

Final Evaluation Findings

Maine Coastal Management Program

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Summary of Findings

The Coastal Zone Management Act requires the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic evaluations of the performance of states and territories with federally approved coastal management programs. This evaluation examined the operation and management of the Maine Coastal Management Program administered by the Maine Department of Agriculture, Conservation and Forestry, the designated lead agency, for the period from October 2009 to May 2017. At the time of the evaluation site visit, the Maine Coastal Management Program was implemented by the Maine Coastal Program and through a network of partner agencies including the Maine Department of Marine Resources, the Maine Department of Environmental Protection, the Maine Geological Survey, and the Office of the Attorney General. On July 1, 2017, the Maine Coastal Program moved to the Maine Department of Marine Resources, which is the recipient of these findings. The evaluation focused on three target areas: program administration, coastal habitat, and coastal hazards and resilience.

The findings in this evaluation document will be considered by NOAA in making future financial award decisions concerning the Maine Coastal Management Program. The evaluation came to these conclusions:

Accomplishment: The Maine Coastal Program has been a leader nationally and regionally in improving coordination and addressing coastal management issues.

Accomplishment: The Maine Coastal Program has been a leader in bringing state partners together in initiatives to improve coastal management, including the development of coastal public access guides, the Maine Coastal Mapping Initiative, and working to educate coastal communities on their coastal hazards risks and opportunities for improving coastal resilience.

Accomplishment: The Maine Coastal Program's Coastal Communities Grant Program is a model program that supports communities by looking at problems holistically and successfully leveraging funding and technical assistance to support communities in their priority coastal management efforts, including protecting and enhancing coastal habitat and improving coastal resilience.

Accomplishment: The Maine Coastal Program worked with partners to develop a three-book public access guide to the Maine coast that provides locals and tourists with comprehensive, visually appealing information on the locations and amenities of public access sites.

Accomplishment: The Maine Coastal Program has been a leader in the state in building coastal resilience through conducting and supporting research to improve understanding of localized impacts of coastal hazards including sea level rise, conducting outreach and education with local communities, and assisting local communities through funding and technical support to improve their coastal resilience.

Accomplishment: The Maine Coastal Program developed a Community Self-Assessment Tool for Flood Vulnerability and Resilience to help coastal communities evaluate how well positioned they are to prepare for, respond to, and recover from flooding events and build local capacity for adaptation.

Accomplishment: The Maine Coastal Program developed, and is leading, the implementation of the Maine Coastal Mapping Initiative. The initiative is filling major gaps in knowledge regarding ocean bathymetry and habitat off the coast of Maine and has produced easily accessible data that are improving maritime safety and being incorporated into planning and coastal management efforts.

Accomplishment: The Maine Coastal Program's support of improving stream connectivity through the Stream Connectivity Workgroup, Coastal Communities Grant Program, and support of local communities is resulting in re-opening of streams to endangered fish populations.

Recommendation: The Maine Coastal Management Program's transfer to the Department of Marine Resources presents both challenges and opportunities in administrative support, program alignment across networked agencies, program visibility, and a continued strong partnership with NOAA through the Coastal Zone Management Act. The Office for Coastal Management encourages the Maine Coastal Program to develop a process to examine funding allocations across networked agencies and look at opportunities to improve alignment of these programs towards coastal program goals, both to strengthen connectivity and to improve coordination and communication. The process could also examine opportunities for strengthening the capacity of the coastal program through synergies with the Department of Marine Resources' other bureaus. The Office for Coastal Management strongly recommends the coastal program include an "administrative coordination" task in its cooperative agreement award to report on the process developed and associated outcomes, and to report on the coastal program's transition to the Department of Marine Resources, particularly any major impacts and changes to the program.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program to continue to support and lead regional and national efforts to improve coastal management, including the Northeast Regional Ocean Council, Gulf of Maine Council, Northeast Regional Planning Body, and Coastal States Organization.

Recommendation: The Office for Coastal Management recommends that the Maine Coastal Program develop an outreach strategy to raise the visibility of the program and assist regional and local organizations in accessing coastal information. The coastal program's transition to the Department of Marine Resources offers the opportunity for the coastal program to improve its communication capabilities and outreach.

Recommendation: The Office for Coastal Management encourages the networked Maine Coastal Management Program in its efforts to incorporate new data and information into the regulatory process. The office encourages the coastal program to work with the Department of

Environmental Protection to use highest astronomical tide data to determine setbacks and to incorporate new beach and dune mapping into the Sand Dune Regulations Chapter 355.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program and the Department of Marine Resources to maintain the momentum of the Community Self-Assessment Tool for Flood Vulnerability and Resilience tool project and support the tool's use by fishing communities and other coastal communities to improve these communities' resilience.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program to continue to build capacity to support strengthening coastal community resilience within the state, both at the inter- and intra-agency levels and across organizations and communities. The coastal program should consider options such as strengthening the capacity of the core coastal program, the Department of Agriculture, Conservation and Forestry's Maine Geological Survey and Municipal Planning Assistance Program.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program in its efforts to continue to build the Maine Coastal Mapping Initiative that will continue to be vital to inform work in priority issue areas such as coastal hazards, fisheries management, and energy siting. The coastal program is also encouraged to continue to partner with other agencies in this effort, including the Office for Coastal Management, NOAA Joint Hydrographic Center, and Maine GeoLibrary.

Recommendation: The Office for Coastal Management encourages the Department of Marine Resources and the Maine Coastal Program to continue to support successful small-scale, community-based habitat restoration and include these efforts among department priorities. The office encourages the coastal program to prioritize coastal habitat restoration needs and build additional capacity to provide technical assistance to implement priority projects, including identification of outside resources and partnerships with federal, state, local, and nonprofit entities.

This evaluation concludes that the Maine Coastal Management Program is successfully implementing and enforcing its federally approved coastal management program, adhering to the terms of the federal financial assistance awards, and addressing coastal management needs identified in section 303(2)(A) through (K) of the Coastal Zone Management Act.

Program Review Procedures

The National Oceanic and Atmospheric Administration (NOAA) evaluated the Maine Coastal Management Program in fiscal year 2017. The evaluation team consisted of Carrie Hall, evaluation team lead; Rebecca Newhall, Northeast regional liaison; Betsy Nicholson, North regional director; Jeffrey, L. Payne, Ph.D., director, NOAA Office for Coastal Management; Jamie Carter, senior remote sensing analyst; and Jeff Willis, deputy director, Rhode Island Coastal Resources Management Council. The support of Maine Coastal Program staff members was crucial in conducting the evaluation, and this support is most gratefully acknowledged.

NOAA sent a notification of the scheduled evaluation to the Commissioner of the Maine Department of Agriculture, Conservation and Forestry, published a notice of “Intent to Evaluate” in the *Federal Register* on March 17, 2017, and notified members of Maine’s congressional delegation. The coastal program posted a notice of the public meeting and opportunity to comment in the *Bangor Daily News* on March 20, 2017. In addition, the Lincoln County Planning Office submitted an article about the public meeting for publication in the *Wiscasset Newspaper* on April 26, 2017.

The evaluation process included a review of relevant documents and a survey of stakeholders, which helped identify three target areas for the evaluation: program administration, coastal habitat, and coastal hazards and resilience. A site visit was conducted and the evaluation team held meetings with staff members and group discussions with stakeholders and program staff members about the target areas. In addition, a public meeting was held on Wednesday, May 3, at 5:00 p.m. in the offices of the Lincoln County Regional Planning Commission, 297 Bath Road, Wiscasset, Maine, to provide an opportunity for members of the public to express their opinions about the implementation of the program. Stakeholders and members of the public were also given the opportunity to provide written comments. No written comments were received. NOAA then developed draft evaluation findings, which were provided to the Maine Department of Marine Resources for review, and the department’s comments were considered in drafting the final evaluation findings.

Final evaluation findings for all coastal management programs highlight the program’s accomplishments in the target areas and include recommendations, which are of two types.

Necessary Actions address programmatic requirements of implementing regulations of the Coastal Zone Management Act and of the state coastal management program approved by NOAA. These must be carried out by the date specified. Failure to address necessary actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in the Coastal Zone Management Act §312(c).

Recommendations are actions that the office believes would improve the program but which are not mandatory. The state is expected to have considered the recommendations by the time of the next evaluation or dates specified.

Evaluation Findings

Program Administration

Overview

From 1978 through 2011, the Maine Coastal Program was administered by the Maine State Planning Office, an executive department agency. The State Planning Office was responsible for providing independent analysis to the governor and legislature on the development of the state's economy and conservation of its natural resources, as well as planning assistance, policy development, program management, and technical assistance for Maine's communities, businesses, and residents. The State Planning Office was also explicitly responsible for interagency coordination, especially in the natural resources arena, through its commissioner-level Land and Water Resources Council.

