



2022 - 2025 Strategic Plan

Mission: To improve the quality of life for the people of downeast and coastal Maine through marine research, marine science education, and innovations in wild and cultured fisheries.

Vision: DEI's groundbreaking work will generate new knowledge of Maine's marine ecosystems for all who depend on them.

Capabilities: The dynamics of a changing ocean and climate, the necessity for sustainable uses of marine resources, and opportunities for restoration ecology all position Downeast Institute for innovative leadership and collaboration in its core work of applied marine research.

DEI is the easternmost marine research laboratory and education center in the United States. Our unique, cold-water location with immediate ocean access and research campus provide exceptional capacity for scientists, marine educators, and their teams. As the University of Maine at Machias Marine Science Field Station and local experiential classroom, DEI enriches the education of youth, university students and the visiting public. DEI cultures commercially important shellfish seed, restoring and creating economic opportunities for harvesters, aquaculturists, and other entrepreneurs throughout coastal Maine and beyond.





Goals

- A. **Create new aquaculture opportunities** by discovering successful shellfish hatchery, nursery and grow-out techniques with multiple species and by producing seed stock on a commercial scale.
- B. **Serve as the Marine Science Field Station for the University of Maine at Machias (UMM)** by providing a research, educational, and conferencing facility for use by faculty, staff and students.
- C. **Provide leadership and credible scientific information** to help harvesters, policy-makers, regulators and others involved in shellfisheries to adapt to a changing marine environment.
- D. **Increase experiential marine science education** for K-12 students, their teachers and the visiting public with the intent of increasing literacy in marine science and research.
- E. **Provide marine research infrastructure and shellfish hatchery space** to meet the demand for research, education, and aquaculture production capacity in Maine and beyond.
- F. **Attract U.S. and international marine research scientists** seeking the unique marine environment, facilities and oceanographic features in the region and on our campus.
- G. **Fortify DEI's capabilities to meet the goals of its strategic plan** through governance, revenue generation, adequate staffing and ongoing communications.

Goals with Objectives

A. Create new aquaculture opportunities by discovering successful shellfish hatchery, nursery and grow-out techniques with multiple species and by producing seed stock on a commercial scale.



1. Continue the annual production of soft-shell clam seed to supply municipal clam committees, and an increasing number of individual clam farmers leasing flats in their towns.
2. Continue to provide ropes seeded with gold mussels and blue mussels to provide a predictable seed supply to sustain the mussel aquaculture industry.
3. Produce other species of commercially important shellfish in response to grower or municipal demand.
4. Advance hatchery, nursery and grow-out trials of Arctic surfclams - an internationally unique project with the potential to create a new Maine aquaculture seafood product.
5. Pursue research to develop hatchery production methods for sea scallop and European oyster seed and rear them consistently through their larval, settlement and nursery phases.
6. Maintain limited production of cultured lobster juveniles for researchers, with capacity to scale up should demand for lobsters increase for research or aquaculture purposes.
7. Remain receptive to additional marine research and selective breeding opportunities with other commercially important species.
8. Publicize research results and information related to commercial aquaculture opportunities in journals, popular media and through keynote and workshop presentations.
9. Continue to specialize in strategic partnerships with growers, including demonstration farms, to advance commercialization of our research and explore potential aquaculture opportunities for Maine's coastal communities.
10. Continue a selective breeding program to develop cold-tolerant American oyster seed to expand the opportunity to farm this species in eastern Hancock and Washington County.

B. Serve as the Marine Science Field Station for the University of Maine at Machias (UMM), by providing a research, educational, and conferencing facility for use by faculty, staff and students.

1. Continue use of the DEI site and facilities for field labs by UMM professors.
2. Provide support for increased use of DEI by UMM/UMaine science and other faculty.
3. Collaborate with UMM/UMaine faculty to create a residential Semester by the Sea educational experience at DEI.



4. Develop strategies for seasonal student exchanges with other colleges and universities.
5. Provide supervision for marine science internships and support for independent and directed studies.

6. Publish academic research papers reflecting DEI's affiliation as the UMM Marine Science Field Station and present findings and analyses at academic symposia, legislative hearings and public forums.
7. Work with the UMM/UMaine Admissions Office to strengthen DEI's presence, e.g., digitally, in enrollment materials, on campus kiosks, and campus tours.
8. Collaborate with UMM/UMaine faculty and others to create intensive marine resources education experiences for Maine legislators, members of local shellfish committees, and other policy makers.
9. Host one or more academic gatherings such as a conference with U.S. and Canadian soft-shell clam biologists/ecologists.

C. Provide leadership and credible scientific information to help harvesters, policy-makers, regulators and others involved in shellfisheries to adapt to a changing marine environment.



