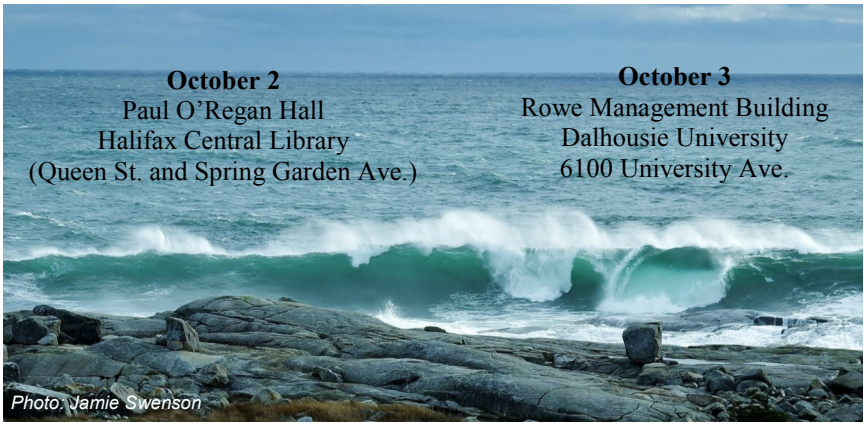
Sobey Fund for Oceans

SUSTAINABLE OCEANS

HEALTHY OCEANS HEALTHY CANADA
2015 MARINE AFFAIRS PROGRAM



The conference is a key activity of the Sobey Fund for Oceans.
The Fund is a unique partnership between the Marine Affairs Program (MAP),
Dalhousie University and WWF Canada

DALHOUSIE UNIVERSITY
Inspiring Minds

Marine Affairs Program

"I have a long history with both Dalhousie and WWF. It became clear to me that collaboration between our brightest young minds and our leaders in conservation is the key to solving some of the great challenges in our oceans. And that's a goal that I share with both Dalhousie and WWF."
Donald Sobey, The Donald R. Sobey Foundation.

Sustainable Oceans Conference

Marine Affairs Student Conference, October 2-3, 2015

The key goal of the 2015 Sustainable Oceans Conference is to explore the knowledge and policy interface. As such, this student-led conference aims to achieve this by acknowledging different knowledge systems and exploring how they work to inform policy making. We hope that by identifying the challenges at this interface, we can work toward sustainable ocean management solutions in Canada.

Special objectives of the conference are to:

- Identify challenges currently facing the knowledge-policy interface in oceans management in Canada and to collaboratively identify solutions
- Provide students with the opportunity to practice their presentation skills, publish their work in an online technical series and to network with other involved in the field of ocean management.
- Provide an exciting, innovative, and interactive platform for participants and professionals alike to learn from one another.
- Bring together all sectors of ocean management and the wider community to explore and collaborate to achieve greater management solutions.

Contact Details:
Co-Chair - Elizabeth Edmondson
Co-Chair - Maryann Watson
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DALHOUSIE UNIVERSITY *Inspiring Minds*

WWF

The conference is a key activity of the Sobey Fund for Oceans. The Fund is a unique partnership between the Marine Affairs Program (MAP), Dalhousie University, and WWF Canada.

Welcome

Dear Attendee,

On behalf of the students in the 2014-2015 Marine Affairs Program class, we would like to warmly welcome you to Sustainable Oceans 2015: *Healthy Oceans, Healthy Canada.*

With the world's longest coastline, Canada's ocean jurisdiction spans across three oceans which support some of the most abundant and diverse marine ecosystems on earth. A complex array of social, economic, political, and environmental changes are affecting our oceans and those who depend upon it. Over seven million people live along Canada's coastline, but all Canadians are dependent on the health of our oceans. Our aim for this event is to strengthen appreciation of Canada's ocean regions, and address the diversity and commonalities of issues and solutions in each ocean region.

Assessing developments in ocean management and sustainability is crucial to understanding the state of Canada's oceans and the steps required to sustain ocean health. As such, the Sustainable Oceans 2015 Conference aims to address how Canada should move forward to keep an ongoing dialogue and promote change for sustainable and healthy oceans in Canada.

We hope the research and ideas presented here inspire you to take positive action with Canada's oceans in mind!

Thank you for your support!