The State Planning Office was eliminated in 2011 and the coastal program was moved to the Maine Department of Conservation along with the Municipal Planning Assistance Program, which was largely funded through Coastal Zone Management Act funds and Land for Maine's Future, which had one program staff member funded by Coastal Zone Management Act funds. Other components of the coastal program which had, since inception, been distributed to the Department of Environmental Protection and Department of Marine Resources were unaffected by the move. In 2013 the legislature finalized a merger of the Department of Conservation and Department of Agriculture to form the Department of Agriculture, Forestry and Conservation. At the time of the evaluation site visit, the coastal program was housed in the Resource Information and Land Use Planning Bureau with the Geological Survey, Municipal Planning Assistance Program, Floodplain Management Program, Natural Areas Program, Land for Maine's Future Program, and the Land Use Planning Commission. In July of 2017, the coastal program moved to the Department of Marine Resources, also an executive department agency.

The coastal program's transfer to the Department of Marine Resources presents both challenges and opportunities in administrative support, program alignment, program visibility, and a continued strong partnership with NOAA through the Coastal Zone Management Act. The Office for Coastal Management strongly recommends the coastal program include an "administrative coordination" task in its cooperative agreement award to report on the transition, particularly any major impacts and changes to the program.

A number of stakeholders noted that the coastal program has been challenged by the frequent reshuffling of the program. Although coastal program staff members have had to adjust to constant change, the coastal program has continued to operate at a high level and staff members have successfully implemented the program and demonstrated leadership on emerging and ongoing issues at the state, regional, and national levels.

A key strength of the coastal program has been the ability to successfully obtain additional funding and grants to advance and leverage priority initiatives. For example, the coastal program has successfully competed for multiple Projects of Special Merit awards, and received more awards than any other coastal program. The program received a Project of Special Merit award for a “Benthic Exploration and Habitat Classification” project in 2015. The coastal program was able to leverage the award with a grant of approximately \$200,000 from the Bureau of Ocean Energy Management, considerable funding from the state’s Submerged Lands Program, and technical support from NOAA’s Office of Coastal Survey. The project resulted in multi-beam sonar mapping and benthic sampling of over 137 square miles of ocean. Habitat maps were then developed based on the Coastal and Marine Ecological Classification Standard. The coastal program also received \$78,000 from the Maine Outdoor Heritage Fund to support public access.

Coordination across State Agencies

The coastal program is a networked program, and Coastal Zone Management funds and matching funds support staff members across multiple agencies and within multiple department bureaus. Coastal Zone Management Act funds support the work of the Department of Agriculture, Conservation and Forestry (DACF) Municipal Planning Assistance Program, whose mission centers on providing technical assistance to coastal municipalities regarding land use and related matters. The DACF Municipal Planning Assistance Program administers the Coastal Community Planning Grants, and has a lead role in negotiating the coastal program’s annual contract with the state’s regional councils, which work with coastal communities to provide professional planning assistance to coastal municipalities on a variety of issues of current concern. Coastal Zone Management Act funds also support staff at the Maine Department of Environmental Protection, the agency that oversees local administration of the Shoreland Zoning Act, one of the coastal program’s core laws and a key element in the state governance of activities along coastal and other waters. Coastal Zone Management Act funding also supports staff at the Department of Marine Resources and Office of the Attorney General.

The highly networked structure of the coastal program provides both challenges and opportunities. The networked structure provides the coastal program with direct links to staff members and expertise in other agencies and bureaus. The networked structure also results in challenges as the coastal program manager must dedicate additional effort to ensuring that staff members that are not direct reports, but funded with Coastal Zone Management Act funds, are addressing coastal management priorities. The evaluation team heard from stakeholders that the fragmentation of staff across the networked program made it challenging to maintain a comprehensive, coordinated, and effective coastal management program. The evaluation team observed that in some cases the networked structure was providing great benefit, but that in other cases, particularly with the Department of Environmental Protection, the alignment with coastal program goals and initiatives was not as apparent. The Department of Environmental Protection and coastal program have collaborated on projects such as a recent analysis of the coastal zone boundary and the department is now providing technical assistance on water-quality related Coastal Communities Grant Program projects. However, there are opportunities though to improve synergies, for example, the department has not yet incorporated new beach and dune mapping into the Sand Dune Regulations Chapter 355. The evaluation team also noted that there

were likely opportunities to improve coordination on coastal resilience, given the Department of Environmental Protection's efforts to provide a clearinghouse of resilience activities and the coastal program's leadership role working with local communities to build coastal resilience. The previous evaluation findings in 2010 also noted the need for the Department of Environmental Protection to identify and support initiatives that were outside the day-to-day implementation of the permitting program.

The Office for Coastal Management encourages the coastal program to develop a process to examine funding allocations across networked agencies and look at opportunities to improve alignment of the networked program towards coastal program goals and to strengthen connectivity and improve coordination and communication. The process could also examine opportunities for strengthening the capacity of the coastal program through synergies with the Department of Marine Resources' other bureaus. For example, as part of a long-term process, staff members from the agencies could meet annually to ensure individual work plans map to coastal program goals to inform the development of the cooperative agreement and associated interagency contractual memorandum of understandings; and hold regularly scheduled check ins or meetings for staff members across agencies. One option would be to focus one or several meetings on how to continue to build on cross agency synergies, to further support, the coastal program's initiatives, such as the Coastal Communities Grant Program. The Office for Coastal Management encourages the Department of Marine Resources and coastal program to consider consolidating staff members under the coastal program director as opportunities arise. For example, if another networked agency partner has determined that they no longer need a staff position currently funded through the coastal program and/or the funding, serious consideration should be given to using the funds to support an additional staff or contractor reporting to the coastal program director. The Office for Coastal Management encourages the coastal program to report on the process developed and outcomes in a task, such as "administrative coordination" in its annual cooperative agreement.

Collaboration with Partnership Programs

The coastal program successfully collaborated with Maine Sea Grant, Wells National Estuarine Research Reserve, and the Casco Bay Estuary Partnership on projects during the evaluation period. However, there are opportunities for the programs to further capitalize on each program's strengths and improve collaboration on joint priority issues. The Office for Coastal Management supports the coastal program's idea to bring together Sea Grant, Wells National Estuarine Research Reserve, and Casco Bay Estuary Partnership (a National Estuary Program) to find common areas of interest where the programs can work together to advance coastal issues. As part of this process, the coastal program is encouraged to consider how to message the different program roles and contributions towards addressing the priority coastal issues.

Outreach

The coastal program conducts a significant amount of community outreach for initiatives and projects, through its support of regional municipal planning, and maintains a website and Coastal Atlas with extensive information. Through the evaluation site visit and in feedback from

stakeholders and the public it was apparent to the evaluation team that the coastal program could benefit from an outreach strategy to raise the program's visibility and assist regional and local organizations' access to coastal information. These regional and local organizations could also serve as an important link to help ensure that interested members of the public are informed. The Office for Coastal Management recommends that the coastal program develop an outreach strategy to raise visibility of the program and assist regional and local organizations' access to coastal information. The coastal program's transition to the Department of Marine Resources offers the opportunity for the coastal program to improve its access to communication expertise, including branding and press releases to elevate the coastal program's visibility.

Cooperative Agreements

The coastal program successfully manages its cooperative agreements and grants in a manner consistent with federal requirements. The coastal program could benefit though from volunteering to transition to a two-year award, a new opportunity being offered by the Office for Coastal Management for a select number of programs. With a two-year award, during the second year, the annual funding will be added to the existing award. This process has worked well for pilot coastal programs that were involved and reduced level of effort for both the Office for Coastal Management and state coastal programs. A two-year award may be particularly beneficial for the coastal program, since currently, cooperative agreement applications must be approved by the governor's office, which results in a lengthier internal approval process, and it will reduce the administrative burden on the Department of Marine Resources. At the same time, federal funding is often being allocated later in the funding cycle due to delays in receiving federal budgets, leaving less time for state approval processes. The coastal program also runs a competitive subgrant program, and those projects often take over 18 months to complete. The coastal program has pursued a number of multi-year initiatives during the evaluation period. The Office for Coastal Management encourages the coastal program to work with the Office for Coastal Management to pursue transitioning to a two-year cooperative agreement.

Program Changes

The coastal program regularly submits program changes to the Office for Coastal Management for approval and incorporation into the state's federally approved program. The Office for Coastal Management commends the coastal program for ensuring its federally approved coastal program is up to date and for submitting 13 routine program changes during the evaluation period.

Regional and National Leadership

The coastal program staff members are highly valued by their federal, regional, and state partners for their knowledge and willingness to contribute to initiatives to improve coastal management. Some of these efforts are highlighted in the discussion below. The Office for Coastal Management encourages the coastal program to continue to support and lead regional and national efforts to improve coastal management and to keep the Maine perspective visible, including the Northeast Regional Ocean Council, Gulf of Maine Council, Northeast Regional Planning Body, and Coastal States Organization, as their contributions bring great value to the work of these organizations.

