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RESEARCH ARTICLE

Understanding the role of information in marine policy development: establishing a coastal marine protected area in Nova Scotia, Canada

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Abstract

Canada has expanded its marine protected area (MPA) coverage in line with the Aichi Biodiversity Target of protecting 10% of its marine territory by 2020. In 2018, a consultation process was launched to designate an Area of Interest surrounding the Eastern Shore Islands area off the coast of Nova Scotia, as the potential 15th *Oceans Act* MPA in Canada (DFO 2021a). This region has a fraught history with external conservation interventions and, consequently, there was a significant level of local mistrust in the process. This study explored the role of information in the consultation process and how it interplayed with the historical context, political pressures, trust, and mistrust among stakeholders and rightsholders. Drawing on interviews, a detailed desktop analysis, and participant observation at consultation meetings, this paper describes what worked well and what could be improved with respect to the sources of information used and the channels through which stakeholders and rightsholders accessed it. This case study demonstrates that while preferences for information sources and channels are context specific and varied, they are inherently personal and influenced by shared histories, trust, and individual beliefs.

Key words: coastal marine protected areas, context, information sources and channels, public consultation, science-policy interface, trust

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Introduction

Canadian efforts to increase marine conservation coverage within Canadian waters began in earnest in October 2010 with the launch of the Aichi Biodiversity Targets (Convention on Biological Diversity n.d.; DFO 2019c), in particular Target 11, which specifies that at least 10% of a country's territorial waters need some measure of protection by the year 2020. Prior to actively implementing the Aichi targets, Canada had only designated 0.22% of its marine waters as marine protected areas (MPAs) (DFO 2019c). Different forms of marine conservation areas can be established by the Department of Fisheries and Oceans Canada (DFO), Parks Canada, and Environment and Climate Change Canada; however, DFO is the primary agency responsible for selecting and implementing MPAs, and this department focused most of the country's attention on meeting the 10% Aichi

Biodiversity Target. As of December 2020 Canada has exceeded the 10% target and is currently reporting that 14% of its maritime territory is under federal protection (ECCC 2020).

DFO has established *Oceans Act* MPAs in the Pacific, Arctic, and Atlantic Oceans—where they border Canada. However, critiques have emerged about the effectiveness of some of the MPAs, particularly the larger (i.e., greater than 2000 km^2) sites and their ability to meet conservation objectives (Westhead et al. 2012; De Santo 2013; Bennett et al. 2015; Callanan 2018; Dehens and Fanning 2018). Greater transparency than commonly applied and genuine consultation in planning and implementation processes are increasingly important issues for MPAs (De Santo 2016). In other consultations leading to designation of Canadian MPAs, several participants voiced concerns about the adequacy of the processes: "we have been disappointed by the level of consultation or the effectiveness of the consultation process to date, and we are troubled by some of the science"; "DFO comes out and announces an area of interest without any consultation whatsoever," and "they [DFO] are building a lack of trust" (Canada. Parliament. Senate. Standing Committee on Fisheries and Oceans 2019). A lack of trust in consultation about MPAs has been echoed in coastal communities in rural Canada (Withers 2019b). Overall, a consensus developed that stronger consultation standards were needed for the creation of MPAs, which was emphasized by a 2018 National Advisory Panel on MPA Standards (Bujold and Simon 2018; Gies 2019). The decision to stress the importance of meaningful consultation marked a necessary step to increase collaborative decision-making and true co-production of knowledge in marine conservation, which was also in line with marine conservation planning processes in other countries (Christie et al. 2017; Hogg et al. 2017; Kelly et al. 2020).

Public consultation processes do not occur in a vacuum; rather, they are conducted within the context of a highly connected society characterized by rapid communication, easy distribution of misinformation, historical circumstances, and speculation. This mix of factors is further accentuated by the fact that MPAs have become a recent topic of Canadian national interest (i.e., within the past decade). The consultation period leading up to MPA designations is heavily scrutinized, as it often brings together very diverse publics and therefore navigates an assortment of competing interests, which can lead to conflict (Pajaro et al. 2010; Hogg et al. 2017). Furthermore, public involvement and community support are often key predictors of the overall success of an MPA; therefore, the importance of the consultation process cannot be overstated (Christie et al. 2009). Additionally, in some circumstances, consultation processes may be equally, if not more, important than the overall outcome (Hare et al. 2003; Gross 2007; Teder and Kaimre 2018). In such instances, individuals and groups become more informed about the evidence and conflicting concerns and, in the process, they also build respect for adversarial perspectives and confidence that the consultation process has accounted for their views.

Despite an increase in the availability of information about MPA designation processes and associated socioeconomic and ecological data during consultations (DFO 1999; Agardy et al. 2003; De Santo and Jones 2007; Day 2017), few studies have been undertaken to understand the actual role of such information within the processes (Agardy 2000; Lundquist and Granek 2005; Pietri et al. 2009; De Santo 2016; Markantonatou et al. 2016). Because information may influence people's attitudes and decisions (Choo 2006; Choo 2017; Jennings 2019; Kahlor et al. 2020), understanding its function within the context of marine conservation is critical (Wilkins et al. 2018). This paper presents a case study about understanding information activity within a Canadian MPA consultation process, focusing on the Nova Scotian Eastern Shore Islands (ESI) Area of Interest (AOI), the first large, coastal conservation area in Atlantic Canada. The consultation process for this AOI has been ongoing since April 2018 (DFO 2021b). The projected end date was initially set at December 2020, but as that date approached it was extended to 2025 (DFO 2021b). Specifically, we examined which information sources and

channels participants prefer and how aspects of misinformation, trust, mistrust, and contextual factors influenced their information-related activities.

The opportunity for this study was unprecedented, as the consultation process was ongoing during the data collection period of this project, presenting a remarkable opportunity to study this marine conservation initiative as it unfolded in real time. In addition, we had the opportunity to examine an underexplored theme within marine conservation planning: the role of information in influencing the participants' perceptions of the process. The dynamic nature of the ESI AOI process also provided the possibility of incorporating participant feedback directly into the consultation process. This outcome may serve to strengthen communication among diverse knowledge groups, both within the context of marine conservation and more broadly in environmental decision-making.

Background and context

One critical aspect explored in this analysis involves the supply of information to stakeholders and rightsholders, including factors relating to people's use of and preference for particular information sources and channels. This paper refers to both stakeholders and rightsholders, as the term "rightsholder" is used to distinguish major groups that represent people with recognized rights under national or international law. First Nations are represented in the ESI AOI consultation process in this way. In today's world of information overload, people make decisions regarding what material is relevant to receive, trust, and use throughout their day (Renn and Levine 1991; Wilkins et al. 2018), and they form habits and take mental shortcuts to manage information use and evaluate sources (Bawden and Robinson 2020; Hass 2015; Heinstrom 2006; Niemand 2010; Nutley et al. 2007). In addition to these strategies, the ways in which information is communicated to people influences whether or not they use it (Dean et al. 2019; Druckman and Lupia 2017; Wilkins et al. 2018). Reception towards different information sources and channels varies among people and can be influenced by factors such as age, race, ethnicity, or gender (Agosto 2019; Lin and Wang 2020; O'Hare and Erdelez 2017; Rowley et al. 2017; Tucker and Napier 2002). In the context of this study, information sources refer to information providers (e.g., scientists, friends) while channels refer to the conduit (e.g., in-person, online, or in print). The use of information sources is often more complex than channel use alone, as it is influenced by personal characteristics of both the receiver and the source, such as individual and professional biases, trust, and personal preferences (Ascher et al. 2010; Voessing and Weber 2017; Wilkins et al. 2018).

