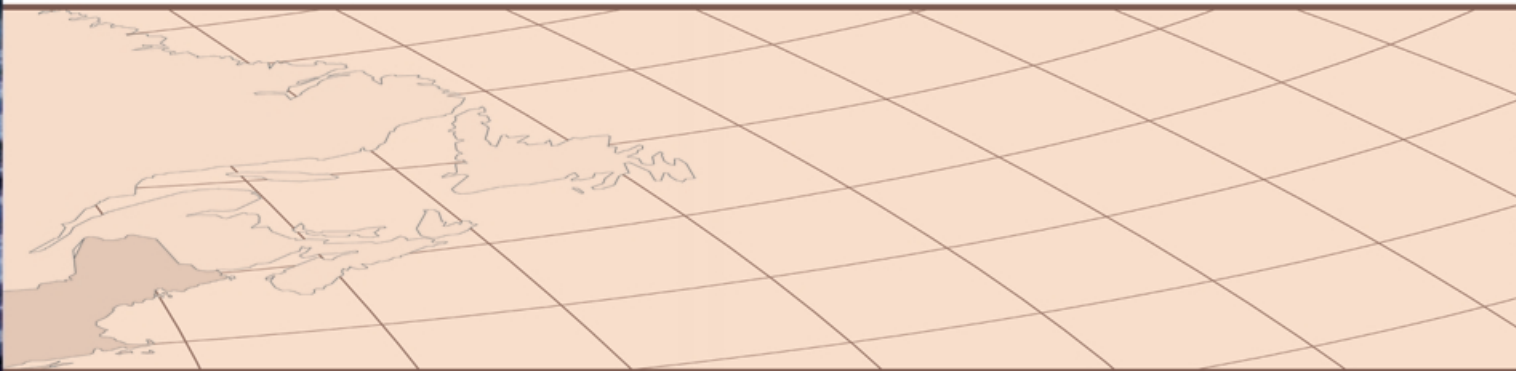




Ocean Zoning:
**Perspectives on a
New Vision for the
Scotian Shelf and
Gulf of Maine**

By Penny Doherty



Marine Issues Committee Special Publication Number 12
Ecology Action Centre
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EXECUTIVE SUMMARY

Stakeholders from the U.S. and Canadian Northwest Atlantic were interviewed to gain their perspectives on zoning the Scotian Shelf and Gulf of Maine. Valuable information about how stakeholders view ocean zoning, its benefits and disadvantages, and whether it should be used as a management tool in these large offshore areas was collected.

Most stakeholders thought zoning was a viable management tool that should be implemented on the Scotian Shelf and in the Gulf of Maine, although they also noted that zoning should be used in conjunction with other management tools and might not be appropriate for some areas or to deal with certain management concerns. A few stakeholders were opposed to zoning because they felt it limited access to the resource, was logistically impossible to implement, or was based on managing for multiple uses rather than maintaining ecological integrity.

Zoning should involve integrated management which relies on stakeholder information to assess public goals for a given ocean space, and to proceed towards meeting these goals. Stakeholders must be involved in the development and application of a zoning process and their perspectives should be considered in management decisions. The information collected in this study can be used for integrated management of the Scotian Shelf and Gulf of Maine.

Key words: ocean zoning, Scotian Shelf and Gulf of Maine, stakeholder perspectives, ocean management

1.0 INTRODUCTION

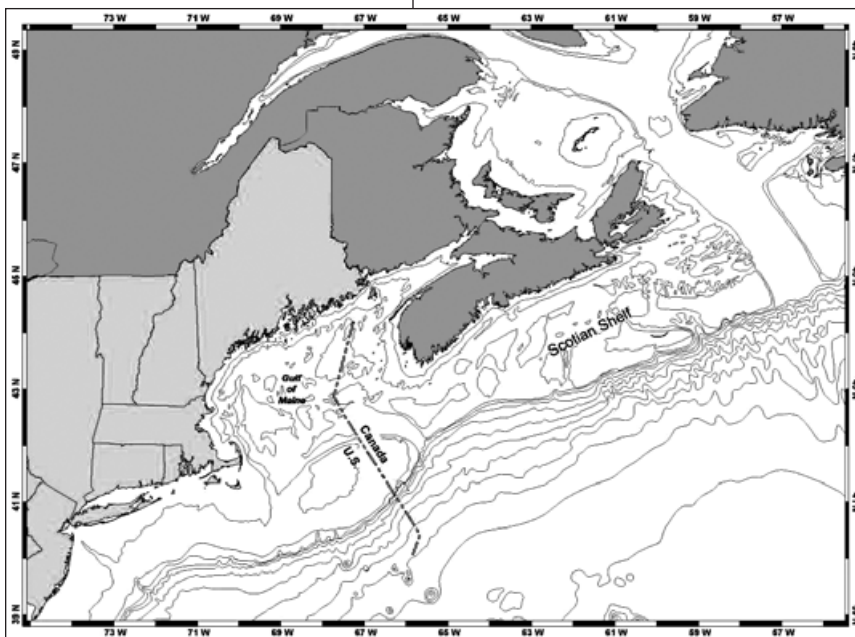
1.1 BACKGROUND

The Ecology Action Centre's (EAC) interest in marine zoning as a tool for managing the Scotian Shelf and the Gulf of Maine (Figure 1) comes from the recognition that these areas are important and diverse ecosystems under threat from expanding resource use (Table 1). In most cases, resource managers do not adequately consider the ecosystem when making management decisions. Failure to adopt an ecosystem approach has damaged both ocean ecosystems and ocean-dependent communities in Atlantic Canada.

Further hindering an ecosystem-based management approach are the multiple jurisdictions and authorities involved, and the myriad of rules and regulations in operation. In Atlantic Canada, for example, 14 federal and four provincial departments and agencies are involved in the management and regulation of the Scotian Shelf, and 25 pieces of key federal legislation govern activities in the region (OACO 1999) (Tables 1 and 2). The Gulf of Maine has a similar governance framework and its management is further complicated by bi-national issues and the many U.S. jurisdictions and laws.

Currently, there is no comprehensive marine planning system for Atlantic Canada or the United States to ensure conservation or to guide developers and users toward appropriate areas and steer them away from inappropriate ones. Although certain areas are designated as fishing management zones or military operational areas, they are managed independently under different jurisdictions and authorities. Such sector-based zones are not adequate to achieve effective ocean planning. Furthermore, there is no comprehensive process that sets standards for different areas, a situation that can lead to uncertainty for marine users. This uncoordinated management is also likely to result in negative environmental impacts.

Figure 1: Map of the Scotian Shelf and the Gulf of Maine. Courtesy of Oceans and Coastal Management Division, Fisheries and Oceans Canada (Maritimes Region), 2003.



The EAC recognizes that the current approach to ocean management in Atlantic Canada is not adequately protecting the ocean ecosystem, its resources or the livelihoods of coastal communities. Although many conservation and regulatory agencies are promoting marine protected areas (MPAs) as the primary area-based management tool, the EAC believes that a comprehensive, proactive, ecosystem-focused approach to area-based management of our oceans, for both ecological and socio-economic reasons, is needed. Ocean zoning may be an important component of such an approach.

Unlike an MPA whose primary objective is protection, ocean zoning can address multiple objectives. According to the literature, zoning is one of the best ways to achieve conservation objectives, to accommodate multiple users and to coordinate management among various jurisdictions and authorities (Kenchington 1990, NRC 2001). Zoning should involve integrated management¹ (IM) of an entire ecosystem (Kelleher and Kenchington 1992). Integrated management relies on stakeholder participation and information to assess public goals for a given ocean space, and to proceed towards meeting these goals.