Northeast Regional Ocean Council

The governors of the New England states formed the Northeast Regional Ocean Council in 2005. The Northeast Regional Ocean Council is a state and federal partnership that facilitates the New England states, federal agencies, regional organizations, and other interested regional groups in addressing ocean and coastal issues that benefit from a regional response. Coastal program staff members have helped develop and support the Northeast Regional Ocean Council and its initiatives, including co-chairing the Habitat Classification and Ocean Mapping Subcommittee, serving as the state co-chair rotating with other states, participating in the Coastal Hazards Subcommittee, and working with the other states on regional funding opportunities and collaborative projects including a current Office for Coastal Management Regional Coastal Resiliency-funded project to advance the practice of living shorelines in the region. The Northeast Regional Ocean Council has also served as an important venue to discuss challenging regional issues such as sand and gravel management and extraction and potential related impacts on sensitive benthic habitats and surrounding communities. This partnership forum and the coastal program's initiative have led to new opportunities such as a cooperative agreement with the Bureau of Ocean Energy Management to assess the locations of sand deposits in federal waters immediately adjacent to Maine's submerged lands.

Northeast Regional Planning Body

The Northeast Regional Planning Body was the first in the nation, formed in 2012, in response to the National Ocean Policy, established by Presidential Executive Order in 2010. The policy called for non-regulatory regional planning bodies to develop and oversee implementation of regional ocean plans, while providing opportunities for extensive public input. The Northeast Regional Planning Body has representatives from the six New England states, 10 federally recognized tribes, 10 federal agencies, and the New England Fishery Management Council, and two ex-officio members (one from a Canadian federal agency and one from New York). Following the establishment of the National Ocean Policy, coastal program staff members were active nationally in helping to shape regional ocean planning guidelines and participated on the National Ocean Council's Governance Coordinating Committee.

The coastal program manager served as one of two state designees to the Regional Planning Body. Coastal program staff members have actively supported the work of the body, including participation in regulatory and communications subcommittees, and served on several project committees, including the Regional Baseline Assessment project group and the Fisheries Characterization project group. In partnership with the Department of Marine Resources, the coastal program staffed the Maine Ocean Advisors' Group, keeping a 20-plus Maine stakeholder group informed about ocean planning efforts and obtaining their feedback on the ocean plan. The coastal program also conducted several rounds of public meetings in the state with NOAA to elicit input into the ocean planning process. In late 2016, the Northeast Regional Planning Body was the first in the nation to have its plan certified by the White House, signed off on by the region, and the plan is now being implemented. The plan includes goals that help to foster healthy oceans and ecosystems; enable effective decision-making; and promote compatibility

among past, current, and future ocean uses through using best practices and the Northeast Ocean Data Portal to guide and inform decisions under existing authorities.

Gulf of Maine Council on the Marine Environment and Regional Association for Research on the Gulf of Maine

The coastal program sits on the Gulf of Maine Council on the Marine Environment, a U.S.-Canadian partnership to enhance the health of the Gulf. The coastal program manager served as chair during the development of the council's 2012-2017 Action Plan. The coastal program has also worked with the council on educational and outreach initiatives, including marine debris and ocean acidification. The coastal program is an active participant in the Regional Association for Research on the Gulf of Maine, with staff focused on translating science for coastal decision makers.

Coastal States Organization and The Coastal Society

The coastal program has also had a strong leadership role in the Coastal States Organization, an organization that advocates for, and supports, the interests of state coastal management programs. The coastal program manager has served as vice-chair and chair, and staff members have participated in the Coastal Zone Management Act reauthorization group, the inlet management group, the coastal resiliency group, the communications group, and short-term efforts to develop comments on pending federal actions and initiatives. The coastal program deputy has served a term as chair of The Coastal Society, an organization dedicated to actively addressing emerging coastal issues by fostering dialogue, forging partnerships, and promoting communications and education.

Governing Council of the New England Ocean Science Education Collaborative

The coastal program is represented by the senior planner-education and outreach on the Governing Council of the New England Ocean Science Education Collaborative and was the chair for the council's 2016 Ocean Literacy Summit hosted in Portland. The summit implemented new approaches to presentation formats, such as lightning talks and café sessions based on Open Space Technology. The summit's evaluations were very positive.

Local Communities Grant Programs

The coastal program re-established its Coastal Communities Grant Program in 2012 and from 2012- 2017 granted \$1.2 million in funding to over 50 projects. The program assists communities in making measurable improvements in coastal water quality, increasing resilience to erosion and flooding, developing and monitoring coastal habitat restoration projects, promoting sustainable development, and enhancing the coastal-dependent economy.

The coastal program also manages the Shore and Harbor Management Grants Program, where eligible applicants can receive up to \$30,000 in funding for eligible projects, including the development of plans or strategies to address the impact of coastal storms and flooding on waterfront infrastructure. For both programs, eligible applicants are towns in the coastal zone, coastal regional planning commissions, and coastal councils of government; applicants provide 25

percent match. Shore and Harbor Management grants help prepare communities for applying for further support through the Maine Department of Transportation Small Harbor Improvement Program. The Small Harbor Improvement grants provide larger scale funding for harbor improvements such as wharves, piers, float systems, and boardwalks. Applicants are viewed more favorably when their projects have first utilized a Shore and Harbor Planning grant for the feasibility studies and project planning work.

The Maine Coastal Program's Coastal Communities Grant Program and the Shore and Harbor Management Grant Program successfully leverage federal and state funding, respectively, and technical assistance to support communities in their priority coastal management efforts, including coastal habitat restoration and improving coastal resilience. The Office for Coastal Management encourages the coastal program to conduct an evaluation of the Coastal Communities Grants Program and build on its success by looking at the program's impacts, capturing lessons learned and working feedback into program improvements, and identifying new opportunities going forward.

The DACF Municipal Planning Assistance Program contracted with the regional planning councils to survey technical assistance needs in their respective regions relating to high priority coastal issues in fiscal year 2012. The regional planning councils' annual work plans have since focused on these priority issues. The coastal program has been exceptional in maximizing the impact of the Coastal Communities Grants Program by combining financial support of community priority projects with high quality technical expertise provided through the networked coastal program, particularly through the Maine Geological Survey and DACF Municipal Planning Assistance Program, and the regional planning commissions to address state coastal priorities. The Office for Coastal Management encourages the coastal program to continue providing high quality technical assistance and training to coastal communities.

As part of the grant programs, each recipient is asked to prepare a case study using a common template provided by the coastal program. As a result, the coastal program now has 50 "in-their-own-words" accounts that capture experiences for the benefit of future grantees and provides the coastal program with feedback, recommendations, and information about steps for each project. The Office for Coastal Management has found the grants recipients' information very useful for the evaluation and foresees having the opportunity to utilize the case studies to demonstrate the impact of the national Coastal Zone Management Program and to share this as a best management practice for other state coastal programs to consider.

Public Access

The coastal program has undertaken several initiatives during the evaluation period to improve the public's knowledge of coastal access sites. Coastal access is a critical element of municipal economies. In addition, the coastal program provides funding opportunities through the Coastal Communities Grant Program to assist municipalities with maintaining and increasing public access to the coast.

Maine Coastal Public Access Guide and Database

The coastal program worked closely with land trusts and municipalities to gather and document the state's coastal public access sites, conducting the most comprehensive assessment to date. In 2013, the coastal program published this information in a 3-volume *Maine Coastal Public Access Guide*. The guide provides descriptions for more than 700 sites along Maine's 5,300-mile coastline, including geographic coordinates, amenities, facilities, parking, and directions. The coastal program also developed the Maine Coastal Public Access database, which allows for many levels of analysis that were not previously possible. The coastal program is currently working on a comprehensive GIS layer that will provide spatial coverage for the vast majority of public access sites in the coastal zone. The public will then be able to easily access the information online, as it will be housed online within the Maine Coastal Atlas. The Office for Coastal Management encourages the coastal program in its efforts to make public access information available online.

Scenic Assessment Methodology and Mapping

The coastal program funded an effort to digitize existing coastal scenic inventories and point locations, which were added to an existing layer in the Maine Coastal Atlas. To assist municipal governments and land trusts that also wish to digitize their scenic inventories, a tutorial for how to update and enhance existing inventories using free, publicly available web-based tools was completed and posted on the coastal program's website. The tutorial will assist additional communities and nonprofits in developing credible and enhanced scenic inventories for use in non-regulatory and regulatory approaches to viewshed conservation.

Findings for Program Administration

Accomplishment: The Maine Coastal Program has been a leader nationally and regionally in improving coordination and addressing coastal management issues.

