

The State of the Gulf of Maine Report: An Initial Study on Awareness, Use, and Influence of the Theme Papers

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***Environmental Information: Use and Influence* Research Initiative
Dalhousie University**



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Preparation of this Report

This report was prepared for the Department of Fisheries and Oceans Canada by the Environmental Information: Use and Influence (EIUI) research initiative, based in the School of Information Management, Faculty of Management, Dalhousie University, Halifax, Nova Scotia. The EIUI research initiative is studying the diffusion, use, and influence of information published as grey literature, through detailed case studies of governmental and intergovernmental organizations focused on marine environmental issues and fisheries. Investigation of the use and influence of information published as grey literature (i.e., not produced by commercial publishers) is a priority, given today's global marine environmental problems. This research seeks to elucidate the pathways (and barriers) of the flow of scientific information from production to relevant policy decisions and to offer insights for enhancing the use of science on matters of global importance. The research encompasses the disciplines of information studies, marine science, resource and environmental management, and public administration. Further details are available at www.eiui.ca.

About the Authors

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Submission Letter



Faculty of Management

30 June 2011

Tim J. Hall
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Dear Tim:

Re: *The State of the Gulf of Maine Report: An Initial Study on Awareness, Use, and Influence of the Theme Papers*

We are very pleased to enclose copies of the final report of *The State of the Gulf of Maine Report: An Initial Study on Awareness, Use, and Influence of the Theme Papers*. The report is also being forwarded to you by e-mail as a pdf file.

We are interested in discussing the results of the report with you at your convenience. Together, we have an opportunity to advance further interest in *The State of the Gulf of Maine Report* and to apply our findings about the awareness and use of the theme papers towards the development of the additional papers that will be prepared and launched as part of the larger *Report*.

We appreciated the opportunity to undertake this study and the support that you provided for it, and look forward to further discussion and research with you and your department.

Yours sincerely,

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/ Enclosure

Executive Summary

In June 2010, the Gulf of Maine Council on the Marine Environment (GOMC) released *The State of the Gulf of Maine Report* in a modular format composed of a context paper and five theme papers based on priority areas identified by the Council. The papers are available for download on the GOMC Web site (www.gulfofmaine.com).

The Environmental Information: Use and Influence (EIUI) initiative, based in the School of Information Management, Faculty of Management, Dalhousie University, in collaboration with the Department of Fisheries and Oceans Canada, conducted a study of the initial awareness and use of *The State of the Gulf of Maine Report* between January and May 2011. The main objective of the study was to determine awareness and use of the *Report* by both the GOMC members and the readers of the *Gulf of Maine Times*, a digital periodical produced by GOMC.

The Environmental Information: Use and Influence research team developed three online surveys using Opinio software to obtain an understanding of the awareness and use of the context and five theme papers of the *Report* (surveyed and analysed as six theme papers). The surveys were administered during April and May 2011. Both the GOMC secretariat and the editor of the *Gulf of Maine Times* facilitated this study by distributing the invitation messages through the respective listservs or distribution systems to Council and Working Group members and to readers of the *Times*.

In the surveys, 11 (52%) responses were received from the 21 Council members currently involved in the GOMC; 13 (48%) responses were received out of the 27 Working Group members; and 72 (less than 1%) responses were received out of the estimated 2,400 readers of the *Gulf of Maine Times* who received an invitation to complete the survey. Readers of the *Times* who responded were mainly consultants, teachers, and persons working outside of GOMC but within the organizations/jurisdictions to which the GOMC members belong.

Awareness of the *Report* was high, not surprisingly, among members of the Council and Working Group. These two groups also found the availability of digital forms of the *Report* to be a suitable form of access. Most of the readers of the *Gulf of Maine Times* who responded (70%) said they were aware of the *Report* and had visited the Web site generally within the previous three months. A few readers of the *Times* who had visited the GOMC Web site within the last year were still not aware of the release of the *Report*.

With regard to format, in general, all three survey groups favoured the availability of the *Report* as a series of issue-based theme papers. Overall, respondents believed this format can be useful for decision making since it facilitates dissemination, distribution, and updating of information about the Gulf of Maine/Bay of Fundy.

Each group promoted awareness of the theme papers. All of the Working Group members, 40% of Council Members, and 22% of the readers of the *Gulf of Maine Times* used mainly electronic networks (e.g., email, the *Gulf of Maine Times*, Web links to the GOMC Web site, and Facebook) for this purpose.

The theme papers were read by most of the Council members (70%) and Working Group members (83%), and in general each member read more than one of the papers. The Context Paper received the highest percentage of readers among Working Group members, while “Coastal Ecosystems and Habitats” and the two theme papers on Climate Change issues received the highest number of readers among Council Members. More of the readers of the *Gulf of Maine Times* read the individual theme papers than the “Context Paper,” seemingly because of their interest in each of the specific coastal issues. The theme paper on “Marine Invasive Species” was read by fewer individuals associated with the Council and the data showed it has been used only by individuals particularly working in managing this issue. All groups read the “Emerging Issues” theme paper with a similar frequency.

Use of the *Report* was varied in spite of the high readership of the theme papers by the three groups. Use of the *Report* by Council members was lower (56%) compared to Working Group members (73%). Both groups stated they used the *Report* mainly as background information in their work. Sixty-two percent of the readers of the *Times* reported that they had not used the *Report*. However, these respondents noted that others were using the *Report* for personal education and communication about the environmental issues in the region, and for developing similar publications and Web content.

All respondents considered the overall value of the theme papers is their importance as a source of baseline information for public education to increase public awareness of the key threats to the region, and as a starting point for managers to inform the formulation of policy, advocacy, and for guiding work and discussion on the environmental management of the Gulf of Maine/Bay of Fundy. The *Report* was also noted for facilitating communication and understanding across institutional and geographical jurisdictions. Overall, respondents believed it was “too soon to gauge” influence of the *Report* due to the recent timing of its release (June 2010). However, it was believed that the information contained in the theme papers will be considered more frequently in making decisions/providing information in the future.

Overall, respondents recommended the need to focus greater efforts on wider distribution of the *Report* to increase education and awareness and to make more use of the media (print, radio and television), press releases, and the social media. Respondents also recommended the production of printed copies in addition to the digital version. Most Working Group members stated that the theme papers should be updated either at least

every two years or every five years, while 45% of readers of the *Gulf of Maine Times* indicated that the theme paper on “Emerging Issues” should be renewed every year.

Working Group members indicated a need for more such summarized information. Production of fact-sheets or “at a glance” summaries on the GOMC Web site was suggested to promote awareness of the *Report* and the issues and as an alternative to the pdf files of the theme papers, which are relatively large and exceed the capacity for downloading on mobile devices. Links between the various theme papers were suggested to facilitate comprehensive understanding of the state of the Gulf of Maine, Bay of Fundy, and their watersheds.

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1. Introduction

1.1. *The State of the Gulf of Maine Report*

The Gulf of Maine is one of the largest semi-enclosed coastal seas in North America and is bordered by the northeastern United States and two of the Canadian Maritime Provinces. It is recognized as one of the world's richest marine ecosystems with various marine and estuarine habitats, such as salt marshes, seagrass beds, tidal mud flats, underwater rocky outcrops, and kelp beds, and highly productive off-shore fishing banks. The Gulf region also supports over 10 million people who live along its western and northern shores within the cities and towns of coastal Massachusetts, New Hampshire, Maine, New Brunswick, and Nova Scotia. The Gulf of Maine is a dynamic, changing ecosystem and has supported a long tradition of fishing, marine transportation, coastal development, and recreation. It continues to be a valuable resource for the people who live and work in the region (GOMC, 2010).

In June 2010, the Gulf of Maine Council on the Environment (GOMC) released the first parts of *The State of the Gulf of Maine Report* to inform decision makers on the main issues affecting the Gulf of Maine/Bay of Fundy region. The *Report* is produced in a modular format composed of a context paper and the first five theme papers based on priority areas identified by the Council. The *Report* papers are available online for download on the GOMC Web site (www.gulfofmaine.com). The *Report* is described as “the first Gulf-wide synthesis of pressures on the environment, biophysical and socio-economic status and trends, and responses to identified issues” (GOMC, 2010). Additional theme papers are being developed during 2011 and 2012 and the plan is that all of the papers will be regularly updated at appropriate intervals for each issue.

1.2. Study Background and Objectives

Among its research objectives, the Environmental Information: Use and Influence (EIUI) initiative, based in the School of Information Management, Faculty of Management, Dalhousie University, is pursuing research to increase understanding of the use and influence of marine environmental grey literature (produced outside of commercial practices) on policy and decision making. Environmental grey literature may be influential in informing policy decisions to mitigate or reverse environmental degradation trends, but little evidence exists to demonstrate the actual use of such publications in this context. These publications can remain difficult to find or largely unknown except to a select few because of the manner in which they are released or communicated (Healy & Ascher, 1995; Holmes & Clark, 2008; McNie 2007; Wells, 2003). Decisions made about marine environments will have a major impact on the ability to achieve environmental sustainability locally, regionally, and internationally, and, therefore, it is important that the best available evidence from current scientific research be considered in policy and decision making (Davies, 2004; Hinrichsen, 2011).

The State of the Gulf of Maine Report is characterized as environmental grey literature. The EIUI research team, in collaboration with the Department of Fisheries and Oceans Canada (DFO), a member of the GOMC, began a study to determine awareness and use of the *Report*. This collaboration provides an opportunity to highlight the pathways (and barriers) of the flow of such scientific information, and its use on matters of importance regarding the Gulf of Maine/Bay of Fundy region. It will also address questions of awareness and whether or not the theme papers are being used for various purposes: information, education, background to a policy document, etc. This study may help to guide the production and release of further theme papers.

Objectives of This Study

The main objective of the study was to determine awareness and use of *The State of the Gulf of Maine Report*, by:

1. Developing and conducting a survey to identify and summarize the efforts of a) the Council and b) the Working Group members to use the context and theme papers, and to promote awareness of them.
2. Developing and conducting a survey of readers of the *Gulf of Maine Times*, to determine public awareness and use of the context and theme papers and to determine who is reading the *Report*.

This report presents the results of the three surveys.

2. Production of *The State of the Gulf of Maine Report*

2.1. The Gulf of Maine Council on the Marine Environment

Council and Working Group

The Gulf of Maine Council on the Environment (GOMC), an international, intergovernmental organization (Canada - United States) was established in 1989 in response to the growing evidence of the declining environmental health of the Gulf of Maine/Bay of Fundy region and the need for collaborative efforts on the Gulf's environmental management. The GOMC functions as a regional forum for exchanging information and for long-term planning for environmental management in the region.

The GOMC is comprised of the Council itself, the Council's Working Group, and several high-level committees and task forces to carry out the work mandated by the Council according to the Action Plan (GOMC, 2006). The Councilors are officials in state, provincial, and federal agencies; non-government organizations; and the private sector (Appendix 1). The Council's Working Group includes one representative for each state, provincial, and federal Council member, as well as Canadian and U.S. co-chairs from each of the Council's committees (Appendix 1). The Working Group conducts strategic

planning, prepares policy options, and develops annual work programs and budgets for Council activities. Funded by Canadian and American governments, the Council and its subsidiaries place a high priority on communication, which is conducted mostly through its own publications (deemed grey literature). The geographic focus of the GOMC publications is regional, yet its audiences and publication formats are diverse (Cordes, MacDonald, & Wells, 2007).

Gulf of Maine Times

The *Gulf of Maine Times*, a newspaper produced by the Gulf of Maine Council on the Marine Environment for over fifteen years, is the primary means of distributing news of the GOMC and information on research, current issues, and community projects in the Gulf of Maine/Bay of Fundy region. The *Times* is now published online, three times per year. Over 2,400 persons, covering a wide cross section of the Gulf of Maine's stakeholders spread throughout the Maritime provinces of eastern Canada (New Brunswick, Nova Scotia) and the New England states of the United States (Maine, Massachusetts, New Hampshire), receive a notice about issues of the *Times* (J. Cradock, personal communication).

2.2. Background to the Production and Release of *The State of the Gulf of Maine Report*

Since its inception in 1989, the Gulf of Maine Council on the Environment (GOMC) has been working to maintain and/or enhance environmental quality and sustainable use of resources in the Gulf of Maine/Bay of Fundy region. For many years there has been recognition of the importance and the necessity of linking monitoring programs in this region and the data they generate with state of the environment reporting and activities in environmental management. Since 2002, GOMC has coordinated a series of conferences and directed studies to identify and reach consensus on the main environmental issues/problems and a method of state of the environment reporting (Della Valle 2006; GOMC, 2007; Mills, 2006; Pesch & Wells, 2004; Walmsley, 2009).

The Council has recognized the importance of state-of-the-environment reporting as a management tool and a necessary component to facilitate the goals listed in its Action Plan 2007-2012 (GOMC, 2007) and in its new Action Plan 2012-2017 (in preparation). In June 2010, the GOMC released *The State of the Gulf of Maine Report* in digital format via the Web. At the launch of the *Report* the editor stated, "the focus is not on policy-makers, educators or NGOs (non-governmental organizations). Oddly, it's on professional people who will repackage the information for their own use. The coastal managers, communicators, technicians, planners, academics – people who work with data" (Griffin, 2010).

The *Report* was released at a meeting in Portland, Maine in June 2010. A broadcast email was sent to all GOMC members. A link to the GOMC Web page containing the *Report*

was included in the June 2010 edition of the *Gulf of Maine Times* to announce the release of the *Report* (Appendix 2).