The level of trust between the information provider and the information receiver can also be a predictor of information use (Tomkins 2001; Nutley et al. 2007; Wilkins et al. 2018; Alfano and Huitjs 2020), and people are more likely to use information from a source that they trust (D'Amato et al. 2019; Wilkins et al. 2018). Trust can also be built through interpersonal relationships; therefore, social networks, both informal and ad-hoc, become crucial tools that people use to sift through information and make timely decisions (Huber et al. 2019; Sayce et al. 2013). In addition, people may be more receptive to disregarding misinformation if it is debunked by trusted sources (Walter et al. 2020). Understanding the relationship between trust and information use is becoming an integral part of effective resource management (MacKeracher et al. 2018).

Furthermore, information use within resource management projects can be complicated by the increased prevalence of misinformation, i.e., the unintentional proliferation of incorrect information, such as captions, dates, or statistics (Cook et al. 2017; Scheufele and Krause 2019; Wardle 2019; Wardle and Derakhshan 2017). While misinformation is not a new phenomenon, the complexity and scale of misinformation in today's digitally networked world is unmatched (Wardle and Derakhshan 2017). Environmental misinformation and the potential impacts of misinformation about environmental initiatives, including MPAs, have begun to garner some attention in academic

research and will likely continue to increase as more ambitious MPA targets are set worldwide (Davis et al. 2014; Farrell 2019; Kopf et al. 2019; Munro 2019; Lees et al. 2020; Hart et al. 2020). The implications for environmental policy processes can be profound, negatively influencing people's behaviours and attitudes about conservation initiatives and redirecting conversations away from relevant issues that require greater attention and analysis (Davis et al. 2014). New conservation programs often entail changes in practices (e.g., personal, community, and institutional) to achieve desired outcomes, e.g., restored biodiversity. Uncertainty about the implications of such changes can, naturally, create anxiety, particularly if livelihoods may be at risk when the conservation measures are implemented. Wardle (2019) noted that when people are fearful of changes, "oversimplified narratives, conspiratorial explanation, and messages that demonize others become far more effective." The extent of environmental misinformation and its impact on support for MPAs is not yet fully comprehended; thus, gaining greater understanding of how people use environmental information and misinformation is required to comprehend its potential impact on society and policy (Maertens et al. 2020; Wardle 2017; Yeo and McKasy 2021).

In addition, MPAs, while a common conservation tool, remain a polarizing topic among various user groups (Agardy et al. 2003; Chuenpagdee et al. 2013; De Santo 2013; De Santo and Jones 2007; Hilborn 2018; Jones 2002; Tanzer 2017; Weible 2008; Yaffee 2020). Aspects of trust, information sources, channel use, and misinformation are important to consider during potentially conflicting processes such as MPA site selection and implementation. Established well, MPAs have the potential to increase ecosystem resiliency, help fish populations recover, and protect vulnerable species and habitats (Roberts et al. 2005; Rodriguez et al. 2017; Sala et al. 2021). Well-managed MPAs require coordination across jurisdictional boundaries, a recognized need for protection, community support, and human resources to ensure regulatory compliance (Sale et al. 2014). More often than not these prerequisites are not met, and MPAs fail to achieve predetermined conservation objectives (Sale et al. 2014). Left in their wake are marine "paper parks", conservation areas that exist solely on paper, without providing any tangible benefits (Pieraccini et al. 2016), calling into question their effectiveness and legitimacy (Barcott 2011; De Santo 2013). Therefore, when working closely with community members, stakeholders, and rightsholders during marine conservation processes, issues about the merits of conservation approaches will inevitably arise. On a broad scale, these misconceptions and misunderstandings related to MPAs can hinder their effectiveness and negatively impact public opinion about their suitability for increasing biodiversity (NOAA n.d.). On smaller scales, MPA misconceptions can divide communities, affect local livelihoods, and proliferate unfounded concerns. To address these challenges, considerable time and energy must be spent prioritizing human dimensions in marine conservation and understanding which methods of communication will contribute to a greater uptake of relevant and reliable information and ultimately to MPA support (MacKeracher et al. 2018; Pieraccini et al. 2016).

The ESI AOI consultation

Of the 14 MPAs currently designated in Canada, eight are located off the Atlantic coast, all of which are either relatively small or situated off-shore (DFO 2019b). Given the size and location of these established MPAs, it is fair to say that their designation invited less controversy than a large, coastal MPA would have (Beswick 2018; Farran 2018), as a large MPA in remote, off-shore areas rather than in coastal regions faces less community opposition and local concern (Farran 2018).

However, this trend changed on 22 March 2018, when the ESI, a large, 2000 km^2 coastal region off Nova Scotia, was announced as an AOI by the Canadian federal government (**Fig. 1**, DFO 2021a). This region is known for its unique island archipelagos, eelgrass and kelp beds, and important habitats for many species at risk, including the roseate tern, harlequin duck, Atlantic cod, and Atlantic salmon (DFO 2021a). To add to the complexity of the MPA's size, scale, and location, the ESI AOI also

Fig. 1. Eastern Shore Islands Area of Interest Map. Reproduction available at dfo-mpo.gc.ca/oceans/aoi-si/easternshore-ilescoteest-eng.html (DFO 2021a).

directly overlaps with a thriving lobster fishery that supports many households along the eastern coast (Withers 2019a). The Eastern Shore population is approximately 21 000, with all of those residents classified as rural (Capital Health Community Clinical Service 2014). Youth outmigration and aging senior residents are issues of concern along the Eastern Shore. While several distinct industries still operate in the region, including forestry and tourism, the lobster fishery is the predominant source of income and is often touted as the "backbone" of the Eastern Shore, with an average contribution of $12 million dollars every year (Capital Health Community Clinical Service 2014; DFO 2019c, 2019d). Thus, the ESI AOI announcement received a mixed response; some praised DFO for taking a proactive approach to conservation, while others were concerned about the potential impact that the MPA would have on the livelihoods of coastal residents, particularly those involved in the

fishing industry (Borland 2018; Gerrard 2019). Over several months following the announcement in Atlantic Canada, supporters of the MPA were largely muffled by a vocal opposition (Primed24 2018).