Accomplishment: The Maine Coastal Program has been a leader in bringing state partners together in initiatives to improve coastal management, including the development of coastal public access guides, the Maine Coastal Mapping Initiative, and working to educate coastal communities on their coastal hazards risks and opportunities for improving coastal resilience.

Accomplishment: The Maine Coastal Program's Coastal Communities Grant Program is a model program that supports communities by looking at problems holistically and successfully leveraging funding and technical assistance to support communities in their priority coastal management efforts, including protecting and enhancing coastal habitat and improving coastal resilience.

Accomplishment: The Maine Coastal Program worked with partners to develop a three-book public access guide to the Maine coast that provides locals and tourists with comprehensive, visually appealing information on the locations and amenities of public access sites.

Recommendation: The Maine Coastal Management Program’s transfer to the Department of Marine Resources presents both challenges and opportunities in administrative support, program alignment across networked agencies, program visibility, and a continued strong partnership with NOAA through the Coastal Zone Management Act. The Office for Coastal Management encourages the Maine Coastal Program to develop a process to examine funding allocations across networked agencies and look at opportunities to improve alignment of these programs towards coastal program goals, both to strengthen connectivity and to improve coordination and communication. The process could also examine opportunities for strengthening the capacity of the coastal program through synergies with the Department of Marine Resources’ other bureaus. The Office for Coastal Management strongly recommends the coastal program include an “administrative coordination” task in its cooperative agreement award to report on the process developed and associated outcomes, and to report on the coastal program’s transition to the Department of Marine Resources, particularly any major impacts and changes to the program.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program to continue to support and lead regional and national efforts to improve coastal management, including the Northeast Regional Ocean Council, Gulf of Maine Council, Northeast Regional Planning Body, and Coastal States Organization.

Recommendation: The Office for Coastal Management recommends that the Maine Coastal Program develop an outreach strategy to raise the visibility of the program and assist regional and local organizations in accessing coastal information. The coastal program’s transition to the Department of Marine Resources offers the opportunity for the coastal program to improve its communication capabilities and outreach.

Coastal Hazards and Resilience

The Maine Coastal Management Program has provided state leadership in assisting coastal communities in understanding their vulnerabilities to coastal hazards, improving their resilience through planning, and implementing strategies to mitigate risks. The coastal program provides municipal officials with technical support and funding to support community efforts (regulatory and non-regulatory), facilitates data collection, and provides downscaled data appropriate for local use. The coastal program’s efforts also support the work of other state and federal agencies.

Stakeholders the evaluation team met with commended the coastal program and Maine Geological Survey and their staffs for their efforts to assist local governments with improving their coastal resilience. For example, one stakeholder noted that the marine geologist was “critical” to their project and that “he’s enthusiastic and builds good will immediately.” The Office for Coastal Management encourages the coastal program in its efforts to support communities and build a network of support through funding, technical assistance, and enhanced partnerships.

Sea Level Rise Coastal Hazards Study

The coastal program, in partnership with the Maine Geological Survey and Lincoln County Regional Planning Commission, completed a Sea-Level Rise Coastal Hazards Study in 2013. A board member of the Lincoln County Regional Planning Commission and Newcastle Planning Board stated: “The Sea Level Rise project arrived at about the right time – a teachable moment for many coastal constituencies. The vulnerability of the marine commercial infrastructure, primary roads, and high value coastal residences in the zone proximate to the shore will clearly be driven home by project results, especially the town-by-town mapping of at-risk structures.”

The study evaluated the potential impact of a 1-foot, 2-foot, and 6-foot sea level rise on the highest annual tide as well as the “storm of record,” which for Lincoln County was a 1978 storm that combined an approximate 3.5 feet of storm surge with high astronomical tides. The project partners worked closely with the Lincoln County commissioners, Lincoln County Regional Planning Commission Board, and the boards of selectmen from each coastal community. Data development involved collection and processing of spatial data for each community, including mean sea level, mean high water, highest astronomical tide, LiDAR, coastal wetlands, historical storm elevations, road infrastructure, building footprints, bluff stability, and shoreland zoning boundaries.

These data were used to develop Google Earth-based scenarios for each community, allowing staff, town officials, and the public to explore sea level rise impacts on their town. A review of municipal regulations and ordinances addressing coastal hazards and sea level rise was completed. The final phase of the project included the development of education and outreach materials and presentations to a number of communities, the planning commission board of directors and oversight committee, and the Lincoln County Emergency Management Agency. The scenarios are also posted on the planning commission’s websites. The evaluation team heard from citizens and stakeholders that the flash cards, developed as part of this project, were very powerful in communicating the message of future risk.

The study also identified opportunities at regional and state levels. Many local communities are small, with an average population of less than 2,000, and they will need to work with state agencies to identify sources of funding to assist with adaptation activities such as adapting the multitude of local roads at risk. The study also identified critical gaps in knowledge, such as better understanding of the impact of wave action and the need to complete a bathymetric analysis of especially susceptible areas.

Coastal Communities Grants Program – Coastal Hazards and Resilience

The coastal program has funded a number of projects supporting coastal communities in their efforts to conduct vulnerability assessments for areas that include working waterfronts, coastal marshes, wastewater treatment plants, and other critical infrastructure, as well as commercial and residential development. Communities have then gone on to include sea level rise in comprehensive plans and capital improvement plans, strengthening land use and floodplain management ordinances for new development, and developing land acquisition strategies.

The coastal grant programs have been critical in engaging communities in efforts to assess their vulnerability and improve their resilience.

One of the coastal program's evaluation metrics included a target that "Between 2012 and 2017, eight communities will adopt one or more of the following: new plans, policies, and regulatory and non-regulatory measures or complete targeted projects to reduce damage from hazards." The coastal program successfully worked with 19 communities to adopt new plans, policies and regulatory and non-regulatory measures, more than doubling its target of eight communities.

As a result of the Sea-level Rise Coastal Hazards Study, communities such as the Town of Damariscotta and Boothbay Harbor have successfully applied for coastal communities grants to further understand their vulnerabilities and identify adaptation strategies.

EXAMPLE: BOOTHBAY HARBOR

Based on the 2013 Sea-level Rise Coastal Hazards Study and issuance of new 2015 Flood Insurance Rate maps by the Federal Emergency Management Agency, which clearly show buildings and structures in relation to the flood zone, town selectman realized that a core economic driver of the town was at risk. The coastal program provided funding for a project to assist the town with analyzing flood risk for commercial and governmental structures in downtown Boothbay Harbor and providing recommendations for improving the flood resiliency of those structures. The project proponents and consultant created a committee and reached out to property owners to identify and work with interested owners. The project includes taking a structure-by-structure look at 19 properties and identifying the vulnerable points in the associated building, conducting a piling feasibility study (i.e. can they hold more weight), and looking at elevation. The project partners include the Town of Boothbay Harbor, Boothbay Harbor Emergency Management Director, Lincoln County Emergency Management Agency, and Lincoln County Board of Commissioners. The coastal program's marine geologist and regional planner also provided technical support.

EXAMPLE: DAMARISCOTTA SEA LEVEL RISE ADAPTATION PLANNING STUDY

The Sea Level Rise Coastal Hazards Study found that historic Main Street, the town's primary commercial area and location of municipal infrastructure, was vulnerable to flooding under future conditions. The study and the County's Flood Hazards Report (2012) and subsequent community outreach raised widespread awareness of the issues and a growing consensus for action to implement flood protection measures. The town, through its Waterfront Planning Committee, secured a grant from the coastal program to further understand the impacts and plan for the future. The town commissioned a detailed study of the effects of sea level rise including a detailed survey and evaluation of structures and windows, doors, and other openings that might allow for intrusion of floodwaters. In addition, they asked their contractor to establish a sea level rise scenario and elevation for the town's use in planning and identification of opportunities and recommendations for protecting downtown structures and public infrastructure from flooding. The town is now looking for additional funding sources to complete identified priority actions.

The coastal program provided funding for two to three staff members of the DACF Municipal Planning program and funding for the nine coastal regional planning organizations. The state and

regional planning organization staff provide technical support to local coastal communities, many with small populations, to assist them in land use planning, including addressing coastal hazards and coastal habitat. The provision of technical assistance and in some cases additional funding through coastal communities and shore and harbor grants has resulted in a number of communities taking steps to improve their coastal resilience, including the following:

- The Town of York amended its Municipal Comprehensive Plan to include an “Adaptation to Sea Level Rise” chapter.
- The Town of Wells incorporated sea level rise language regarding infrastructure in the Town’s Harbor Management Plan.
 - The City of Saco was the first community to pass increased elevation requirements for development in the floodplain (3 feet above base flood elevation) to account for sea level rise. The city also adopted new shoreland zoning maps that use LiDAR-derived highest tide line.
 - The Town of Bowdoinham completed a Sea Level Rise and Climate Change Study and adopted a sea level rise and climate change chapter into its 2014 Comprehensive Plan. The town also completed a vulnerability analysis of its prime farmland soils and working farms.
 - The Town of Chebeague Island has assessed the current condition of its wharf infrastructure and the potential future impacts from storms, and examined the feasibility of using alternative locations on the island.

