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The Contributions of the Gulf of Maine Council to Regional Climate Resilience

by Pamela A. Jordan

Abstract

This article investigates Canada-US collaboration in support of climate resilience efforts in the Gulf of Maine by focusing on the work of the binational Gulf of Maine Council on the Marine Environment (GOMC). Despite lacking authority over coastal management policymaking, the GOMC made significant progress between 2004 and 2022 towards achieving its climate resilience goals. Most importantly, GOMC actors, including members of the Climate Network, have helped build capacity for more effective measurement, monitoring, and analysis of climate change impacts in the Gulf of Maine. While its participants share common values and support rigorous climate action and marine conservation measures, the GOMC itself has been underdeveloped as a binational collaborative tool due to its limited mandate, financial resources, and small staff.

characterization of a fragmented adaptation landscape can be applied to the Gulf of Maine region, where climate denialism among some public officials and frequent political party turnover—in addition to two national institutional contexts—present formidable obstacles to formulating coherent adaptation strategies.

This article investigates Canada-US collaboration in support of climate resilience efforts in the Gulf of Maine by focusing on the work of the binational Gulf of Maine Council on the Marine Environment (GOMC).² The GOMC's purpose is “to facilitate integrated watershed, coastal, and ocean management; to

The Gulf of Maine is one of the world's fastest-warming bodies of ocean water due to climate change and unstable currents (GMRI 2022). The results of this climate-induced warming—which include the increasing rate of ocean acidification, toxic algae blooms, sea level rise, and more severe storms—are already adversely affecting coastal marshes and communities, lucrative fisheries such as lobster and cod, and marine biodiversity more generally (Pershing et al. 2021). Coastal communities are experiencing increased flooding and erosion, and equity issues need addressing due to unequal capacities for adaptability.¹

Under these hazardous conditions, robust adaptation policies are necessary for the protection of the marine environment and vulnerable coastal communities, not only in the Gulf of Maine region but also worldwide. However, adaptation efforts—such as infrastructure building and more effective management of fisheries—have too often not been treated as urgent priorities. Biesbroek and Lesnikowski argue that “the current adaptation landscape [worldwide] is still highly fragmented, characterised by unequal progress across contexts and unstable and ephemeral governance arrangements that suffer from high transaction costs” (Biesbroek and Lesnikowski 2018: 304). This

enable the region's governments to be more effective stewards; and to develop and sustain strong partnerships” (GOMC 2018: 9). It was created in 1989 as the first regional marine environmental protection regime in North America (Chircop et al. 1995). Due to the two federal governments' jurisdictional and sovereignty concerns, however, the Council's actions can only be voluntary, meaning that it cannot adopt legally mandated coastal management policies. Yet, despite these institutional constraints, the GOMC has been termed “a model for transboundary marine conservation worldwide” (Wondolleck and Yaffee 2017: 1). Many of its successes have involved scientific data gathering and sharing, including the Gulf of Maine Mapping Initiative, the Gulf of Maine Ocean Observing System, and the Ecosystem Indicator Partnership. Currently, the GOMC's largest project in terms of funding and scope is the Regional Collaboration to Address Marine Debris in the Gulf of Maine, which is funded by a two-year grant of \$367,839 from the US National Oceanic and Atmospheric Administration (NOAA) (GOMC 2022).

In what ways and how effectively has the GOMC been supporting recent climate resilience efforts in the Gulf of Maine ecosystem? In answering this question, I employ

process tracing on a wide range of GOMC documents. These include summaries of projects, meeting reports and agendas, presentations made at GOMC forums, and climate outlook reports designed for coastal managers. I collected further information through email messages from and remote meetings with the GOMC's executive director, Joan LeBlanc, and GOMC members. Lastly, I observed the GOMC's annual meeting in Portland, Maine, on July 28-29, 2022, which marked the first time the group had convened in person in two years due to the COVID-19 pandemic.

