GOALS	RECOMMENDATIONS	Action to Date	Future Action
1. Invest in Maine's Capacity to Monitor and Investigate the Effects of Ocean Acidification and Determine Impacts of Ocean Acidification on Commercially-Important Species and the Mechanisms Behind Those Impacts	*1.1. Enhance monitoring and create a database sufficient to support the development of regulatory and non-regulatory approaches to reduce and limit nutrients and organic carbon from sources that are contributing significantly to acidification of Maine's marine waters. Enhanced monitoring should begin in one or more pilot estuaries where impacts are presently occurring.*		
	1.2. Expand monitoring of ocean acidification to establish its natural variability and to detect trends in water chemistry and related biological responses.	NECAN has supported various efforts to target monitoring in coastal areas. In Dec 2017, NECAN held a workshop with NROC on monitoring for coastal acidification. In 2018 and 2019, NECAN ran a series of workshops with citizen science groups in the northeast (including Maine) to engage these groups in monitoring for coastal acidification along with their current efforts. This led to Shell Day, a one-day monitoring blitz event when many citizen	The NECAN Management and Policy Working Group will revisit recommendations from the 2017 workshop and consider how to move towards implementation of some recommendations. Analysis of the Shell Day samples will be presented to the citizen science groups through webinars.

		science groups collect water samples for analysis of total alkalinity during the same day. This will give a snapshot of conditions around the region, may provide insights into relationships between salinity and alkalinity in specific estuaries, and will increase public involvement in coastal acidification issues.	
	1.3. Develop new tools with which to assess and understand acidification and its impacts in Maine waters.		
	1.4. Determine the causes and relative importance of acidification in the waters and sediments of Maine.	NECAN is involved in a NOAA-funded effort through NERACOOS to develop a model of coastal acidification that will cover the Gulf of Maine. This will help to determine the relative strength of drivers of coastal acidification, as well as project future trends and conditions.	NERACOOS will hold stakeholder outreach meetings with shellfish growers and water quality groups to receive input on important scenarios and conditions to include in their model.

	1.5. Identify the impacts of acidified waters and sediments on Maine's commercial species.		
2. Reduce Emissions of Carbon Dioxide	*2.1. Strengthen coordination and continue participation with existing national, state, and regional initiatives regarding the reduction of atmospheric CO_2 levels.*		
	2.2. Encourage key leaders and policymakers to synchronize in establishing a comprehensive and unified strategy to reduce carbon dioxide emissions.		

	2.3. Expand actions at the state and local levels that may help in reducing CO_2 emissions.		

3. Identify and Reduce Local Land-Based Nutrient Loading and, Organic Carbon Contributions to Ocean Acidification and Freshwater Runoff by Strengthening and Augmenting Existing Pollution Reduction Efforts and Making Groundwater Recharge a Land Use Priority.	*3.1. Identify and reduce nutrient loading and organic carbon from point source and nonpoint discharges determined to cause or contribute to ocean acidification.*		
	3.2. Assess the need for water quality criteria relevant to ocean acidification.	This was discussed at the NECAN-NROC monitoring workshop. One result was a recommendation to consider narrative standards instead of numerical standards.	NECAN will continue to support future efforts to help define what criteria will be most useful.
	3.3. Ensure that state staff and other practitioners are working with the best information and most effective technology.		

	3.4. Investigate incentive programs for pollution and freshwater runoff reduction.		
	3.5. Support and reinforce current planning efforts and programs that address the impacts of nutrients and organic carbon and freshwater runoff into coastal waters.		
	3.6. Enhance education and outreach programs that provide landowners with information about best practices for reduction of nutrient pollution.		

4. Increase Maine's Capacity to Mitigate, Remediate and Adapt to the Impacts of Ocean Acidification	*4.1. Preserve, enhance and manage a sustainable harvest of kelp, rockweed and native algae in bivalve areas and adjacent shoreline, and preserve and enhance eelgrass beds.*		
	4.2. Encourage bivalve production to support healthy marine waters.		
	4.3. Spread shells or other forms of calcium carbonate ($CaCO_3$)in bivalve areas to remediate impacts of local acidification.		
	4.4. Increase the capacity of the fishing and aquaculture industries to adapt to ocean acidification.		

	4.5. Identify refuges and acidification hotspots to prioritize protection and remediation efforts.	The model developed through NERACOOS may help in this regard.	Depending on the results of stakeholder workshops, identification of hotspots may be one of the uses of the model.
	4.6. Encourage the enhancement and creation of research hatcheries.		

5. Inform Stakeholders, the Public, and Decision-Makers about Ocean Acidification in Maine and Empower Them to Take Action.	*5.1. In addition to providing the commission's report, its key findings should be communicated to the Governor, Maine's legislative leaders, Maine's Congressional delegation, the press and the general public in a series of briefings by commission members.*		
	5.2. Continue efforts to increase the understanding of ocean acidification among key stakeholders, targeted audiences and local communities to help implement the commission's recommendations.	NECAN has developed many outreach materials, including a video and website. NECAN also held a workshop in conjunction with MACAN, the Mid-Atlantic Coastal Acidification Network, to develop conceptual models of coastal acidification to aid in communication efforts. In 2018-2019, NECAN held a series of webinars targeted to industry audiences.	Ongoing efforts include finalizing conceptual models for policymakers and industry audiences. NECAN will continue to hold webinars to provide updates on regional research findings.

	5.3. Enhance the existing communication network of engaged stakeholders, state agency representatives and the research community.	The NECAN Education and Outreach working group is probably the best venue for this coordination to occur.	
	5.4. Develop, adapt and use curricula on ocean acidification in K-12 schools and institutes of higher education and increase interdisciplinary university programs to equip young leaders with the skills to find solutions to complex multidisciplinary problems such as ocean acidification.	The NECAN Education and Outreach working group tracks educational materials and provides links to them on the NECAN website.	

6. Maintain a Sustainable and Coordinated Focus on Ocean Acidification.	*6.1. Create an on-going ocean acidification council.*		