3. Methods

The Environmental Information: Use and Influence research team developed three online surveys to obtain data regarding awareness and use of the context and five theme papers of *The State of the Gulf of Maine Report* (Appendix 3 through 5). These surveys were administered using Opinio software available at Dalhousie University. The format of the surveys followed methods already tested in case studies of organizations producing grey literature (Cossarini, 2010; Soomai, 2009; Soomai, MacDonald and Wells, 2011). Ethics approval to conduct the surveys was obtained from the Dalhousie University Social Sciences and Humanities Research Ethics Board on 29 March 2011 and the surveys were administered during late April to early May 2011. Michele Tremblay (GOMC secretariat) and Nancy Griffin and James Cradock (*Gulf of Maine Times*) facilitated this study by distributing the invitation messages to participants through the respective listservs or distribution systems of GOMC.

3.1. Surveys of the Council and Working Group Members

One questionnaire was developed to survey members of the Council (see Appendix 3) and another to survey Working Group members (see Appendix 4). A message of invitation to complete the survey, which included a link to the online surveys, was emailed with the assistance of Michele Tremblay to the designated groups through GOMC listservs. Council and Working Group members completed the surveys online. Two reminder messages and an extension of the deadline were used to increase the response rate (Appendix 5). The data were downloaded from Opinio by the EIUI research team for analysis.

3.2. Survey of Readers of the *Gulf of Maine Times*

A questionnaire was developed to survey the readers of the *Gulf of Maine Times* (see Appendix 6). An invitation to complete the online survey was posted to the reader distribution list of the *Times* with the assistance of James Cradock and Nancy Griffin. A notice of invitation to complete the survey was also included in the main page of the 5 May 2011 issue of the *Gulf of Maine Times* as an “Important Message to *Times*’ readers”(Appendix 7).

For this study, readers of the *Gulf of Maine Times* were considered to be a proxy for the general public. The study population for the online survey of the readership of the *Times* includes individuals associated with government, non-government and academic institutions, as well as the general public.

4. Results and Discussion

The responses to the three surveys were exported from Opinio into Excel for analyses. The results of each of the three surveys are presented under the headings awareness, format of the *Report*, use, influence, and updates to the *Report* in the sections 4.1- 4.3. The responses from the Council members, Working Group members, and the readers of the *Gulf of Maine Times* were also combined into one data set for examination. These latter results, presented in Section 4.4, describe the overall institutional as well as the geographic range of awareness and use of the theme papers within the Gulf of Maine/Bay of Fundy region.

4.1. Survey of the Council Members

Of the 21 Council Members identified from the current composition of the GOMC (www.gomc.org), 11 responses were received and of these 10 were complete, i.e., respondents exited the online survey after completing the last question. Council Members were not asked the question on how often theme papers should be updated.

Responses were received from individuals at agencies within the Canadian and US federal government, non-governmental organizations, and academic and research organizations in the region (Table 1). No responses were received from members representing agencies within Canadian provincial governments or US state departments.

Table 1. Responses from Council members, by organization type (N=10).

Organization Type	% of the total number of responses
Canadian Federal Government	10
US Federal Government	30
Federal Government (unknown jurisdiction)	10
Non-Governmental Organization	30
Academic/Research Institution	20

Awareness

The ten Council Members who responded were all aware of the theme papers. They also found the availability of digital forms of the *Report* on the Website to be a suitable form of access. As one respondent stated, “web accessible reports are an ideal format for such information” (Council Member 1).

Format of the Report

All respondents found the format of the *Report*, i.e., as downloadable pdf files from the GOMC Web site, in addition to being produced as a series of issue-based theme papers, to be useful for decision making.

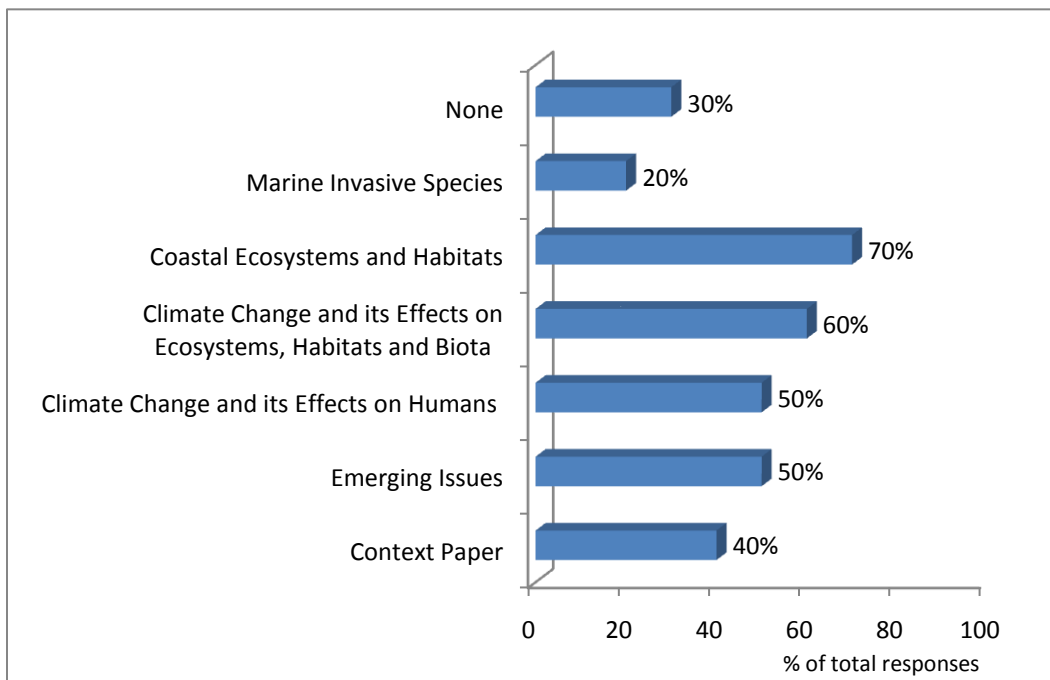
In general, respondents stressed the need for individual theme papers since “it is useful to frame the issues in a series of clearly separate documents” (Council Member 8).

However, two Council Members suggested it may also be useful to make the information available in one full report which incorporates all of the six theme papers in a single pdf document since “a series of thematic papers does not allow the reader to truly understand what is the ‘State of the Gulf of Maine’” (Council Member 10).

Use

Of the ten Council members who responded, seven (70%) said they had read one or more of the six theme papers. All of the theme papers were read by at least 40% of respondents, with the exception of the theme paper on “Marine Invasive Species” (20%) (Figure 1). The paper on “Coastal Ecosystems and Habitats” was read by more Council members (70% of responses) than the other theme papers. The theme papers are considered as baseline information as “these reports provide a framework for study and reflection” (Council Member 1).

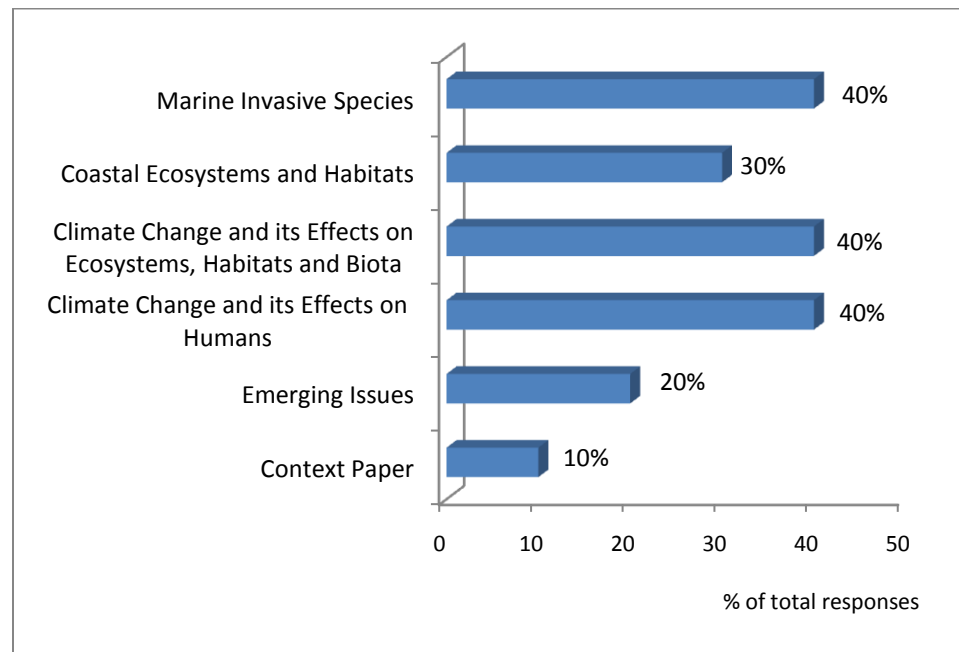
Figure 1. Theme papers read by Council members, by percentage of responses (N=10).



All of the theme papers were used by the Council members except for the paper on “Marine Invasive Species” (Figure 2). While 70% of the members stated they read more than one theme paper, the data on usage show that 40% did not use any of the theme papers. Council members preferred to use the theme papers covering specific coastal issues and the “Emerging Issues” compared with use of the “Context Paper” (Figure 2). One member was concerned that there were no theme papers for fisheries and aquaculture.

Council Members stated they used the theme papers to prepare for meetings, to develop work-plans, and for internal research purposes. Overall, the *Report* was used for education; as one member stated, “I have used these papers to help me understand the impacts of a rapidly changing climate on aspects of marine, estuarine and riverine habitat restoration in particular” (Council Member 1).

Figure 2. Theme papers used by Council members, by percentage of responses (N=10).



Forty percent (40%) of the Council members who responded said they had made attempts to promote awareness of the theme papers. They stated they shared the information within their professional and personal networks. For instance, they circulated the *Report* to senior managers and colleagues within their institutions. Electronic networks were important as a means of promoting awareness and as one respondent stated, “I occasionally ‘tweet’ about the contents as a way to let electronic friends know how I feel about the issues” (Council Member 1). Another Councilor believed future efforts will be made to promote awareness to others “by referencing papers as much as possible and calling attention to them in meetings with Government and other stakeholders” (Council Member 7).

Influence

Most Council members were of the view that it was “too soon to gauge” influence of the *Report* due to its recent release. But, one of the ten Council members who responded was aware of instances where the theme papers influenced policy decisions.

All Council members noted the overall value of the theme papers is their importance as a source of information for education and awareness building for the environmental management of the Gulf of Maine/Bay of Fundy. Council members said the information

in the *Report* is a “good, concise, objective summary of the issue[s] in a place-based context” (Council Member 6) which provides “stakeholders with sound scientific information about the Gulf of Maine environment, so managers can take the best informed decisions” (Council Member 7).

The importance of the *Report* in policy-making was also noted by both government and non-government respondents. Council members representing the Canadian and US federal governments noted the *Report* provided baseline information for policy and decision making and public education since it “continues to build strong scientific foundation for policy considerations” (Council Member 3). Respondents representing non-governmental organizations, stated the overall value of the theme papers was “to give advocates and policy makers information with which to make a case for better management and more funding for the Gulf of Maine” (Council Member 6). Two Council members commented on the value of the *Report* as a tool for focusing discussions and work, since it “helps to develop consensus on emerging issues” (Council Member 2) and “helps focus the GOMC discussions and keep stakeholders informed about the current state of the marine environment in the respective area” (Council Member 7).

Most Council members reached their conclusions on the overall value of the *Report* after reading the theme papers and being involved in production of the *Report* over several years. Respondents noted “we’ve been thinking about ways to promote better awareness of the issues facing the region for more than 20 years, and this is an inevitable product of those deliberations” (Council Member 1). Respondents also based their conclusions on their awareness of how the *Report* was used, for instance, in the development of “joint work-plans and government strategies” (Council Member 2) and as background information by “noting how they are referenced - informally and formally” (Council Member 3).

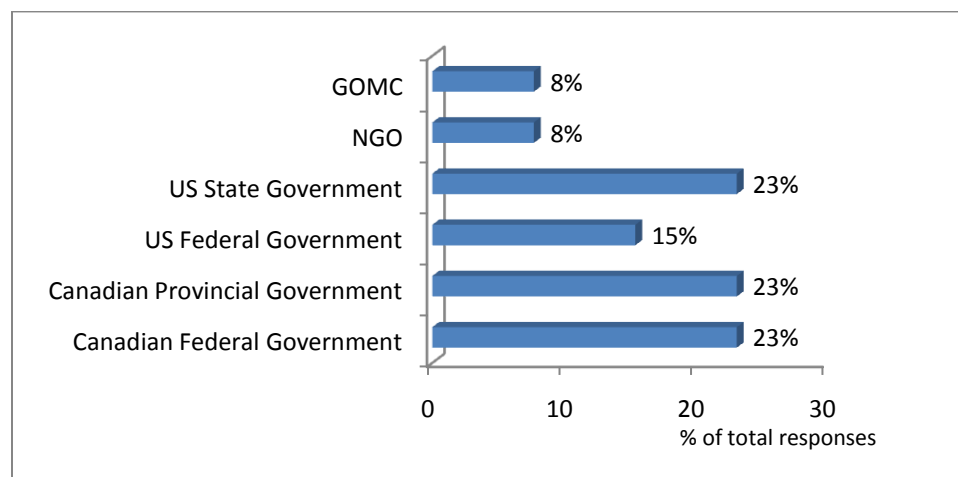
Council members commented that more efforts need to be placed on promoting awareness of the *Report* to a wider range of “organizations focused on the Gulf of Maine” (Council Member 9) and “to policy/decision makers in the relevant management agencies in the Gulf” (Council Member 8) who need to be made aware of the existence of the *Report*.

4.2. Survey of the Working Group Members

Of the 27 Working Group members identified from the current composition of the GOMC (www.gomc.org), 13 responses were received. Of these 13 responses, 11 were complete, i.e., respondents exited the online survey after completing the last question. All of the 13 respondents, however, completed questions 1 through 5 (see Appendix 5).

The composition of the responses reflected the composition of the agencies represented within the Working Group (Figure 3). Responses were obtained from Canadian provincial and federal government agencies as well as US federal and state departments. Of the total number of responses (N=13), most were from government agencies (84%), while 8% came from the non-government sector.