OVERVIEW OF THE COUNCIL AND HOW IT ADOPTED CLIMATE CHANGE AS A PRIORITY ISSUE

The binational stewardship of the Gulf of Maine is not governed by the 1909 Canada-U.S. International Boundary Waters Treaty or by any other national-level agreement, as in the cases of the Columbia River in the Pacific Northwest and the Great Lakes (Henshaw et al. 2021; Jordan 2020). Instead, the Gulf of Maine Council functions as “a bottom-up process rooted in the initiative of midlevel agency managers” from five subnational jurisdictions: the Canadian provinces of New Brunswick and Nova Scotia and the US states of Maine, Massachusetts, and New Hampshire (Wondolleck and Yaffee 2017: 16). It is the brainchild of David Keeley, a former director of Maine's Office of Coastal Programs. In the early 1980s, Keeley envisioned a forum in which “he and his counterparts in the region could meet to discuss issues of shared concern in the Gulf,” such as worsening water quality, habitat degradation, and the depletion of natural resources (Wondolleck and Yaffee 2017: 16–17). He appealed to Maine's governor, John McKernan, for support and then organized a meeting with his counterparts. Soon, they encountered federal-level resistance. The US State Department and Canada's Ministry of External Affairs argued that a binational body could not be formed without a legally binding treaty, while NOAA questioned its viability due to trade conflicts and a boundary dispute between Canada and the United States involving the lucrative Georges Bank fishing ground.

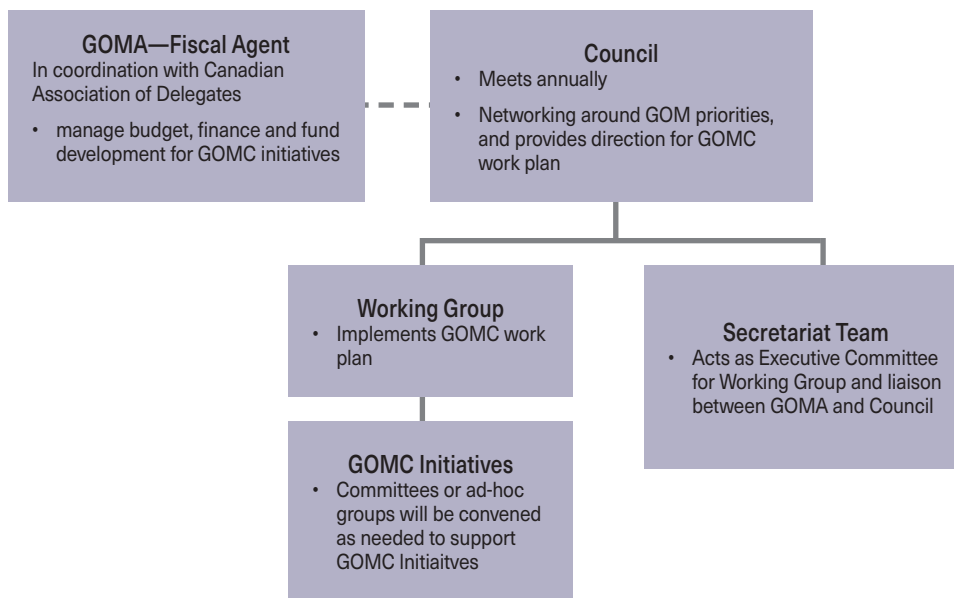
How, then, did the GOMC's supporters prevail over these formidable obstacles? First, the International Court of Justice resolved the boundary dispute in a 1984 decision (*Delimitation of the Maritime Boundary in the Gulf of Maine Area, Canada v United States*). Second, and more crucially, both federal governments came to accept that, as

long as the new bilateral body did not have policymaking authority over coastal management, no legally binding bilateral treaty was needed. As a result, in 1989 the premiers of New Brunswick and Nova Scotia and the governors of Maine, Massachusetts, and New Hampshire signed “An Agreement on the Conservation of the Marine Environment of the Gulf of Maine between the Bordering States and Provinces,” which authorized the establishment of the Council (GOMC 2020b). The agreement, in recognizing the separate jurisdictions of the national and subnational governments, “formalized a process for participants to exchange information, agree upon mutually beneficial goals, and work toward those priorities within the context of preexisting agencies with preexisting budgets and personnel already organized and trained” (Huntley 2001: 4–5). Kim Hughes (pers. comm., August 5, 2022), a biologist and long-term GOMC member, including as a representative of New Brunswick's Department of Environment, emphasized that its structure enables people to learn from best practices in similar areas and is valuable for dealing with elected officials.