In 2002, the EAC received funding from the J.M. Kaplan Fund to explore the utility of ocean zoning and its applicability to the Scotian Shelf and the Gulf of Maine. This report, which identifies stakeholders' perspectives on zoning these large, offshore areas, is part of that overall project.

1.2 WHAT IS OCEAN ZONING?

Ocean zoning is similar to land-use zoning wherein specific areas are designated for particular uses. On land, for example, we separate residential and commercial areas and separate incompatible uses, so that playgrounds are not located next to city dumps. Although there are differences between zoning on land and in the ocean, ocean zoning can help to identify all uses and the way in which these uses can or cannot be harmonized. For example, we wouldn't locate aquaculture facilities next to sewer outfalls. Similarly, we wouldn't want dragging to occur in areas with sensitive benthic habitats.

¹ Integrated management is a dynamic, multidisciplinary process that attempts to balance environmental, economic, social and cultural objectives over the long term to promote sustainable management of the ocean (DFO 2002). It seeks to integrate all relevant sectors, policy areas and levels of administration but is not a substitute for sector-based resource management planning. Rather it is a means to ensure that sector-based plans are complementary to each other (Cicin-Sain and Knecht 1998).

TABLE 1: SUMMARY OF OCEAN USES, SECTOR TRENDS AND KEY LEGISLATION

Oceans Use Sector	Sector Trends	Key Federal Legislation
Fisheries	Groundfish moratorium in some areas, expanding pelagic and invertebrate fisheries in region	Canada Shipping Act; Coastal Fisheries Protection Act; Fisheries Act; Fisheries Development Act; Fisheries and Recreational Harbours Act; Fish Inspection Act; Government Organization Act; Navigable Waters Protection Act; Oceans Act
Shipping	Increasing vessel traffic	Canada Shipping Act; Coasting Trade Act; Government Organization Act; National Transportation Act; Pilotage Act; Public Harbours and Port Facilities Act; Shipping Conference Exemptions Act; Oceans Act
Offshore Oil and Gas	Expanding exploration operations on Scotian Shelf, with one site in production with pipeline. Current exploration licences have been granted for areas totalling 7,497,874 ha (CNSOPB 2003). Potential for additional pipelines and power cables	Canada-Newfoundland Atlantic Accord Implementation Act; Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act; Canada Oil and Gas Operations Act; Canada Petroleum Resources Act; Resources and Technical Surveys Act; Oceans Act
Defence Operations	Offshore exercise/training areas, surveillance and patrol operations throughout region	Canada Shipping Act; Emergencies Act; National Defence Act; Oceans Act
Recreation and Tourism	Expanding, primarily involves wildlife tours, recreational boating and fishing, and cruise ships	Canada Shipping Act; Oceans Act; Fisheries Act
Oceans Industry and Telecommunications	Increasing interest in high technology applications, potential for additional telecommunication cabling	Government Organization Act, Atlantic Canada 1987; National Research Council Act; Natural Sciences and Engineering Act; Telecommunications Act; Oceans Act
Science, Research and Development	More partnerships among government, industry and universities	Government Organization Act, Atlantic Canada 1987; National Research Council Act; Natural Sciences and Engineering Act; Telecommunications Act; Oceans Act
Marine Conservation	Increasing interest in marine conservation and ecosystem protection, including marine protected areas (e.g., Gully), coral conservation, and species at risk	Oceans Act; Fisheries Act
Ocean Mining (potential)	Resource potential for aggregate extraction	Oceans Act

Adapted from: Oceans Act Coordination Office. 1999. Eastern Scotian Shelf Integrated Management (ESSIM) Project Discussion Paper. Oceans Act Coordination Office, Fisheries and Oceans Canada – Maritimes Region. December 1999.

In essence, zoning means drawing lines on maps and establishing appropriate uses for the areas within these boundaries, taking into account the existing uses and ecological features of the area. Setting standards or conditions of use for each area is important: Do we want the same standards for a busy urban port as we do for fish spawning areas? The standards set for each area would establish which activities would be permitted or prohibited, and would serve as targets to be met for any future development or use in the area. Depending on the standards, areas could range from no use to multiple use spaces. Standards would make it easy for all users to understand which areas are appropriate for which activities.

1.3 OCEAN ZONING IN THE NORTHWEST ATLANTIC: RECENT LITERATURE AND MANAGEMENT

In recent years, zoning has become a hot topic in marine conservation and ocean planning. Ocean zoning has already been applied in a variety of locations and over a wide range of geographical scales (Appendix A). Many scientists, conservationists, resource managers and scientific organizations now believe that zoning is an effective way to plan ocean space and to deal with issues of multiple use conflict and conservation (Dayton et al. 2002, Norse 2002, Pew Oceans Commission 2003).

TABLE 2: KEY GOVERNMENT DEPARTMENTS GOVERNING ACTIVITIES ON THE SCOTIAN SHELF

Federal Department/ Agency	Mandate/Regulatory Responsibility
Fisheries and Oceans/Canadian Coast Guard	Fisheries resource management; marine conservation and protection; marine environmental protection; ocean science and understanding; marine safety
Transport Canada	Marine safety (ship safety and regulation); ship-source pollution prevention and control; ports and harbour authorities; ferry services
Environment Canada/Canadian Wildlife Service	Environmental protection and response; ocean dumping; environmental (wildlife) conservation and enforcement; atmospheric services
Canadian Environmental Assessment Agency	Federal environmental assessment
Natural Resources Canada/Geological Survey of Canada	Natural resources (energy, metals and minerals); earth sciences; marine geosciences (regional, resource and environmental) and mapping
National Energy Board	Frontier oil and gas (environmental and emergency response, research and development)
Department of National Defence/Maritimes Forces	Maritime security and defence; search and rescue; ocean surveillance and information management; support enforcement mandates of civilian agencies
Parks Canada/Canadian Heritage	National parks, marine conservation areas, historic/cultural sites
Royal Canadian Mounted Police (Solicitor General)	Law enforcement (e.g., drug interdiction, smuggling)
Citizenship and Immigration	Control of illegal immigration
Department of Justice	Applications of laws and regulations
Department of Foreign Affairs and International Trade	Permits for foreign research and access to resources
Revenue Canada/Customs and Excise	Control of smuggling
Industry Canada	Licensing of international telecommunications cables
Joint Management Boards	
Canada-Nova Scotia Offshore Petroleum Board	Offshore oil and gas (environmental and safety regulations, development authorizations)
Canada-Newfoundland Offshore Petroleum Board	Offshore oil and gas (environmental and safety regulations, development authorizations)
Provincial Department/Agency (Nova Scotia)	
Department of Agriculture and Fisheries	Fisheries management and conservation for some species; aquaculture development
Department of Energy	Oil and gas (provincial management and development, royalties)
Department of Natural Resources	Protection of coastal environments (e.g., beaches, wetlands); coastal development and construction
Department of the Environment	Environmental protection and assessment

Adapted from: Oceans Act Coordination Office. 1999. Eastern Scotian Shelf Integrated Management (ESSIM) Project Discussion Paper. Oceans Act Coordination Office, Fisheries and Oceans Canada – Maritimes Region. December 1999.