Community Self-Assessment Tool for Flood Vulnerability and Resilience

The coastal program successfully applied to host a NOAA Coastal Management Fellow from 2015-2017 to help communities address coastal flooding, one of the most significant natural hazards impacting Maine coastal communities. The coastal fellow created a non-regulatory self-assessment tool to help communities evaluate how well positioned they are to prepare for, respond to, and recover from flooding events and build local capacity for adaptation. The fellow collaborated with regional and municipal officials, state agency programs, and regional and municipal stakeholders to develop the tool. The tool provides a framework for examining flood risk, evaluating vulnerability of the natural, built, and social environments, and identifying opportunities to enhance flood resilience. The tool incorporates Community Rating System-related information to help communities identify activities that can provide credits, yielding savings on flood insurance. The tool was designed to provide guidance and support to promote a bottom-up approach to community resilience. The coastal fellow, with the assistance of partners, piloted the self-assessment with two coastal communities, and at the time of the site visit, final revisions to the tool were in process. Through the pilot process, it was found that it is important to also provide technical assistance to help the communities through the process. The tool has also been presented twice at the Northeast Regional Ocean Council for interested state and federal managers.

At the time of the evaluation site visit, the coastal program was finalizing the Maine Climate Adaptation Toolbox, which will include the Community Self-Assessment Tool along with other relevant guidance for local communities and model ordinance documents. The toolbox will be a

valuable resource for coastal communities. Once completed the toolbox will be included in the Department of Environmental Protection's new climate adaptation toolkit. The toolkit is a website clearinghouse of state information and contains information and data from the networked coastal program.

The Community Self-Assessment Tool appears to have great potential to assist coastal communities in better understanding their vulnerabilities and improving their resilience. Unfortunately, once the fellowship is complete, the coastal program will no longer have a staff member dedicated to this project. The Office for Coastal Management encourages the coastal program and the Department of Marine Resources to maintain the project's momentum and support efforts to engage fishing communities and other coastal communities in the use of the tool to improve communities' resilience. In addition, the coastal program is encouraged to consider using NOAA's Community Rating System Open Space Preservation mapping process and populate a version of the Data Checklist with local and state data sources; maintain its existing partnership with the Maine Floodplain Management Program and further coordinate the data aspects of this activity with Maine GeoLibrary; and explore opportunities to connect the Community Self-Assessment Tool with the Coastal Communities Grant Program.

Maine Property Owner's Guide

The *Maine Coastal Property Owner's Guide to Erosion, Flooding, and Other Hazards* provides homeowners guidance on how to assess the coastal hazards on their property and steps they can take to reduce their risk to these hazards. The guide, published in 2011, is the most popular item on Maine Sea Grant's website and is optimized for viewing on both desktop computers and mobile phones. The guide was written by the marine geologist, funded through the coastal program, in partnership with Maine Sea Grant. The Office for Coastal Management encourages the coastal program to improve its resilience-related web materials and work with Maine Sea Grant to update the *Maine Coastal Property Owner's Guide to Erosion, Flooding, and Other Hazards* regarding Maine's bluffs.

State Hazard Mitigation Plan

The coastal program's networked partner, the Maine Geological Survey, played a key role in updating the state's five-year hazard mitigation plan (2013). The plan meets new Federal Emergency Management Agency guidelines to consider "changing future conditions, including the effects of long-term changes in weather patterns and climate on the identified hazards and to reflect the most recent research, analysis, and mitigation planning." The Maine Geological Survey led the incorporation of sea level rise and tsunamis into the state's plan and updated the bluff hazards and landslide discussion. The Office for Coastal Management encourages the coastal program and Maine Geological Survey to evaluate new regional estimates that have been published by NOAA that update the Intergovernmental Panel on Climate Change curves in advance of the next mitigation plan update cycle.

Adaptation Planning for Maine’s Coastal State Parks

The coastal program successfully applied for a competitive Project of Special Merit award for the project initiated in 2012, “Changing Shorelines: Adaptation Planning for Maine’s Coastal State Parks.” State parks and historic sites are important drivers of the local, regional, and state economy. This project brought together expertise from the coastal program, Maine Geological Survey, Maine Natural Areas Program, Bureau of Parks and Lands, and Maine Historic Preservation Commission to identify resources in select coastal state parks that are vulnerable to the impacts of sea level rise and make recommendations regarding strategies to address those impacts. The study included completing natural resource inventories for three state parks, vulnerability assessments for four coastal state parks and an historic site, identification of data needs, and investigating visitor preference for adaptation solutions at Popham Beach State Park.

Coastal Sand Dune Mapping

The State of Maine recognizes coastal sand dune systems as resources of state significance, since they act as natural barriers that protect the shoreline from storm events, have great scenic beauty, provide vital habitat for a variety of wildlife, and provide unsurpassed recreational opportunities. The Maine Department of Environmental Protection has promulgated Coastal Sand Dune Rules (Chapter 355) pursuant to the Natural Resources Protection Act (38 M.R.S. 480). Chapter 355 applies to activities that are located in a coastal sand dune system and require an individual permit according to the act.

Through the use of Coastal Zone Management Act funding, the Maine Geological Survey completed an updated coast-wide mapping of coastal sand dunes, which included the identification of approximately 1,500 additional acres of sand dunes on top of the approximately 2,000 acres previously mapped as part of the Coastal Sand Dune Geology Map series. The preliminary maps have been submitted to the Department of Environmental Protection for review. The new maps will need legislative review before they can be incorporated by reference as amendments to Chapter 355. The Office for Coastal Management encourages the Maine Coastal Program to work with the Department of Environmental Protection to incorporate this new data into state regulations.

Shoreline Bluffs

The coastal program was awarded a competitive grant for an ongoing Project of Special Merit, “Building Resiliency along Maine’s Bluff Coast.” The project’s outcome is to develop better predictive models relating to bluff response and landslide hazards from increased sea levels and storms. The project includes a pilot study area within Casco Bay where over 130 landslides were identified for the first time using newly available LiDAR data. The project also is looking at best management practices for eroding bluffs and identifying opportunities for green infrastructure, which is discussed in the “Coastal Habitat” section. A workgroup of numerous partners is helping inform the project, including the Town of Brunswick, The Nature Conservancy, Casco Bay Estuary Partnership and Cumberland County Soil and Water Conservation District, Department of Inland Fisheries and Wildlife, and Maine Coast Heritage Trust. The project will be completed in

December 2017. The partners have developed a greater understanding of bluff response and landslide hazards but continue to work to improve modeling and collect data.

The Office for Coastal Management encourages the state's ongoing beach monitoring to consider more unmanned aerial vehicle-based data acquisition in beach, dune, and bluff systems; continuing to explore the use of satellite interferometry to detect terrain deformation; and exploring the use of synthetic aperture radar (SAR) sensors to map sea ice, which would benefit a number of efforts to better characterize the extent and persistence of coastal ice cover and understand coastal erosion. Through this project, the coastal program, Maine Geological Survey, and project partners have successfully integrated previously funded bluff erosion studies and living shoreline planning and implementation work to consolidate subject matter expertise and improve understanding of bluff erosion.

In Maine, shoreline setbacks from shoreline bluffs are based on Highest Annual Tide, which varies by year. There is an opportunity to provide consistency and clarity for businesses and homeowners seeking permits by basing the setbacks on the highest astronomical tide computed by NOAA for the current National Tidal Datum Epoch. The adoption of the highest astronomical tide would mean that the Highest Annual Tide would not need to be computed every year, making the boundary easier to predict as it would only change every 20-25 years. The Office for Coastal Management encourages the coastal program to work with the Department of Environmental Protection to enable the use of highest astronomical tide to determine setbacks.

Potential Hurricane Inundation Mapping

In 2013, the Maine Geological Survey and Maine Floodplain Management Program created Potential Hurricane Inundation Maps, with funding through a Federal Emergency Management Agency Cooperating Technical Partners grant to the Floodplain Management Program. The Federal Emergency Management Agency and the U.S. Army Corps of Engineers, and Maine's Emergency Management Agency, helped review the methodology, creation of the maps, and support documents. The data can be viewed or downloaded at the Potential Hurricane Inundation Mapping website, which is hosted by the Maine Geological Survey. The maps show areas along the Maine coastline that potentially will be inundated by storm tides for Hurricanes Categories 1-4 making landfall at mean high tide. The tool is based on an updated National Hurricane Center SLOSH model and new LiDAR data. The hurricane hazard data provide important information for updating Maine's Hurricane Evacuation Plans, used by state, county, and local emergency managers. Although funded through a Federal Emergency Management Act grant, the project was made possible through technical mapping tools and techniques funded by the coastal program, for example, the Highest Annual Tide Mapping Tool.