Figure 3. Organizational composition of Working Group responses (N=13).



Awareness

As with the Council itself, all of the Working Group members who responded (N=13) were aware of the theme papers. All of the members found the availability of the *Report* as downloadable pdf files from the GOMC Web site to be a very suitable and convenient form of access. All members preferred an electronic version of the *Report* instead of a print version because of the cheaper cost of production and distribution in electronic forms. “Internet is best...saves paper, saves time in accessing, and you can return any time you want” (Working Group Member 11). However, the option to print from a pdf file, if necessary, was considered to be suitable. While downloading pdf files in an office environment was an appropriate format, there were concerns that the pdf file size of the theme papers exceeded the capacity for downloading on mobile devices. As one member stated, “accessing the documents outside the office, from a Blackberry or other portable device, is basically impossible” (Working Group Member 9).

Format of the Report

Overall, Working Group members considered the theme-based method to state of the environment reporting to be the best approach. They found the production of the *Report* as a series of issue-based theme papers to be useful for decision making since this format facilitated dissemination, distribution, and updating of information. As one member stated, “by reading one report at a time, I am able to process the information more clearly...if it were one large daunting *Report* it would be less accessible to me” (Working Group member 1). In terms of the ease of distribution and update of information, it was noted “the modular approach can be easily updated or provided to targeted audiences” (Working Group member 8) and this format “will allow for updated modules to be ‘injected’ into the text of the entire document as they become available” (Working Group member 7).

Working group members suggested that links should be made between the themes to integrate information contained in each of the theme papers as appropriate. One Working Group member stated that, “themes are the best way to assemble information, as long as integration is achieved through providing links between theme papers...for example, ‘Climate Change’ theme is referenced in ‘Emerging Issues’” (Working Group member 11). In addition, members commented that other issues needed to be linked and represented in additional theme papers, but these other issues were not identified.

Use

Eighty-two percent (9 out of 11) of the Working Group members who responded (N=11) stated they had read one or more of the six theme papers while 18% said they had not read any (Figure 4). The Context Paper was the most widely read paper (73%).

The use profile was quite different for Working Group members compared to Council members. Overall, approximately 83% (9 out of 11) used the *Report* while 27% (3 out of 11) stated they had not used any of the six papers (Figure 5). The mean percentage of Working Group members who stated they read the theme papers was 48.9%; the mean percentage who used the *Report* was 24%. While 73% of Working Group members stated they read the Context Paper, 36% stated they used it. All Working Group members said they used the *Report* mainly as background information in their work. The *Report* was used specifically for obtaining general descriptions of the Gulf of Maine/Bay of Fundy region, required for project development. The *Report* was also used for personal education and communication of the environmental issues in the region. Respondents also noted the theme papers encouraged the development of similar publications and Web content, for example, for the ACZISC/COINAtlantic Web site development.

Figure 4. Theme papers read by Working Group members, by percentage of responses (N=11).

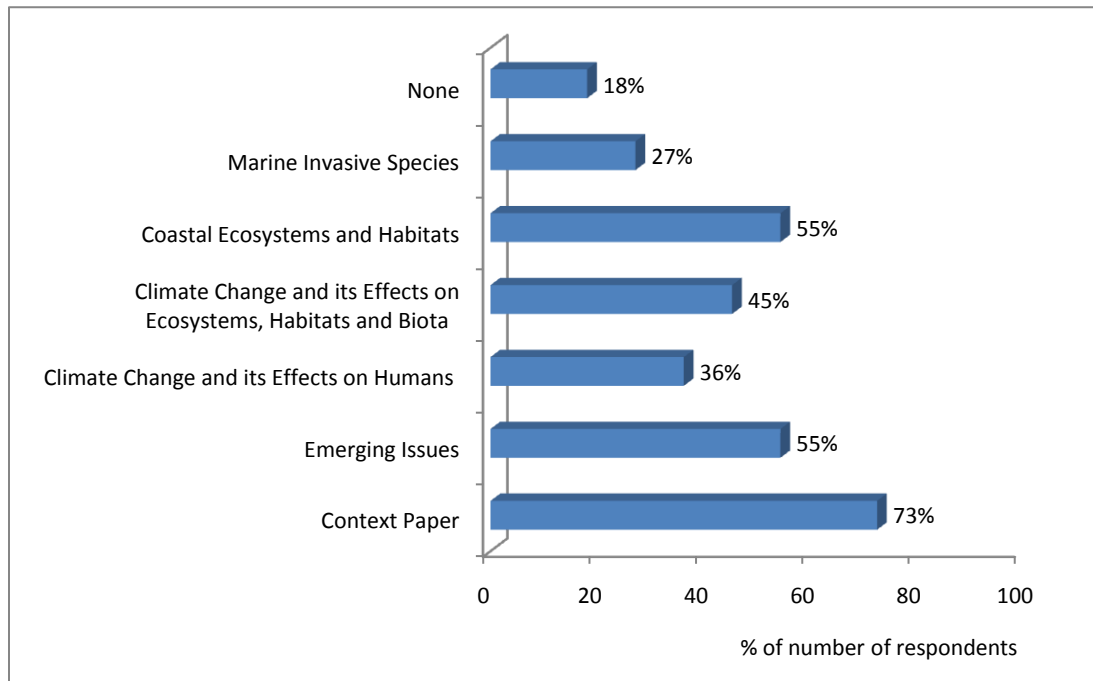
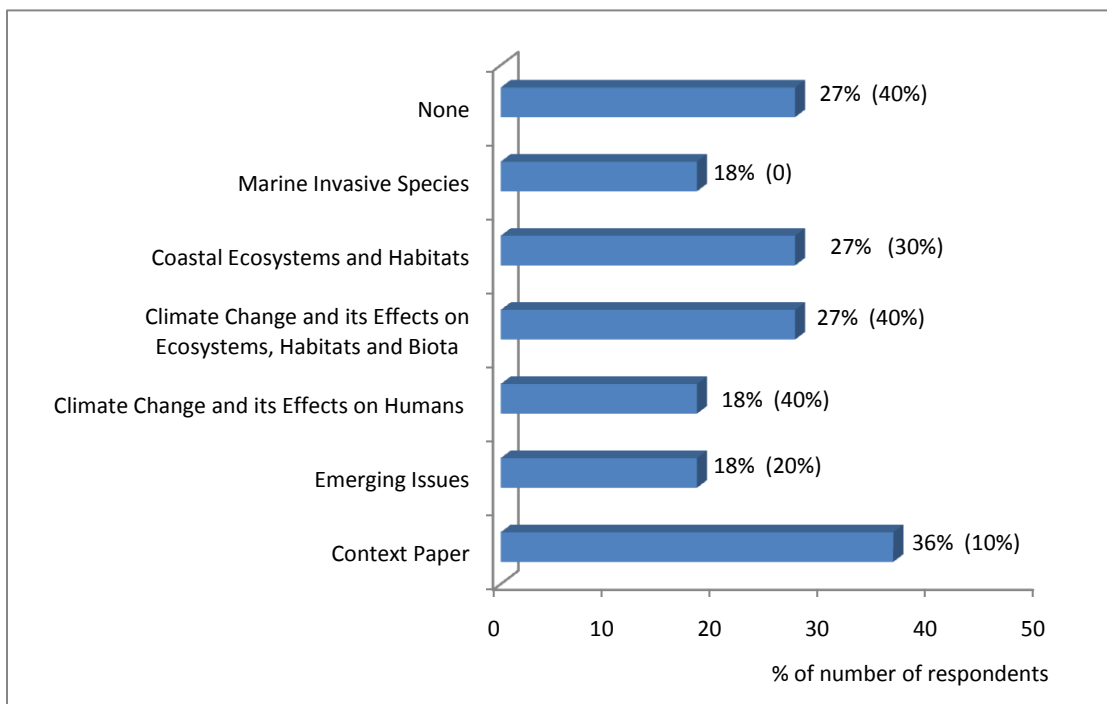
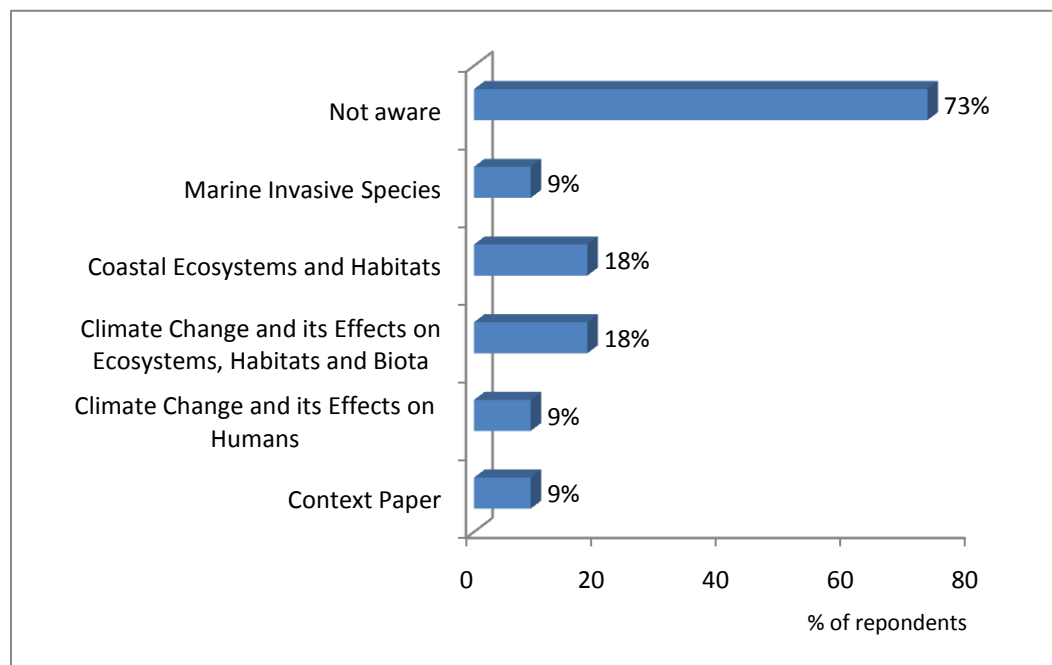


Figure 5. Theme papers used by Working Group members, by percentage of responses (N=11). (% responses from Council members are shown in parenthesis).



Twenty-seven percent of Working Group members (3 out of 11) said they were aware of others using several of the theme papers in the *Report*, while 73% (8 out of 11) were not aware (Figure 6). The papers on “Coastal Ecosystems and Habitats” and “Climate Change and its Effects on Ecosystems, Habitats and Biota” were the most used by others. Working Group members were not aware of others using the “Emerging Issues.” They noted the *Report* was being used mainly as a source of information for general knowledge or for work. One Working Group member stated that his/her “staff use these papers as research for developing policy/programs and background material” (Working Group Member 1).

Figure 6. Working Group members’ awareness of use of the *Report* by others (N=11).



All Working Group members said they had taken steps to promote awareness of the *Report*. In general, electronic means were used, including email to colleagues, announcements in the GOMC electronic newsletter, links to the GOMC Web site on respondents’ organizational Web sites and Facebook sites, for example, Coastal Zone Canada and ACZISC. Working Group members also stated they used word of mouth. While one member noted the information was shared with groups that were implementing policy, members were generally not aware of instances where the *Report* influenced management decisions.

Influence

Out of the eleven responses, one Working Group member was aware of organizations or individuals that changed their views on coastal issues because of the theme papers. This member believed that the available information in the theme paper on “Marine Invasive Species” will guide policy making, as “marine species will be considered more frequently

when making decisions/providing information on invasives” (Working Group Member 11).

All Working Group members consider the overall value of the theme papers is the provision of baseline information to guide policy making, to educate wider audiences, and for future comparisons in the region. The general view is “the material can help influence policy decisions as it provides them [decision-makers] with the best scientific information available” (Working Group Member 1). The information is also credible and one member claimed it “provides a digest of information along with the intelligence and experience from the authors and editors so that I can more readily understand and evaluate the issues” (Working Group Member 5). The theme papers were considered valuable for graduate students of marine resource management.

The *Report* not only provides baseline information, but Working Group members see it as a means of facilitating communication and understanding across institutional and geographical jurisdictions. The *Report* presents an opportunity to acquire new information from multiple jurisdictions since it “represents a bi-national and multi-state/provincial position on the Gulf of Maine” (Working Group Member 7).

Working Group members also stated the theme papers could be condensed into fact sheets to increase their value in education and policy making. One member noted the value of the *Report* “can be considerable, if people are aware of the papers, feel they provide useful information, and begin to cite them in ongoing and emerging management/conservation dialogues” (Working Group Member 12).