The Eastern Shore has a fraught history with external conservation interventions by government. In 1972, the federal and provincial governments approved the development of a potential new national park centred around the community of Ship Harbour (Froese-Stoddard 2013; Hammond 2018). The park was slated to encompass 362 km^2 and provide a scenic escape for tourists. However, it became increasingly clear to local residents that the park might cause them more harm than anticipated. Direct contact had not been made between park officials and residents, which lent an air of mistrust to the entire process. Additionally, some sources of public information were entirely inaccurate, including the size of the park, which was considerably larger than initially described to residents (Froese-Stoddard 2013). In another instance, park officials attempted to placate residents who were worried about expropriation, stating that this tactic would "be kept to a minimum" (Froese-Stoddard 2013). This statement was also exposed as false, when it was revealed that 90 permanent residents and 167 summer residents would need to be relocated to make room for the incoming park (Froese-Stoddard 2013).

Ultimately, community members mobilized and stopped development of the national park from proceeding (Hammond 2018). However, this experience shaped public perception about government initiatives for the foreseeable future and led many residents to fear the activities of any level or branch of government. Unsurprisingly, the announcement of the ESI AOI was met with trepidation by residents who feared that it would be a repeat of the national park initiative (Hammond 2018).

Consequently, DFO committed to approaching the ESI AOI with openness, transparency, and genuine consultation from the onset. Prior to the ESI AOI announcement on 22 March 2018, DFO met with potential stakeholders and rightsholders, including nongovernmental organizations (NGOs), fishers, and Indigenous groups to explain the plan that they were launching. During this preplanning phase, DFO also formed an Advisory Committee, a 35-person group of diverse stakeholders and rightsholders, created to provide feedback and advice to DFO throughout the consultation process (DFO 2021a). Involvement in the Advisory Committee varied throughout the consultation process. A firm definition of who could serve on the Advisory Committee was not articulated. Rather, DFO aimed to include a variety of expertise, perspectives, and representatives of groups that had a stake in marine conservation in the area. This inclusive approach resulted in a large Advisory Committee. DFO facilitated meetings of the Advisory Committee and with other groups, two community open houses, and several informal gatherings for the ESI AOI, all of which involved sharing information and addressing community concerns.

The last Advisory Committee meeting was held on 28 March 2019 (DFO 2019a). According to DFO representatives, the consultation process was proceeding well at that time. However, the consultation was a dynamic, evolving process, which became apparent on 8 May 2019, when then Minister of Fisheries and Oceans, Jonathan Wilkinson, arrived at the Ship Harbour Legion building on the Eastern Shore for a meeting regarding the AOI in the middle of the lobster fishing season. He was met by more than a hundred protesters, including lobster fishers who tied up their boats to attend the meeting, illustrating the seriousness of their opposition to an MPA (Withers 2019c). Not only was the timing of the meeting inconvenient for fishers, arguably the most prominent stakeholder group in the consultation process, but little advance notice was provided for other community members on the Eastern Shore (Bell 2019). During a return meeting to the Eastern Shore on 15 August 2019, which the authors viewed via video recording, Wilkinson stated that the ESI AOI process was "effectively suspended", and that a timeline for the implementation of an MPA on the Eastern Shore would not be predetermined (Lubczuk 2019). In the wake of Wilkinson's second meeting, the future of the proposed MPA became unclear.

The combination of historical context, political pressures, trust, mistrust, and diverse stakeholder and rightsholder groups make the consultation a uniquely suitable process to examine and illustrate information use and the associated factors that may relate to the ultimate success or failure of the conservation initiative. This study addressed the following questions. (*i*) What factors influenced the information-related activities of participants (e.g., their preferred sources and channels, and use of information) during the ESI AOI consultation process? (*ii*) What are the key elements of successful stakeholder and rightsholder engagement and how did the ESI AOI consultation process compare to successful examples elsewhere in Canada and beyond?

Methods

This study used a mixed-methods approach, following established qualitative research methods (Leedy and Ormrod 2019), which combined interviews, a review of relevant documents and websites (including primary literature, Advisory Committee minutes, community bulletins, newspapers, policy papers, government websites, and relevant social media), and observational data obtained from attending two representative consultation meetings on the Eastern Shore. These meetings, facilitated by DFO, included an informal, "open-house" style information session and a formal, discussion-based gathering. During these meetings, notes were taken on issues related to information (dissemination, format, sharing, misinformation, etc.).

In August and September of 2019, interviews were conducted with Advisory Committee members involved in the consultation process and representatives from DFO. Both the Advisory Committee members and government representatives have a vested interest in the outcome of the AOI and were therefore the focus of this study. The interview questions were based on existing literature examining patterns of information use, as well as guides for conducting effective and inclusive federal consultation processes in Canada. Ethics approval for the study was obtained via the ethics review process established by the Social Science and Humanities Research Ethics Board at Dalhousie University (ethics approval # 071919). Membership of the Advisory Committee is not publicly available. We contacted 19 members we had encountered in the consultation meetings, 10 of whom agreed to be interviewed, including representatives from each stakeholder and rightsholder category (see **Table 1**). Interviews ranged from 40 min to 2.5 h in length and were conducted individually, either by phone or in person. The interview questions were semi-structured to address the research questions of the study while also allowing flexibility for a conversation to occur (see **Supplementary Material**). All interview participants were treated anonymously.

The interview participants were grouped into five broad categories: government, academia and environmental NGOs, industry, community groups, and First Nations groups (**Table 1**). To prevent

Table 1. Categories of interview participants for the Eastern Shore Islands Area of Interest consultation process (DFO 2021a).

Categories for study	Number of interview participants
Government (federal, provincial, local/municipal)	2
Academia and nongovernmental organizations	1
Industry	2
Community groups	4
First Nations/Indigenous Peoples	1
Total	10

inadvertent identification of individual interview participants, we revised the stakeholder and rightsholder categories that DFO created for membership of the Advisory Committee, i.e., some categories were combined. Each participant responded to the interview questions from the viewpoint of the representative categories, and are referred to below by category, followed by a letter representing a different individual, for example: Community Group A, or Government B (DFO 2021a, **Table 1**).

Each interview was audio-recorded, transcribed verbatim, and coded for content, using conventional analysis processes (Ryan and Bernard 2003; Hsieh and Shannon 2005; Fereday and Muir-Cochrane 2006; Krippendorf 2019). The content analysis was completed in three stages: an initial round of coding to determine specific codes for each relevant interview response, a broader grouping of associated codes into categories, and a final restructuring of categories into overarching themes of all interviews. An independent check of the coding was completed by another researcher for reliability and consistency of the coding. In the results that follow, data from the interviews were triangulated with the documentary analysis and meeting observations.

Results

Two major themes emerged from the document analysis, meeting observations, and the interviews with the Advisory Committee members and government representatives involved in establishing the ESI AOI: (*i*) the historical and contemporary context of the Eastern Shore Islands and (*ii*) external and internal forces that exerted varying levels of influence on the consultation process itself. Within the two themes, factors such as misinformation on social media, timing issues, and relationship-building opportunities generally hindered the success of the consultation process. While this case study is unique and occurred under particular conditions, the results gleaned from it are broadly applicable to other marine consultation processes.

Theme I: Historical and contemporary context

The historical context of the ESI and its enduring legacy permeated many aspects of the MPA consultation process. Some residents of the Eastern Shore have a limited relationship with government representatives and government-led conservation initiatives. At the time of the consultation, 47 years had passed since the plan for establishing a Ship Harbour National Park had failed. Yet interviewees, local to either the Eastern Shore or the surrounding Halifax Regional Municipality, spoke about that plan with lingering intensity. Some interviewees referred to the government's "legacy" and the emotional mindset of locals who would oppose the AOI, as they had opposed the proposed national park (Community Group D; Academia + NGO).