Findings Coastal Hazards and Resilience

Accomplishment: The Maine Coastal Program has been a leader in the state in building coastal resilience through conducting and supporting research to improve understanding of localized impacts of coastal hazards including sea level rise, conducting outreach and education with local

communities, and assisting local communities through funding and technical support to improve their coastal resilience.

Accomplishment: The Maine Coastal Program developed a Community Self-Assessment Tool for Flood Vulnerability and Resilience to help coastal communities evaluate how well positioned they are to prepare for, respond to, and recover from flooding events and build local capacity for adaptation.

Recommendation: The Office for Coastal Management encourages the networked Maine Coastal Management Program in its efforts to incorporate new data and information into the regulatory process. The office encourages the coastal program to work with the Department of Environmental Protection to use highest astronomical tide data to determine setbacks and to incorporate new beach and dune mapping into the Sand Dune Regulations Chapter 355.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program and the Department of Marine Resources to maintain the momentum of the Community Self-Assessment Tool for Flood Vulnerability and Resilience tool project and support the tool's use by fishing communities and other coastal communities to improve these communities' resilience.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program to continue to build capacity to support strengthening coastal community resilience within the state, both at the inter- and intra-agency levels and across organizations and communities. The coastal program should consider options such as strengthening the capacity of the core coastal program, the Department of Agriculture, Conservation and Forestry's Maine Geological Survey and Municipal Planning Assistance Program.

Coastal Habitat

Coastal Atlas – Maine Coastal Mapping Initiative

In 2012, the coastal program created the Maine Coastal Mapping Initiative, the state's first seafloor mapping program, which provides critical data for near-coastal and offshore decision-making. The information is available to the public through the Maine Coastal Atlas, a data mapping platform. Unlike for other New England states, the bathymetry and composition of the seafloor off the coast of Maine is not well understood and mapped. With increasing planning being done at the regional level, it is critical for Maine to increase its collection of baseline data. The coastal program is working with partners, including NOAA and other federal agencies, to acquire critical data about the seafloor and the oceanic environment, including bathymetry, sediment information, fauna type and abundance, and water column information. The information will aid coastal managers and planners, private industry, fishermen, and academics in their efforts to understand environmental change over time; improve maritime navigation and safety; maintain vibrant marine ecosystems; inform offshore economic development permitting; increase Maine's resilience to environmental changes; promote informed regional ocean planning; and conduct habitat classification and modeling.

The coastal program's deputy director and science coordinator provides overall coordination support for this statewide effort. The coastal program has partnered with state, regional, and federal agencies and obtained additional funding and staffing to support this effort. The coastal program successfully competed for a coastal management fellow in 2010 to lay the groundwork for a marine spatial planning initiative and again in 2013 to help develop and implement the coastal mapping initiative. In 2013, the coastal program led an effort to collect bathymetric and backscatter data for approximately 25 square miles of seafloor in Midcoast Maine. These data were used to generate bathymetric and habitat maps as a proof of concept that high quality data could be acquired on a small platform with minimal crew and equipment. The effort was successful, and in 2014, the initiative obtained multi-year funding support from the Bureau of Ocean Energy Management to identify and characterize sand deposits in federal waters 3-8 nautical miles offshore of Maine's southern and mid-coasts. Since then, approximately 125 square miles of bathymetry have been collected. After completion of 2014 data processing, NOAA's Integrated Ocean and Coastal Mapping unit determined that data collected were of "hydrographic quality," and the data are being used to update hydrographic charts for distribution to mariners. The habitat data and seafloor imagery are being utilized by the Department of Marine Resources to aid in stock assessments.

The coastal program is also using data collected to develop a habitat classification map using the Coastal and Marine Ecological Classification Standard. Ninety-four sites were ground-truthed using underwater video and sediment collection. The coastal program is continuing to work with Office for Coastal Management staff to complete quality assurance checks on the results.

The coastal program is also collecting human use data to better understand usage. For example, in 2012, the coastal program partnered with the Northeast Regional Ocean Council and the Boston-based science and policy nonprofit *Seaplan* to undertake a region-wide recreational boating survey. The results provide insight at a broad scale of counties where boaters tend to recreate and buy supplies, allowing a level of inference in terms of where boaters are accessing the water and the economic impact of recreational boating. The boating survey results helped characterize regional trends for the Northeast Regional Ocean Plan.

The coastal program's leadership in the Maine Coastal Mapping Initiative is helping to fill major gaps in knowledge regarding ocean bathymetry and habitat off the coast of Maine and has produced easily accessible data that are improving maritime safety and being incorporated into planning and coastal management efforts. The Office for Coastal Management strongly encourages the Maine Coastal Program in its efforts to continue to build the Maine Coastal Mapping Initiative, which will continue to be vital to inform work in priority issue areas such as coastal hazards, fisheries management, and energy siting. The coastal program is also encouraged to continue to partner with other agencies in this effort, including the Office for Coastal Management, NOAA Joint Hydrographic Center, and Maine GeoLibrary.

In addition, the Office for Coastal Management encourages the coastal program to continue its efforts to collect LiDAR data in the nearshore and to consider expanding the use of unmanned aerial vehicles for remote image acquisition; to consider partnering with other agencies and

organizations such as the Office for Coastal Management, Maine GeoLibrary, University of Maine, and Gulf of Maine Research Institute to hold a workshop focused on coastal unmanned aerial vehicle mapping to help identify existing capabilities, challenges, and opportunities; to develop a data management plan for the Maine Coastal Atlas to streamline future updates; and to look for opportunities to further the use of the Coastal Atlas in coastal decision-making.

Land Acquisition and Habitat Restoration

The Land for Maine's Future Program, first established in 1987, is a program that uses bond funds to purchase lands from willing sellers for conservation and recreation purposes and to preserve working waterfronts. The coastal program utilizes Coastal Zone Management Act funds to support one Land for Maine's Future staff member. From September 2009 to May 2017, Land for Maine's Future invested close to \$13 million in funds on 49 coastal projects, totaling 4,394 acres and 17.28 shorefront miles, that provide conservation and recreation, water access, or preserved working waterfronts.

The coastal program developed three evaluation metrics for the 5-year time period of 2012-2017, one of which set a target of 330 acres of coastal habitats acquired in fee or protected via conservation easement. Over the five years, 817 acres were acquired in fee or protected via conservation easement, greatly exceeding the original target.

Fishery Management Plans

In 2013, the Maine Legislature passed An Act to Provide Guidance for the Development of Marine Fisheries Management Plans. The law strengthened the Department of Marine Resources' authority to develop Fisheries Management Plans. The coastal program funds several Department of Marine Resources staff positions that have supported the development of the new plans. The plans define the biological, social, and economic goals of the fishery as well as objectives and metrics to evaluate success and provide greater certainty to industry members by establishing the triggers and thresholds at which management actions would be sought or taken. The plans are developed with the advice and input of the species-specific Department of Marine Resources advisory councils where applicable, and approved through the Department of Marine Resources Advisory Council. The plans also have laid out management efforts that incorporate real-time data into decision-making. The Department of Marine Resources developed fishery management plans for rockweed and scallop, and urchin and lobster plans are underway.

Habitat Restoration Projects

Since 2011, the coastal program has had a part-time restoration coordinator on contract that has assisted in the development of 30 habitat restoration projects. Habitat gains achieved between 2011 and 2015 include re-establishing 26 miles of barrier-free stream conditions for species like Atlantic salmon, alewife, eastern brook trout, and American eel. In addition, access to 1,190 acres of alewife spawning habitat was re-established, and 66.8 acres of tidal marsh were restored.

The coordinator works at the community level to identify restoration opportunities, build community support, assist in preliminary restoration planning, and raise funds from external

sources for projects, including pre- and post-monitoring of restoration efforts. At the time of the evaluation site visit, the coastal program had completed a request for proposals process for a multi-year contract for restoration coordination which has since been put in place.

EXAMPLE: TOGUS POND

Togus Pond has a dam that is currently blocking fish passage, limiting game fishing. The community around the lake is very interested in fishing and recreation in the lake, so the lake association started looking into how to build a fish passage. The coastal program provided critical technical assistance to the lake association, which was lacking knowledge of all the steps required to install a fish ladder. While this shovel-ready project waits for funding for construction, the association has started to improve the health of the lake by first stocking the lake in 2010, and now helping over 60,000 fish get over the dam (by hand). The returned fish are making a clear impact on the ecosystem, as eagles have returned, and fish sizes are increasing.