The Council itself acts as a convening body whose decisions are made by consensus. Since 1989, its composition has diversified significantly, and this expanded membership has strengthened its organizational resilience and capacity to innovate. Originally, three appointed representatives from each subnational jurisdiction sat on the Council. In 1995, though, councilors agreed to add representatives from relevant Canadian and US agencies, in acknowledging the importance of federal programs and resources in the management of the Gulf of Maine ecosystem (Wondolleck and Yaffee 2017).³ As GOMC members grew more committed to scientific data sharing and coordinating data collection in achieving common goals, it became apparent that more stakeholders needed to become involved. Now membership includes representatives of First Nations and environmental groups, universities, research institutes, and independent scientific advisors. Rob Stephenson, a Canadian science advisor to the GOMC, stressed that it “has no [legal] authority, but it does link a lot of people and link issues, and provides a forum for discussion” (pers. comm., 26 July and 4 August, 2022).

The GOMC's flexible structure allows initiatives to be organized on a larger scale with input from all interested stakeholders (GOMC 2014a). A secretariat team composed of Canadian and US representatives oversees the GOMC's

FIGURE 1: Gulf of Maine Council's Organizational Chart



Source: (GOMC 2020b)

work, and its chairmanship rotates every two years among the five jurisdictions (GOMC 2018). The Gulf of Maine Association (GOMA) is a 501(c) 3 nonprofit organization that serves as the GOMC’s fiscal agent in terms of fund-raising, approving budgets, and insuring legal compliance with grants and other contributions.⁴ The council’s structure also features several issue-based committees, including Climate Network, Coastal and Marine Spatial Planning, Contaminants, Ecosystem Indicator Partnership, Habitat, and Maritime Activities. The GOMC’s forums and committees have “created a cascade of information, priorities, and relationships, which take root by ultimately changing individual agency behavior” (Wondolleck and Yaffee 2017: 25).

A Working Group composed of council representatives from the five subnational jurisdictions collaborates with the GOMC to design and implement five-year action plans and two-year work plans for projects (GOMC 2020b). The 2001–2006 Action Plan included the goal of developing adaptation strategies, encouraging research and disseminating information (GOMC 2001). During these years, the GOMC’s interest in climate change grew significantly. In 2003, the Climate Change Network Task Force (sometimes called the Climate Change Task Force in GOMC documents) was created within the Working Group to advance this goal, and it was chaired by Gary Lines of Environment

Canada (Wake et al. 2006). Climate change further developed as a priority at the GOMC’s Emerging Issues Forum in June 2005 in Orono, Maine. At this event, participants agreed to develop climate change indicators targeting the Gulf of Maine marine environment that would be used to inform the Council’s decisions about how best to support regional responses to climate change (Wake et al. 2006). The following year, the first indicators report on climate change authored by the Climate Change Task Force, Cross Border Indicators of Climate Change over the Past Century: Northeastern

United States and Canadian Maritime Region, was published, and it has served as a baseline for the GOMC’s future climate initiatives.