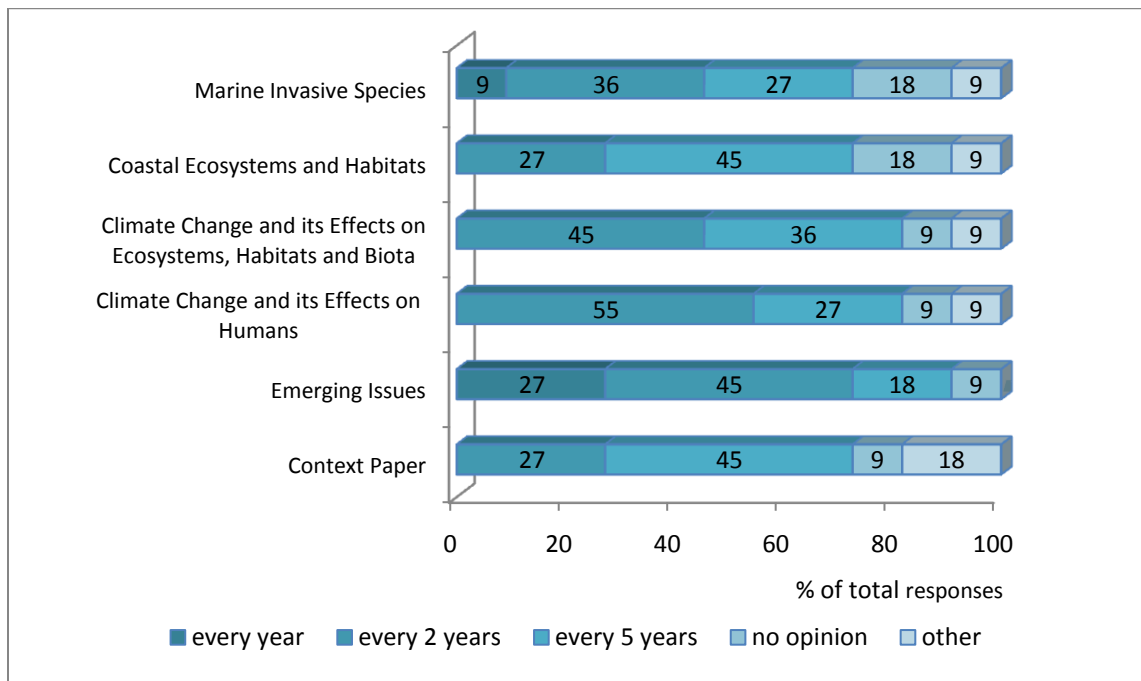
Overall, Working Group members said they reached their conclusions on the value of the *Report* after reading and carefully considering the content of the theme papers. They also stated they based their conclusions on their involvement in the GOMC and the production of the papers, as well as on their experience with similar efforts.

Updates of the Report

Overall, most of the Working Group respondents (N=11) stated the theme papers should be updated either at least every two years or every five years (Figure 7). One respondent (9%) said the “Marine Invasive Species” theme paper should be updated every year. Most respondents (55%) believed the theme paper on “Climate Change and its Effects on Humans” should be updated every two years.

Working Group members provided alternative time frames for updates of specific theme papers. One said the papers should be updated beyond five years or within three to five years only if there is significant change in content or depending on the availability of new knowledge for each issue. Alternatively, one respondent believed that there may be no need to update the theme papers.

Figure 7. Frequency of updating the *Report*, by percentage of Working Group member responses (N=11).



Working Group members raised concerns that managers were still not becoming aware of the issues in spite of the availability of the *Report*. These respondents stated they will support any research that can suggest more ways to promote this material to managers and “get them to start using it” (Working Group Member 1). As one member stated, there was a need for an “aggressive communications campaign to disseminate these materials to target audiences” (Working Group Member 6). In this study, Working Group members themselves, who are all senior managers, were very aware of the issues of the theme papers.

Working group members indicated a need for more summarized information. They suggested the production of fact-sheets to promote awareness of the *Report* and the issues: “it would be beneficial for the theme papers to have easy-to read fact sheets that would present the state of the environment, issues and threats, how the GOMC and other partners are responding, and what the general public can do to protect/conserv the Gulf of Maine coast & watershed” (Working Group Member 7). Furthermore, a summary on the Web site would be an alternative to downloading the pdf files of the theme papers, which are considered to be relatively large files. Working Group members also suggested the production of “at a glance” summaries. One member stated there should be better links to the data and information sources in the theme papers. This may be a relatively easy technical matter, but complicated by copyright considerations, if attempted.

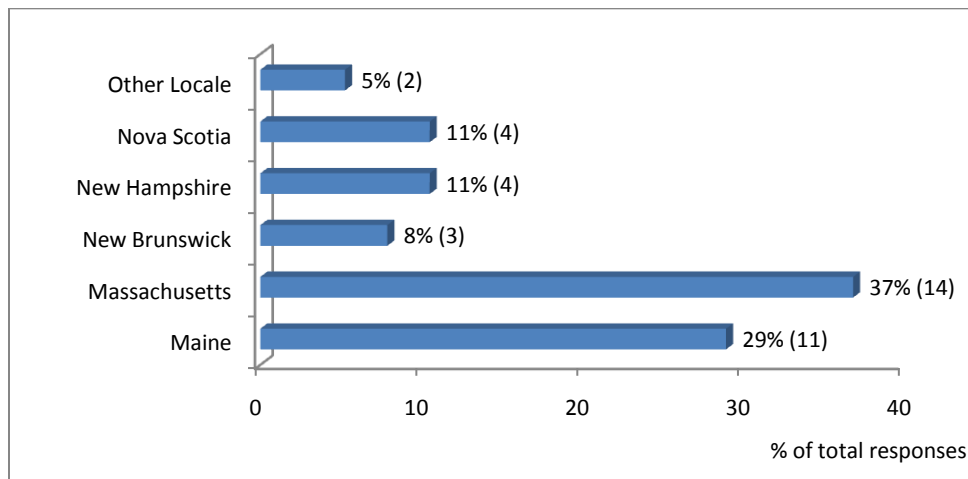
4.3. Survey of the *Gulf of Maine Times* Readers

Of the estimated 2,400 readers of the *Gulf of Maine Times* who received a copy of the invitation to complete the online survey, 72 responded. In many instances, respondents did not answer all of the survey questions; there were 51 completed responses, i.e., respondents exited the survey after completing the last question. The number of responses for each question, therefore, differs and these numbers are indicated in the following section. Approximately 53% of respondents (N=38) responded to the demographic questions in the survey of the *Times* readers.

Demographics of the readers of the Gulf of Maine Times

Out of the 38 who completed the demographic questions, 11% reside in Nova Scotia, 8% in New Brunswick, 29% in Maine, 11 % in New Hampshire, and 37% in Massachusetts (Figure 8). The majority of responses were from American readers of the *Gulf of Maine Times*; 31 responses came from Maine, Massachusetts, and other locales which included Connecticut and Maryland.

Figure 8. Geographic location of readers of the *Gulf of Maine Times* (N=38, the number of responses is shown in parentheses).



Most respondents were over fifty years old with approximately 32% within the 51-60 age group and approximately 30% over sixty years old (Figure 9). Of the 38 respondents, 55% were male and 45% were females and 97% indicated they had a university degree.

Responses were obtained from industry, government and non-government agencies, academic institutions, while the “Other” category comprised business, consultants, and retired school teachers (Figure 10). Government representatives (37%) were the largest group of respondents in the survey while non-government agencies (5%) were the lowest.

Figure 9. Age group of readers, by percentage of responses (N=38; the number of responses is shown in parentheses).

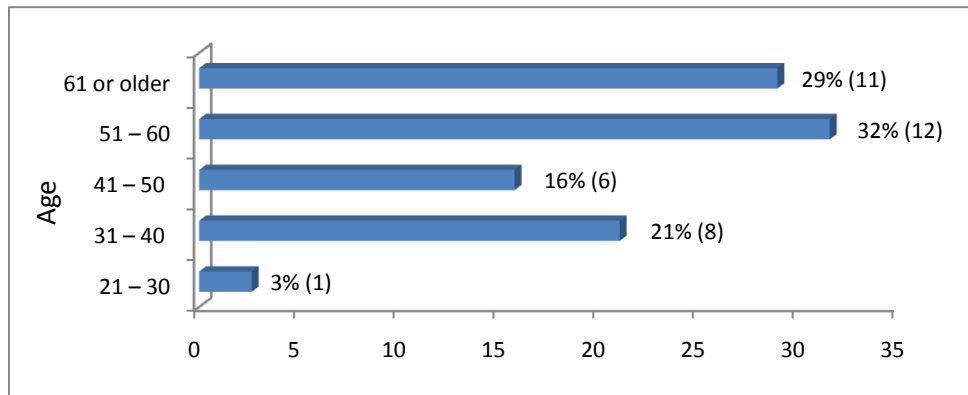
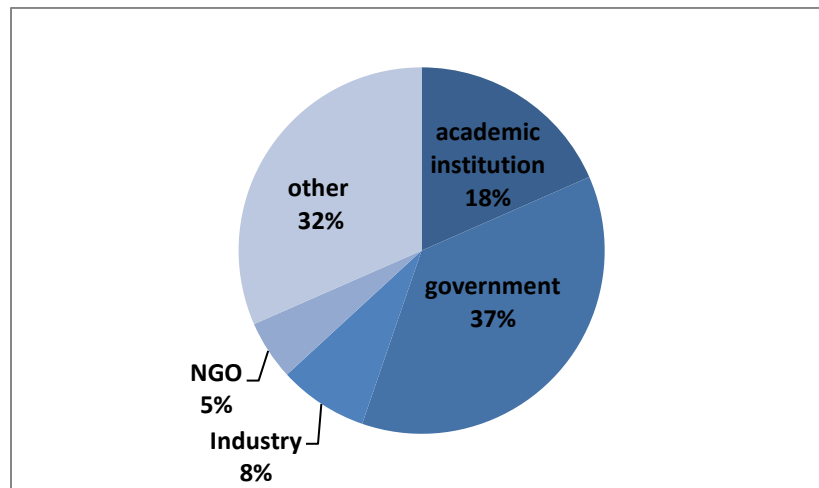


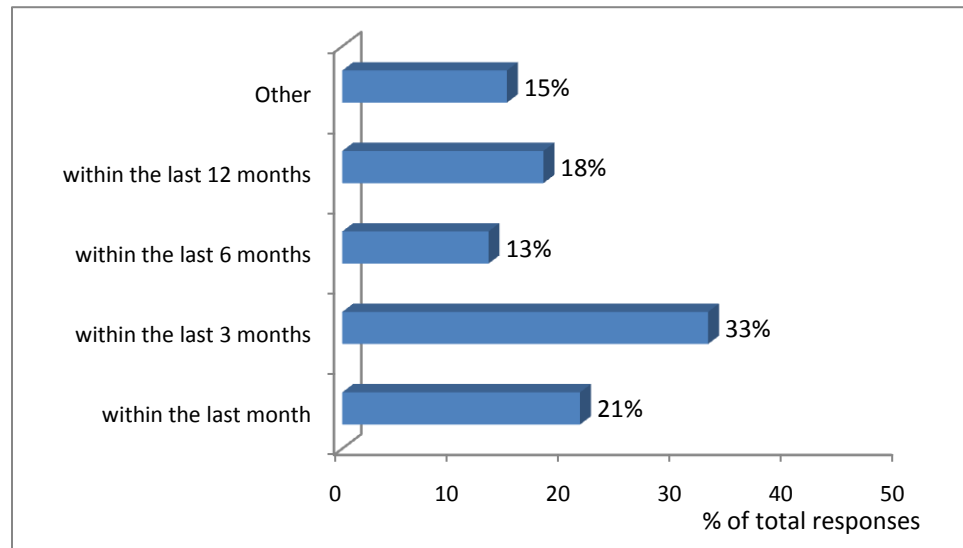
Figure 10. Institutional affiliation of readers, by percentage of responses (N=38).



Awareness

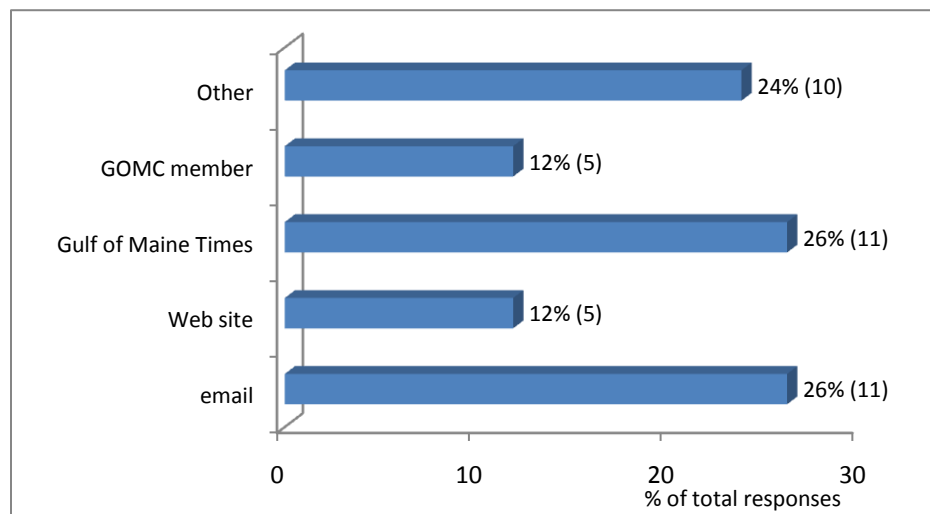
Out of the 72 respondents, 64 answered whether they were aware of the State of the Gulf of Maine *Report*. Seventy-eight percent of these readers (N=64) said they were aware of the *Report*. Of these 64 readers, 61 responded to the question on the frequency of visits to the Gulf of Maine Council on the Marine Environment Web site. Seventy-nine percent (N=61) visited the Web site and were aware of the *Report*, while 21% visited the site although they stated they were not aware of the *Report*. Sixteen percent (N=13) of the readers who were not aware of the *Report*, visited the Web site within the last six months, while 5% visited the Web site within the last twelve months. In the latter case, these readers may have visited the Web site before the *Report* was posted. Of the readers who were aware of the *Report*, many said they visited the Web site within the last 3 months (33%, N=61), and another 21% visited the website in the last month (Figure 11). Fifteen percent could not recall when they visited the site while 5% said they never visited the Web site.

Figure 11. Frequency of visits to the GOMC Web site, by readers of the *Gulf of Maine Times* (N=61).



Respondents became aware of the *Report* by a variety of means: email, the GOMC Web site, the *Gulf of Maine Times*, or they were members of the GOMC. Out of 42 responses, 26% became aware of the *Report* through an email message or from reading the *Gulf of Maine Times* (Figure 12). Twelve percent (N=42) became aware through the GOMC Web site and through their role as a member of the GOMC. The category “other” contains, students doing research, the general public, and persons working outside of the GOMC but within an organization / jurisdiction to which the GOMC members belong. Readers in this group became aware of the *Report* through their work but they did not specify to which organizations they belonged except that they worked with coastal projects in the past.