Sincerely,

Elizabeth Edmondson and Maryann Watson
Co-Chairs
Sustainable Oceans 2015

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Program

Oct 2	Paul O'Regan Hall Halifax Central Library
5:30	**Registration**
6:00	**Welcome Remarks**
6:10	**Awarding of SFO Scholarships** Presented by Rob Sobey
6:30	**Keynote Speaker** Cristina Mittermeier
7:20	**Closing Remarks**
7:30	**Reception**
8:30	**End of Program**

Oct 3	Rowe Management Building Dalhousie University
8:30	**Registration** Poster viewing
9:00	**Welcome Remarks**
9:15	**Presentation Session I** Science and Technology
10:45	**Break** Poster viewing
11:15	**Presentation Session II** Community based solutions & Outreach
12:45	**Lunch** Poster viewing / judging
1:30	**Presentation Session III** Ocean and Coastal Management and Policy
3:00	**Break** Poster viewing
3:15	**Introduction of Panel Members**
3:30	**Panel discussion**
4:30	**Closing Remarks** Prizes & Acknowledgments
5:00	**End of Program**

Conference Committees and Judges

Overarching Organizing Committee

Elizabeth Edmondson (Chair), MMM Candidate
Maryann Watson (Chair), MMM Candidate
Kelsey Desnoyers
Julie Reimer (Events), MMM Candidate
Adrian Gerhartz-Abraham (Submissions), MMM Candidate
Taylor Mason (Outreach) MMM Candidate

Submissions Committee

Elizabeth Baker, MMM Candidate
Erin Keenan, MMM Candidate
Helen McConnell , MMM Candidate

Outreach Committee

Hillary MacDonell, MMM Candidate
Giselle Gao, MMM Candidate
Kascia White, MMM Candidate

Event planning Committee

Kimberley Vardon, MMM Candidate
Alexandra Chadid, MMM Candidate

Judges

Oral and Poster Presentations

Hugh Williamson
Marine Affairs Program
Dalhousie University

Alana Gauthier
NEXUS
Coastal Resource Management

Kascia White
MMM Candidate
Marine Affairs Program

Kes Morten
Ocean Tracking Network
Dalhousie University

Megan Bailey
Marine Affairs Program
Dalhousie University

Photo Competition

Cristina Mittermeier
Executive Director:
Sea Legacy.
Founder of the ILCP

Maria (Bugsy) Delesalle
NEXUS
Coastal Resource Management

Jessica Conrod
NSCAD Graduate

Becky Field (MAP)
Marine Affairs Program
Dalhousie University

Keynote Speaker

Cristina Mittermeier

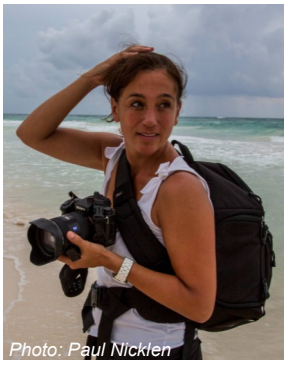
Photo: Paul Nicklen

Cristina is a Mexican-born marine biologist and photographer who specializes in conservation issues surrounding fisheries and indigenous cultures. As a writer and a photographer for the past 25 years, her work centers on the delicate balance between human well-being and healthy ecosystems. She is the founder and former president of the International League of Conservation Photographers and was recently recognized as one of the World's top 40 Most Influential Outdoor Photographers by the Outdoor Photography Magazine and is the recipient of the 2011 Nature's Best/Smithsonian Conservation Photographer of the Year award and the North American Nature Photographer's Association 2010 Mission Award. She has edited 22 coffee table books on conservation for CEMEX and has authored her first book with National Geographic, Sublime Nature: Photographs that Awe and Inspire.

Cristina is one of Sony's Artisans of Imagery, she sits on the board of the WILD Foundation, is part of Conservation International's Chairman's Council, and of the advisory board for the Wild Seas and Waters Program and the Marine Wilderness 10 + 10 Project. As a public speaker she has given presentations in forums ranging from the Conference of the Parties to the Convention on Biological Diversity to the TEDx stage. Cristina is the Executive Director of SeaLegacy.

Panel Member

Naiomi Metallic

Naiomi W. Metallic is an associate lawyer at Burchells LLP in Halifax. Originally from the Listuguj Mi'gmaq First Nation on the Gaspé Coast of Québec, she is an alumnus of Dalhousie Law School, and the University of Ottawa's Civil Law program and is currently obtaining an LL.M. from the Osgoode Hall at York University with a focus on administrative and constitutional law. She was the first Mi'gmaq person to clerk at the Supreme Court of Canada. She is a member of her firm's Aboriginal and Litigation practice groups. She is also a member of Dalhousie's Board of Governors .

Paul Macnab

Paul Macnab is an Oceans Biologist with the Oceans and Coastal Management Division of the Department of Fisheries and Oceans (DFO) at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Paul was introduced to marine management in the late 1980s when he worked as a deckhand in the offshore fishery. He was part way through his captain's papers when the Atlantic groundfish moratorium was declared. He returned to university, initially at St. Mary's in Halifax. A scholarship enabled Paul to conduct field research in Japan on spatial tenure and cooperative fisheries management. He was subsequently employed with Parks Canada and worked directly with Newfoundland communities to establish no-take lobster reserves in Bonavista Bay, simultaneously completing his Master's degree in Geography from the University of Waterloo. Paul has worked for DFO in Nova Scotia since 1999, primarily in the Marine Protected Areas Program. Paul looks forward to his regular guest lectures for the Marine Affairs Program and the International Oceans Institute. He has also taught in the Geography Department at Saint Mary's.