Mistrust

When engaging local communities in considering the establishment of MPAs, a single "one size fits all" practice for effective consultation has not been determined (Davis et al. 2014). Despite best intentions, MPAs may fail to meet their objectives if they do not account for local histories and community norms (Davis et al. 2014). Understanding and accounting for the context is critically important when communicating and working with local communities in planning conservation projects, a reality that was demonstrated repeatedly during interviews and documents associated with this study.

Many interview participants identified the historical context of the Eastern Shore as inescapably contributing to the mistrust that pervaded the consultation process, in particular the failed Ship Harbour National Park initiative. When commenting on the mistrust within the community, one interviewee (Academia + NGO A) explained: "The people who had fought the national park were going to fight this too . . . It's all psychological, emotional. It has nothing to do with any kind of logic . . . It's

historical context." Another interviewee (Community Group A) agreed with this view about mistrust of government: "Unfortunately, it's [the ESI AOI consultation process] one of the few areas, I think, where communities can really have some input but because of people's past experiences with other types of so-called conservation, they don't believe this is a true, consultative process." Other participants did not fault DFO for the national park experience, as the park proposal had been initiated by another federal government department, but pointed out that DFO bears the legacy of fraught relationships with previous governments, which translated into a lack of trust for DFO:

> "And the other thing was, of course this isn't DFO's fault, they have a legacy. There's a legacy here, right or wrong, correct or incorrect. The perception here is that you can't trust DFO. You can't. You can't trust government. Whether or not that's 20–60-year-old perception, that's the perception. And it's a hill that they have to climb, right out of the chute, so they didn't deal with that properly" (Community Group D).

Interviewees frequently stated that the historical mistrust of community members meant some Advisory Committee members had predetermined opinions about the ESI AOI or drew comparisons to the national park. One interviewee (Industry B) said: "The community rushed to judgement to oppose the MPA without any knowledge of what the process and the real nature of the MPA would represent." Many community members had made up their minds to oppose the MPA from the onset, according to several interviewees (Academia + NGO A; First Nations A; Community Group A and D; Industry A). This mindset was seen as a hindrance to the consultation process by some interviewees, particularly as some individuals who opposed the introduction of an MPA were members of the Advisory Committee. Some committee members disagreed with the decision to allow those who were opposed to the MPA from the beginning to sit on the Advisory Committee:

> "Many [number not specified] have predetermined that they oppose the concept [of the MPA], yet sat on the Advisory Committee, which I found just astounding. Not acceptable. Why would you sit on a committee to create something when you're publicly opposed to it from the get-go?" (Industry B)

Trust

The present-day context of the ESI AOI was another driving force underlying many interview responses. Several contextual elements were unique and affected the proceedings in unforeseen ways. First, the consultation process occurred during a federal election year, which leant an air of uncertainty to DFO's promises to stakeholders and rightsholders and contributed to instances of conflict between government representatives and members of the Advisory Committee. Interview participants felt assurances from DFO regarding zoning decisions within the MPA would be quickly altered if the election resulted in a change in the governing party (personal observation (HRM), Advisory Committee meeting, 28 March 2019). Second, as mentioned earlier, the ESI AOI was the first large, coastal MPA announced for Atlantic Canada. However, despite fears that the past could repeat itself, the interviews revealed more trust than mistrust in the process. This outcome was largely due to the fact that DFO led the conservation initiative and supplied a large portion of the information to Advisory Committee members. Trusting DFO during the consultation process became a necessity or a reflex for some interview participants. For example, one interviewee (Community Group D) stated: "I mean if you can't trust your government, you're in bad shape." In addition, trust in DFO resulted from the department's honesty during the ESI AOI process. This interviewee pointed out that:

> "They [DFO] actually admitted that they did something wrong. And admitting that you have made an error, or an omission builds trust . . . admitting that you made a mistake, or something wasn't done or approached right builds confidence, builds trust." (Community Group D)

Several interview participants mentioned that their trust in DFO also helped when they faced conflicting information during the consultation process. Of the four community groups interviewed, three confirmed they had encountered information that contradicted statements from DFO but confirmed they would trust DFO to have presented the objective, truthful information (Community Groups A, B, and D).

Information sources and channels

Table 2 and Table 3 outline the information sources and channels most and least used by Advisory Committee members during the consultation process. Understandably, several interview participants' trust in DFO extended to confidence in using DFO as a source of information. In fact, DFO was the most used information source when participants sought accurate information about the ESI AOI (Table 2). Trust in DFO stemmed from the Department's primary role as the lead organization during the consultation process. For example, one interviewee (Community Group B) stated:

> "They're [DFO] just painting a picture of what's there. That's kind of core information and it's on that that I base my trust… if the DFO science people are telling me something about the ocean, I'm going to probably accept that… I'm assuming that whatever DFO or the universities put out is factual and that's the way it is."

Another participant (Community Group A) echoed this statement, highlighting DFO's leadership role in the consultation process as a reason for trusting the information provided to the Advisory Committee: "Usually I accept what DFO is saying, because they're the ones that are sort of presenting what the rules and regulations are."

The present-day context also influenced which information sources were least used. As shown in Table 2, the provincial government, local government, and national news were the least used information sources when the participants sought accurate information about the ESI AOI. This practice

Table 2. Most and least used information sources by Advisory Committee members when seeking accurate information about the Eastern Shore Islands Area of Interest.

Information sources: most used	Number of responses: 16 (2 per respondent)	Information sources: least used	Number of responses: 16 (2 per respondent)
Federal government	8	Provincial government	4
Community groups	4	Local government	4
Conservation groups	2	National news	4
Local news	1	Family/friends	2
Internal scientists	1	Conservation groups	1
Local government	0*	Universities	1
Provincial government	0	Scientific organizations	0
Universities	0	Community groups	0
National news	0	Local news	0
Friends/family	0	Federal government	0
Scientific organizations	0	Other	0

*0 indicates channel was not selected by participants.

Table 3. Most and least used information channels by Advisory Committee members when seeking accurate information about the Eastern Shore Islands Area of Interest.

Information channels: most used	Number of responses: 16 (two per respondent)	Information channels: least used	Number of responses: 15 (two per respondent, one respondent chose one)
Meetings or gatherings	7	Recorded media	6
Online communications	3	Teleconferencing	3
Online content	2	Visual media (TV)	3
Printed content	2	Live audio	2
Talking with other people	2	Online content	1
Visual media (TV)	0*	Visual media (online)	0
Recorded media	0	Meetings or gatherings	0
Live audio	0	Online communications	0
Teleconferencing	0	Printed content	0
Visual media (online)	0	Talking with other people	0
Other	0	Other	0

*0 indicates channel was not selected by participants.

is because the ESI AOI was a federal initiative rather than provincial or municipal. Therefore, it would not have been logical to turn to the latter levels of government as a primary source of accurate information, as most of the information was supplied by the federal government. National news was also used infrequently, primarily because of the lack of media coverage on this topic at a national level.

