research, and environmental education career pathways, reinforcing science communication and collaborative skills.

Sea Turtle Scientists in Training provides Brunswick Community College students with a three-day, two-night immersive field experience at BHIC. Participants gain hands-on experience in marine biology and environmental research, including participating in sea turtle nest surveys, analyzing data, and observing biological sampling techniques. Classroom activities will help students connect fieldwork to broader conservation and ecological topics focusing on sea turtle biology, life cycle, nesting and conservation at BHIC.

Through mentored activities, students will develop scientific reasoning, data interpretation skills, and communication skills. They will present their findings to BHIC staff and peers, reflecting on research processes and career pathways. STSIT emphasizes mentorship, professional networking with BHIC staff, and exposure to STEM careers for students from rural and coastal communities with limited access to hands-on science experiences. This program will equip participants with both technical skills and professional confidence while fostering long-term interest in environmental science and conservation.

Interns participate in short residential programs during the summer or fall. Participants are selected competitively based on academic interest, prior experience, and alignment with program goals within the sea turtle research, environmental education, marketing, or coastal environmental science tracks. Internships provide hands-on experience in their selected track while interacting with other programs to develop a broad understanding of STEM careers.

Sea Turtle Interns conduct nightly beach patrols at Bald Head Island, one of only two sea turtle saturation tagging beaches in North Carolina. They perform full work-ups on nesting turtles, including flipper and PIT tagging, measuring, collecting genetic samples, caging nests for protection, relocating at-risk nests, completing nest excavations, and assisting with strandings. These activities provide intensive, applied experience in wildlife research and management.

Education Interns design and deliver science-based programs for learners of all ages, from toddlers to adults. Hands-on activities include birding, kayaking, fishing, and nature tours, along with leading evening turtle walks and shifts at the visitor information desk. Through these experiences, interns refine science communication skills, foster community engagement, and inspire the public to connect with and care for the natural environment.

Marketing Interns translate scientific work into accessible stories and educational messaging, building skills in science communication, content creation, and nonprofit marketing. They assist with social media, photography, video, website development, and creation of digital and printed promotional materials.

Coastal Environmental Science Interns conduct population and habitat monitoring for key wildlife, including deer and alligators, manage invasive plant species, track aquifer levels, and perform water quality sampling. They assist with research projects, including those led by museum and university collaborators. They also integrate field data with conservation planning, supporting both research initiatives and ecosystem management objectives.

All interns complete independent research projects, which are closely mentored by BHIC staff, culminating in presentations to local audiences. Interns will have the opportunity to present at professional conferences. All interns will attend regular professional development sessions addressing interdisciplinary teamwork, scientific communication, and career navigation, ensuring participants leave with applied skills, professional confidence, and a strong foundation for careers in museum, conservation, or environmental education fields.

Post-baccalaureate Technicians engage in nine-month immersive residencies and are selected competitively based on academic interest, prior experience, and alignment with program goals within the sea turtle research, environmental education, marketing, or coastal environmental science tracks. Their work mirrors the corresponding intern tracks but in greater depth and over a longer period, allowing for mastery of complex field, research, marketing, and educational skills. Across all tracks, technicians mentor interns, reinforce professional development topics, and help facilitate independent research projects. Their extended tenure enables them to refine leadership, problem-solving, and project management skills, serving as a bridge between BHIC staff and interns while contributing to the continuity of BHIC's research and educational programs. Technicians are encouraged to present about their area of expertise locally, and to apply to present at professional conferences.

Sustainability Fellows are graduate students in environmental fields who apply for and receive fellowship funds to conduct coastal sustainability research. While specific university affiliations are not predetermined, applicants are evaluated based on a competitive application process and their alignment with BHIC's conservation priorities and research goals. Through their one-year fellowship, they will conduct applied field studies integrated with BHIC research objectives and receive mentorship from BHIC staff and their associated collegiate faculty. The fellows also serve as peer mentors for interns and technicians, strengthening the overall workforce pipeline. Research outcomes are disseminated locally, at professional conferences, and through museum and STEM networks. This experience cultivates advanced research, public communication, and interdisciplinary problem-solving skills while contributing new knowledge to the field of coastal conservation science. Please see *Fellowship Letters of Support* in *Supporting Documents* for more information.