In a recent “report to the nation”, the Pew Oceans Commission (2003) called for a new ocean policy for the United States. One of the report’s seven recommendations for restoring U.S. fisheries focused on implementing ecosystem-based planning and marine zoning. An earlier Pew Oceans Commission report (Dayton et al. 2002) also advocates marine zoning for fisheries management in the United States.

We recommend the United States adopt a new approach to fisheries management based upon (1) a major investment and commitment to monitoring, ecosystem modeling, and field-scale adaptive management experiments; and (2) implementation of a proactive, precautionary management regime founded upon ecosystem-based planning and marine zoning. (p. 31)

Dayton et al. (2002) suggest that zoning is an appropriate tool not only for fisheries management but also for coordinating management of all authorities and for overall ocean space planning.

Marine waters of the United States need to be comprehensively zoned in a manner that integrates land-sea interactions and ecosystem function and services operating throughout watersheds, the coastal zone, and farther offshore. Comprehensive zoning is more conceptually sound and ecologically useful than implementing piecemeal closures intended to protect special features or habitats. (p. 34)

Similarly, the Pew Ocean Commission (2003) recommends that

Over the next decade, ocean zoning should be applied more broadly on a regional basis to comprehensively plan and manage all activities in the oceans. (p. 106)

and Norse (2002) states,

Taking this first initial step through the worrisome, maddening, fascinating and exciting zoning process will ultimately lead to dramatically improved ocean management in the USA... (p. 56)

In the U.S. Atlantic, zoning has been implemented in the Florida Keys National Marine Sanctuary (NOAA 1996). In Atlantic Canada, it is being considered as a viable management tool for ocean planning by the Eastern Scotian Shelf Integrated Management (ESSIM) initiative, a pilot project under Canada’s Oceans Act that will lead to an Integrated Oceans Management plan for this large offshore area. ESSIM is considering an ecosystem-based management framework with spatial planning and zoning as potential management tools (OCMD 2003).

1.4 OBJECTIVES AND SCOPE

The goal of this study was to collect stakeholder perspectives relevant to the implementation of zoning on the Scotian Shelf and in the Gulf of Maine. Information was obtained through personal interviews and attempts were made to address the following topics:

- 1. What does zoning mean to stakeholders?*
- 2. Should zoning be used as a management tool for the Scotian Shelf and the Gulf of Maine?*

3. *What are the benefits and disadvantages of ocean zoning?*
4. *What would be required before zoning could be implemented on the Scotian Shelf and the Gulf of Maine?*
5. *Is the political will in place for zoning the oceans?*
6. *What factors should drive zoning (e.g., science, social objectives, etc.)?*
7. *Are stakeholders aware of zoning in other areas?*

2.0 METHODOLOGY

To initiate discussion about the utility and applicability of zoning on the Scotian Shelf and Gulf of Maine, we interviewed a range of stakeholders, including resource users, conservationists, scientists and academics, from both Atlantic Canada and the United States on their perspectives on ocean zoning (see Appendices B and C for participants and questionnaire). In all, we interviewed 21 stakeholders in person or over the phone. Initially, we sought participants already known to us for their knowledge of ocean zoning but thereafter, names of suitable candidates were often provided by participants.

In attempts to summarize the results of the interviews, it became apparent that we were losing some important perspectives from respondents. Thus, in many cases, respondents' answers are directly cited. Please note that not all respondents answered all questions. Results are presented in the next section.

3.0 RESULTS OF INTERVIEWS AND DISCUSSION

3.1 INTERPRETATIONS OF OCEAN ZONING

A multitude of terms have become synonymous with ocean zoning: area-based management, sea use planning, spatial planning, sea use zoning, marine zoning and comprehensive zoning. As has occurred with the term 'marine protected area', stakeholders may interpret words in different ways, resulting in confusion and fear and causing them to reject the concept (Agardy et al. 2003). The importance of standing on common ground at the beginning of a process, of making sure that stakeholders understand the terms being used, cannot be underestimated. Different interpretations of a word or phrase may hinder the implementation of a process such as zoning. Thus it is important to know how stakeholders define ocean zoning.

Most respondents had a broad understanding of the concept of ocean zoning, defining it in terms of different areas for specific activities.

A spatial planning approach where you identify and demark [demarcate] areas for specific uses or specified conditions... We see it as a 3-dimensional spatial and temporal approach.

“Ocean zoning means creating a master plan for the ocean...”

A special management framework where you designate different uses to different parts of the oceans.

Several respondents equated ocean zoning with land use zoning. There was a general understanding that areas in the ocean, just like those on land, can be designated for particular activities or that certain activities may be prohibited.

Ocean zoning is applying the tried and true principles of terrestrial zoning to the ocean. Draw lines on a map, determine who does what and make regulations.

Actively manage resources so that human activities are consistent with other human activities and ecological features. Like on land, we regulate on land from economics to protecting land. It's similar to on land.

One respondent identified private property rights as the major difference between zoning on land and in the ocean.

Ocean zoning is analogous to land use zoning, zoning for different uses, from no use to multiple uses. The difference being private property rights.

A few respondents saw ocean zoning as an overall plan for the oceans.

Ocean zoning means looking at the whole picture. MPAs [marine protected areas] are not good enough. We need to look at the whole ecosystem. MPAs look at special features that should be protected. Zoning must encompass everything – where fish spawn, migrating fish, where they are when they are juveniles.

Ocean zoning means creating a master plan for the ocean – like minicities and counties. Area-based management where you rationally manage activities.

Several respondents defined zoning as a means of providing for multiple uses.

Ocean zoning is a tool to provide both access and protection.

Set areas aside in the ocean for protection of fish and also recognizing that people need to make a living.

An approach to regulate and manage human activities in the ocean where the ocean should be managed as a mixed use-recreational, commercial, scientist, wildlife. Different habitats, different activities.

Ocean zoning might result in conservation and protection as well as uses like extraction and harvesting.

One respondent felt that zoning was a conflict resolution mechanism.

It's a process of identifying what uses, resources and activities are in certain areas and developing a plan so that the uses don't conflict too much. Ocean zoning is a process and plan more than a physical marking.

Respondents noted that although zoning could be based on a variety of parameters or appropriate uses, the environment should be a primary consideration.

“Everyone can look at a map and understand what uses can go where.”

[Zoning is] being proactive, reasonably managing human activities so that they don't adversely interact with other human uses and don't negatively impact the environment. We need to ensure that human activities will not irreversibly damage marine resources. If done properly, zoning will ensure that uses are compatible with susceptibility of these habitats, not wasting the resource. [With zoning we're] not focusing on short term needs and impacts. If zoning is done properly, it would take ecological impacts into account.

One respondent, when asked to define ocean zoning, simply stated:

It means parts of the ocean that we won't be let into.

Interestingly, none of the respondents explicitly mentioned integrated or coordinated management when defining ocean zoning, although it is one of the key elements of zoning (Kelleher and Kenchington 1992).

3.2 BENEFITS OF OCEAN ZONING

Identifying the potential benefits to stakeholders is important in any process and can contribute to stakeholder support in the long term. The benefits of ocean zoning most often identified by respondents were conservation, clarity and conflict resolution.

Conservation

Several respondents identified ocean zoning as a means of achieving ecosystem-based objectives and conservation.

If zoning is used in a way to protect the ecosystem, it has many good advantages. Within a body of water, we need an overall system... need an ecosystem approach. Ocean zoning can do this if defined properly.

There is some destruction of habitat through fishing and oil and gas. Zoning could help to address or alleviate those concerns.

