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.*	Maine Coastal Observing Alliance (MCOA) built a citizen science network in estuaries from Casco to Penobscot Bays, measuring nutrients and pH in late summer-fall.	
	1.2. Expand monitoring of ocean acidification to establish its natural variability and to detect trends in water chemistry and related biological responses.	MCOA now has five years of pH and total nitrogen data, and has increased sampling areas during the past five years.	*See. 1.4*

	1.3. Develop new tools with which to assess and understand acidification and its impacts in Maine waters.		Identify proxy indicators that assess pH of waters in times past (e.g., chemical composition of shells). Develop collections of samples that can be either measured for these proxies or archived for future measurements as they become available or affordable.
	1.4. Determine the causes and relative importance of acidification in the waters and sediments of Maine.	MCOA has made some progress in sampling occurrences of acidification that seem due to freshwater addition, estuarine eutrophication, and import of acidified waters from offshore. While some incidents of acidification have clear origins, some others are difficult to interpret.	Based on previous findings, identify high-priority sites to measure at least three of the four carbon system parameters simultaneously (pH, alkalinity, total dissolved inorganic carbon, and pCO2).
	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.*	MCOA's data show that certain estuaries in certain years seem prone to nutrient-driven acidification. These include both more and less populated estuaries.	
	3.2. Assess the need for water quality criteria relevant to ocean acidification.		
	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.	MCOA data sets provide some of the information needed to address these eutrophication-driven impacts.	
	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.	MCOA data sets provide a five-year record of sites in which pH may reach levels of potential concern to fishing and aquaculture.	

	4.5. Identify refuges and acidification hotspots to prioritize protection and remediation efforts.	MCOA sample sets identify the zones of midcoast estuaries that have experienced relatively acidic conditions. Hotspots have included deeper waters at the mouths of several estuaries in 2014, and the Medomak estuary in 2017.	
	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.		

	5.3. Enhance the existing communication network of engaged stakeholders, state agency representatives and the research community.	MCOA has been a member of a three-year acidification data synthesis project funded by NOAA.	
	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.		

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

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