Under the next action plan (2007–2012), the GOMC continued to incorporate climate change issues into its activities. In 2007, the Working Group conducted a survey of GOMC stakeholders’ views, including about their preferred agenda items for future Working Group meetings; 52 percent of 24 respondents ranked climate change and sea-rise adaptation as their top choice (GOMC 2007). In 2010, the task force, produced two climate-themed reports—one on the effects of climate change on humans (Walmsey 2010) and the other on its effects on ecosystems, habitats and biota (Nye 2010)—as resources for coastal managers that appeared in the State of the Gulf of Maine Report⁵ and were funded by grants from Environment Canada and NOAA. By 2010, the Working Group had already deemed the EcoSystem Indicator Partnership, a GOMC committee that compiles scientific data, and climate change as cross-cutting areas, meaning that they are factored into the work of all GOMC initiatives (GOMC 2010). Two years later, in 2012, councilors agreed to make the Climate Network a GOMC standing committee, in following the scientific consensus that climate change poses a serious challenge to the health of

the marine ecosystem (J. LeBlanc, pers. comm., August 29, 2021).

The goals of the GOMC's last two Action Plans (2012–2017 and 2018–2022) concerned environmental and human health (including climate adaptation), restoring and conserving habitats, and sustainable and resilient communities. GOMC actors have tended to focus on climate change adaptation more than mitigation measures, although government officials in the region support the expansion of wind turbine farms in helping to reach their carbon emissions reductions targets. According to the website, the majority of the GOMC's committees and projects now address at least some aspect of the climate crisis, but its Climate Network committee specifically was meant to serve as a regional clearinghouse for information on climate impacts and adaptation strategies. The Network has benefitted from the diverse perspectives and methodologies of meteorologists, climatologists, marine scientists, transportation experts, regional planners, and public health experts (GOMC 2016).

While various meetings are scheduled throughout the year, the GOMC's annual meeting in particular serves as a platform for information sharing and learning about federal and subnational initiatives and best practices (e.g., coastal management, wind turbine development, public outreach programs) in the five jurisdictions, providing updates about the initiatives of the various GOMC committees, discussing federal grant opportunities, and incubating new collaborations. Meeting materials posted on GOMC's website indicate that GOMC members have designated climate-related issues as agenda items at annual meetings since 2004; in fact, with each passing year, GOMC members have incorporated climate factors more regularly into their discussions of other key agenda items, such as habitat and the EcoSystem Indicator Partnership.⁶

Most participants at the GOMC's July 2022 annual meeting—from representatives of federal and state or provincial agencies to those of over a dozen nongovernmental organizations—discussed climate change issues in their formal presentations and remarks, although the Climate Network did not give a separate report. Many of these presentations were principally informational. For instance, the representative from the Massachusetts Office of Coastal Zone Management, Lisa Engler, outlined how the state's new Clean Energy and Climate plan will help achieve the goal of net zero by 2050, such as through policy and infrastructure changes like expanding offshore wind farms.

Kim Hughes, the New Brunswick biologist, brought to the GOMC's attention a nongovernmental organization in New Brunswick with an innovative, experiential approach to K–12 climate change education. During one session, the Gaia Project's executive director presented on his organization's work, which generated strong interest among GOMC members, including a representative from Maine's Department of Marine Resources. The representative of the Houlton Band of Maliseet Indians (Littleton, Maine), Sharii Venno, discussed how “tribes are working with EPA on climate change [projects] with a focus on food sovereignty” (GOMC 2023: 10).

Other presentations at the GOMC's annual meeting in July 2022 proposed future collaborations and strategic approaches to addressing climate change. For example, during a presentation by the chairs of the GOMC's Coastal and Marine Spatial Planning Committee, Glen Herbert of Canada's Department of Fisheries and Oceans and Betsy Nicholson of NOAA, there was a discussion about how to collaborate in the development of offshore wind turbines and a sustainable ocean economy, while promoting biodiversity, aquaculture, and economic justice. As Nicholson emphasized, “the GOMC is the place where we can look at the bigger picture, inform each other and influence each other in a way that's really helpful.” In addition, the director of the Gulf of Maine Research Institute's (GMRI's) Climate Center, David Reidmiller, together with Janet Duffy-Anderson, GMRI's Chief Scientific Officer, proposed a partnership with the GOMC on a new symposium for promoting climate resilience in the Gulf of Maine based on forecasts up to 2030. Lastly, Rob Stephenson, the GOMC independent science advisor, urged GOMC members to further develop an ecosystem-based framework “to integrate the natural and social science disciplines and engage the relevant participants to achieve the full spectrum of advice on complex challenges such as reconciliation with indigenous peoples, achieving social justice, tradeoffs across objectives and activities, and assessing cumulative effects” (GOMC 2023: 11).