One respondent indicated that zoning is the only method that would allow a system of marine protected areas (MPAs) to be implemented. Respondents noted that zoning might make the implementation of marine protected areas easier.

Ocean zoning is a way that can get MPAs or conservation areas without scaring people off too much and without totally displacing certain activities. It's a way of recognizing that different areas have different sensitivities.

Clarity

It was thought that ocean zoning would provide certainty in the sense that the ground rules for certain areas and activities would be known to all ocean users.

...the first benefit would be to provide clarity – what's an appropriate activity or not... [Zoning] breaks down the ocean into more definitive chunks. This will have a positive influence on letting people know what's going on in the ocean.

Everyone can look at a map and understand what uses can go where.

“[Zoning] can be used as a tool to avoid and reconcile spatial conflict between users.”

Conflict resolution

It was thought that establishing which activities occur in an area would reduce conflicts between users.

[Zoning] can be used as a tool to avoid and reconcile spatial conflict between users. There is a benefit to figuring out what are the actual uses in an area. It should reduce conflicts.

[Zoning] helps to identify all uses and how these uses can be harmonized and which ones cannot be harmonized.

Economic benefits

Respondents noted that zoning could maximize economic benefits, either by increasing the revenue obtained from a particular ocean space or by providing economic certainty.

[Fish farming] could generate more economic activity in a small ocean space than scallop dragging. If zoning could open up more space, it would be beneficial to fish farming.

If you are able to get agreement for certain areas being zoned for certain users... would be strategically good for the economy.

Benefits to the Resource

Respondents noted that if zoning were done properly, it would ensure that ocean uses are compatible with the susceptibility of habitats. This in turn would be beneficial to the resource because there would be a focus on long-term needs. Respondents felt that zones implemented to protect juvenile fish or spawning and aggregating fish benefited the resource.

Other benefits

Other benefits identified by respondents include:

- *If zoning is done well and everyone supports the zones and activities, it should reduce the cost of enforcement through voluntary compliance.*
- *In the context of community-based user groups, ocean zoning will allow users to restrict activities and may lead to conservation or at least more sustainable use.*
- *Zoning gets people to think about which activities are more harmful and pushes the debate further, almost like an environmental assessment of activities.*
- *Zoning is a key tool for addressing cumulative effects.*
- *Zoning may enhance understanding of the marine environment.*
- *Protection of spawning areas and habitat.*

3.3 DISADVANTAGES OF OCEAN ZONING

In developing any process, it is essential to identify the perceived disadvantages. Participants identified a variety of disadvantages associated with ocean zoning, but many noted that they considered these issues to be challenges rather than disadvantages. Similarly, several respondents

“It needs a balanced approach. If one sector or objective is too heavy it will crumble like a house of cards.”

stated that if zoning were done properly, the disadvantages could be minimized.

Unbalanced approach to zoning

A few respondents noted that without a zoning scheme balanced for all ocean users, the process would fail. One respondent noted that a zoning system that gave greater weight to traditional users would not be appropriate:

It needs a balanced approach. If one sector or objective is too heavy it will crumble like a house of cards.

Zoning for destruction

A few respondents expressed concern that zoning might intensify activities in some areas, with subsequent negative impacts.

There is criticism that activities will be displaced and concentrated in others. The Stone Fence [Scotian Shelf] is a major redfish area. We use bottom trawling in this area. If it is displaced, it would impact another area. Therefore, ocean zoning can be a way of zoning for destruction. If there are not enough voices there for marine conservation, industrial and general use zones will win.

Multi-stakeholder issues

Respondents noted that the multi-jurisdictional nature of zoning is a major challenge.

Ocean zoning challenges the governance structure, particularly in the coastal zone where there are multiple jurisdictions but less so in the offshore...How do we deal with multiple jurisdictions? How do we regulate multiple uses in geographic areas? There are big challenges in jurisdictional issues.

Fear/emotion

Respondents noted that there is a wide variety of perceptions about zoning and fear associated with some of those interpretations: fear about placing boundaries on the ocean because the ocean is often associated with boundless space, and a perception that zoning could lead to more boundaries and the ocean being “fenced up,” which was thought to be an emotional issue for fishermen. Fear of current regulatory boards losing the authority to regulate or losing some areas in which they currently regulate was also noted as a disadvantage.

Enforcement

Respondents identified enforcement as a potential disadvantage. Zoning was thought to be very difficult to control. One respondent noted that “the people power isn’t there” for the policing of zones and that people have a tendency to break the rules, particularly in the fishing industry. The difficulty of finding a cost efficient approach to enforcement was also mentioned as was the difficulty of implementing a zoning approach built on compliance.

Zoning for extraction

Several respondents noted that a major disadvantage would be if zoning

“If ocean zoning focuses on extraction, same as on land, it’ll create the illusion that we’re properly managing our oceans...”

were implemented improperly, managing for extraction as had been done on land.

If ocean zoning focuses on extraction, same as on land, it’ll create the illusion that we’re properly managing our oceans...

Zoning with incomplete knowledge

There was also concern that zoning with incomplete knowledge might have negative consequences.

Start with zoning without complete information ...losers will be new kids on the block [new industry, new users].

To zone without really knowing what’s going on, would mean an unfortunate loss of benefits to Canadians.

Other disadvantages

Other perceived disadvantages included:

- *Zoning could lead to limitations on areas today that would create economic barriers.*
- *Different community members use the ocean in different ways. Therefore some zoning schemes may not reflect their needs.*
- *There is a risk that zoning focuses on boundaries (e.g., as GIS mapping does), rather than reflecting the pattern of human use or natural ecosystems.*
- *Zoning created without fishermen’s input may create further antagonism between fishermen and rule-makers and/or fishermen and the environmental community.*
- *The ocean is already zoned so it would be a complex process to make changes.*
- *The way of looking at the ocean as a global commons is antithetical to zoning.*
- *Zoning could be perceived as being too rigid to be applied effectively in a dynamic marine environment and could hinder adaptive management.*
- *Zoning current uses may not enhance marine conservation since marine creatures don’t stay within boundaries drawn by humans.*
- *Zoning implemented by a top-down government process might be perceived as limiting options or the potential for users. This would make zoning a hard sell to users.*

3.4 GETTING AT TERMINOLOGY ISSUES

The understanding of terms is important in any process involving multiple stakeholders. Fear and confusion based on different interpretations of terms may hinder the implementation of management tools like MPAs (Agardy et al. 2003). Thus it is important to know whether stakeholders differentiate between ocean zoning, and MPAs and zones.

“Ocean zoning is the big picture while MPAs are one component of the picture.”

“Zoning requires comprehensive planning where the community decides where things should be.”

3.41 ZONING VERSUS MARINE PROTECTED AREAS

Most respondents stated that MPAs and zoning are different but related. There was a general understanding among respondents that ocean zoning has a broader scope and more applications than MPAs do. Zoning was seen as a tool to manage all ocean activities over a large geographic area, whereas MPAs were thought to be smaller areas created mainly for conservation purposes. Both were thought to be aspects of zoning under different legislative and regulative mandates.

Ocean zoning is the big picture while MPAs are one component of the picture.

Ocean zoning means looking at the whole picture. MPAs are not good enough. [We] need to look at the whole ecosystem. MPAs look at ... special features that should be protected. Zoning must encompass everything...

MPAs are only one possible zone – a black and white approach to marine conservation. Zoning is far more than MPAs, it could include whale sanctuaries, shipping lanes, fishing areas/closures, bird sanctuaries.