The Office for Coastal Management encourages the Department of Marine Resources and the coastal program to continue to support successful small-scale, community-based habitat restoration and include these efforts among department priorities. The office encourages the coastal program to prioritize coastal habitat restoration needs and build additional capacity to provide technical assistance to implement priority projects, including identification of outside resources and partnerships with federal, state, local, and nonprofit entities. The office also encourages the coastal program to capitalize on its move to the Department of Marine Resources and seek out opportunities to leverage NOAA National Marine Fisheries Service funds for state priority restoration efforts.

Stream Connectivity Work Group

The habitat restoration coordinator coordinates the Stream Connectivity Work Group, which is composed of individuals representing state and federal agencies, tribal governments, nongovernmental organizations, forest products companies, and engineering firms working to increase the rate and quality of habitat restoration in Maine. The group was created in 2009 to increase the rate and quality of restoration. A priority of the work group has been to identify the thousands of culverts, dams, and other impediments to fish passage statewide and improve connectivity.

The workgroup has developed training, guidance documents, and tools to improve stream connectivity. In 2011, Maine Audubon, the coastal program, and other work group members launched Stream Smart, a program that trains contractors, landowners, and other professionals responsible for road-stream crossings how to construct crossings that maintain fish and wildlife habitat while protecting roads and public safety. A *Maine Stream Crossing Survey Manual* (2012) was developed by several work group members as a practical survey guide to ensure consistent documentation of stream barriers. The *Maine Stream Connectivity Work Group 2012-2013 Report* found that most of Maine's culverts over streams hinder or block the movements of fish, other aquatic organisms, or the sediment and organic materials they require for survival. The Maine Department of Transportation published *Design Guidance for Culvert Sizing* (2015).

The coastal program along with many partners including The Nature Conservancy in Maine, Maine Audubon Society, U.S. Fish and Wildlife Service, U.S. Geological Survey, Maine Office of Geographic Information Systems, and Maine Department of Inland Fisheries and Wildlife provided funding and in-kind support for the development of the Stream Habitat Viewer Version 2.0 and the previous version. The Stream Habitat Viewer enhances statewide stream restoration and conservation efforts by providing a starting point for towns, private landowners, and others to learn more about stream habitats across the state. The viewer displays habitats important to Maine's economy, ecology, and way of life, and also the locations of dams and public road crossings that can block the movements of fish, wildlife, and the stream processes that create and maintain habitat. The Stream Habitat Viewer and data have been used by partners to prioritize habitat restoration and it is hoped that more coastal municipalities and watershed groups will use the information to identify and pursue high priority coastal restoration projects.

The Maine legislature authorized a Clean Water for Maine bond and voters approved the bond in 2014. The bond provides for \$5.4 million in funding for vital public improvements including stream crossing and culvert upgrades and 72 towns and other entities have received funding for replacement of undersized and failing culverts, more than half of which were in coastal counties. In many cases, the culverts were replaced with "stream simulation" structures that offer greater hydraulic, ecological, and economic benefits. The Department of Environmental Protection manages the bond funds and the Stream Connectivity Work Group has provided support, as well as the Regional Planning Commissions, who assisted communities with preparation of funding proposals.

State Wildlife Action Plan (2015)

In 2015, in collaboration with the Maine Department of Marine Resources, coastal program staff members worked with the Maine Department of Inland Fisheries and Wildlife to complete the 10-year update of the 2005 State Wildlife Action Plan. For the first time, the 2015 plan includes marine information. The 2015 plan includes 69 marine and diadromous species in need of conservation, including the habitats where these species can be found, stressors associated with these species and habitats, and potential conservation actions that could significantly reduce the impacts of the identified stressors. The plan also highlights the lack of knowledge for other unlisted marine species whose conservation status is currently unknown. It is anticipated that greater inclusion of marine and diadromous organisms in the 2015 plan will lead to improved prioritization of these species for conservation, management, and research funding opportunities.

Coastal Communities Grant Program – Habitat Projects

The coastal program has provided financial support to local communities through the Coastal Communities Grant Program to complete projects that will lead to habitat improvements. These projects have often built on larger coastal program initiatives such as improving stream habitat connectivity. Examples of projects are as follows:

- The Washington County Council of Governments received funding to install 10 new rain gauges to provide real-time rainfall data through the Internet to the Department of

Marine Resources. The project supports the county's \$4.1 million shellfish harvesting sector by providing accurate rain data to improve shellfish closure decision-making.

- The Town of Falmouth received funding to conduct a stormwater run-off study and to develop an integrated stormwater management plan to improve conditions in Mussel Cove, closed for shellfish harvesting due to pollution. The Director of Long-Range Planning and Economic Development for the Town of Falmouth stated, "This work will allow the town to be proactive and deploy any taxpayer funds to address issues in the most cost-effective, systematic, and efficient manner."
- The Town of Warren received funding to retain an engineer to study the best way to reopen three culverts to encourage fish migration in the St. George River watershed, which is home to a recovering alewife population and designated as Atlantic Salmon Critical Habitat.

Marsh Migration and Conservation

The coastal program received competitive funding for a Project of Special Merit, "Integrating Science into Policy: Adaptation Strategies for Marsh Migration," to enable communities, conservation entities, and state and federal agencies to plan for the preservation of those areas of Maine's coastal landscape where tidal marshes are likely to migrate as sea level rises. The Maine Geological Survey worked in partnership with the Maine Natural Areas Program to use LiDAR elevation data in an analysis of the potential for tidal marsh migration onto undeveloped lands along the entire coast of Maine based on four projections of sea level rise (1-foot, 2-foot, 3.3-foot, and 6-foot) above current highest annual tide. As part of the project, the Geological Survey developed the Highest Annual Tide GIS Mapping Tool to more accurately map the highest annual tide jurisdictional boundary for shoreland zoning using NOAA CO-OPS tidal stations, LiDAR, and VDatum software.

The results of the analysis show what non-tidal areas within estuaries will be inundated and are likely to transition to tidal marsh vegetation as sea level rises. Using the LiDAR-derived marsh migration model, the Natural Areas Program conducted further analysis to identify percent, acreage, and distribution of future inundated areas that are composed of natural lands, agricultural lands, freshwater wetlands, and conservation land. The GIS analysis also identifies "future tidal wetlands" that are well buffered, and potentially highly adaptive, yet are currently unprotected from land conversion. This information has informed the state and local land trusts and is actively being used by some land trusts for acquisition planning.

Living Shorelines and Beneficial Reuse

The coastal program was awarded a competitive grant for an ongoing Project of Special Merit, "Building Resiliency along Maine's Bluff Coast" (also discussed in the "Coastal Hazards and Resilience" section). The project includes exploring the effects of current shoreline armoring and the potential for use of living shoreline techniques. The project included an analysis of existing state and federal regulations and permits on the potential use of living shoreline techniques. Existing state regulations concerning stabilization of eroding bluffs create an incentive for

armoring with hard structures. While Maine's sand dune rules prevent new armoring in those environments, armoring of unstable bluffs is increasing.

A technical working group, including the Town of Brunswick, The Nature Conservancy, Maine Coast Heritage Trust, and the Casco Bay Estuary Partnership, was created to inform the development of a decision tree for living shoreline suitability on a site-specific basis. As part of the project that will be completed in December 2017, new research on bluff stability was conducted, including the analysis of "mud budgets" at a few sites in Casco Bay in order to understand the geological impacts of shoreline stabilization on the intertidal zone sediment supply. The project results will enable a better understanding of bluff hazards, shoreline stabilization options, and policy revisions, including changes to municipal shoreland zoning that will be needed to allow for, and encourage, living shoreline techniques where they will be effective.

A fiscal year 2016 NOAA Regional Coastal Resilience Grant funded the coastal program and Maine Geological Survey staff, along with The Nature Conservancy and other Northeast Regional Ocean Council partners throughout the region, to identify and address state and federal regulatory impediments to living shoreline implementation efforts. Maine's Living Shorelines Regulatory Workgroup facilitated discussions with several state and federal agencies and developed a statewide regulatory framework for living shoreline projects to help identify and ultimately lower regulatory barriers.

With sea level rise, the beneficial reuse of dredged material will continue to grow in importance as a necessary source of material to restore and maintain coastal habitat. The federal consistency coordinator organizes and provides staff support for the Maine Dredging Team, an intra-agency team that includes the Maine Departments of Transportation, Department of Environmental Protection, Marine Resources, and Agriculture, Conservation and Forestry. The coordinator also participates in the New England Regional Dredging Team and National Dredging Team. The Office for Coastal Management encourages the coastal program to continue to be involved in collaboration efforts across state and federal agencies to improve the utilization of beneficial reuse of dredged material for habitat restoration and coastal resilience.

Marine Debris

The coastal program plays a lead role in the state's effort to address marine debris, an area of increasing concern. The evaluation team heard from a number of members of the public that marine debris was a priority issue for them. The coastal program also noted that for the first time lobster fishermen are interested in working with them to address marine debris and be part of the solution. Marine debris has recently become a more serious issue as lobster traps are now made out of plastic, which gets crushed and tossed up onto the beach where it can sometimes trap birds. The traps also contain metal mesh coated in plastic and the plastic chips off into small pieces as the debris degrades.