Throughout the project, all participants will receive orientation on safety, project goals, and BHIC policies, along with ongoing mentorship and skill-building sessions. Progress will be monitored through regular check-ins, activity reports, and milestone reviews.

By structuring activities sequentially and scaffolding experiences from high school exposure to graduate-level research, BHIC ensures participants gain progressively advanced skills in STEM, conservation practice, public engagement, and professional development. These activities

collectively prepare participants for careers in science-based museums, environmental organizations, and informal STEM education while generating data to evaluate program impact.

Project Staff. Dr. Jennifer Wiggen, BHIC Director of Education & Engagement, will serve as the project manager and principal investigator for this project. She will coordinate other staff members and manage project timeline and deliverables. She will serve as the advisor and mentor for the environmental education interns and resident technicians; she will be the liaison for the high school and Sea Turtle Scientists in Training programs. Jennifer will also serve as the lead on survey data collection and analysis.

The following BHIC staff will lead project components within their departments:

- Dr. Beth Darrow, BHIC Director of Science, will serve as the advisor and mentor for the coastal environmental science interns, resident technicians, and fellows.
- Paul Hillbrand, BHIC Sea Turtle Biologist: Advisor and mentor for sea turtle interns and resident technicians; field-work coordinator for Sea Turtle Scientists in Training program.
- Will Burgman, BHIC Marketing Associate: Advisor and mentor for marketing interns and resident technicians.
- Heather Bariso, BHIC Coastal Educator II: Educational program coordinator and mentor for education interns and resident technicians.
- Allison Polinski, BHIC Coastal Scientist II: Field-work coordinator and mentor for coastal environmental science interns and resident technicians.

Non-BHIC collaborators and roles:

- Jen Damin, Executive Director of Professional Development and Elementary Education, Brunswick County: Recruitment assistance for high school volunteer program.
- Dr. Kim Jones, Brunswick Community College, Dean of Arts & Sciences: Recruitment assistance for STSIT program.
- Current scientific collaborators and conservation professionals including university faculty, NC Wildlife Resources Commission and Department of Environmental Quality staff, and Village of BHI municipal leaders.

Interact with interns, technicians, and fellows during research projects; university faculty are primary research mentors for fellows. Please see *Key Project Staff and Resumes*.

Resources. *The Living Coast: An Immersive STEM Museum Workforce Pipeline Initiative* will take three years to complete. The time commitment of staff to complete this project will be significant, requiring the investment of time and expertise from six full-time BHIC staff members to prepare, implement, and evaluate the project. Additional resource needs include leveraging partnerships with local high schools, Brunswick Community College, and regional universities to enhance program reach and expertise.

IMLS funds will cover salaries and stipends for undergraduate interns, post-baccalaureate technicians, and a portion of fellow support, travel costs for participants, and STSIT supplies. This funding is essential for completing project activities and ensuring full engagement across all levels of the workforce pipeline. BHIC will provide cost share through expert staff time for

mentorship, project management, and supervision, as well as in-kind support such as room and board, ATV and golf cart access, and other physical resources necessary to implement immersive field experiences safely and effectively.

Participant Recruitment. Participants will be recruited through established educational partnerships, regional outreach, national recruitment efforts, and targeted marketing designed to expand access to museum and STEM career pathways. BHIC will emphasize outreach to students and early-career professionals from coastal and rural communities, where opportunities for hands-on experience with science-based museums and environmental organizations may be limited. Recruitment will include direct outreach to high schools, community colleges, university departments, museum networks, and social media campaigns highlighting BHIC's unique opportunities.