Many respondents noted that MPAs are a component of zoning and vice versa. There was a general understanding that zones could occur within an MPA and that MPAs could be one tool within a zoning scheme.

An MPA is only a small subset, a tool, part of the ocean zoning toolbox.

Zones can be within MPAs. Zoning is a management tool within an MPA.

Zoning was seen as having more applications and hence more benefits than MPAs. One respondent noted that ocean zoning, unlike an MPA, is for resolving user conflicts and for deciding which activities have priority. Another respondent stated that zoning, unlike an MPA, spans a continuum in terms of both the spatial extent of the area and the nature of controls placed on it, such as management and planning. Therefore zoning can be used for a variety of planning purposes, as well as meeting ecosystem-based objectives.

If zoning was just MPAs, [we] would have a slow progress and would be too constricted in what we could do.

One respondent thought that, in terms of conservation, zoning might be supported more by users than MPAs, which elicit some fear among users. It was thought that vertical zoning, which would allow some activities to occur at particular levels of the water column while prohibiting others, might be more readily accepted by users than a no-take MPA.

A few respondents also noted that a zoning plan is developed by a community to achieve certain goals. One respondent viewed this as a major difference between MPAs and zoning.

An MPA is an exclusive zone, instituted in the absence of comprehensive planning, largely a function of fisheries management. Zoning requires comprehensive planning where the community decides where things should be.

A few respondents saw no difference between MPAs and zoning. These respondents did not view zoning as existing separately from MPAs.

“Zoning implies a planning process that links together the various sectors whereas on a sectoral basis zones can be imposed without overall considerations. The big difference is the process.”

“We’re already zoning the ocean with different areas and designations but we’re not doing it explicitly. We need to map existing zones and see where the potential conflicts are, then recreate a scheme. The pieces are already in place. We need to integrate it and make it explicit.”

Instead, MPAs were thought to be broadly applied to determine uses for different activities.

3.42 ZONING VERSUS ZONES

Several respondents stated that the major difference between ‘zones’ and ‘zoning’ was the planning process.

Zoning is a process of planning. For example, residential or business. Zones are what result from the process.

You can divide an area into zones without deciding what goes where. Zoning is an active decision-making process like urban planning. For example, R2 is residential property and C2 is commercial property.

Differences of multiple use and sectoral issues were recognized by a few respondents.

Zoning implies a planning process that links together the various sectors whereas on a sectoral basis zones can be imposed without overall considerations. The big difference is the process.

Zones are not designed for multi-uses. The concept of ocean zoning is to designate certain areas for certain uses [from] multiple use to no use. Ocean zoning looks at multiple uses, now it’s single use.

A few respondents stated that there was no difference between the two terms.

One begets the other. Zoning policy delivers zones.

Zoning, unlike zones, was thought to be a proactive process that would permit ecosystem-based objectives to be achieved.

The only way to meet the ecosystem-based objectives is through zoning comprehensively rather than ad hoc or sectoral zoning.

3.5 POLITICAL FEASIBILITY OF OCEAN ZONING

There were mixed responses about the political feasibility of ocean zoning. Several respondents believe that since the ocean is already zoned in some areas, zoning in a more comprehensive manner is politically feasible.

We’re already zoning the ocean with different areas and designations but we’re not doing it explicitly. We need to map existing zones and see where the potential conflicts are, then recreate a scheme. The pieces are already in place. We need to integrate it and make it explicit.

We’ve actually done it [zoning] in terms of fishing. We’ve managed the ocean for fishing. We’ve managed to address things like overfishing and gear conflicts for decades. It’s not a leap to take more things into account.

Zoning is also feasible, said several respondents, because it would provide ground rules for industry or more simply a common set of rules to deal with certain objectives. One respondent noted that zoning gives clarity to new industries such as the oil and gas industry because it identified

“Zoning will be very challenging because of the conflict between traditional users and new kids on the block.”

“As far as the public is concerned, no one disagrees with land use planning so they shouldn’t disagree with ocean planning.”

“We need ocean zoning. It is a necessary step...”

where their activities are acceptable. It is beneficial for any new industry to know sooner rather than later if its activities are going to be excluded from an area. No industry wants to commit resources in an area from which they may later be excluded or come up against resistance.

Opposition by the fishing industry was seen as a major barrier to creating political support for zoning.

The fishing industry will have problems with ocean zoning because it is used to going everywhere and will likely see zoning as a constraint. They would have to give up something as opposed to, for example, oil and gas who would gain a planning framework.

Zoning will be very challenging because of the conflict between traditional users and new kids on the block.

One respondent thought that political will might be present when everyone embarks on discussions about zoning with good intentions. However, once details are established and some industries incur some sort of loss, political will may diminish. Multi-jurisdictional issues and the varying perspectives on zoning held by the many players involved would make it difficult to reach a consensus and would likely affect political will.

Even within a [federal] department, there are still a variety of perceptions about zoning. Each department does its own zoning. The challenge will be how we fit it all together.

The short-term thinking of politicians was seen as inimical to ocean zoning, which is a plan in long-term investment. Conversely, one respondent noted that use conflicts may drive political will toward zoning.

Several respondents stated that ocean zoning was both politically feasible and necessary.

Ocean zoning is feasible and essential for marine environmental health down the road.

It [zoning] is the only way forward. The Oceans Act provides us with legal instruments for zoning. As far as the public is concerned, no one disagrees with land use planning so they shouldn’t disagree with ocean planning.

We need ocean zoning. It is a necessary step... If we take zoning seriously then we must have zoning to allocate uses in the offshore.

A few respondents also noted the need for both top-down and bottom-up leadership for zoning to gain favour with policy makers.

There is interest in ocean zoning coming from the Oceans Act office but this may be top down and not reflective of sustainable fisheries. There is the will and capability at the community level but not the political support for community-based zoning. If we get federally driven zoning it will look like federally driven integrated management.

It [zoning] needs a lot of leadership at the top and at the grassroots level.

“They [zoning and gear restrictions] are both tools in the toolbox of fisheries management.”

“We need to go ahead with ocean zoning, integrate what’s been done, make it spatially explicit with clear objectives.”

A few respondents stated that zoning is not currently politically feasible.

There are too many users. [Maine’s] coastal waters have always been considered to be open to everybody. The whole nature of the fishing industry is to move between different fisheries. We’re a long way from it [zoning] being politically feasible.

The political will and jurisdiction is not in place yet for ocean zoning. There is paranoia on the provincial level.

3.6 OCEAN ZONING OR OTHER MANAGEMENT TOOLS?

Most respondents stated that zoning is a useful management tool, as are changes to policy or gear restrictions, and that it is essential to use these tools in a balanced way.

They [zoning and gear restrictions] are both tools in the toolbox of fisheries management. None is more discrete than the other. There are certain applications where zoning makes more sense, such as the protection of spawning areas. Gear modifications are appropriate in areas of bycatch concerns or habitat destruction.

Allowing trawling in some areas and not in others. I don’t see it as one or the other [gear restrictions or zoning]. Ocean zoning uses gear restrictions or policies in a comprehensive, global approach.

One respondent noted that there are a number of pressing issues that could be dealt with at the policy level, e.g., decisions about where oil and gas activities should be banned. However, for long-term comprehensive planning and management, something similar to a zoning framework is needed.