Figure 12. Methods by which readers became aware of the *Report* (N=42, number of responses shown in parentheses).



Format of the Report

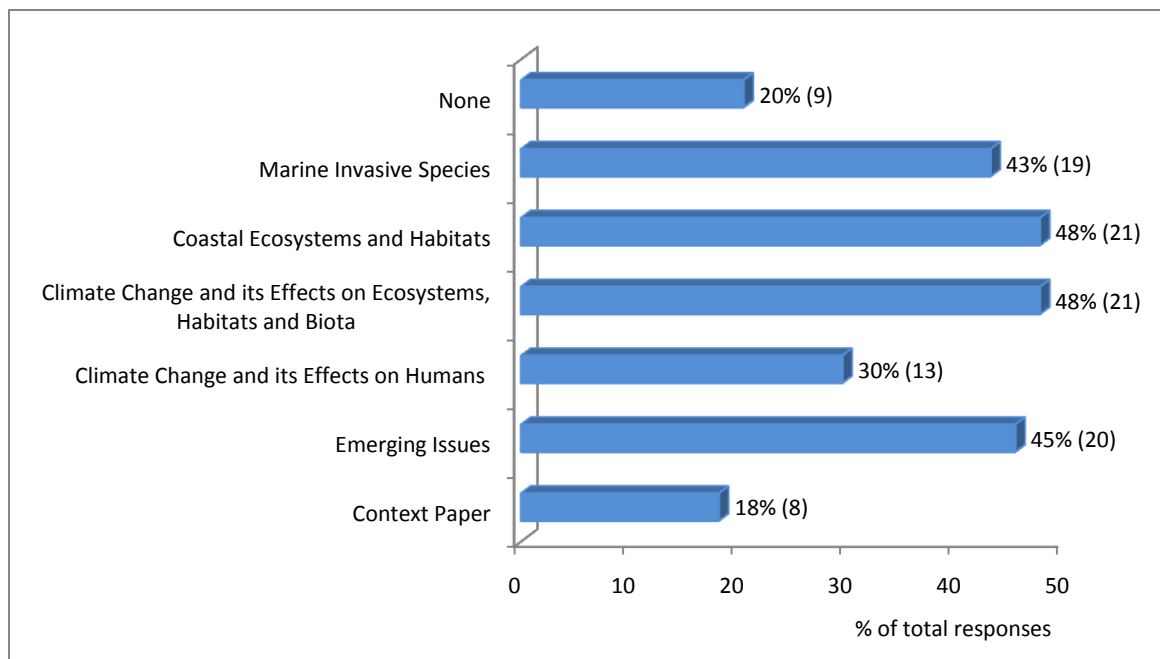
All 44 readers who responded to questions about the format of the *Report* stated the availability of the *Report* as downloadable pdf files from the GOMC Web site was a suitable method of access for them. Overall, they commented that this method saves on paper.

Almost all respondents (98%, N=44) found the *Report*, produced as a series of theme papers, was a useful format. Theme papers were ideal for presenting information for personal knowledge and for further transfer of information, for example, in schools. Respondents found the theme papers made it “easier to find pertinent subjects of interest” (*Gulf of Maine Times* Reader 6) and “thematic representations are useful to convey topics” when the *Report* is used for teaching purposes (*Gulf of Maine Times* Reader 60). One reader provided an alternative view and recommended the production of “one complete document” (*Gulf of Maine Times* Reader 29).

Use

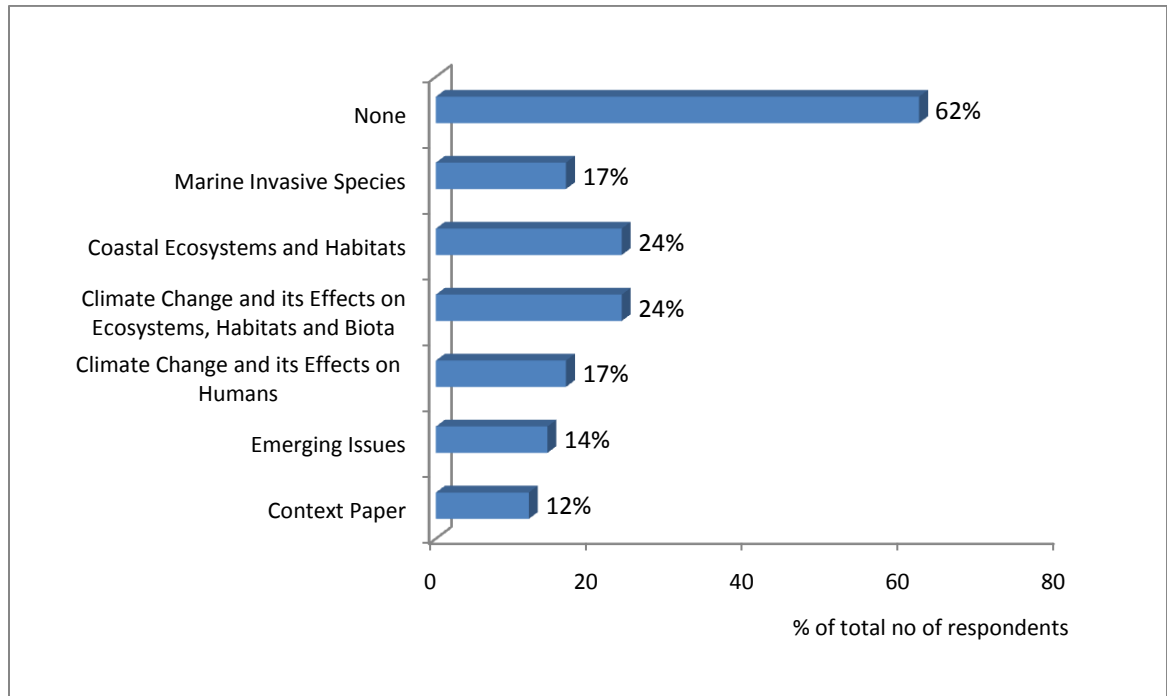
In general, 80% of respondents (N=44) indicated they read more than one of the six papers (Figure 13). The Context Paper was the least read (18%) compared with between 30% and 48% who read the other individual theme papers.

Figure 13. Papers read, by percentage of the readers of the *Gulf of Maine Times* (N=44).



Out of 42 responses, 62% stated they have not used the *Report*, and of the remaining 38% use was distributed across all of the papers. The theme papers on “Coastal Ecosystems and Habitats” and “Climate Change and its Effects on Ecosystems, Habitats and Biota” were used more (24%) than the other theme papers (between 12% and 17%) (Figure 14).

Figure 14. Papers used, by percentage of the readers of the *Gulf of Maine Times* (N=42).



Overall, respondents stated the information contained in the theme papers was used as background material for position papers, research papers, research projects, journal articles, and presentations, and for teaching graduate classes. In one case, a respondent stated that the theme papers were summarized specifically for a Cabinet Minister, thereby showing not only use, but possibly influence.

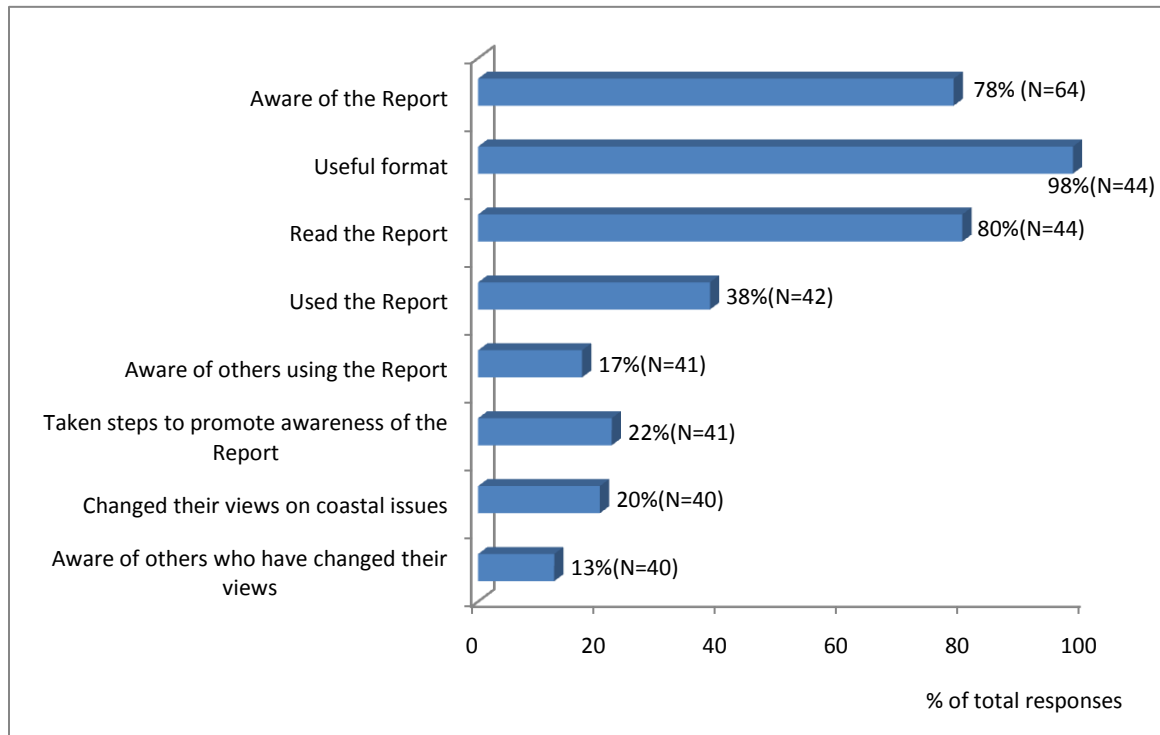
Seventeen percent of readers (N=41) were aware of other people or organizations that used the theme papers. The responses indicate that each of the theme papers was used with a similar frequency by others. For example, respondents noted the theme papers were being used by others as background materials for advocacy and education. Approximately 22% (N=41) had taken steps to promote awareness of the papers. Respondents said they mentioned the papers to colleagues, emailed links to government colleagues, included a notice in newsletters, and used the papers as a resource at appropriate workshops and for teaching.

Influence

Twenty percent of readers (N=40) stated they changed their views on coastal issues because of the theme papers. Respondents said they had gained “additional information and awareness and depth of understanding” (*Gulf of Maine Times* Reader 28). Responses to questions about awareness and use of the *Report* by readers of the *Gulf of Maine Times* are seen in Figure 15. While 78% (N=64) of readers were aware of the *Report*, 80% (N=44) read it and 20% (N=42) had used the *Report*. Approximately 13% (N=40) stated they were aware of organizations/individuals which have changed their views on coastal issues because of the theme papers. However, while these respondents to the survey

noted that others may have become more aware of the issues through reading the theme papers, they were not certain that a change in views regarding coastal issues had occurred.

Figure 15. Awareness and use of the *Report* by the readers of the *Gulf of Maine Times* (N= the number of responses in each case).



Readers of the *Gulf of Maine Times* found the overall value of the theme papers to the environmental management of the Gulf of Maine/Bay of Fundy is as a source of baseline information for public education to increase public awareness of the key threats to the region, and as a starting point for management to inform the formulation of policy. The theme papers were identified as the best source of available information specific for the region; as one reader stated “the papers bring together useful information that is normally scattered in various places, and the concise format is good, rather than reading a huge report...the papers present the latest thinking of the experts and get that thinking out to a broad audience” (*Gulf of Maine Times* Reader 3). The geographic scale of the information was considered very useful since it “provides a regional context to some of these environmental problems...there are many estuary or state specific reports on similar topics, but this allows the reader to think on a slightly larger scale” (*Gulf of Maine Times* Reader 30). One respondent noted it reflected “a consensus view from council members, but not much more” (*Gulf of Maine Times* Reader 32), which was technically incorrect, as the theme papers were written independently of the Council.

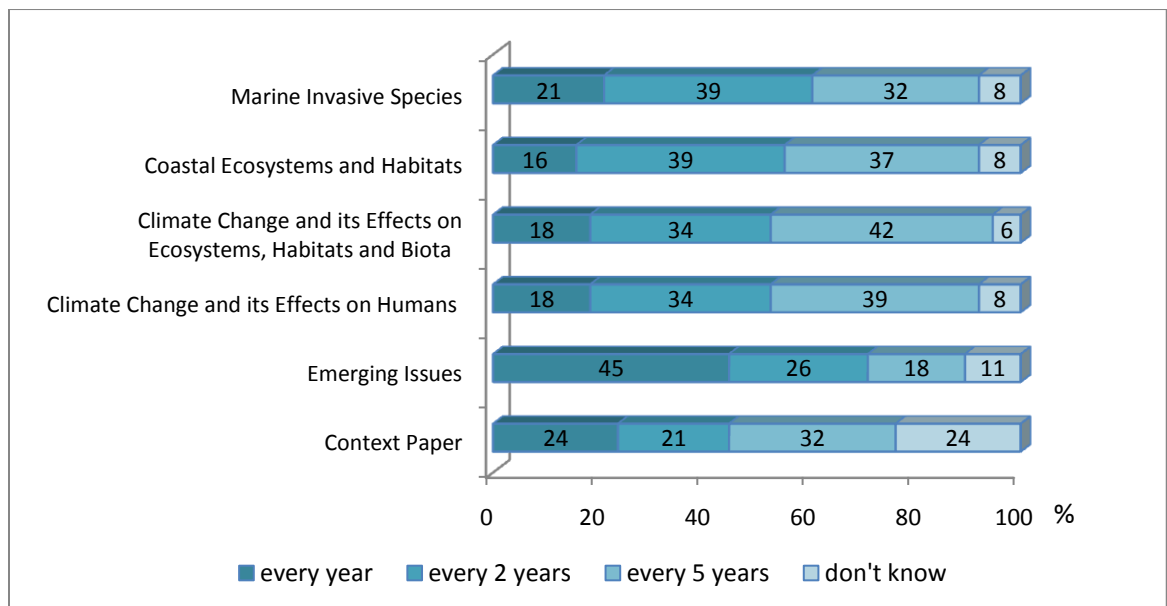
Readers were able to determine the overall value of the theme papers by reading them, working with upper level management within their organizations, and holding

conversations with coastal users in the region, such as fishermen and also students. Respondents based their opinions on their experience with other state of the environment reports. They also based the overall value of the theme papers on the credibility of the quality of information mentioned in the *Gulf of Maine Times*. One respondent noted a concern that the theme papers were not coordinated with similar works in the region and stated “there are a lot of other efforts in the region and it’s not clear how the theme papers fit in with related work.” (*Gulf of Maine Times* Reader 32).