Beginning with its 2012–2017 Action Plan, the GOMC has increased its sponsorship of public forums for the discussion of scientific and management issues related to pressing challenges such as climate change (GOMC 2018). To date, the GOMC's largest public forum, the Gulf of Maine 2050 International Symposium: Challenges and Opportunities for Regional Resilience, was held in Portland,

Maine, from November 4 to 8, 2019. Organizers chose the year 2050 as a forecasting benchmark because it “marks the threshold between the inevitable changes to the climate system that we must prepare for and the even more challenging conditions that we will hopefully avoid” (GOMC 2019: 23). Over 300 people participated, including scientists and representatives from nongovernmental groups and all levels of government in the United States and Canada. Presentations featured scientific findings about climate change and forecasts for water temperature rises and increasing ocean acidification, severe storms, sea-level rise, and precipitation. Symposium participants agreed to expand collaboration and the sharing of knowledge, tools, resources, and strategies to stakeholders; and to strengthen public outreach. They also recommended designing policies and management actions that address social equity and environmental justice, helping fishermen adjust to changes, and conducting “collaborative research across silos—integrate social science, economics and ecological impacts” (GOMC 2019: 26). The key products of the Symposium are a set of academic papers that are now published in the University of California Press journal, *Elementa: Science of the Anthropocene* (Joan Leblanc, pers. comm., July 14, 2021).⁷ These papers and the symposium’s outcome document have informed the GOMC’s work (Joan LeBlanc and Ellen Mecray, pers. comm., August 11, 2021).

The GOMC regularly engages with two other intergovernmental groups to explore opportunities for information-sharing and collaboration. The first is the North American Climate Services Partnership, a tri-national collaboration of Canada, Mexico, and the United States that focuses on the Gulf of Maine, the Great Lakes, Alaska and the Northwest, and the Southwest and Mexico (GOMC 2021). Members share information concerning best practices, lessons learned, and new climate data products. The focus is not only on domestic climate programs, but also on initiatives happening in the designated regions of Alaska/the Pacific Northwest, the US Southwest/Mexico, the Great Lakes, and the Gulf of Maine (J. Leblanc and E. Mecray, pers. comm., August 11, 2021). The other intergovernmental group that the GOMC is in regular contact with is the Conference of New England Governors and Eastern Canadian Premiers, which consists of the premiers of Newfoundland and Labrador, New Brunswick, Nova Scotia, Prince Edward Island, and Quebec and the governors of Connecticut, Maine, Massachusetts, New Hampshire, and

Rhode Island. The group adopted a regional climate action plan (CAP) in 2001 and revised it in 2017 and agreed to decrease greenhouse gas emissions by 35 to 45 percent below 1990 levels by 2030 and 75 to 85 percent below 2001 emissions by 2050 (CNEGECP 2017).

THE CLIMATE NETWORK’S SUPPORT OF CLIMATE RESILIENCE

The Climate Network is a cross-cutting committee, meaning that its goals and outcomes contribute to the climate-related work of the other committees. In a 2014 GOMC report about the Network’s priorities, other committees identified such climate-related topics as habitat conservation, water quality, critical infrastructure, vulnerable communities and industries, flood risk mitigation, and ocean acidification and shellfish management (GOMC 2014a). Its steering committee is co-chaired by representatives from Environment and Climate Change Canada (ECCC) and NOAA. Beginning in 2012, Ellen Mecray, NOAA’s Regional Climate Services Director for the Eastern Region, served as its US cochair, while Bill Appleby of ECCC served as her Canadian counterpart, until he resigned in 2021. As of late 2023, Mecray is serving with two Canadian cochairs from ECCC. According to the GOMC’s executive director, there are no set rules for selecting steering committee members, but “rather an approach where co-chairs conducted outreach to identify individuals from US and Canadian agencies and organizations who were interested and brought relevant expertise to the table that aligned with the committee’s priorities. As with all GOMC committees and initiatives, there was an effort to involve people from all five jurisdictions representing various agencies and perspectives” (J. LeBlanc, pers. comm., October 26, 2023). The network’s members have also included representatives from other federal agencies, environmental agencies of the five jurisdictions, universities and research institutes, and the EcoSystem Indicator Partnership. Between 2013 and 2017, it had a part-time coordinator. However, since 2017, it has not been allocated funding for one.⁸