Meetings and gatherings were the most frequently used information channel during the consultation, and nearly every interview participant identified these channels as being crucial for gathering information (Table 3). Many interviewees pointed out that the meetings were useful, both for receiving data and information and speaking with fellow participants, forming relationships, and creating bonds among individuals and groups. DFO was also praised for the printed content it distributed, particularly the ESI AOI newsletter, which was mailed out to several thousand Eastern Shore residents (Community Group B and C; Government A). The least used information channel was recorded media, such as podcasts, as this information channel was not a common method for distributing information about the ESI AOI.

While the Canadian federal election was a major undercurrent during the consultation process, it did not directly influence the interview participants' use of information sources and channels. Nonetheless, the election imposed a time constraint on the consultation process. The governing Liberal Party committed to protect 10% of Canada's territorial waters by the end of 2020, in line with Aichi Target 11 (CBD n.d.; Liberal Party of Canada 2019). This promise led many Advisory Committee members to believe that the ESI AOI would be established quickly to meet the 2020 deadline, regardless of any opposition. Despite DFO's assurances (expressed in meetings and confirmed in interviews) that the MPA would not be completed by 2020, the impending election and pressure to meet the commitment to Aichi Target 11 did lead to several issues with timing during the consultation process, discussed further below. These issues, in conjunction with both internal and external factors shaped the outcomes of the consultation process.

Theme II. External and internal forces

The second major theme shown from the interviews and corroborated from documentary sources was the presence of external and internal factors that exerted constraints on the consultation process that impeded its projected outcome. Issues with timing and misinformation relating to the ESI AOI and MPAs generally were commonly mentioned as factors that hampered the consultation process. In this study, external factors were defined as circumstances that DFO was not able to directly address, whereas internal factors were circumstances over which DFO could exert some measure of control. Timing was labelled an internal factor, while misinformation was viewed as an external factor.

Timing

Timing concerns were a common thread in the data analyzed in this study. Without prompting, many interviewees drew attention to scheduling concerns. Four instances of questionable timing were mentioned repeatedly. The belief that the ESI AOI would be implemented by the end of 2020 to be counted towards the 10% Aichi Target was prevalent. This conviction stemmed from early presentations by DFO in which 2020 was given as an estimated completion date for the ESI AOI. DFO swiftly omitted the 2020 deadline in subsequent community presentations to reflect better the complexity of the Eastern Shore context, assuring stakeholders and rightsholders that the consultation and establishment process would continue as long as needed and that DFO was "committed to taking whatever time is necessary to get this right" (DFO 2019a). However, several Advisory Committee members and local residents believed the "2020 deadline" to be reality (DFO 2018), beliefs exacerbated by the fact that while meetings with the Committee were being held, the DFO AOI website continued to state that the public consultation would end on 31 December 2020. Some participants acknowledged the difficult position that DFO was put in as a result of international targets, but the 2020 deadline set a negative tone in the consultation process, and subsequent concerns about this timing were not fully addressed during the consultation period. As noted in the introduction, in December 2020, the deadline was extended to 2025, and this completion date for community consultations is now reflected on the DFO AOI website (DFO 2021b).

A second timing issue was the federal Minister of Fisheries' first meeting with residents on the Eastern Shore. The scheduling of this gathering during the peak of the lobster fishing season was acknowledged by both government representatives and Advisory Committee members as unfortunate. In reflection on this meeting, one interviewee (Government A) stated:

> "... it [the consultation process] kind of derailed when the Minister came out during lobster fishing season. That was very poor timing... I feel like that soured everybody. If you were to plot that trend, I think it would have been improving and then there was a crash."

This programming misstep conflicted with DFO's own guidelines on effective consultation, which state:

> "Consideration is given to the time of day and time of year for holding consultations (e.g., consider that the general public is more available after normal working hours and that certain industries might be busier during particular seasons)" (DFO 2004b, Guideline 3.3, p. vi, Consultation Toolbox, emphasis added).

A third timing issue that came up in most interviews was the speed at which DFO responded to information requests coupled with the presence of misinformation online. Due to the restrictions of the Department's communication policy, DFO representatives were not able to respond quickly to false comments on social media, nor were they able to provide correct information to the mainstream media to counter the misinformation. DFO's slow reaction time was largely because the organization

is "not nimble to respond or clarify because everything needs to go through clearance" (Government A). For this reason, DFO communicated through other information channels, primarily email, which would be faster than other options at their disposal. One interviewee (Government A) stated these channels were standard "for just ease of getting these [responses] out the door . . . Print goes through multiple approval levels, it takes a long time, it's not fast . . . emails are still reviewed but they don't go quite so slow."

The lack of opportunities for the Advisory Committee members to build relationships with each other was also viewed as a timing issue. Several Advisory Committee members expressed a desire for more time for face-to-face communication with other members, but the tight meeting schedules did not facilitate such interactions and allowed mistrust to linger among committee members (Academia + NGO A, First Nations A). The existing mechanism for establishing MPAs was seen as a hindrance in encouraging these critical interpersonal connections during the consultation process. One interviewee described the implementation process as "clinical" (Government A).

Misinformation

DFO's restricted capacity to respond on social media and other online platforms allowed misinformation to pose a challenge to the consultation process, a factor that influenced the proceedings (Government A). The response capacities of the federal government in dealing with false information online was mentioned in most interviews. Misinformation was shared primarily over social media outside the consultation activities, though some interviewees mentioned "word of mouth" as another misinformation channel. When asked about DFO's efforts to combat online misinformation, several interviewees suggested that more steps at mitigating the problem should have been pursued, and that the government response time was too slow compared with the speed at which social media was spreading inaccuracies. Government representatives agreed, saying social media provided "a platform for the sharing of misinformation very quickly" (Government A). Another interviewee (Community Group B) provided further explanation:

> "And there's a lot of that Facebook discussion. They express a lot of views there that I find to be misinformation . . . The government kept trying to answer questions, but they were slow to do that because they had to have a rationale for why they were saying things, when really the others could just say anything at any time through social media or these other sources . . . Yes, that was a significant weakness of the process."

One interviewee (Community Group A) supported this description: "There were several occasions where we said, 'this stuff that is getting said is wrong. You need to counter it; you need to correct it.' "

When the interview participants were asked to identify instances of what they believed to be misinformation, they most commonly mentioned examples related to property issues, and the possibility of additional regulations being imposed on members of the marine harvesting industry, followed by issues relating to the pace of the MPA's establishment, and external interference by international organizations (Fig. 2). Interviewees from Industry A, Academia + NGO A, and Community Group D noted examples of misinformation, including the belief that "you're at risk of your property being expropriated," that NGOs were "using government money to buy up all those islands," that "the AOI was an international conspiracy by the FAO [Food and Agriculture Organization], the CBD [Convention on Biological Diversity], the IUCN [International Union for Conservation of Nature], the UN [United Nations] . . . ," and that "the whole reason there's an AOI . . . is to put the lobster guys out of business."

