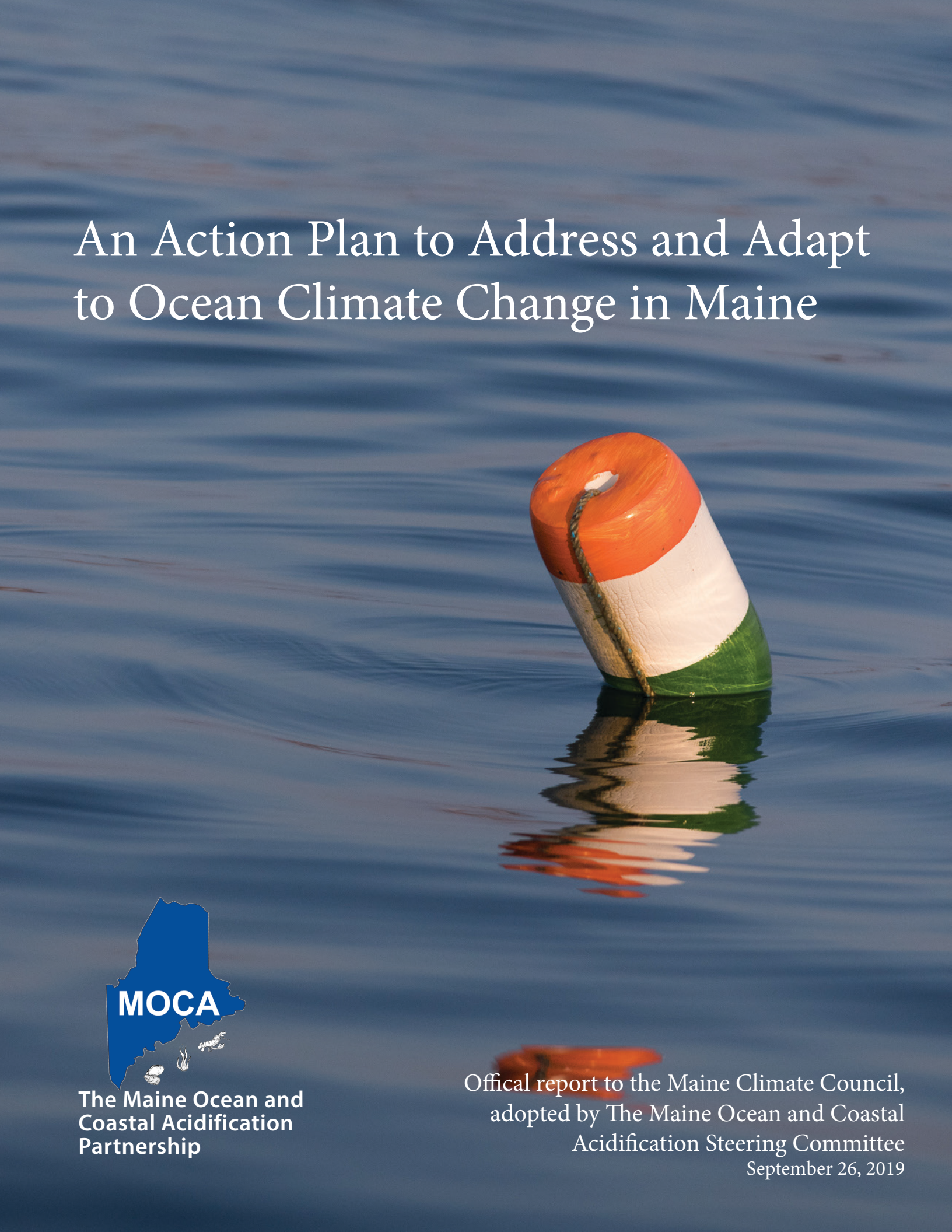
An Action Plan to Address and Adapt to Ocean Climate Change in Maine



MOCA

The Maine Ocean and Coastal Acidification Partnership

Offical report to the Maine Climate Council, adopted by The Maine Ocean and Coastal Acidification Steering Committee

September 26, 2019

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Statement of Intent

Members of the Maine Ocean and Coastal Acidification (MOCA) partnership have long anticipated State leadership in addressing and mitigating the effects of climate change. We strongly support the Governor's formation of a climate council. We appreciate the encouragement we have received from the Governor's staff to share our work and recommendations with the state's newly-created Climate Council. With ardor for progress on climate matters, we wish those involved the strength of purpose, courage, and steadfastness of direction to meet this challenge head on, and we stand ready to provide our support.

To find solutions and apt responses to the impacts of climate change, Maine will need to traverse many pathways. These may take the Council through uncharted territory or may follow routes that have been partially explored by those who have traveled ahead. The recommendations below reflect the consensus of many who have worked collaboratively to advance Maine's knowledge of and response to ocean climate change. We define **ocean climate change** to include the significant consequences of climate change to our marine waters, including increased acidification, sea level rise, and changes in temperature, salinity, and currents, which in turn impact the health and distribution of marine species, affect changes in ecosystems, and impact our coastal communities. We define **communities** as people who live in a similar place or have a characteristic in common; community is not constrained or defined by municipal boundaries.