1. Carry out well-replicated research projects using experimental and sampling designs that instill confidence for all in the results.
2. Contribute to baseline research along the Maine coast on changes in the demography of shellfish predators such as milkyribbon worms and green crabs, and work to institutionalize long-term research sites.
3. Conduct field research to test and refine a model shellfish management program that will protect wild and cultured soft-shell clams until they are large enough to resist predation.
 - a. Work with Department of Marine Resources (DMR) and the Maine legislature to create a soft-shell clam research fund.
4. Maintain and expand use of recruitment boxes to monitor productivity and survival rates of commercially important shellfish over time.
5. Communicate information effectively to all, and provide technical assistance to harvesters, aquaculturists and other entrepreneurs.
6. Conduct laboratory and field research to test the response of specific species to ocean acidification and warming caused by climate change.
7. Contribute to the scientific knowledge base and public understanding of the role of predators.
 - a. Publish academic research in peer-reviewed journals.
 - b. Be a media resource for news features and editorial content.
 - c. Conduct public outreach via symposia, workshops, talks, DEI's website, and social media.

D. Increase experiential marine science education opportunities for K-12 students, their teachers and the visiting public with the intent of increasing literacy in marine science and research.



1. Continue offering Marine Science Days during the school year for approximately 24 downeast middle and high schools, increasing impact by prioritizing opportunities for ongoing interactions and long term projects.
 - a. Develop and provide pre- and post-visit curricula and other materials for use by teachers in their home classrooms.
 - b. Continue to utilize distance learning technology to enhance and

- augment interactions with students.
2. Offer summer programs with hands-on learning about the local marine environment for students in grades K-12 and their families, growing summer program enrollment to a maximum of 60 each summer.
 3. Remain flexible and responsive to requests for specialized educational experiences statewide, including field research projects, gifted and talented programs, work with children and youth with disabilities, and initiatives such as the Blueberry Harvest School (Mano en Mano) and Lubec Summer Recreation.
 4. Provide in-school lessons on local marine fauna with DEI's traveling touch tank and explore opportunities for a deeper relationship with after-school programs such as EdGE, an after-school program of Maine Seacoast Mission.
 5. Collaborate with Jonesport-Beals High School to offer apprenticeships for students enrolled in their regional career and technical education program in aquaculture.
 6. Provide annual professional development in marine science through the Coastal Science Academy and short term/specialty workshops that confer recertification credits for approximately 100 K-12 teachers and educational technicians.
 7. Increase opportunities for the general public to learn about the local marine environment and aquaculture research and production, e.g., Shellfish Field Day, periodic lectures, tours and special events.
 8. Expand education internships for high school age students during summer camps and the school year.
 9. Provide curricular input and ongoing guidance to Eastern Maine Skippers Program (EMSP), an immersive marine education program with downeast high schools.
 10. Explore collaborations in educational program delivery with organizations such as the Gulf of Maine Research Institute and the Island Institute.
 11. Explore creating a marine educator in residence program.

E. Provide marine research infrastructure and shellfish hatchery space to meet the demand for DEI's research, education, and aquaculture production capacity in Maine and beyond.

1. Continue to enable innovation that will improve processes, increase efficiency, and maximize output.
2. Initiate a process for the Management Team to methodically engage in long-range planning for continued build-out, capital projects prioritization, and facilities enhancement.
 - a. Regularly review the Facility Use Policy to update priorities in response to changing demands.



F. Attract U.S. and international marine research scientists seeking the unique marine environment, facilities and oceanographic features in the region and on our campus.



1. Conduct a comparative analysis with U.S. and Canadian east coast marine labs and create a capabilities statement/services and pricing matrix highlighting DEI's distinctiveness.
2. Continue to develop and implement comprehensive marketing strategies to reach all constituents – teachers, scientists, students, funders, businesses and the general public.
3. Continue to recruit adjunct researchers.
4. Raise funds to attract early career scientists with an interest in shellfish genetics and lobster research.
5. Work with Maine Sea Grant and the Lobster Institute to house Extension staff at DEI.

G. Fortify DEI's capabilities to meet the goals of the strategic plan through governance, revenue generation, adequate staffing and ongoing communications.

1. Strengthen DEI's Board of Directors' culture of active oversight, strategic planning, fundraising, hands-on volunteering, and role as organizational ambassadors.
 - a. Develop 5-year operating and capital financial projections, and update annually.
 - b. Review risk management, data security, emergency preparedness and disaster recovery plans annually and update as determined.
 - c. Seek development assistance and capacity.
2. Increase the diversity and scale of revenue generation.
 - a. Follow a robust annual calendar of applications to a range of federal and state funding agencies and private foundations for research, outreach, education, capacity-building and operating support.
 - b. Enhance consistent long-term funding through DEI's Memorandum of Agreement with the University of Maine System.
 - c. Increase ongoing funding through State of Maine appropriations.
 - d. Earn income through contracts with visiting and adjunct scientists, education program tuition, seed production and sales, aquaculture business incubation projects, demonstration farms, meetings, conferences and residencies.
 - e. Continue an annual appeal to all DEI constituencies with special seasonal fundraising letters and ongoing requests accompanying newsletters, Donate Now button on the website and other opportunities.
 - f. Increase capacity for solicitation and stewardship with major donors.
 - g. Increase number of DEI staff over time in concert with expanded space, infrastructure and funding.
 - h. Determine annual assessments and needs for all-staff training in core skills and individualized professional development plans for all DEI staff.
 - i. Provide space and/or technical support for business incubation with the goal toward commercialization.
 - j. Complete a leadership succession plan
3. Develop and implement annual communications plans in support of strategic goals and objectives.