The senior planner-education and outreach leads Maine's annual Coastweek, a weeklong statewide beach cleanup with sponsored events. The senior planner has also worked on projects

to reduce and clean up marine debris. The coastal program has created a campaign to reduce single use plastic items such as plastic bags and bottles. The coastal program also worked closely with the Department of Marine Resources to get special permission for a temporary permit to handle gear so that derelict gear could be removed from the ocean. One area of particular concern is the Coastal Islands National Wildlife Refuge and the impact of marine debris on the island's bird populations. During Coastweek 2015, 6.5 tons of debris was removed from the wildlife refuge.

The senior planner is serving as the State of Maine's representative on the Gulf of Maine Council of the Marine Environment and has used that role to establish and lead a new initiative that will coordinate efforts to address marine debris throughout the Gulf of Maine. The senior planner will continue to work closely with stakeholders throughout the Gulf of Maine in reducing the impact of derelict fishing gear through the implementation of new strategies and the Clean Foundation model for both land-based and water-based derelict gear removal efforts. The Office for Coastal Management encourages the coastal program in its efforts to address marine debris, an issue that was raised by a number of public citizens during the public meeting.

Evaluation Findings Coastal Habitat

Accomplishment: The Maine Coastal Program developed, and is leading, the implementation of the Maine Coastal Mapping Initiative. The initiative is filling major gaps in knowledge regarding ocean bathymetry and habitat off the coast of Maine and has produced easily accessible data that are improving maritime safety and being incorporated into planning and coastal management efforts.

Accomplishment: The Maine Coastal Program support of improving stream connectivity through the Stream Connectivity Workgroup, Coastal Communities Grant Program, and support of local communities is resulting in re-opening streams to endangered fish populations.

Recommendation: The Office for Coastal Management encourages the Maine Coastal Program in its efforts to continue to build the Maine Coastal Mapping Initiative that will continue to be vital to inform work in priority issue areas such as coastal hazards, fisheries management, and energy siting. The coastal program is also encouraged to continue to partner with other agencies in this effort, including the Office for Coastal Management, NOAA Joint Hydrographic Center, and Maine GeoLibrary.

Recommendation: The Office for Coastal Management encourages the Department of Marine Resources and the Maine Coastal Program to continue to support successful small-scale, community-based habitat restoration and include these efforts among department priorities. The office encourages the coastal program to prioritize coastal habitat restoration needs and build additional capacity to provide technical assistance to implement priority projects, including identification of outside resources and partnerships with federal, state, local, and nonprofit entities.

Evaluation Metrics

Beginning in 2012, state coastal management programs began tracking their success in addressing three evaluation metrics specific to their programs. The evaluation metrics include a five-year target and provide a quantitative reference for each program about how well it is meeting the goals and objectives it has identified as important to the program.

METRIC 1

Goal: Maine's shellfish growing areas are classified as open for shellfish harvesting.

Objective: By 2017, the number of acres of open shellfish beds will increase by 15%.

Strategy: Maine Coastal Program (MCP) staff will work annually with the Department of Marine Resources to identify priority target watersheds and devote staff time to assist municipal water quality committees and watershed groups with adoption of regulatory and non-regulatory approaches to coastal pollution reduction. MCP will provide technical assistance on municipal comprehensive plan language and strategies; assist in land use ordinance development; conduct training programs for municipal code enforcement officers and help connect groups with resources in other state agencies. MCP will offer sub-awards (on a competitive basis) to watershed groups and towns for projects that meet the above objectives. Types of projects may include analysis of water quality data, watershed surveys to identify sources of pollution, public education programs, storm drain stenciling or septic system inspections, installation of best management practices, and resource surveys to identify shellfish beds with restoration potential.

Performance Measure: The number of communities that adopt new plans, policies, and regulatory and non-regulatory measures; or complete targeted projects, or implement recognized best management practices to reduce impacts to coastal water quality in targeted watersheds of priority shellfish growing areas.

Target: Between 2012 to 2017, 10 communities will adopt one or more of the following: new plans, policies, and regulatory and non-regulatory measures; or complete targeted projects, or implement recognized best management practices to reduce impacts to coastal water quality in targeted watersheds of priority shellfish growing areas.

Results:

Year 1: 8 direct MCP involvement; 3 additional with CZM networked agency involvement
 Year 2: 0 direct MCP involvement; 5 additional with CZM networked agency involvement
 Year 3: 0 direct MCP involvement; 5 additional with CZM networked agency involvement
 Year 4: 1 direct MCP involvement; 1 additional with CZM networked agency involvement
 Year 5: 4 direct MPC involvement; 1 additional with CZM networked agency involvement

Cumulative Results: 13 direct MCP involvement; 15 with networked agency involvement

Discussion: The Maine Coastal Program has been very successful in supporting community efforts through direct staff and networked agency activity to adopt new plans, policies, and regulatory and non-regulatory measures; or complete targeted projects, or implement recognized best management practices to reduce impacts to coastal water quality in targeted watersheds of priority shellfish growing areas. The coastal program almost tripled its target.

METRIC 2

Goal: Maine’s coastal communities are resilient to coastal hazards.

Objective: By 2017, eight communities will improve their resilience to coastal hazards.

Strategy: MCP staff will develop local and regional sea level rise, storm surge, and erosion data; present information to municipalities in meetings and workshops; assist towns with development of vulnerability assessments and cost-benefit analyses; provide technical assistance on adaptation measures such as methods to restore natural dunes, new floodplain and shoreland zoning language, development of open space, and land acquisition plans; and provide information on feasible construction methods and state laws and regulations. MCP will also offer sub-awards, on a competitive basis, to municipalities and regional councils to undertake projects such as evaluation of waterfront facilities and infrastructure, feasibility studies for adaptation measures, and public outreach.

Performance Measure: The number of communities in the coastal zone that adopt new plans, policies, and regulatory and non-regulatory measures or complete targeted projects to reduce damage from hazards.

Target: Between 2012 and 2017, eight communities will adopt one or more of the following: new plans, policies, and regulatory and non-regulatory measures or complete targeted projects to reduce damage from hazards.

Results:

Year 1	4 Communities
Year 2	3 Communities
Year 3	2 Communities
Year 4	7 Communities
Year 5	3 Communities
Cumulative Results	19

Discussion: The coastal program, directly and through its networked agency partners, has been very successful in providing technical and financial support to community efforts to reduce damage from coastal hazards. In four years, the coastal program has more than doubled its

original target of eight communities adopting one or more plans, policies, and regulatory and non-regulatory measures to reduce damage from hazards.

METRIC 3

Goal Maine has healthy, resilient coastal habitats.

Objective: By 2017, Maine will protect 330 acres of coastal habitat via land or easement acquisition.

Strategy: The Maine Coastal Program will allocate staff resources to the Land for Maine’s Future (LMF) program – soliciting and reviewing proposals, overseeing appraisals, developing materials for the LMF Board, and managing financial and legal arrangements for acquisitions. Staff will track habitat values protected through acquisitions. MCP may also provide sub-awards (on a competitive basis) to municipalities for open space plans and other pre-acquisition feasibility studies to identify conservation properties.

Performance Measure: The number of acres of coastal habitats acquired in fee or protected via conservation easement.

Target: Between 2012 and 2017, 330 acres of coastal habitats will be acquired in fee or protected via conservation easement.

Results:

Year 1	49 Acres
Year 2	315 Acres
Year 3	0 Acres
Year 4	170 Acres
Year 5	283 Acres
Cumulative Results	817 Acres

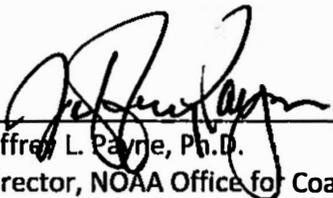
Discussion: The coastal program, through the efforts of its networked agency partner Land for Maine’s Future, was successful in protecting coastal habitat. The initial target was more than doubled, and over 800 acres of coastal habitat was protected in fee or through a conservation easement.

Conclusion

For the reasons stated herein, I find that the State of Maine is adhering to the programmatic requirements of the Coastal Zone Management Act and its implementing regulations in the operation of its approved Maine Coastal Management Program.

These evaluation findings contain eight recommendations that must be considered before the next regularly scheduled program evaluation but which are not mandatory at this time. Recommendations that must be repeated in subsequent evaluations may be elevated to necessary actions.

This is a programmatic evaluation of the Maine Coastal Management Program, which may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.



Jeffrey L. Payne, Ph.D.
Director, NOAA Office for Coastal Management

Nov 21, 2017

Date

Appendix A: Response to Written Comments

No written comments were received.