Updates of the Report

Although readers recommended that most theme papers should be updated every 2 or 5 years, 45% of respondents (N=38) believe that the theme paper on “Emerging Issues” should be renewed every year (Figure 16).

Figure 16. Frequency of updating the *Report*, by percentage of responses (N=38).



While respondents found the information was easily accessible, they believe that greater efforts should be given to use other means of disseminating the information and “a bigger push to publicize them is needed, if they really are going to have a big impact” (*Gulf of Maine Times* Reader 3). Efforts should be put into wider distribution for education purposes and use of social media and video. Readers recommended that the GOMC should make more use of traditional print news media, television, press releases, and the social media, for example, “start producing short educational videos and posting on social media sites such as YouTube” (*Gulf of Maine Times* Reader 7).

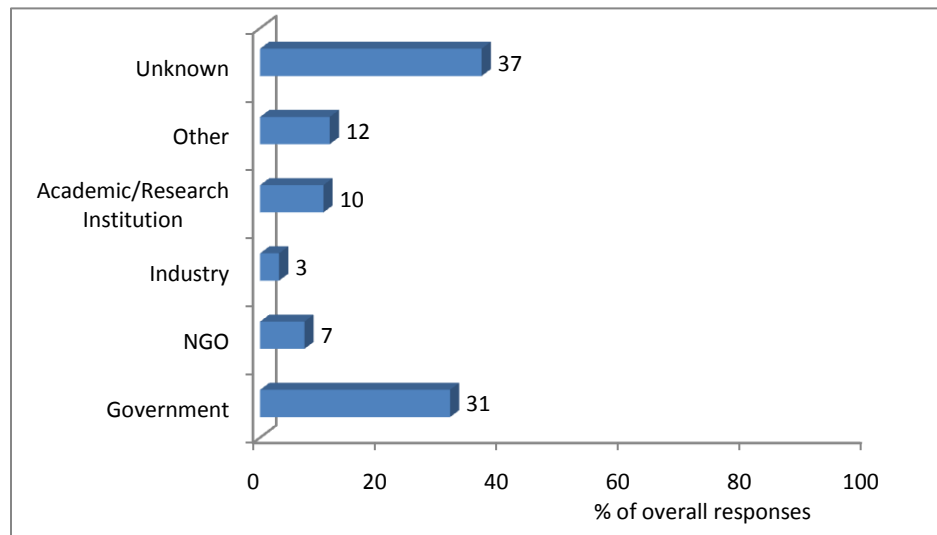
The readers of the *Gulf of Maine Times* suggested that print copies should be made available since “emails and downloads don't have the same impact although they are convenient. I read the *Gulf of Maine Times* much more closely when it was mailed to me” (*Gulf of Maine Times* Reader 16). Respondents have a long standing interest in the region

and some requested information on specific impacts of and threats to commercial and recreational fisheries in the region.

4.4. Awareness and Use of the *Report* by all Three Surveyed Groups

The responses from the Council Members (N=11), Working Group Members (N=13) and the readers of the *Gulf of Maine Times* (72) show that overall, government organizations represented the largest stakeholder group (31%) while industry had the lowest representation (3%) (Figure 17). Responses in the “Other” category were comprised mainly of business and consulting firms (12%). The institutional affiliation of 37% of the total number of responses (N=96) is unknown. The low response rate from industry in the region is unfortunate, since industry is engaged in activities that affect the Gulf of Maine / Bay of Fundy region.

Figure 17. Stakeholder composition of all three groups (Council Members, N=11; Working Group Members, N=13; Readers of the *Times*, N=72; total N=96).



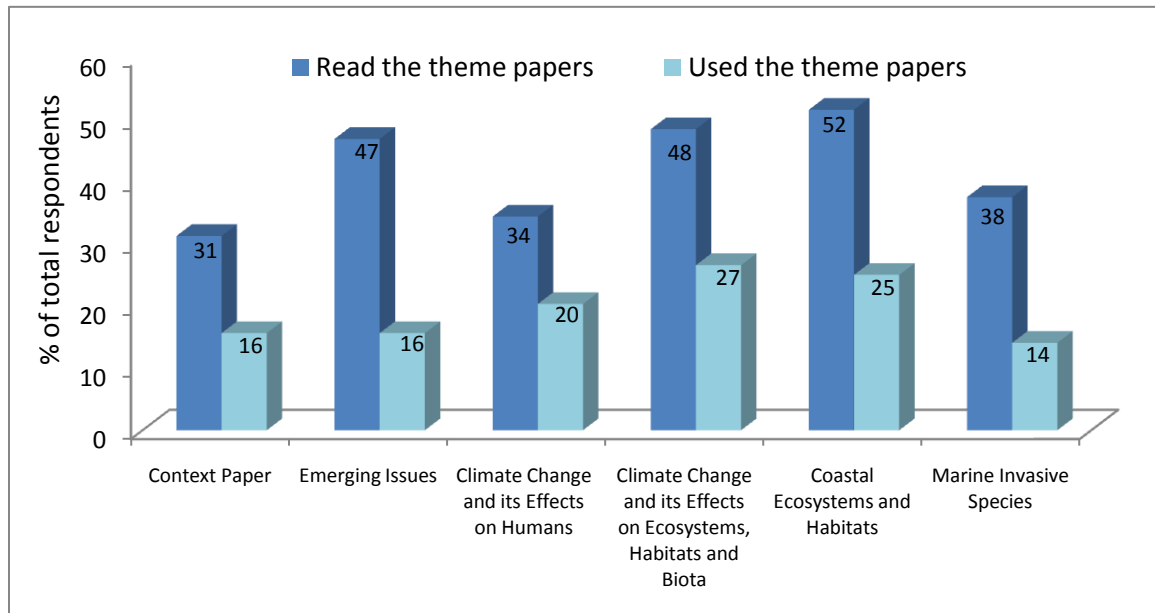
From the total number of completed responses stating whether the *Report* was read or used (N=64, N=63 respectively), the data shows that while individuals read one or more of the theme papers, reported usage was low (Figure 18). On average, respondents are twice more likely to read the *Report* than to use it.

An analysis of responses to questions about awareness and use (N=64, N=63) gave an overview of the preferences of the respondents as to which of the theme papers have been read and used (Figure 19 and Figure 20).

The “Context Paper” was the most preferred paper by Working Group members; it was read by 73% and used by 36%. All three groups read the “Emerging Issues” with an average frequency of 52% (Figure 19). The theme paper “Coastal Ecosystems and Habitats” was read by most Council Members (78%) followed by the theme papers on

“Climate Change and its Effects on Ecosystems Habitats and Biota” (67%) and “Climate Change and its Effects on Humans” (56%). Usage statistics for the two theme papers on climate change were highest for the Council members (44%) (Figure 20).

Figure 18. Percentage of survey respondents who read and used the theme papers (Read the theme paper, N= 64; Used the theme paper, N=63).



Readers of the *Gulf of Maine Times* preferred to read the individual theme papers for each of the specific coastal issues and had the least preference for the “Context Paper” (18%). As a proxy for the general public, readers of the *Gulf of Maine Times* showed that there is low usage of the theme papers by the public since 80% (N=44) stated they had read the *Report* yet 62% (N=42) stated they had not used the *Report* (Figure 19 and Figure 20).

The theme paper on “Marine Invasive Species” was read by fewer individuals within each of the groups and responses showed that it has been used only by individuals working specifically in managing this issue.

A two-way ANOVA showed no significant interaction or effect ($F(2, 10) = 1.58, p = .25$; $F(5, 10) = 1.45, p = .28$) and there is insufficient evidence to conclude a difference in the overall readership of the six theme papers across all three survey groups. Likewise, a two-way ANOVA showed no significant interaction or effect ($F(2, 10) = 0.90, p = .44$; $F(5, 10) = 1.40, p = .31$) to conclude there is a difference in the overall use of the six theme papers across the three survey groups.

Figure 19. Papers read by the three surveyed groups (% of completed responses: Council Members, N=10; Working Group Members, N=11; Readers of the *Times*, N=44; total N=64).

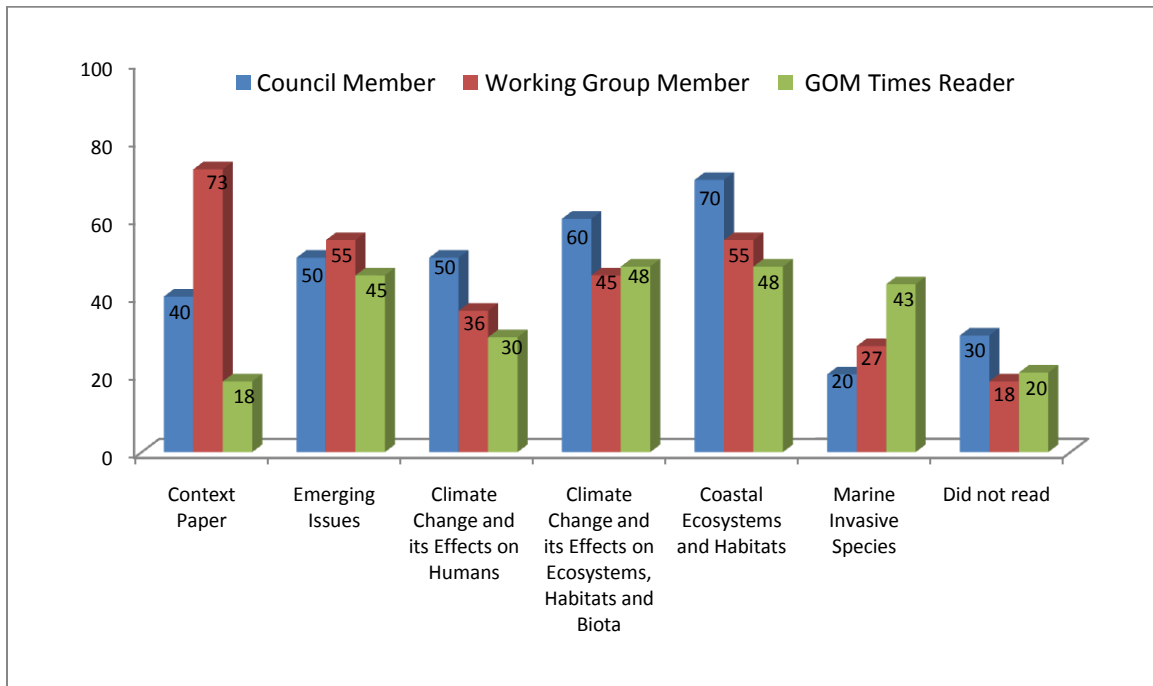
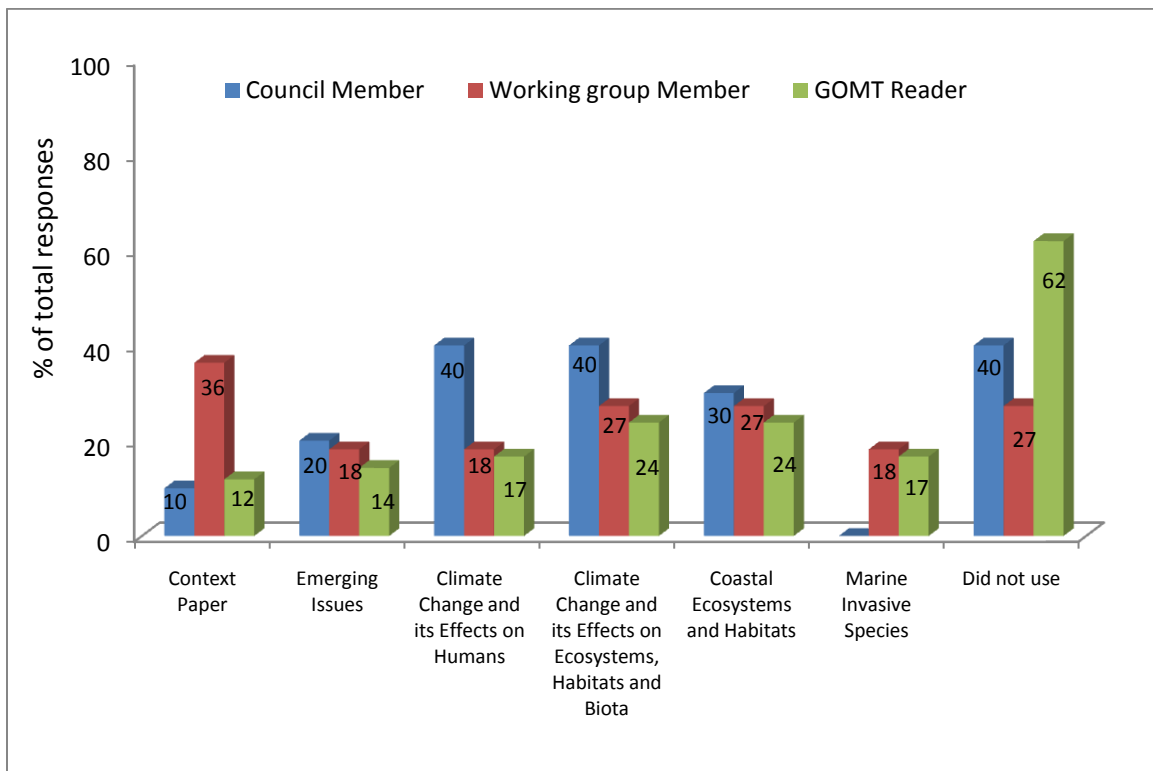


Figure 20. Papers used by the three surveyed groups (% of completed responses: Council Members, N=10; Working Group Members, N=11; Readers of the *Times*, N=42; total N=63).