We need comprehensive long-term management. We need to do something like zoning. There are some decisions that ultimately come down to politics, some big decisions that have to be taken at a big policy level...We need to focus at both levels... In other words, some problems cannot be dealt with by zoning so we need the political policy level. We need to do both.

A few respondents felt that zoning should be the major focus of ocean management.

We need to start with ocean zoning and stop discussing policy. We will learn by doing. If we start with ocean zoning, it will take 20-30 years to do but we have to start with ocean zoning to make it happen.

We need to go ahead with ocean zoning, integrate what’s been done, make it spatially explicit with clear objectives. We want aquaculture areas, shipping lanes and all uses integrated so that uses are not conflicting. We need it to be centralized and organized.

A few respondents noted that other tools, such as policy changes or gear restrictions, were more appropriate for fisheries management than zoning.

Yes, I’d like to see that [gear restrictions, policy changes]. That may inhibit us from doing zoning. [There would be] no remorse from the fishing industry.

“Zoning should be science-informed not science-driven.”

3.7 THE ROLE OF SCIENCE IN ZONING

There was a general sense among respondents that to give ocean zoning credibility, it should be science-informed but not science-driven and that science alone should not dictate how zoning should be implemented.

Zoning should be based on science but not constrained solely by science. We'll have to zone in absence of full knowledge and we need to take into account social, economic, cultural aspects that science doesn't consider.

Zoning should be science-informed not science-driven. Science-driven zoning does not mean science-driven management or implementation. We don't want scientists to dictate the way we implement the zoning. We need management to make sure people have rights to use zones and use them appropriately.

Although most respondents felt that science was an important basis for zoning, it was noted that science should be overlaid with other considerations and that zoning should be reactive to other needs, including:

- *management to make sure people have rights to use zones and that they use them appropriately.*
- *transboundary issues*
- *location of communities*
- *local and fishermen's knowledge*
- *economic factors*
- *social needs/uses (e.g., who depends on certain areas/activities)*
- *cultural aspects (e.g., uses of indigenous tribes)*
- *interactions with industry*
- *coastal access*
- *ecosystem-based objectives*
- *aesthetics (don't want national marine parks directly next to industry)*
- *current ocean uses*
- *different legislative responsibilities in different geographic areas*
- *political issues*
- *administrative conveniences*
- *conservation of wild stocks*
- *shipping lanes*
- *flexibility, to reflect changes over time to social and economic factors.*

When zoning for protection, however, science was seen as the primary consideration for management.

We need science if zoning is to protect something from something else.

[Zoning should be] true science-driven if society decides that the zoning priority is marine biodiversity preservation.

Within MPAs, zones could be science-based.

One respondent said that in the end, science should have the final say for zoning.

Science should be the basis for our final decision. We should not ignore the science, it should drive our decision...

3.8 KNOWLEDGE OF EXISTING OCEAN ZONING EXAMPLES

Many respondents gave sector-based zones as examples of ocean zoning. For example:

- *fisheries closures (e.g., Western Bank groundfish closure on the Scotian Shelf)²*
- *moratorium on oil and gas industry activity (Georges Bank Prohibition Zone, Atlantic Canada)*
- *lobster fishery zoning (Atlantic Canada)*
- *wind farms*
- *oil and gas license blocks*
- *gas lines*
- *shipping lanes in general and in the Bay of Fundy (Atlantic Canada)³*
- *transatlantic pipelines*

Some respondents were more familiar with international zoning efforts and named the following:

- *Australia's Great Barrier Reef*
- *Southeast Australia Zoning Plan*
- *Solitary Islands, New South Wales*
- *Wadden Sea National Park (Germany, Denmark and the Netherlands)*
- *Channel Islands National Marine Sanctuary, California*
- *Monterey Bay*
- *U.S. Coastal Management Plans*
- *Marine Mammal Conservation in Mediterranean*
- *Zoning initiatives in Cambodia and the Philippines*
- *Hawaiian Coral Reef Ecosystem*
- *North Sea*
- *Florida Keys National Marine Sanctuary*
- *An ocean zoning project in the Caribbean, sponsored by the University of Rhode Island, to reduce conflict and ration uses between islands*

² Emerald Bank and parts of Western Bank have been closed since 1987 to protect haddock spawning aggregations (DFO 2002).

³ Shipping lanes in the Bay of Fundy were changed on July 1, 2003 to protect critically endangered North Atlantic right whales from collisions with ships. One respondent noted that these shipping lanes were a type of zone that focused on one user (i.e., shipping industry) but had a strong conservation angle.

“[We] haven’t taken a global approach to protect the ocean. Approaches have been piecemeal and narrow focused, so can’t be considered ocean zoning.”

- *Wilderness areas, marine protected areas*

One respondent could cite no examples:

I can’t think of many examples that can be called an ocean zoning approach, mainly because our approach has been focused on extraction. [We] haven’t taken a global approach to protect the ocean. Approaches have been piecemeal and narrow focused, so can’t be considered ocean zoning.

Another respondent noted that although many examples of ocean zoning exist,

The majority of zoning has been in protected areas with regulatory backing.

3.9 NEXT STEPS FOR ZONING THE SCOTIAN SHELF AND GULF OF MAINE

Respondents had many suggestions about what is required before ocean

TABLE 3: RESEARCH AND PROCESS PRIORITIES FOR OCEAN ZONING

Research	Process
What do we need to know to zone effectively?	What areas will be zoned?
What do we have in terms of knowledge?	Who will draw the lines?
Need a gap analysis	How will compliance and accountability be ensured?
Oceanographic, physical, biological characteristics of the areas (e.g., mapping)	How will the effectiveness and progress in meeting the objectives be monitored?
General ecological, species and user overview	What other tools can also be used and how will they be combined with zoning?
What is the fragility of seascape types? How fragile is geology to different ocean uses? (We need to classify zones in relationship to geology.)	What are the desired social/economic objectives?
What is an ecosystem?	Is the political will in place for ocean zoning to be implemented?
What needs to be protected?	Is the legislative capacity/legal framework in place for ocean zoning?
What are the sensitivities in each area?	Where is the driving force for ocean zoning coming from (e.g., government, industry, grassroots)?
What areas are good candidates for multiple use or conservation areas?	Who are the appropriate people to bring to the table?
What is the status/health of resources in that area?	How will zoning be implemented (e.g., by ecosystems, using the precautionary approach)?
How are resources/conditions affected by human activities?	How can zoning be implemented with different sectoral legislation?
Identify areas where we know a lot of information and areas where we know only a little bit of information.	How can zoning be implemented with different jurisdictional legislation? For example, estuaries are under federal jurisdiction. The Bay of Fundy is under New Brunswick provincial jurisdiction and the seabed in the Bay of Fundy is under Nova Scotia jurisdiction. How to set up zones in this area is not well thought out.
Economic assessment, job assessment, economic trends (How many people make their livings off ocean areas and what industries are they connected with?)	What are stakeholders’ perspectives on ocean zoning?
Need a better understanding of species in the ocean and their interdependence on the ocean itself (i.e., benthic community).	What do stakeholders and the public value about the oceans?
Need a solid ecosystem framework	Is there any way of achieving a balance between security and flexibility?
Need to look at the map and think of consequences. How can we capture variances in fishery closures in a single map (e.g., some closures may be for 1 year but not the next)?	What impacts are policy decisions having on fisheries?
	How will changes be incorporated over time?
	How can you set up a system of zoning that doesn’t just reflect political realities?
	How would new zones marry in existing zones?
	How do we get good information to decision-makers that objectively portrays the reality that we face in the ocean?
	What do we do in cases where we don’t have enough information? What is our goal in terms of that?
	How does ocean zoning relate to environmental assessment and strategic environmental assessment?
	At what scale will management take place (e.g., individual, community, population, ecosystem) and will it be meaningful in a policy sense? For example, at what scale is the impact from draggers significant and how do we partition it?
	We need more heightened transparency than with land use planning. Heightened transparency will lead to better planning both for land and sea.
	How will objectives be measured?

zoning becomes a reality in Atlantic Canada and the U.S. There was a general sense that research is required to determine important background information before zoning could be implemented (Table 3). Respondents also felt it is important to raise awareness of zoning by profiling case studies of areas where zoning has been implemented. To avoid making mistakes, they said, it is essential to assess zoning schemes and plans from other regions, and the successes and failures, before applying zoning in an Atlantic Canadian or United States context. Further debate and workshops about zoning were also regarded as important.