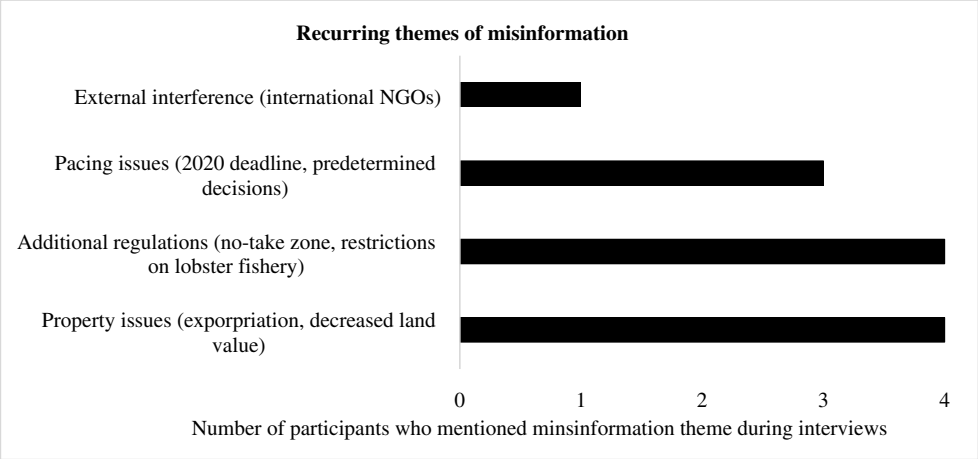

Fig. 2. Themes of misinformation mentioned by interviewees during the Eastern Shore Island Area of Interest consultation process. NGOs, nongovernmental organizations.

Misinformation on social media was pervasive and persistent throughout the consultation process (Government A). The majority of participants stated that they would not use social media to obtain accurate information about the ESI AOI. Rather, they checked social media to learn about fellow Advisory Committee members, e.g., "It was an important information channel for me in terms of finding out what other groups were thinking" (Community Group A). Other participants read social media to "get a flavour of unofficial information," which was relatively easy, since "Nobody is vetting it" (Community Group B).

The participants' views about social media varied, but the majority tended to be negative. The representatives of Industry B and First Nations A labelled social media "hurtful," "poisonous," and "helped to proliferate misinformation." Community Group C interviewee stated that social media simply served to "massage public opinion" about the consultation process, and abetted validation of many views online, regardless of accuracy.

According to the interviewees, misinformation spread via social media was an external factor that was largely out of DFO's control (Academia + NGO A). Government representatives fully acknowledged that misinformation was "a huge stumbling block" during the consultation process but emphasized that the department was essentially unable to act on it, due to strict social media policies (Government A). Any statement released by DFO required various levels of clearance, so that by the time an original, inaccurate statement could be addressed, the critical period to correct it had already passed. Several interview participants recognized the challenges DFO faced in managing misinformation on social media and the constraints under which they operated. Interviewees also noted that DFO did well to address inaccuracies within the consultation process and that at no point was false information allowed to circulate during Advisory Committee meetings (Government A; Academia + NGO A; Community Group C). However, misinformation outside of the consultation process was more problematic. Messaging content restrictions followed by the federal government department coupled with a very active opposition using social media was a continuing challenge for DFO.

In contrast to the external distribution of misinformation, issues related to timing during the consultation process were primarily viewed as internal factors within DFO's control and influence, most notably the Minister's controversial first community meeting on the Eastern Shore. Pacing issues associated with the establishment of the ESI AOI were also considered to be within the control of

DFO, as the entire process was conducted under the Department's leadership. DFO staff were familiar with the history on the Eastern Shore and the trepidation that local residents may have felt with the announcement of another federal conservation initiative. Despite this knowledge, DFO initially set a tight timeline for the consultation, only two years (2018–2020). After receiving pushback on the timeline, DFO staff admitted they were "pretty innocent" in thinking the advisory process could proceed that quickly, and the deadline was removed from subsequent public presentations. However, the date remained on a public DFO website until December 2020 (when it was extended to 2025). No Canadian MPAs have been established in under three years from the start of consultation; the average time for consultation and planning has taken between five and seven years (Bill C55 2019). While the website now reflects a realistic timeline, its relevance to this study is moot as the consultation process is currently "effectively suspended" (Myatt 2019).

Discussion

The growing literature on meaningful consultation during conservation planning consistently emphasizes the importance of the following components: (*i*) trust, (*ii*) accounting for local community context, (*iii*) stakeholder ownership, (*iv*) appropriate timing, and (*v*) the provision of accurate information to relevant parties (Reed 2008; Reyers et al. 2010; Ritchie and Ellis 2010; Gopnik et al. 2012; Orr 2014; De Santo 2016; Markantonatou et al. 2016; Sterling et al. 2017; Reed et al. 2018). The last point is a relatively new and underexplored area of research, i.e., understanding the role of information within stakeholder consultation and conservation planning processes. The findings of this study suggest that the ESI AOI consultation process, led by DFO, did not fully meet these broad recommendations for effective consultation. This case contributes to understanding the multifaceted role of information in environmental decision-making. It also resonates with several themes that have been observed in analyses of stakeholder engagement in UK marine conservation planning, hence the following discussion draws some comparisons between the processes, where relevant. In addition, the results from this study may apply to other consultation processes occurring within Canada and other locations, as analyses of the role of information in marine planning become more widespread.

Trust and context

As the results show, both trust/mistrust and the local context were critical factors affecting the potential success of stakeholder and rightsholder engagement in this region, and they also influenced the use of information sources and channels. In particular, community context significantly influenced mistrust of government agencies. As interviewee Academia + NGO A stated: "it's all psychological, emotional. It has nothing to do with any kind of logic. It really doesn't. It's historical context." Among Eastern Shore residents and Atlantic coastal communities more broadly, mistrust primarily stems from failures of past government initiatives and management practices, such as Ship Harbour National Park, the Kouchibouguac National Park in New Brunswick, and the cod fishery collapse in Newfoundland (Kirby 1982; Wappel 2005; Rudin 2011; Froese-Stoddard 2013). The memories of historical missteps in Atlantic Canada highlights the importance of acknowledging and incorporating historical setting into consultation processes, since context impacts the trust and uptake of information, as well as the effectiveness of engagement exercises. As Reed et al. (2018) have noted, the literature on stakeholder and public engagement shows that consultation is not merely "a technical process that can be replicated independently of context" (p. S11). Comprehensive understanding of the context is needed to ensure the process is effectively designed and adapted to account for local circumstances. Developing that level of understanding will likely require considerable effort and empathy. Understanding and accounting for local context is important for creating meaningful conservation plans and ensuring regulatory compliance (OECD 2013).