Panel Member

James Boxall

James Boxall teaches geography and GIS at Dalhousie University where he holds an appointment in Marine Affairs. For his decades of "service to geography" he was elected as a Fellow of both the Royal Geographical Society in London and the Royal Canadian Geographical Society. He is a Governor of the Royal Canadian Geographical Society, chairing the Research Grants Committee and also receiving the Society's Education Medal in 2012 and Franklin Expedition Erebus Medal in 2015.

He currently co-chairs the International Network for Learning and Teaching Geography in Higher Education (INLT), as well as being a representative for Canada on the International Geographical Union Commission for Geographical Education and the Canadian Committee for International Map Year. He recently completed two years as co-chair of the Canadian Round Table on Geomatics (NRCan) leading the development of GeoAlliance Canada -a new body to bring together all sectors to enhance geography and geospatial learning, business and environmental stewardship. As a geographer and educator, his interests focus on bridging gaps in geoliteracy.

Panel Moderator

Julie Reimer

Julie Reimer (Hovey) is a Master of Marine Management Candidate (2015) at Dalhousie University and was awarded the Sobeys Fund for Oceans Scholarship in 2014. Julie also holds a Bachelor of Science (Honours) in Biology from Queen's University. Most recently, Julie completed an internship through the Marine Environmental Observation, Prediction, and Response (MEOPAR) Network, conductimg research for the Whales, Habitat and Listening Experiment (WHaLE). This research seeks to understand the options and restrictions of the commercial shipping fleet with respect to the implementation of conservation technologies that report on the location of baleen whales in near real-time. Julie is currently finalizing her contribution to the WHaLE project, her MMM degree, and working with the MS Nova Star to develop passenger programming to engage travellers in current challenges facing the oceans and their management.

Advancing Canada's Future Through Policy

As a way to broaden participation in this year's conference, a questionnaire was developed and sent to Canada's federal political parties as well as NGO's for response. The questions cover a range of coastal and ocean related issues, such as species at risk, offshore oil and gas development, and northern development and ask the respondents to comment on how Canada should proceed at a policy level to address these issues and concerns. As the 2015 Federal election is scheduled for October 19, we feel it is important to understand where our political leaders stand on coastal and ocean related issues and to illustrate the importance of Canada's oceans regions to our country. The questionnaire provides another level of reflection on the current developments in technology, policy, coastal and ocean management, and community based solutions in the Pacific, Arctic and Atlantic regions of Canada that are being presented through student research.

Responses to the questionnaire will be used during the panel discussion to facilitate discussion with our panel members to include an industry perspective on issues and to ignite discussion on how Canadians can foster positive change. The questionnaire brings the issues beyond academia, and includes perspectives of those involved in decision making and provides those interested in discussing the importance of the oceans for Canada a more holistic view. We hope that the responses will further promote active participation in the call for action to help sustain Canada's ocean.

Full responses to the questionnaire will be made available following the conference in a report that will also include the research, discussion points and themes that have come out of this conference.

Oral Presentations
Science and Technology

The effect of climate change on fishing incidents in Atlantic Canada

Sara Rezaee, PhD Candidate, Department of Industrial Engineering, Dalhousie University

The fishing industry is one of the most dangerous occupations in the world. The hazardous natural environment, decisions based on incomplete information, lack of experience, and many other environmental and human-related factors can contribute to incidents in the ocean. Recently, due to climate change, fish harvesters' reliance on traditional weather patterns and familiar situations have become increasingly questionable, adding another element of uncertainty. This research, geared to provide insights for improved risk management strategies with respect to extreme weather conditions, follows three main phases: 1. Prevention (to determine the relationship between extreme weather factors and fishing incidents). 2. Immediate consequence (to determine the relationship between extreme weather factors and severity level of fishing incidents). 3. Resilience (to determine how climate change scenarios can affect fishing risk in the future). Several statistical methods such as random parameters negative binomial regression have been applied to develop mathematical models in each phase of the study. The results of this research can help decision makers concerned with fishing safety (i.e. Coast Guard, Department of Fisheries and Oceans, and fish harvesters) to strengthen the prevention system by closure of fisheries in harsh weather, increasing awareness of fish harvesters, providing better response resources, and lower the consequences of fishing incidents associated with extreme weather conditions.