Between 2012 and 2017, the network’s mission was to support improved climate resilience and adaptability in coastal communities in the Gulf of Maine watershed, with a focus on the cross-border sharing of scientific knowledge and resources and the coordination of regional responses (GOMC 2017). In 2013, its participants began to intensify

its support of climate resilience. Mecray reported that the “demand for climate products and services has been increasing among multiple sectors such as commerce, agriculture, maritime, infrastructure and environment. Extreme weather and climate events have been on the rise with 11 disasters causing more than \$1 billion each in the U.S. during 2012” (GOMC 2013: 11). In September 2013, more than 60 stakeholders participated in a conference in Orono, Maine, convened by the Climate Network called “Bilateral Coordination and Collaboration for Climate Service Delivery.” Representatives from federal and subnational agencies, indigenous groups, universities, and NGOs identified best practices about and lessons learned from climate action programs, strategies for mitigation and adaptation, and future priorities.

The Climate Network focused on five key project initiatives between 2012 and 2017 (GOMC 2018). The first was the production of two-page *Gulf of Maine Quarterly Climate Impacts and Outlook Reports* by Canadian and US scientists, who developed and distributed them with the support of NOAA, ECCC, and the North American Climate Services Partnership (GOMC 2016). By late 2014, more than 300 subscribers were receiving them via an e-bulletin, which also contained announcements about climate-related events, tools, and scientific reports (GOMC 2014b). These planning tools, which are accessible on the network’s website, summarize the previous season’s climate events and provide a forecast for the next season. Coastal managers used this information to inform their climate-related work. Unfortunately, the network’s e-bulletins were suspended in 2015 due to a loss in funding (GOMC 2015a).

The second initiative was a public outreach project, the Gulf of Maine King Tides Initiative, which raised public awareness about future flood risks and fostered a public stakeholder identity.⁹ This project encouraged people to submit their photos of extreme high tides to help assess future flood risks. The network organized photo contests in 2014 and 2015 with a \$7,000 grant from the Maine Community Foundation to encourage the participation of volunteers. The King Tides website contains a gallery of these images, along with information for teachers to use in science curricula and news updates about King Tides and climate change. In a related effort, the network received a foundation grant to collaborate with University of Southern Maine students in 2014 and 2015 on a sea-level-rise

demonstration project that was displayed along a walking trail in Portland (GOMC 2014b).

The third initiative was the launch of a regional climate dashboard that provided coastal managers with real-time climate data.¹⁰ The dashboard served as a model for the EPA’s Resilience and Adaptation in New England (RAINE) database (J. LeBlanc and E. Mecray, pers. comm., Aug. 11, 2021). A related project that the Climate Network facilitated from 2016 to 2018 was a web-based tool for Atlantic Canada that provided coastal managers with improved access to extreme rainfall data; this was funded by Environment Canada’s Atlantic Ecosystems Initiative for three years (GOMC 2016).

The fourth initiative was a climate adaptation study in the Bay of Fundy in 2014. Its findings were based on a survey carried out by the Climate Network of over 30 Bay of Fundy communities and phone interviews with 31 municipal and regional officials. Those surveyed identified five key and interrelated climate concerns: extreme weather, hurricanes/high winds, inland flooding, sea-level rise, and storm surge. Municipal officials reported that the areas most vulnerable to climate impacts were transportation, infrastructure and accessibility, and stormwater and emergency management. They also had difficulty addressing these problems due to limited staff time and expertise, inadequate budgets, and lack of jurisdictional authority (Schauffler 2014).