A useful example was provided by one respondent.

Norway has National Offshore Areas. Under the Building and Planning Act, 'communes' are designed that must have land and sea use plans. These zones are re-evaluated every 5 years. The Joint Land/Sea Use Plan is a more integrated approach. The planning paradigm deals with conflicts in a non-specific sense and allows opinions to be voiced before something happens. Norway has a different mindset [than Canada] - it's under a planning approach... Why don't we just use sea use planning, like in Norway?

Many respondents felt strongly that clearly defined reasons, purpose, goals, objectives and ground rules that everyone could understand were required for the process before zoning could be implemented. Strategies with clear timelines and strong leadership were also identified as important elements, as was a transparent stakeholder process with judicious consultations. Respondents identified many issues that should be addressed within the zoning process (Table 3).

Specific suggestions for next steps include:

- Getting people to accept the vision of zoning by:
 - Creating interest in the public and media to invoke a government response and get the issue on the table.
 - Using a terrestrial analogy: For example, Newcastle, Australia, is not a planned city but rather an ad hoc mess that grew as it happened. Canberra, on the other hand, is a planned city that had a legislative framework from the beginning.
 - Holding a workshop: Show a virgin ocean, then add fishing activities, shipping lanes and aquaculture, etc. to capture the imagination. Demonstrate the difference between what can happen if activities are allowed to run wild and situations where there is agreement that certain things, such as corals and draggers, lobster habitat and scallop dragging, don't mix.
 - Producing documents that give models, examples and evidence of why ocean zoning might be useful. The documents should make the case for ocean zoning by giving examples of ocean user conflicts that might be resolved by zoning.
- Influencing decision makers, giving them a more in-depth understanding of what is transpiring in the ocean.
- Controlling uses to be more consistent with goals for a specific area.

“Our whole history of uses is zonation. The logical last step is a comprehensive yet flexible zoning scheme.”

“Zoning is a non-starter because the process for engaging people in discussion about buying into ocean zoning is a multi-stakeholder approach that relies on consensus agreeing.”

4 Although the Canadian government supported the Third United Nations Conference on the Law of the Sea (UNCLOS III) and signed the completed Convention in 1982, Canada has yet to ratify it even though the Convention has been in legal force since 1994.

- Building organizations/partnerships to be empowered to manage zones. Bringing management down to the local level.
- Making industry more responsible, requiring them to prove that no negative impacts will result from their activities.

Several respondents stressed the importance of doing case studies in different areas. Areas identified for this purpose were the Gulf of St. Lawrence (Canada), Mouth of the Saguenay River (Canada), Bay of Fundy (Canada), Stellwagen Bank (U.S.A.) and the Scotian Shelf and Gulf of Maine.

An ecologically defined area like the Bay of Fundy may be easier to do than a huge area.

It will work in the Gulf of St. Lawrence. I know the people. [In the] Southern Gulf ecosystem, people are used to working together. Put the first step in place and go with it. It has to be kick started. We have the knowledge that we need. It must be an inclusive process. Why did we form Canada? Because each little town couldn't do it on its own.

We have more than enough knowledge to move forward. We don't need more science. The Scotian Shelf and Gulf of Maine are the best studied areas of the world's oceans.

We need to inject it [zoning] properly into the ESSIM [Eastern Scotian Shelf Integrated Management] process and make it a strategic feature of the planning process. We need to try it out in an area. We need to bring everyone who has zones and needs zones together to work toward it. ESSIM provides a mechanism for doing this. ESSIM can be a vehicle for exploring this.

We can start the process now in areas where we have information. In an area off Massachusetts – Stellwagen Bank...[we have] 20 years of information about species diversity/abundance, high-resolution mapping of sediments/habitats, needs of species.

3.10 IS ZONING THE WAY TO GO?

Most respondents stated that zoning should be implemented on the Scotian Shelf and in the Gulf of Maine.

We need to zone. We need people who have the regulatory ability, the decision-makers from different sectors, to do it to get together. We need a set of objectives. Start with conservation objectives and present ocean uses and do a zoning scheme. The fallout from this will be the deficiencies in the legal area...

We can start zoning and should.

Zoning is the logical extension of the Law of the Sea.⁴ We went from 10 to 12 nautical miles. It was the first step in terms of legal zoning. Our whole history of uses is zonation. The logical last step is a comprehensive yet flexible zoning scheme.

A few respondents were opposed to zoning. One respondent was against zoning because it would limit access to the resource. Another respondent was adamantly opposed to zoning because of the likelihood that implementation would be based on managing for multiple uses and

conflict reduction rather than on maintaining ecological integrity. The respondent also felt that the logistics necessary for zoning are insurmountable.

Zoning is a non-starter because the process for engaging people in discussion about buying into ocean zoning is a multi-stakeholder approach that relies on consensus agreeing. In my opinion, it leads to the lowest common denominator – the bar is set low. It deflects energy from simply banning. It's better to put energy into individual battles such as closed aquaculture and getting rid of dragging. Marine zoning is theoretical. It's very difficult if not impossible to operationalize.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The concept of ocean zoning is not clearly understood by all stakeholders and is often interpreted as sector-based zoning rather than a coordinated approach to ocean planning. In some cases, stakeholders view sector-based zones or MPAs as being the same as ocean zoning. Some respondents thought zoning was a tool for achieving conservation or limiting access to the resource, but not necessarily for managing for multiple use. The various interpretations of ocean zoning might hinder its implementation.

Respondents identified several benefits of zoning, including:

- *providing clarity to ocean users*
- *resolving conflict among multiple uses*
- *achieving ecosystem-based objectives*
- *benefiting the economy*
- *attaining conservation areas without displacing all activities*
- *benefiting the resource by concentrating on long-term needs*
- *reducing the cost of enforcement*
- *addressing cumulative effects*

Disadvantages of ocean zoning identified by respondents include:

- *the potential for zoning to cause destruction by displacing activities from one area and concentrating them in another*
- *challenges with multi-sectoral/jurisdictional issues*
- *the lack of infrastructure for enforcement*
- *difficulties in getting stakeholders to accept zoning because of the fears associated with different perceptions of zoning*
- *disadvantages associated with implementing zoning while managing for extraction or without complete information*
- *the creation of economic barriers for the future*
- *the failure to reflect the needs of all ocean users*

Several respondents stated that disadvantages should be seen as challenges that could be minimized if zoning were implemented appropriately.