The information and recommendations we are providing reflect the ongoing work of many MOCA members and include input gathered at three stakeholder meetings held this summer. Each stakeholder meeting was attended by 20 to 25 invited participants, matched to the themes of Research and Monitoring, Policy and Law, or Resilience and Adaptation. Participants in these sessions brought years of experience working on ocean climate change, and it is their sincere hope, and ours, that the information and recommendations provided in this document will be of substantive help to the Maine Climate Council in negotiating pathways to climate success.

Overview

The Maine Ocean and Coastal Acidification (MOCA) partnership[1] is a voluntary network of 220 people, led by a 7 member steering committee and a 38 member advisory group. MOCA's membership includes scientists, fishermen, aquaculturists, advocates, legislators, and concerned citizens. We have worked together to understand the impacts of ocean climate change on Maine's marine waters, economies, and communities and to implement the recommendations of Maine's Ocean Acidification Study Commission.[2] MOCA started with an emphasis on ocean and coastal acidification and necessarily broadened its focus to the impacts of ocean climate change.

Since 2016, MOCA members have worked collaboratively to understand how ocean climate change affects our iconic marine species and environs. MOCA meetings have provided a forum for researchers to share and coordinate groundbreaking research and for federal and state policy makers to contemplate regulatory changes based on sound science.

While the benefits of collaboration have been many, our voluntary network has no authority to seek funding, coordinate research, or implement regulatory changes. Often our dependence on short-term funding limited what we could accomplish, resulting in a piecemeal approach to a problem that requires a highly- coordinated, long-term response.

The Maine Climate Council has the power to change that. We fervently hope the Council will consider our recommendations, build upon MOCA's work, and help Maine remediate and adapt to ocean climate change.

Process

To develop the recommendations that follow, we:

- Asked the most active MOCA members to complete templates listing what they have accomplished since 2015 and what they plan to do in the future to meet the recommendations originally identified in Maine's Ocean Acidification Study Commission Final Report. A link to those templates[3] is attached as raw data that may be useful to the Climate Council.
- Conducted three stakeholder discussion sessions to explore the topics of research and monitoring, policy and law, and resiliency and adaptation. Twenty to twenty five people attended each meeting, and representatives of the Mills' administration attended all three meetings.
    - The research and monitoring meeting drew renowned researchers whose work has advanced Maine's understanding of ocean climate change.
    - The policy and law meeting drew staff from Congresswomen Pingree and Senator Collins' offices, members of the Maine Legislature's Joint Standing Committees on Environment and Natural Resources and Marine Resources, and noted professors and marine advocates.
    - The resiliency and adaptation meeting commingled several areas of expertise, including people who are experimenting with mitigation, remediation, and adaptive strategies, such as buffering to enhance shellfish growth and planning for sea level rise.

1 https://seagrant.umaine.edu/extension/maine-ocean-and-coastal-acidification-partnership-moca/
2 https://www.maine.gov/legis/opla/oceanacidificationrpt.pdf.
3 https://seagrant.umaine.edu/extension/maine-ocean-and-coastal-acidification-partnership-moca/moca-planning-report-2019/

Recommendations

Meeting participants shared their recommendations and ranked them by order of importance. Four **consistent themes** emerged during the meetings that pertain to all recommendations:

- **The Climate Council must identify funding to support essential strategies and actions.** The biggest shortcoming of MOCA has been our inability, as a voluntary network, to obtain and coordinate long-term funding to accomplish what must be done to respond to inevitable changes to Maine's coastal and marine resources.
- **The Climate Council should build upon existing efforts, rather than duplicate or re-create steps already taken.** For example, the State could facilitate a long-term, coastal monitoring network that coordinates and supplements existing efforts. The State could host periodic symposiums similar to those held by MOCA, drawing together researchers who are conducting new research to discuss and compare their findings.
- **The State must enhance the staffing and budget of its Departments of Environmental Protection and Marine Resources** to more fully address marine water quality and public and ecosystem health problems caused by ocean climate change.
- **The State must recognize the critical roles that municipalities, fishermen, aquaculturists, and others are playing and will play to address ocean climate change**, and ensure adequate opportunities to engage them in strategy development and action planning. This could be done by creating or attending forums where these communities can share their observations and concerns with the Climate Council.

Guided by these themes and the input received during our stakeholder sessions, **the MOCA Steering Committee recommends that Maine's 2020 Climate Action Plan prioritize the following strategies and actions with respect to ocean climate change:**

1. **Identify and coordinate a robust, long-term, marine monitoring program that builds upon existing monitoring.** Monitoring is essential for science-based decision making, and a successful monitoring program will require data collection using reliable instrumentation and protocols, long-term funding, a data repository and management system, and the capacity to conduct meaningful data analysis. This monitoring program should build on, support, and supplement existing public and private monitoring. It must also remain flexible and responsive; monitoring needs will change as our knowledge advances and we test new means of resiliency and adaptation. In the future, this data collection could inform modeling, if needed, to support sound decision-making both in a regulatory sense and for resiliency and adaptation planning.