5. Conclusions

In the surveys, 11 (52%) responses were received from the 21 Council members currently involved in the GOMC; 13 (48%) responses were received out of the 27 Working Group members; and 72 (less than 1%) responses were received out of the estimated 2,400 readers of the *Gulf of Maine Times* who received an invitation to complete the online survey. Readers of the *Times* who responded were mainly consultants, teachers, and persons working outside of the GOMC but within the organizations/jurisdictions to which the GOMC members belong.

Awareness of the *Report* was high, not surprisingly, among both Council members and Working Group members. These two groups also found the digital forms of the *Report* to be a suitable form of access. Most of the readers of the *Gulf of Maine Times* who responded (70%) said they were aware of the *Report* and had visited the GOMC Web site generally within the last three months. A few readers of the *Times* who visited the GOMC Web site within the last year were still not aware of the release of the *Report*.

With regard to the format, in general, all three survey groups favoured the availability of the *Report* as a series of issue-based theme papers. Overall, respondents believed this format was useful for decision making since it facilitated dissemination, distribution, and updating of information about the Gulf of Maine/Bay of Fundy.

Each group promoted awareness of the theme papers. All of the Working Group members, 40% of Council Members and 22% of the readers of the *Gulf of Maine Times* used mainly electronic means (e.g., email, the *Gulf of Maine Times*, Web links to the GOMC Web site, and Facebook) to alert others about the *Report*.

The theme papers were read by most of the Council members (70%) and Working Group members (83%) and, in general, each member read more than one of the papers. The “Context Paper” received the highest percentage of readers among Working Group members while “Coastal Ecosystems and Habitats” and the two theme papers on Climate Change issues received the highest number of readers among the Council Members. More of the readers of the *Gulf of Maine Times* read the individual theme papers than the “Context Paper,” seemingly because of their interest in each of the specific coastal issues. The theme paper on “Marine Invasive Species” was read by fewer individuals associated with the Council and the data showed it has been used only by individuals particularly working on managing this issue. All groups read the “Emerging Issues” theme paper with a similar frequency.

Use of the *Report* was varied in spite of the high readership of the theme papers by the three groups. Use of the *Report* by Council members was low (56%) compared to Working Group members (73%). Both groups stated they used the *Report* mainly as background information in their work. Sixty-two percent of the readers of the *Times* reported that they had not used the *Report*. However, these respondents noted that others

were using the *Report* for personal education and communication about the environmental issues in the region, and for developing similar publications and Web content.

All respondents considered the overall value of the theme papers is their importance as a source of baseline information for public education to increase public awareness of the key threats to the region, and as a starting point for managers to inform the formulation of policy, advocacy, and for guiding work and discussion on the environmental management of the Gulf of Maine/Bay of Fundy. The *Report* was also noted for facilitating communication and understanding across institutional and geographical jurisdictions and presented an opportunity to acquire new information from multiple jurisdictions which is a clear example of influence. However, respondents believed it was still “too soon to gauge” influence of the *Report* due to the recent timing of its release (June 2010). Respondents believed that the information contained in the theme papers will be considered more frequently in making decisions/providing information in the future.

Overall, respondents recommended the need to focus greater efforts on wider distribution of the *Report* to increase education and awareness and to make more use of the media (print, radio, and television), press releases, and the social media. Respondents recommended that organizations already focused on the Gulf of Maine/Bay of Fundy region and policy-and decision makers must be included in these efforts. Respondents also recommended the production of print copies in addition to the digital version. Most Working Group members stated that the theme papers should be updated either at least every two years or every five years, while 45% of readers of the *Gulf of Maine Times* indicated that the theme paper on “Emerging Issues” should be renewed every year.

Working Group members indicated a need for more such summarized information. Production of fact-sheets or “at a glance” summaries on the GOMC Web site was suggested to promote awareness of the *Report* and the issues and as an alternative to downloading the pdf files of the theme papers which are relatively large and exceed the capacity for downloading on mobile devices. Links between the various theme papers were suggested to facilitate a comprehensive understanding of the state of the Gulf of Maine, Bay of Fundy, and their watersheds.

6. Recommendations

Awareness and Access

1. Promotion of awareness of the theme papers can be increased by greater use of social media, television, radio, and print media. Also, printed versions of the theme papers have a role to play in increasing awareness and use of the *Report* by audiences outside of the GOMC circle. Awareness and use of the *Report* and interest in addressing coastal and ocean issues generally could be enhanced by ongoing communication initiatives within GOMC.

2. The current size of the theme paper pdf files should be reduced to provide an option for downloading smaller files with less formatting for ease of personal printing and viewing.

Updating and Further Development

3. Thoughtful consideration should be made about the frequency of updating each of the theme papers (already published), in the context of resources available to the Council and the need to cover more topics about the Gulf of Maine/Bay of Fundy region.

4. A section should be included in the next survey that will allow interaction with the public and accommodation of their suggestions for topics to include in future theme papers. This recommendation follows the model used by BoFEP with its Fundy Issues fact sheets, for example.

Information Use and Influence in Science Policy

5. The survey of the Gulf of Maine Times readers should be repeated in 2012 and 2015 to determine use of the theme papers two and five years after their completion and availability, by persons and groups outside of the immediate Gulf of Maine Council on the Marine Environment (GOMC) circle.

6. As part of the Action Plan (2012-2017), GOMC should give further consideration to measurement of the influence of its information and communication products, and how such measures could be made part of the information cycle of each product produced by Council.

7. Further information should be formally sought from Councilors and their senior staff as to the role of Gulf of Maine information in their policy and decision making activities, and the interplay between science and policy development in the GOMC context.

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Appendix 1. Gulf of Maine Council Member Agencies

Canadian federal government

- Environment Canada - Atlantic Region
 - Environmental Conservation Branch
- Department of Fisheries and Oceans

Canadian provincial governments

New Brunswick

- Environment
- Agriculture, Fisheries, and Aquaculture

Nova Scotia

- Fisheries and Aquaculture
- Environment

United States federal government

- US Environmental Protection Agency
 - New England Regional Office
- US Army Corps of Engineers Information Network
 - New England District
 - Waterways Experiment Station
- US Department of the Interior
 - US Fish and Wildlife Service
 - US Geological Survey
 - National Park Service
- National Oceanographic and Atmospheric Administration
 - Coastal Services Center
 - National Marine Fisheries Service

US state governments

Maine

- Department of Marine Resources
- State Planning Office

Massachusetts

- Office of Coastal Zone Management

New Hampshire

- Department of Environmental Services

Appendix 2. Launch of the *Report* noted in the *Gulf of Maine Times*

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Council Launches State of the Gulf Report

June 29, 2010
By Nancy Griffin

Much of the first comprehensive *State of the Gulf of Maine Report* was released during the recent 20th anniversary meeting of the Gulf of Maine Council on the Marine Environment in early June.

Each theme paper on a particular topic fits under one of six priority areas of concern in the Gulf, and all are designed to be updated regularly as new information becomes available.



"Because the Gulf of Maine is still in good health, we have a real opportunity here to manage one of North America's natural treasures in a manner that will benefit our children and our children's children," said Dr. Jay Walmsley, editor of the report and Oceans Project Leader, Oceans and Coastal Management Division, Department of Fisheries and Oceans, Canada.

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(The full text of this news release is given below.)

Council Launches State of the Gulf Report

Much of the first comprehensive State of the Gulf of Maine Report was released during the recent 20th anniversary meeting of the Gulf of Maine Council on the Marine Environment in early June.

Each theme paper on a particular topic fits under one of six priority areas of concern in the Gulf, and all are designed to be updated regularly as new information becomes available.

“Because the Gulf of Maine is still in good health, we have a real opportunity here to manage one of North America’s natural treasures in a manner that will benefit our children and our children’s children,” said Dr. Jay Walmsley, editor of the report and Oceans Project Leader, Oceans and Coastal Management Division, Department of Fisheries and Oceans, Canada.

“In order to do so, we need to know a bit more about some of the issues that are facing us. This is why the council is producing this report.”

The report recognizes six priority areas: Climate change, fisheries and aquaculture, coastal development, eutrophication (nutrient enrichment), biodiversity and energy issues. Under the umbrella of the six priority areas, papers that are already available on the GOMC website (link below) are: At-risk and invasive species, energy issues, climate change and its effects on humans, climate change and its effects on the environment, and emerging issues – the one paper that covers all priority areas.

Coming soon, said Walmsley, will be nutrient enrichment (or eutrophication), and contaminants and their effect on ecosystems and human health.

“The focus is not on policy-makers, educators or NGOs (non-governmental organizations). Oddly, it’s on professional people who will repackage the information for their own use. The coastal managers, communicators, technicians, planners, academics – people who work with data,” said Walmsley. “The theme papers give an in-depth overview, and people who are really interested can go to the reference documents to do their own digging.”

Some challenges to the Gulf’s ecosystem may be seen in the Emerging Issues paper, written by Peter G. Wells of the International Ocean Institute and Faculty of Management at Dalhousie University, Halifax, Nova Scotia. In one column of a table listed early in the paper, Wells identifies existing, known impacts threatening 10 aspects of the Gulf from aquaculture to microbial pathogens. The next column lists projected threats from emerging issues that may have escaped public notice until now. However, one potential effect—deep-water oil drilling—noted in the paper has emerged in spectacular fashion in recent months in the Gulf of Mexico .

“Some key emerging issues are ocean acidification, new synthetic chemicals, alternative energy developments, future minerals extraction from deeper waters, and the impact of marine spatial planning on resource use,” said Walmsley. “Each theme paper focuses on a priority area and can be updated regularly. If the data changes regularly, we will update biennially,” said Walmsley.

“One of the nice things about the report, it’s not stagnant. Initially, it’s an introductory document for people who don’t know the area. They can learn where the Gulf of Maine is and why it’s important. <http://www.gulfofmaine.org/gomt/?p=417>

“We want to provide specific, accurate information about the Gulf — not every aspect, but those six priority areas,” said Walmsley.

One of the impressive things about the report besides the content, Walmsley noted, is the time it took to put the whole thing together.

“I was called in right after the decision to do this was made,” she said. “I was asked to do a scoping document in January of 2009.” The scoping document was done in March, a task team was set up and a work plan initiated. By June 2010, five authors had completed five documents that went through an “onerous review policy.”

“It took one year to think it up and six months to do it,” said Walmsley.

The documents are “information rich,” said Walmsley. “Each author was limited to 12 to 15 pages. We tried to avoid opinions. We’re not there to tell people what they’re doing wrong, but to tell people what’s happening. Each paper has a section on responses, indicating what’s already in place. It’s an objective overview.”

The team identified a total of 14 papers to be written to start. Walmsley hopes other academics will want to contribute papers and plans to do one herself.

“In terms of policy and planning, we hope this will be the go-to document so people can plan where to go next,” she added.

The Gulf of Maine Council on the Marine Environment, for instance, will use the document when compiling its 2012 action plan.

The State of the Gulf of Maine Report is available at: <http://www.gulfofmaine.org/state-of-the-gulf/http://www.gulfofmaine.org/gomt/?p=417>

(Editor Jay Walmsley displays some of the published papers in the State of the Gulf Report. Photo credit: Jennifer Hackett/DFO)

Appendix 3. Survey of the Council



Faculty of Management

School of Information Management

Survey of the *State of the Gulf of Maine Report*

This survey is being conducted as part of a research study on the awareness and use of the *State of the Gulf of Maine Report* by the Environmental Information: Use and Influence (EIUI) research initiative led by Dr. Bertrum MacDonald (School of Information Management) and Dr. Peter Wells (School for Resource and Environmental Studies and Marine Affairs Program) at Dalhousie University. Completion of this questionnaire is voluntary, and all responses will be treated as confidential.

Only members of the EIUI research team at Dalhousie University will have access to the completed questionnaires. So that the identity of individuals will not be revealed (which might be disclosed by your affiliation), only aggregate data will be reported in publications arising from this research. A report of the findings and the recommendations will be given to the Canada Department of Fisheries and Oceans. The questionnaire will take about 15-20 minutes to complete and will aid in building understanding about the use and influence of environmental information. If you have questions about the study, please contact Dr. MacDonald (bertrum.macdonald@dal.ca; 902-494-2472) or Dr. Wells (oceans2@ns.sympatico.ca). Further information about the research initiative can be found at www.eiui.ca.

A) Affiliation

1. Which organization do you represent?

B) Format of the *State of the Gulf of Maine Report*

2. The *Report* is available as downloadable pdf files from the Gulf of Maine Council on the Marine Environment Website. Are you finding this method of access suitable for you and for members of your staff involved in decision making?

☐ Yes

☐ No

Please explain _____

3. The *Report* is produced as a series of issue-based theme papers. Has this format proved useful for you and for members of your staff involved in decision making?