In addition, transparency and clarity with respect to the process and how it is organized and carried out are important for building trust and managing expectations. These factors led to negative stakeholder perceptions of other marine planning processes, e.g., the UK's Marine Conservation Zone initiative, which took far longer than expected, failed to communicate adequately with participants in the process throughout the consultation, and arguably "moved the goalposts" during the process with respect to evidence required for designating marine conservation zones, resulting in distrust and wariness among some who were involved (De Santo 2016). Setting clear goals and managing expectations throughout the process is critical for maintaining public support (Reed 2008; Orr 2014; De Santo 2016). It is also important not to inundate the public with too much complex information that may be difficult for them to sort through and fully understand. In the UK case, the regulatory community assumed that "because we know this stuff [. . .] everybody else knows this stuff," which poses complications given the lack of widespread scientific literacy, and the challenge posed when conservation decisions affect livelihoods (De Santo 2016).

Ownership

Local community ownership was another challenge on the Eastern Shore that has been demonstrated in other contexts, e.g., whether and how stakeholders or rightsholders feel their participation matters. When the local community takes ownership of a conservation area and has the ability to influence decisions about it, subsequent policies are more suited to local needs and are therefore more effective (Reed et al. 2018). Arguably, the more invested people feel about a process, the more likely they will comply with its outputs. While DFO staff consciously attempted to avoid presenting information that would imply a decision had already been made and held many meetings in the region prior to the 2018 announcement of the potential coastal MPA (Koropatnick 2018), participants in the ESI AOI process expressed feelings of resignation when asked about their ability to influence the outcomes of the consultation, as heard from Community Group B: "They're the federal government . . . They're not going to do what I say, I have no authority. I'm just a citizen." A participant at a public meeting for the ESI AOI reiterated that view, saying: "We're participating in it [the consultation], but we're not making a difference or contributing" (meeting observation). This lack of empowerment echoed what has been found elsewhere, e.g., stakeholder perceptions in the UK's Marine Conservation Zone planning process. For example, De Santo (2016) cited a member of the regulatory community commenting on that process who stated that "some people view participation as meaning stakeholders make the decisions on how decisions are made," which was not the case. In other words, managing expectations from the beginning of consultation activities is a critical factor, so participants understand the value of their contribution and support the overall process.

To promote stakeholder and rightsholder ownership, we recommend a slight restructuring of power arrangements during decision-making stages of consultation processes. Specifically, this modification would grant all relevant levels of government (e.g., including municipal and provincial voices) an equal say when formalizing management actions, while allowing each level to retain implementation power over its discrete jurisdictional areas (Margeta 2001). In DFO's own Consultation Framework, this model is described as "Negotiated Arrangements," in which "government delegates authority for decision-making to other groups, or shares decision-making powers, or manages cooperatively" (DFO 2004a). Negotiated arrangements have been successfully implemented in other countries with similar marine spatial conflicts (Coast Learn n.d.; Ivančić 2003). This approach ensures that all levels of government are committed to presenting a transparent front, and that decisions made are locally relevant, important prerequisites for successful marine management (De Santo 2016; Richmond et al. 2019; Scherer et al. 2014). Including municipal and provincial decision-makers' voices may slow the process, especially if they oppose the proposed plans, but excluding them does not preclude their ability to hamper it. Since the jurisdictional responsibilities of municipal governments in Canada do not

extend beyond the high-water mark, it may be assumed that they have no role in coastal conservation initiatives (Manuel and MacDonald 2020). Nonetheless, municipal governments typically are extensively involved in planning services that support coastal areas and, therefore, can be involved in implementing conservation measures. In this study, interview participants noted that the provincial government publicly opposed the creation of additional MPAs and was believed to have contributed to the misinformation circulating about the proposed coastal MPA. Whether or not different levels of government disagree about a conservation measure, it would be wise to include them in the fold from the beginning of a consultation process to ensure they have access to the most accurate information and feel their perspective is respected, even if conflicts develop, as they could arguably undermine the process either way.

Timing

Appropriate timing is key to effective engagement yet is often a challenge in consultation processes (O'Haire et al. 2011). Timing issues effectively "derailed" the entire ESI AOI process following the Minister of Fisheries and Oceans' first meeting on the Eastern Shore, and other instances of poor scheduling were mentioned in interviews, such as the establishment of timelines, lack of opportunity to build relationships among the members of the Advisory Committee, and the speed of information dissemination (Government A). In addition, electoral time scales are important, as administrative changes can negatively impact environmental consultations, as was observed in the UK Marine Conservation Zone process, where the relative authority of different government agencies shifted during the process, resulting in what had been a fairly bottom-up governance process initially, to becoming quite top-down by the end (De Santo 2016).

In future conservation projects, proper timing should be prioritized within public engagement initiatives, including meeting schedules and clear timelines for the overall process (Canadian Environmental Assessment Agency 2008), thus avoiding comments like the following from an interviewee, which summarizes several events during the ESI AOI consultation process: "That was very poor timing" (Government A). In the UK Marine Conservation Zone process, the UK government changed from Labour to Conservative leadership during the consultation process, further complicating transparency and the flow of information online. While political shifts are not always foreseeable, conservation planning activities should be protected from their impact in advance (De Santo 2016).

Information

Misinformation is a widespread problem that has become considerably more pronounced since the rise of social media (Mintz 2002; Wardle and Derakhshan 2017; Scheufele and Krause 2019; Wardle 2019). Increasing research attention is being focused on characterizing misinformation activities and the resulting implications. Treen et al. (2020), for example, defined misinformation as "misleading information that is created and spread, regardless of whether there is an intent to deceive" (p. 3). Intent was not determined in this research, which is common in many similar studies. Thus, as Treen et al. (2020) stated, the definition must pragmatically allow identification "without knowledge of intentions."

The role of misinformation was notable in the ESI AOI consultation process. This theme emerged from the data (DFO 2018), especially from the interviews. The negative effects of online misinformation were greater than anticipated and no one involved in the consultation was equipped to manage misinformation effectively within Eastern Shore communities. Misinformation can promote faulty thinking during public consultation and disrupt the efforts of those who wish to advance local engagement (Davis et al. 2014; Munro 2019).

As communities globally grow more interconnected, challenges associated with misinformation will continue to increase in environmental resource management (Farrell et al. 2019; Scheufele and Krause 2019). Access to clear and up-to-date information has been found to be a critical factor in

building stakeholder trust and ownership in other places, e.g., in the UK Marine Conservation Zone process (De Santo 2016). For future consultation processes in Canada and elsewhere regarding conservation initiatives, it will be necessary to consider the impacts of misinformation on stakeholder support and how it could be addressed. Consultation processes can be lengthy and require extensive resources to accommodate many groups. Ford et al. (2021) pointed out that misinformation is a contributing factor to misplaced conservation, "which occurs when actions increase the scientific, financial, political, or social resources required to achieve a positive outcome for biodiversity in the present or future (p. 253). The deficit model of research communication, i.e., simply providing more and more information with the expectation that it will be fill a gap in knowledge, has been proven often to be ineffective (Akin and Scheufele 2017). Thus, alternative methods to promote the updating of information and diminishing the influence of misinformation are needed. Recent studies, for example, have explored whether an inoculation process can mitigate the effects of misinformation (Cook et al. 2017; van der Linden et al. 2017; Maertens et al. 2020). Deliberate, pre-emptive strategies, sensitive to the context of a consultation process, may help. Blastland et al. (2020) determined that if "people are pre-emptively warned against attempts to sow doubt (known as prebunking), they resist being swayed by misinformation or disinformation" (p. 364). Related to these findings, van der Meer and Jin (2020) have shown that initiatives of government agencies can be more successful than social peers in improving belief in accuracy of information. Thus, providing guidance on social media literacy for participants (i.e., via a brochure or online sources, such as "Critical Thinking" (NSERC 2021), could be an option to promote critical thinking and online responsibility prior to the start of consultation processes. This recommendation is in line with Canada's anti-misinformation strategy and could help to curb online misinformation that government agencies have difficulty addressing (Funke and Flamini 2019). In addition, since participants in this study viewed DFO as a source of accurate information, the integrity of information disseminated by the Department could be emphasized, because credible sources have "potentially impactful roles as preventative and corrective measures against misinformation" (Yeo and McKasy 2021, p. 4).