The fifth initiative was the production of a community toolkit posted on the Climate Network’s website with links to resources and tools for municipalities working on climate mitigation or adaptation. The website has links to videos, case studies about climate initiatives, a “Living Shorelines” page with information for people interested in using natural infrastructure such as oyster reefs for mitigating coastal erosion due to sea-level rise, higher tides, and storm surges.¹¹

The Climate Network’s Work Plan for 2017 to 2019 continued to emphasize the sharing of knowledge and resources and coordinating regional actions in support of stronger climate resilience and adaptability in Gulf of Maine communities (GOMC 2017). One ongoing initiative was the production of *Gulf of Maine Quarterly Climate Impacts and Outlook Reports*. A second ongoing initiative was the production of web-based tools that gave coastal managers access to intensity/duration/frequency extreme rainfall data to help them better prepare for climate impacts.

The network adopted five goals in its Work Plan for 2020 to 2022 (GOMC 2020a): (1) to provide a network for

climate information exchange between the jurisdictions; (2) to facilitate access to climate information to support climate adaptation actions and community resilience; (3) to provide current seasonal climate information and seasonal outlooks for the Gulf of Maine; (4) to promote the use of climate information in communities and resource industries; and (5) to network with the broader international community through the North American Climate Services Partnership. The COVID-19 pandemic slowed the progress made on some of these goals, as network members needed to focus on the work requirements in their principal government agencies or nongovernmental organizations. But the Climate Network continues to identify future opportunities, priorities, and activities in response to feedback from representatives of the five subnational jurisdictions (GOMC 2023).

EVALUATING THE BINATIONAL RESPONSE TO THE CLIMATE CRISIS IN THE GULF OF MAINE

This article investigated how the Gulf of Maine Council as a cooperative binational arrangement supported climate resilience efforts in the region between 2004 and 2022. Participants helped build capacity for more effective measurement, monitoring, and analysis of climate change impacts in the Gulf of Maine and disseminated their findings to regional practitioners (GOMC 2021). Notably, the *Gulf of Maine Quarterly Climate Impacts and Outlook Reports* “served as a catalyst for development of other US/Canadian outlooks focused on the Great Lakes, Alaska/Yukon, and the West Coast” (GOMC 2019: 8). The GOMC’s openness to new partners and to adopting new areas of focus in response to scientific findings and community needs has been one of its strengths. For instance, since 2020, the GOMC has been focusing more on issues of equity and climate justice, in response to the concerns of communities in the region (J. LeBlanc and E. Mecray, pers. comm., August 11, 2021). These efforts also reflect a greater acceptance in both countries of the urgent need for climate action, although partisan polarization continues to be a key limiting factor (Lachapelle and Borick 2022). With the accumulation of more scientific data on the harmful effects of climate change, supporting climate resilience has become a priority not only for members of the Climate Network, but for all GOMC actors.

The intensity of the commitment to climate action has fluctuated on the federal and subnational levels in both Canada and the United States, due to frequent political

party turnover and the tendency for politicians to deprioritize or even sabotage climate action policies, especially in the United States during the Trump era (Gross 2020). For example, network participants reported in 2019 that in some jurisdictions “political issues [continued] to pose problems for development” of tools that help scientists measure sea-level rise (GOMC 2019: 8). President Joseph Biden’s administration has signaled a renewed interest in pursuing joint climate action with Canada. Only two days after taking office in January 2021, President Biden spoke with Prime Minister Trudeau about the challenge of climate change (The White House 2021). At a virtual GOMC meeting in June 2021, Betsy Nicholson of NOAA acknowledged that “the ongoing change in U.S. federal administration will impact funding and priorities related to GOMC objectives. With United States and Canada in sync on several marine related priorities, GOMC will have an opportunity to leverage resources for regional ocean planning, climate change, coastal resilience and other priority areas of focus” (GOMC 2021a: 9).