☐ Yes ☐ No Please explain _____

C) Use of the *State of the Gulf of Maine Report*

4. Have you read one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>

5. Have you used one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No	If so, how have you used it (e.g. as background to address a problem or develop a policy position)
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>	
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>	
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	

6. Have you or your staff taken steps to promote awareness of the theme papers? If yes, please describe the method(s).

☐ Yes ☐ No Please explain _____

D) Influence of the *Report*

7. Are you aware of instances where the theme papers have influenced policy decisions?

☐ Yes ☐ No If yes, please explain _____

8. a) What do you consider to be the overall value of the theme papers to the environmental management of the Gulf of Maine? _____

b) How did you make this assessment? _____

9. Is there anything further that you would like to mention that can be helpful to our study of the use, and influence of the *State of the Gulf of Maine Report*? _____

Thank you for completing this questionnaire.
--

Appendix 4. Survey of the GOMC Working Group



Faculty of Management

School of Information Management

Survey of the State of the Gulf of Maine Report

This survey is being conducted as part of a research study on the awareness and use of the *State of the Gulf of Maine Report* by the Environmental Information: Use and Influence (EIUI) research initiative led by Dr. Bertrum MacDonald (School of Information Management) and Dr. Peter Wells (School for Resource and Environmental Studies and Marine Affairs Program) at Dalhousie University. Completion of this questionnaire is voluntary, and all responses will be treated as confidential.

Only members of the EIUI research team at Dalhousie University will have access to the completed questionnaires. So that the identity of individuals will not be revealed (which might be disclosed by your affiliation), only aggregate data will be reported in publications arising from this research. A report of the summary findings and the recommendations will be given to the Canada Department of Fisheries and Oceans. The questionnaire will take about 15-20 minutes to complete and will aid in building understanding about the use and influence of environmental information. If you have questions about the study, please contact Dr. MacDonald (bertrum.macdonald@dal.ca; 902-494-2472) or Dr. Wells (oceans2@ns.sympatico.ca). Further information about the research initiative can be found at www.eiui.ca.

A) Affiliation

1. Which organization do you represent?

B) Format of the State of the Gulf of Maine Report

2. The *Report* is available as downloadable pdf files from the Gulf of Maine Council on the Marine Environment Website. Are you finding this method of access suitable for you and for members of your staff involved in decision making?

☐ Yes ☐ No Please explain _____

3. The *Report* is produced as a series of issue-based theme papers. Has this format proved useful for you and for members of your staff involved in decision making?

☐ Yes

☐ No

Please explain _____

C) Use of the *State of the Gulf of Maine Report*

4. Have you read one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>

5. Have you used one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No	If so, how have you used it (e.g. as background to address a problem or develop regulation)
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>	
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>	
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	

6. a) Are you aware of the use of the theme papers by people or organizations other than you?

Theme Papers	Yes	No	If so, how were the theme paper(s) used (e.g. as background to address a problem, or develop regulation or a position paper)
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>	
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>	
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	

7. Have you or your staff taken steps to promote awareness of the theme papers?

☐ Yes ☐ No If yes, please explain the method(s) _____

D) Influence of the Report

8. Are you aware of instances where the theme papers have influenced management decisions?

☐ Yes ☐ No If yes, please explain _____

9. Are you aware of organizations/individuals who changed their views on coastal issues because of the theme papers? Yes ☐ No ☐

If yes, please describe the type of organization or the professional roles of the individual without disclosing the names of the individuals. _____

10. a) What do you consider to be the overall value of the theme papers to the environmental management of the Gulf of Maine? _____

b) How did you make this assessment? _____

11. How often do you think the theme papers should be updated? Please specify which theme paper(s).

12. Is there anything further that you would like to mention that can be helpful to our study of the use, and influence of the *State of the Gulf of Maine Report*? _____

Thank you for completing this questionnaire.
--

Appendix 5. Reminder Message Sent to Members of the Council of the Gulf of Maine Council on the Marine Environment

Thanks to all members of the Council who have already responded to the invitation to complete the online survey noted below. The survey has been extended by one week to accommodate members who have not yet had an opportunity to respond. Please complete the survey by Monday, 9 May 2011, which will take about 15 minutes of your time.

*_*_*

You are invited, in your role as a member or recent member of the Council of the Gulf of Maine Council on the Marine Environment, to participate in a research study entitled "Awareness and Use of the Gulf of Maine State of the Environment Theme Papers."

This study is being conducted by the Environmental Information: Use and Influence (EIUI) research initiative (www.eiui.ca), based in the Faculty of Management, Dalhousie University, Halifax, Nova Scotia, with support from the Canada Department of Fisheries and Oceans. The study has two main objectives: to gain an understanding of the awareness and use of the theme papers which make up the State of the Gulf of Maine Report, and to develop recommendations pertaining to effective dissemination of information presented in these publications in order to guide future publications and communication materials related to coastal management in the Gulf of Maine region.

Your participation is voluntary and you may withdraw at any time. Participating in the study might not benefit you personally, but the findings may be informative for the production of future GOMC publications.

By clicking on this link <<https://surveys.dal.ca/opinio/s?s=11388>> you may complete the survey, which will take about 15 minutes of your time. If you are unable to reach the online survey from the link, copy and paste the following Web address [<https://surveys.dal.ca/opinio/s?s=11388>] into your Web browser. Please complete the survey no later than Monday, 9 May 2011.

Participation in this study should be of minimal risk to you. The probability of any harm occurring because of disclosing information regarding your awareness and use of the State of the Gulf of Maine Report is no greater than risks encountered by you in your daily work life. All responses to this questionnaire will be treated as confidential and will only be accessible to the EIUI research team. The data will be retained in secured cabinets at Dalhousie University for five years after which they will be destroyed. Your consent to participate in the study will be assumed if you complete the survey.

Questions regarding this research may be addressed to Dr. Bertrum MacDonald (902-494-2472; bertrum.macdonald@dal.ca) or Dr. Peter Wells (oceans2@ns.sympatico.ca) who head the EIUI research initiative. A copy of the executive summary of the report prepared at the conclusion of this study will be posted to www.eiui.ca in the summer of 2011.

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Patricia Lindley, Director of Dalhousie University's Office of Human Research Ethics Administration, for assistance (902-494-1462; patricia.lindley@dal.ca).

Thank you for completing the survey by Monday, 9 May 2011.

Appendix 6. Survey of the Readers of the *Gulf of Maine Times*



Faculty of Management

School of Information Management

Survey of the State of the Gulf of Maine Report

This survey is part of a research study on the awareness and use of the theme papers in the *State of the Gulf of Maine Report*. This study is being conducted by the Environmental Information: Use and Influence (EIUI) research initiative led by Dr. Bertrum MacDonald (School of Information Management) and Dr. Peter Wells (School for Resource and Environmental Studies and Marine Affairs Program) at Dalhousie University. Completion of this survey is voluntary, and all responses will be treated as confidential.

Only members of the EIUI research team at Dalhousie University will have access to the survey data. So that the identity of individuals will not be revealed, only aggregate data will be reported in publications arising from this research. A report of the summary findings and the recommendations will be given to the Canada Department of Fisheries and Oceans. The survey will take about 15-20 minutes to complete and will aid in building understanding about the use and influence of environmental information. If you have questions about the study, please contact Dr. MacDonald (bertrum.macdonald@dal.ca; 902-494-2472) or Dr. Wells (oceans2@ns.sympatico.ca). Further information about the research initiative can be found at www.eiui.ca.

A) Affiliation

1. a) Are you aware of the *State of the Gulf of Maine Report*? ☐ Yes ☐ No

If the response to question 1 is "No", the respondent will be directed to the following question, which will conclude the survey for these participants.

When did you last visit the Gulf of Maine Council on the Marine Environment Website?

- | | |
|---|---|
| <input type="checkbox"/> within the last month | <input type="checkbox"/> within the last 6 months |
| <input type="checkbox"/> within the last 3 months | <input type="checkbox"/> within the last year |

If the response is "Yes" to Question 1 a), the respondent will be directed to the following questions, in sequence.

1. b) How did you become aware of the *Report*? _____

B) Format of the *State of the Gulf of Maine Report*

2. The *Report* is available as downloadable pdf files from the Gulf of Maine Council on the Marine Environment Website. Are you finding this method of access suitable for you?

☐ Yes ☐ No Please explain _____

3. The *Report* is produced as a series of theme papers. Has this format proved useful for you?

☐ Yes ☐ No Please explain _____

C) Use of the *State of the Gulf of Maine Report*

4. Have you read one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>

5. Have you used one or more theme papers? (check each option as appropriate)

Theme Papers	Yes	No	If so, how have you used it (e.g. as background to address a problem or develop a position paper)
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>	
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>	
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	

6. (a) Are you aware of the use of one or more of the theme papers by people or organizations other than you? (check each option as appropriate)

Theme Papers	Yes	No	If so, how have you used it (e.g. as background to address a problem or develop a position paper)
Context Paper	<input type="checkbox"/>	<input type="checkbox"/>	
Emerging Issues	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on humans	<input type="checkbox"/>	<input type="checkbox"/>	
Climate Change and its effects on ecosystems, habitats and biota	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal ecosystems and habitats	<input type="checkbox"/>	<input type="checkbox"/>	
Marine Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	

7. Have you taken steps to promote awareness of the theme papers? Yes ☐ No ☐

If yes, please describe the method(s). _____

D) Influence of the *Report*

8. Have you changed your views on coastal issues because of the theme papers?

☐

Yes

☐

No

If yes, please explain_____

9. Are you aware of organizations/individuals who changed their views on coastal issues because of the theme papers? Yes ☐ No ☐

If yes, please describe the type of organization or the professional roles of the individual without disclosing the names of the individuals._____

10. a) What do you consider to be the overall value of the theme papers to the environmental management of the Gulf of Maine?_____

b) How did you make this assessment?_____

11. How often do you think the theme papers should be updated? Please specify which theme paper(s).

12. Is there anything further that you would like to mention that can be helpful to our study of the use, and influence of the *State of the Gulf of Maine Report*?_____

E) Demographic Information (To aid in our analysis, please tell us about yourself).

13. You live in

☐ Maine

☐ New Hampshire

☐ Nova Scotia

☐ Massachusetts

☐ New Brunswick

☐ other locale, please explain, _____

14. Age

☐ under 20

☐ 21 – 30

☐ 31 – 40

☐ 41 – 50

☐ 51 – 60

☐ 61 or older

15. Gender

☐ male

☐ female

16. Do you work for

☐ governmental body

☐ non-governmental organization (e.g. conservation or advocacy group)

☐ academic institution

☐ public school system

☐ industry

☐ other, please specify _____

17. Education level

☐ schooling up to high school diploma

☐ college diploma

☐ university degree (undergraduate or graduate)

Thank you for completing this questionnaire.

For further information on this project please visit our Web site at eiui@dal.ca.

Appendix 7. Invitation to Complete the Survey Posted in the *Gulf of Maine Times*

The screenshot shows the homepage of the Gulf of Maine Times website. At the top is a navigation bar with links: Home, Around the Gulf, Book Reviews, Editor's Notes, and Features and Columns. Below the navigation bar is a large banner featuring the website's logo, which includes a lighthouse and the text "Gulf of Maine Times", and a map of the Gulf of Maine. The main content area is titled "News" and features a prominent "REMINDER" box. To the left of the main content are two sidebars: "SEARCH THE TIMES" with a search bar, and "EXPLORE THE TIMES" with links to About Us, Calendar, News, Resources, Sponsors, and Subscribe. Below these is a "RECENT NEWS" section listing several articles. At the bottom left is a "READ PAST TIMES ARTICLES" section. To the right of the main content is a "SUPPORT THE TIMES" section with a "DONATE" button, and a "GULF OF MAINE TIMES SPONSORS" section featuring logos for CHEWONKI and the Department of the Interior. A Facebook social plugin is also visible on the right side of the page.

SEARCH THE TIMES

Search & Hit Enter

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- Calendar
- News
- Resources
- Sponsors
- Subscribe

RECENT NEWS

- Important message for Times readers!
- Census of Marine Life exceeds expectations
- A new approach to seafood sales
- NERACOOS – Observing the ocean
- Book Review: Four Fish: The Future of the Last Wild Food
- Thailand reclaims habitat, nurseries through multi-faceted "royal projects"

READ PAST TIMES ARTICLES

News

REMINDER: Thanks to readers of the Gulf of Maine Times who have already responded to the invitation to complete the online survey noted below. If you have not yet completed the survey, please do so by Friday, 6 May. The survey will take about 15 minutes of your time.

You are invited, as a reader of the Gulf of Maine Times, to participate in a research study entitled "Awareness and Use of Gulf of Maine State of the environment Theme Papers." The study is being conducted by the Environmental Information: Use and Influence (EIUI) research initiative, which is based at Dalhousie University, Halifax, Nova Scotia, supported by the Canada Department of Fisheries and Oceans.

The study has two main objectives: to gain an understanding of the awareness and use of the theme papers of the State of the Gulf of Maine Report and to develop recommendations pertaining to the effective dissemination of information presented in the Report in order to guide future publications and communication materials related to coastal management in the Gulf of Maine region.

By clicking on this link <<https://surveys.dal.ca/opinio/s?s=11375>> you may complete the survey, which will take about 15 minutes of your time. If you are unable to reach the online survey from the link, copy and paste the following Web address [<https://surveys.dal.ca/opinio>

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(The full text of this news item is given below.)

NEWS

Message for *Times* readers

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Participation in this study should be of minimal risk to you. The probability of any harm occurring because of disclosing information regarding your awareness and use of the State of the Gulf of Maine Report is no greater than risks encountered by you in your daily work life. All responses from this research will be treated as confidential and will only be accessible to the EIUI research team. The data will be retained in secured cabinets at Dalhousie University for five years after which they will be destroyed.

If you have any questions about this study, you may contact Dr. Bertrum MacDonald, School of Information Management, (bertrum.macdonald@dal.ca; 902 494-2472) or Dr. Peter Wells, School of Resource and Environmental Studies, (oceans2@ns.sympatico.ca), both at Dalhousie University, who head the EIUI research initiative. Further information about the initiative is available at <http://www.eiui.ca/>

A copy of the executive summary of the report prepared at the conclusion of this study will be posted to www.eiui.ca in the summer of 2011.

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study you may contact Patricia Lindley, Director of Dalhousie University’s Office of Human Research Ethics Administration, for assistance at (902-494-1462, or patricia.lindley@dal.ca).

Thank you for completing the survey by Friday, 6 May 2011.