Conclusion

Overall, this study identified a variety of factors that can affect the uptake and use of information within a consultation process and highlighted the importance of understanding these factors prior to and during marine conservation initiatives. The results from this research demonstrate that the factors influencing information-related activities of the Advisory Committee members for the ESI AOI were varied and complex, yet innately human. Incorporating human dimensions into marine policy planning is gradually becoming mainstream, but more emphasis is needed on this topic in future research (Bennett et al. 2017; Christie et al. 2017). Understanding the context surrounding information use is crucial for the uptake of environmental information and should be prioritized in consultation processes (see **Fig. 3**). This observation is particularly relevant in situations of conflict or low levels of trust, such as the experience in the Eastern Shore region of Nova Scotia. However, cases like the ESI AOI consultation are not unique. With the implementation of marine protected areas growing in popularity as a global conservation practice, complex and adversarial conditions similar to the Nova Scotian case (as illustrated in **Fig. 3**) will invariably be evident in other communities and countries.

Despite similarities, it is important to emphasize that every marine conservation designation process has its own opportunities and challenges, and transferring lessons learned from one to another may not be straightforward, given local contexts and the fact that participants also learn from the process. As Yaffee (2020) set out in his recent analysis of the California MPA process, a delicate balance between politics, legal foundations, private funding, and an innovative and adaptive public process resulted in success, which does not mean that this outcome could be easily replicated elsewhere.

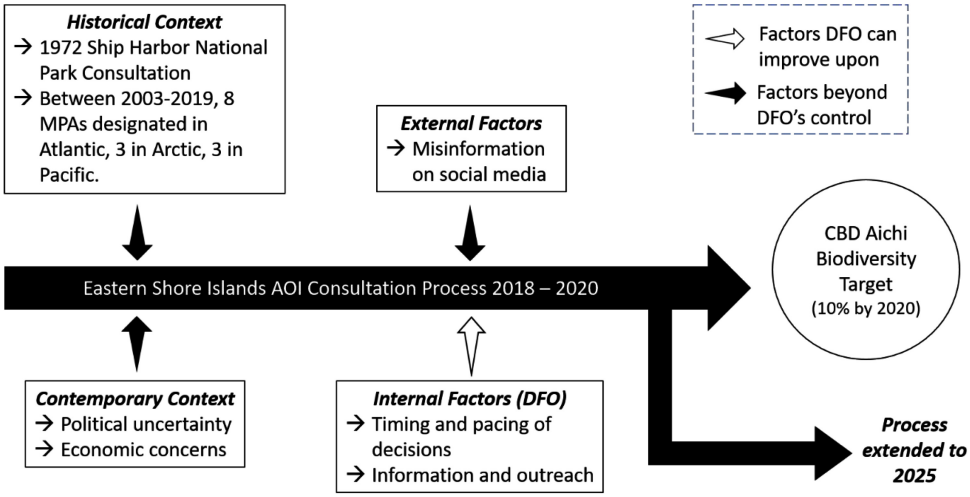

Fig. 3. Factors affecting trust/mistrust of information in the Eastern Shore Islands Area of Interest consultation process. AOI, area of interest; CBD, Convention on Biological Diversity; DFO, Department of Fisheries and Oceans Canada.

Local context matters. However, it is still useful to examine different approaches and learn from them, where relevant.

This study examined an ongoing consultation process for Atlantic Canada's first proposed inshore MPA (DFO 2021a); however, this process will likely not be the last. Key elements of successful inshore MPAs include community support and buy-in (Bennett and Dearden 2014; Groves 2017); thus, meaningful stakeholder engagement will continue to be needed in future MPA establishment processes. Such engagement can reduce public skepticism about the intensions of governments in implementing conservations measures (McAfee et al. 2021). While DFO faced several hurdles during the ESI AOI process that may have been novel for this particular location, lessons learned from this experience can be applied at various spatial scales. This case study, with participants representing all stakeholder and rightsholder groups in the region, followed appropriate methodology for focused qualitative research, yet its implications are broad. The findings support conclusions in related studies and can guide future consultations in local and global contexts (De Santo 2016). By entering upcoming consultation processes with a deeper understanding of community networks, information preferences, and historical biases, practitioners can proactively address expected challenges. Furthermore, as noted earlier, emphasizing human dimensions in conservation planning will ensure a greater probability of successful implementation of future MPAs.

The results of this study provide a snapshot in time, which likely is not fully representative of other marine consultative processes in Canada. Additional case studies would extend understanding of the role of information in marine policy development, particularly where misinformation is prevalent. Future studies could also consider demographic characteristics of participants as a potential influence on information-related activities. Race, gender, age, education level, and livelihood can have an effect on the use of information sources and channels, and the level of trust in particular sources; thus, considering these variables in future studies could shed light on the additional factors that influence information use (Wilkins et al. 2018). It may also be interesting to further explore Advisory Committee perceptions on topics in this study compared to wider community perceptions to see how accurately the Advisory Committee represented local opinions. It would also be interesting to examine whether

the large, flexible size of the Advisory Committee impacted its functionality or trustworthiness (ESI AOI Committee Meeting 2018; Government A).

This study demonstrated that context was a major theme related to the use and trust of information sources. All of the interview participants identified DFO as one of their primary sources for accurate information about the ESI AOI. However, several participants also mentioned that their choices would likely change depending on the initiative, i.e., if the process was not being facilitated by the national government. Future work could follow up on these statements by examining the information source and channel use of participants in consultation processes led by institutions and other levels of government. Such work could extend understanding of the influence of context on information use during consultation processes. As one interviewee stated succinctly: "The context within which information is provided is critical to how that information is taken up" (Academia + NGO A). That context underlies numerous other factors that contribute to how information fulfills a crucial role in both the operation of a consultation process, as well as conservation decisions and the success of establishing marine protected areas.

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Author contributions

HRM and BHM conceived and designed the study. HRM collected the data. HRM analyzed and interpreted the data. HRM, EMDS, and BHM contributed resources. HRM, EMDS, and BHM drafted or revised the manuscript.

Competing interests

The authors have declared that no competing interests exist.

Data availability statement

All relevant data are within the paper and in the Supplementary Material.

Supplementary material

The following Supplementary Material is available with the article through the journal website at doi:10.1139/facets-2020-0109.

Supplementary Material 1

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