On the subnational level, all five jurisdictions have adopted their own climate action plans. In 2019, Maine’s government created the 39-member Maine Climate Council, a group of scientists, industry leaders, and local and state officials, which has since adopted a climate action plan with a goal to achieve carbon neutrality by 2045.¹² However, conservative state politicians in particular have stymied climate advancements in the Gulf of Maine region. For instance, because New Hampshire has been frequently governed by Republican legislative majorities and governors, its 2009 climate action plan lacks binding carbon emissions reduction targets and has not been revised in light of recent climate science findings (Hoplamazian 2022). Overall in the Gulf region, though, the trend has been toward adopting more robust climate action through the collaborative work of public-private partnerships. Research centers such as the Gulf of Maine Research Institute and the Northeast Climate Justice Research Collaborative, which is headquartered at University of Massachusetts Boston, are important multistakeholder efforts.

The GOMC arrangement as defined by the 1989 agreement has granted its members and partners some flexibility and autonomy in crafting initiatives that serve the needs of regional coastal managers and communities. However, the GOMC is not empowered to solve the problems posed by a fragmented climate adaptation landscape in the Gulf region

because it cannot mandate targets and goals. Moreover, the GOMC has not received sufficient and sustainable operational funding from either the two federal governments or their subnational counterparts to ensure that it can fulfill its expanding mission. For instance, for the Climate Network to become a clearinghouse for information on climate impacts and adaptation strategies, it would need dedicated staff to help manage projects, coordinate information sharing, and update the website and perform other public-facing duties such as organizing public forums. Unfortunately, given the uncertainties about the outcome of the 2024 federal and state elections in the United States, there is no guarantee that this critical base of financial support will ever be realized.

NOTES

- 1 https://investigate.gmri.org/project/coastal_flooding
- 2 I use the US Environmental Protection Agency's definition of climate resilience: "the capacity of a system to maintain function in the face of stresses imposed by climate change and to adapt the system to be better prepared for future climate impacts." (<https://www.epa.gov/climate-adaptation/climate-adaptation-and-epas-role>).
- 3 The subnational agencies include New Brunswick's Department of Environment and Local Government, Nova Scotia's Department of Intergovernmental Affairs, Maine's Department of Marine Resources, Massachusetts's Office of Coastal Zone Management, and New Hampshire's Department of Environmental Services. The federal agencies include Environment and Climate Change Canada, Fisheries and Oceans Canada, the US National Oceanic and Atmospheric Administration, the US Department of the Interior, and the US Environmental Protection Agency (EPA).
- 4 <https://www.gulfofmaine.org/public/gulf-of-maine-council-on-the-marine-environment/about-the-council/>
- 5 <https://www.gulfofmaine.org/public/state-of-the-gulf-of-maine/>
- 6 <https://gulfofmaine.org/public/gulf-of-maine-council-on-the-marine-environment/about-the-council/meeting-documents/>
- 7 <https://online.ucpress.edu/elementa/collection/266/Gulf-of-Maine-2050-Visioning-Regional-Resilience>
- 8 The Climate Network's budget has been modest. Its 2013 budget was an estimated \$41,000 (GOMC 2013), while in 2015 it received a \$105,806 project grant from the ECCC (GOMC). The Network also receives in-kind support from other partner organizations and agencies. According to Joan LeBlanc (pers. comm., July 14, 2021), "Dedicated funding from GOMC member agencies supports general operations for the GOMC and a GOMC coordinator but does not provide contract support for committees. Contractors for committees, such as the Climate Network coordinator, are funded only when specific project-related funds are made available—usually through a specific funding or grant request.

- 9 <https://www.gulfofmaine.org/2/climate-network-homepage/king-tides-photo-contest/>
- 10 <https://www.gulfofmaine.org/2/climate-network-climate-outlook/>
- 11 <https://www.gulfofmaine.org/2/climate-network-community-toolkit/>; <https://www.gulfofmaine.org/2/climate-network-living-shorelines/>
- 12 <https://www.maine.gov/future/climate/council>

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