High school participants will be recruited through partnerships with the Brunswick County public school system as well as social media and digital marketing to BHIC's community of supporters. Recruitment for the *Sea Turtle Scientists in Training* program will occur in collaboration with faculty at Brunswick Community College, connecting classroom learning with applied field experience and professional skill development.

Undergraduate internship, technician, and fellow positions will be advertised nationally through university career centers, museum networks, and relevant academic departments. BHIC has a strong, long-standing reputation for immersive internships, technician, and fellowship programs, and its unique barrier island setting offers a compelling environment for hands-on conservation, research, and environmental education. Paid opportunities, along with free room and board for residential participants, further enhance program accessibility and appeal to top candidates.

Selection across all programs will follow procedures led by BHIC staff and partner representatives. Candidates will be evaluated based on demonstrated interest in STEM or environmental fields, commitment to collaborative learning, and potential for professional growth within informal science education or environmental science careers. This approach ensures transparent, merit-based selection while leveraging BHIC's reputation and unique offerings to recruit and prepare a strong, well-qualified future museum workforce.

Risks. Turnover among key project staff at BHIC or one of our partnering organizations could hinder project progress. Care will be taken in documenting the planning process and overarching project needs to ensure smooth continuation of the project in the event that turnover occurs. In-person training and fieldwork may be interrupted by natural factors such as hurricanes or other extreme weather conditions; project planning will build in contingencies for such disruptions. Recruitment and participation of high school students, interns, technicians, and fellows is not anticipated to be a barrier due to BHIC's longstanding record of successful recruitment in these areas. Established partnerships with local high schools, Brunswick Community College, and regional universities will be leveraged to maintain robust applicant pools and ensure adequate program participation.

Tracking Progress. Progress toward project goals will be tracked through coordinated project management, ongoing evaluation, and assessment of participant outcomes. BHIC has extensive experience leading internship, technician, and fellowship programs, and program success will be evaluated through exit interviews, supervisor competency assessments, and ongoing alumni tracking. A detailed project plan (see *Schedule of Completion*) will ensure timely completion of activities across all program components. BHIC staff will conduct quarterly internal review meetings to monitor progress and address challenges or opportunities for improvement. Milestone-based meetings with external partners will further ensure accountability and alignment across collaborative activities.

Participation will be tracked by counting the number of students, interns, technicians, and fellows in each program annually, as well as completion of their training and research activities. Each intern and technician will complete an exit interview, and supervisors will complete competency assessments based on the National Association of Colleges and Employers (NACE) Career-Ready Competencies, evaluating career readiness, applied skills, and professional growth. Qualitative feedback, reflections, and supervisor evaluations will provide additional insight into short-term program effectiveness. See *NACE: Career Readiness* document in *Supporting Documentation* for more information.

Long-term impact will be evaluated through longitudinal tracking of alumni via annual email surveys. Career placement data will determine the project's effectiveness in strengthening pathways into the museum, conservation, and STEM workforce, informing future program refinement.

Project Results

Collectively, the project will provide hands-on STEM training and mentorship to 75 high school students, 44 undergraduate interns, 12 post-baccalaureate technicians, and 3 sustainability fellows over three years, strengthening the informal STEM and museum workforce pipeline by increasing participants' knowledge, skills, confidence, and professional competency. Through documentation and dissemination of research and program outputs, participants gain experience presenting their work to professional audiences, reinforcing applied skills and career readiness. By equipping participants with technical expertise, research experience, and leadership skills, *The Living Coast* initiative will foster lasting impact, connecting alumni directly to career pathways in museums, environmental organizations, coastal research, and STEM education. Alumni will continue to advance professional practice, provide mentorship, and engage in public outreach, while helping cultivate the next generation of skilled professionals. This initiative expands access to immersive STEM and museum experiences, building a workforce prepared to advance coastal conservation, informal science education, and public engagement nationwide.

Footnotes - See *Bibliography* in *Supporting Documents*

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