Many respondents felt that zoning is politically feasible because the ocean is already being zoned, albeit mostly on a sector-by-sector basis, and thus it would be logical to zone more comprehensively and collaboratively. Some respondents felt that the political will exists for zoning because zoning provides ground rules for industry, particularly for new industry. However, opposition by the fishing industry was seen as a major barrier to creating political support for zoning.

Most respondents felt that zoning is the way forward for ocean management and should be implemented on the Scotian Shelf and in the Gulf of Maine. A few respondents were opposed to zoning because it would limit access to the resource, be based on managing for multiple uses or conflict resolution rather than on maintaining ecological integrity, or be logistically impossible.

Respondents recognized that ocean zoning might not be suitable in some areas or for certain management purposes. Zoning should not be the sole management tool considered but rather should be used in conjunction with other tools. Although science should be a key consideration for zoning, other factors (e.g., social, cultural, economic, access, etc.) should also be taken into account.

Respondents raised many issues that should be considered before zoning is implemented. Identified by several respondents as important next steps in management of the Scotian Shelf and the Gulf of Maine, were examining international ocean zoning examples, getting people to accept the vision of zoning, and implementing zoning in one area as a case study.

Recommendations

- This report has only begun to investigate stakeholders' perspectives on ocean zoning. It is evident that stakeholders have much to contribute to the process of zoning the ocean. Support for zoning is best generated by inclusion of those affected by its implementation.
 - *Stakeholders must be involved in the development and application of a zoning process and their perspectives should be considered in management decisions.*
- There are general misconceptions and fears associated with the term 'ocean zoning'. Differences in opinion need to be addressed, otherwise confusion or fear may lead to rejection of the concept. Education is a key component in the acceptance of ocean zoning by stakeholders and the public alike.
 - *Clarity of definition is essential. We need to look at the full range of zoning and its applications in different situations. To get people to accept the vision of zoning, several initiatives should be undertaken, e.g., further debate and workshops that address topics such as comparing the cost of zoning to not zoning, explaining exactly what zoning is and is not, what zoning means for industry and other stakeholders, and the benefits/disadvantages of zoning.*

- Zoning is not the solution to all management issues and might not be the appropriate tool for management in certain areas.
 - *It is important to consider a range of management tools.*
- There is no comprehensive spatial plan for the offshore in Atlantic Canada or the U.S. The problems facing the offshore cannot be resolved under fragmented, sector-focused management regimes. We need a comprehensive approach to ocean management that can only be achieved through coordinated management with an ecosystem focus. Zoning appears to be a necessary step for dealing with conservation and the complexities of ocean management in multiple-use areas. Conservation, however, should be the driver.
 - *Fisheries management, governments, ocean industries and grassroots initiatives should consider multi-sector zoning to promote conservation and uniform management decisions among different jurisdictions.*
 - *Regulations for ocean zoning should be explicitly written into Canada's Oceans Act.*
- In Atlantic Canada, zoning could be integrated into the ESSIM initiative. However, the effectiveness and the time-consuming nature of this process beg many questions, including, if we come up with a plan, will it have any force?
 - *Zoning should be used as a management tool under ESSIM.*
 - *Additional approaches to integrated management should also be investigated.*

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Appendix A

Examples of ocean zoning

Ocean zoning has already been applied in a variety of locations and over a wide range of geographical scales. Almost all of these areas, however, are marine protected areas or reserves. Some better known examples:

- The Great Barrier Reef Marine Park is a multiple-use protected area covering roughly 345,000 km² offshore. This area is larger than the area defined by ESSIM (320,000 km²). Within the park, protection levels range from almost no restrictions on activities to zones where almost no human activities are permitted. The Great Barrier Reef was the first area to have large-scale zoning developed as an integral part of its management process.
<http://www.gbrmpa.gov.au/corp-site/management/zoning.html#Zoning%20Plan%20Stages>
- The Lundy Island Marine Nature Reserve, off southwest England
<http://www.lundy.org.uk/inf/mnr.html>
- The Wadden Sea National Park borders Denmark, Germany and the Netherlands, and is the result of the first tri-national zoning scheme.
<http://cwss.www.de/index.html>
- The Florida Keys National Marine Sanctuary spans 9,500 km² and is based on a large-scale marine zoning plan with 23 no-take zones.
<http://www.fknms.nos.noaa.gov/regs/welcome.html#where>
- Monterey Bay National Marine Sanctuary
<http://www.mbnms.nos.noaa.gov/research/techreports/marinezones/contents.html>
- Hol Chan Marine Park, Belize
<http://www.ambergriscaye.com/holchan/3.html>
- Tasmanian Seamounts Marine Reserve
<http://www.ea.gov.au/coasts/mpa/seamounts/plan/managing.html>

Appendix B

People interviewed and/or contacted in the preparation of this report

The following people were either interviewed or provided valuable information that contributed to this study. In all, 21 respondents were interviewed either in person or by phone.

Andre D'Entremont (*Health, Safety & Environmental Coordinator, Kerr-McGee Offshore Canada Ltd.*)

Heather Breeze (*Consultant, Maris Consulting*)

Boris Worm (*Marine Conservation Biologist, Biology Department, Dalhousie University*)

Paul Parker (*Executive Director, Cape Cod Commercial Hook Fishermen's Association*)

Percy Hayne (*President, Gulf Nova Scotia Fleet Planning Board*)

Bruce Hatcher (*Director, Marine Affairs Program, Dalhousie University*)

David Vanderzwaag (*Professor of Law, Dalhousie Law School and Canada Research Chair in Ocean Law and Governance*)

Mike Sinclair (*Regional Director of Science, Fisheries and Oceans Canada*)

Inka Milewski (*Marine Science Advisor, Conservation Council of New Brunswick*)

Moira McConnell (*Professor of Law, Dalhousie Law School*)

Jennifer Graham (*Consultant, Catalyst Community Consulting*)

Aldo Chircop (*Professor of Law, Dalhousie Law School*)

Glen Herbert (*Oceans Biologist, Oceans and Coastal Management Division, Fisheries and Oceans Canada*)

Arthur Hanson (*Senior Scientist, International Institute for Sustainable Development*)

Debra Walsh (*Manager, Atlantic Canada, Canadian Association of Petroleum Producers*)

Chris Zeman (*Attorney, Oceana*)

Craig Pendleton (*Coordinating Director, Northwest Atlantic Marine Alliance*)

Neil Munro (*Senior Science Advisor, Parks Canada*)

Don Aldous (*President, Don Aldous Consulting Ltd.*)

Mike Hastings (*Executive Director, Maine Aquaculture Innovation Center*)

Arthur Bull (*Guysborough County Inshore Fishermen's Association*)

Wayne Eddy (*Fisherman, Eastern Shore Fishermen's Protective Association*)

Carl Safina (*President, Blue Ocean Institute*)

Appendix C

Interview questionnaire

1. What is ocean zoning?
2. What are the benefits of ocean zoning?
3. What are the disadvantages of ocean zoning?
4. Is ocean zoning different from marine protected areas? If yes, how is ocean zoning different from marine protected areas?
5. Is ocean zoning politically feasible?
6. Would we be better to focus on changes in policy or gear restrictions rather than on ocean zoning?
7. Should ocean zoning be science-driven only?
8. What good examples of ocean zoning exist?
9. Are zones different from zoning? If yes, how are zones different from zoning?
10. What do we need to know about ocean zoning before it can be used in Atlantic Canada/United States?
11. What are Atlantic Canada's/United States' next steps in terms of ocean zoning?



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