2. **Assist Maine communities in evaluating and implementing the remediation and adaptation options that will work best for their communities and resources.** There will be no one-size-fits-all solution, and communities will need assistance assessing, including through cost-benefit analyses, various choices they might utilize to adapt to climate change. This will include planning for sea level rise, increased storm intensities, and other impacts to coastal environments experienced on a local level.

3. **Identify strategies to adapt fisheries management and support diversification of the working waterfront.** As our understanding of the complicated, synergistic impacts of ocean climate change advances, the state should identify fisheries management objectives and recommend or implement means to diversify the working waterfront to adapt to ocean climate change. Strategies may include localized pilot remediation projects, development of aquaculture as a working waterfront resilience strategy, increased license access for newly emerging species in the Gulf of Maine, and/or strategies to help shift fisheries management from single species to more integrated management plans.

4. **Identify and develop resources and training to assist marine resource managers and enforcement personnel, fishermen,**

aquaculturists, and others to recognize and address ocean climate change. The state should identify communities engaged in marine resource management, enforcement, fisheries, aquaculture and related industries whose livelihoods are affected by ocean climate change and provide them with the resources, training, and education necessary to recognize and respond to ocean climate change. The better informed Mainers are who work and live along our coasts, the better stewards they can be and the more they can do to mitigate and adapt to climate change.

5. **Enforce and strengthen existing regulatory tools to reduce nitrogen pollution, stormwater pollution, wastewater pollution, and other land-based inputs to ocean climate change.** Existing laws and regulations should be reviewed to identify ways to reduce the causes and impacts of climate change, including introducing new laws and regulations as needed. For example, excess nitrogen is delivered to our marine waters through stormwater runoff, point source discharges, and atmospheric deposition. Nitrogen pollution exacerbates coastal acidification and has other negative impacts on marine habitats and species. The State has existing regulatory tools that might be further employed to reduce nitrogen pollution. We recommend that those tools be identified, amended where needed, and applied.

6. **Require all relevant state and municipal plans, permits, and regulations to address ocean climate change.** If we are going to have meaningful, long-term impacts on land-based contributors to ocean climate change, the State must use its regulatory authority to support development and economic growth that will appropriately protect, rather than negatively impact, our coastal and marine environments.

To support these recommendations, we provide links to the following:

- MOCA Steering Committee profiles and contact information
- Lists of stakeholder meeting attendees and contact information
- Raw content templates provided by the stakeholders

Conclusion

To date, Maine has attempted to address ocean climate change largely through localized community responses or collaborative efforts such as MOCA. To truly mitigate the impacts of climate change, these efforts must be knit together and advanced through state leadership. We believe the Maine Climate Council creates the ambitious but necessary state framework to do that.

Moreover, the Maine Climate Council has the authority to make change happen. We fervently hope the Council will use that authority to build on MOCA's work and the work of others, to help Maine remediate and adapt to ocean climate change.

Acknowledgments

We want to thank the Broad Reach Fund of the Maine Community Foundation for supporting our efforts to conduct stakeholder outreach meetings, secure the assistance of Jeff Wahlstrom and Starboard Leadership Consulting, and develop the recommendations in this document.

The Maine Ocean and Coastal Acidification Partnership

Climate Action Planning Meetings

Research and Monitoring, July 16, 2019,1pm to 4pm
24 Total attendees

Name	Email	Affiliation
Cheyenne Adams	cheyenne.adams@maine.gov	Maine Department of Marine Resources
Susie Arnold	sarnold@islandinstitute.org	Island Institute
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Jeff Wahlstrom	cjw@starboardleadership.com	Starboard Leadership Consulting
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Don Witherill	donald.t.witherill@maine.gov	Maine Department of Environmental Protection

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Policy and Law Working Group, July 26, 2019, 1pm to 4pm
21 Total attendees

Name	Email	Affiliation
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Alexis Burns	alexisburns@cascobay.org	Friends of Casco Bay Intern
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Richard Nelson	fvpescadero@yahoo.com	Lobsterman Friendship
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Don Witherill	donald.t.witherill@maine.gov	Maine Department of Environmental Protection

The Maine Ocean and Coastal Acidification Partnership

Resiliency and Adaptation, July 29, 2019, 1pm to 4pm
20 Total attendees

Name	Email	Affiliation
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Current Steering Committee Members:
Ivy Frignoca, Esperanza Stancioff, Parker Gassett, Rep. Lydia Blume, Rep. Mick Devin, Richard Nelson, Meredith White, Don Witherill
Former Steering Committee Members: Susie Arnold, Aaron Strong