Oral Presentations
Science and Technology

Halifax harbour sediment quality assessment and management solutions

Wenhui Gao, Marine Affairs Program, Dalhousie University

Halifax Harbour is one of the world's deepest harbours. It is sheltered, spacious, and has minimal currents and tides. The ice free port leaves the harbour accessible year round and it is the closest port of call for ships operating the North Atlantic, Round-the-World and Suez routes. These advantageous natural conditions have made Halifax Harbour one of the largest commercial ports in Canada and home of Canada's east coast Navy. In addition to being a major shipping port, industrial centre, naval centre and research centre, Halifax Harbour is surrounded by one of the fastest growing urban regions in Atlantic Canada. Increasingly, the Harbour's ecosystems have been placed under stress as a result of intensive human activity along its shorelines. Since the colonization of the area 250 years ago, Halifax Harbour has been a receptacle for raw sewage and industrial wastes.

Environmental assessments show that acute chemical components in the water and sediments still have great potential hazards to the health of human and biota. Harbour sediments have historically tended to be hotspots of contamination due to direct and/or indirect causes related to anthropogenic activities developed in the area such us shipping-related activities, industries, presence of highly populated areas, rivers and other discharges. Dredging and disposal processes can release pollutants bound to contaminated sediments and make them available to the biota.

This research findings will be relevant in assisting with recovery plans for threatened and endangered species frequenting the harbour. It will also provide needed information to assist identified sources of the contaminants to mitigate against the continued pollution of these contaminants into the harbour. Similarly, regulators will be provided with recommendations aimed at improving management of priority contaminants through the use of best practices.

Oral Presentations
Science and Technology

Marine conservation planning in the Scotian Shelf
Adrian Gerhartz , Marine Affairs Program, Dalhousie University

The Scotian shelf bioregion constitutes an area of intense socio-economic activity. Key activities in the bioregion include fisheries, oil and gas, shipping, renewable energies and aquaculture. However, Canada's commitment to protect at least 10% of the bioregion through networks of marine protected areas (MPAs) will require trade-offs between conservation and human activities. This project analyses the effectiveness of the spatial design of the current MPA system and proposes a new spatial configuration that is critical for addressing two main concerns: 1) the adequacy of the network for meeting conservation goals 2) the efficiency of minimizing impact among stakeholders in relation to the use of the maritime space. In order to accomplish the former objectives, the project follows a systematic planning approach that allows for the selection of conservation features, the setting of goals and targets and the application of a selection process of conservation sites using Marxan software package and ArcGIS. To minimize cost among other sea uses, spatial distribution of socio-economic activities are used and a reverse Marxan was performed. This enabled to use the selection frequency of the reverse Marxan as a cost layer and therefore determine how to avoid areas that are frequently used for other activities in the bioregion. Results first indicate that the current network is ineffective in terms of representation and adequacy. Second, it identifies new areas that would complement the MPA system and improve the network's adequacy. Finally, a new spatial design resulted from running the software with the cost layer derived from reverse Marxan is presented.

Oral Presentations
Science and Technology

A detection and classification system for passive acoustic monitoring of marine mammals in near real-time

Hansen Johnson, Department of Oceanography, Dalhousie University

Passive acoustic monitoring is a more efficient means of determining the seasonal occurrence and distribution of vocal marine mammals than traditional ship-based methods. Large volumes of raw data and slow, labor-intensive manual processing have limited the broad application of this technique. We make use of a low frequency detection and classification system (LFDCS), developed by M. F. Baumgartner and others at the Woods Hole Oceanographic Institution, that automatically identifies vocalizations from large baleen whale species and transmits that information to the user in near real-time. When integrated onto autonomous ocean gliders and other monitoring platforms, the LFDCS can be used to determine species distribution, increase the efficiency of visual surveys, and warn mariners in close proximity to detected whales to reduce the risk of ship strike. Its ability to determine the presence of the critically endangered North Atlantic right whale (Eubalaena glacialis) is of particular value for management and conservation applications on the Scotian Shelf. In the summer of 2014 we conducted trial deployments of gliders equipped with the LFDCS that successfully reported baleen whale distribution in and around Roseway basin, a known right whale critical habitat area. An overview of the LFDCS system, the results of our initial deployments, our future study objectives, and the utility of the LFDCS as a dynamic monitoring tool will be discussed.

Oral Presentations

Community-based Solutions and Outreach

Charting a course for oceans education in Nova Scotia's high school Curriculum

Kerri McPherson, School for Resource and Environmental Studies, Dalhousie University

The coastal province of Nova Scotia relies heavily on the oceans and coasts for its economy and the livelihoods for many communities and individuals. However oceans concepts appear to be largely lacking from the Nova Scotia high school science curriculum and as a result are not reflected in classroom teaching. This is in despite of available and supportive ocean related teaching resources, ocean scientists and researchers, and national and internationally recognized ocean technology and sector industries. As such, the purpose of this study is to determine potential challenges and barriers preventing the integration of ocean education into high school science courses. The findings from this study will also help to create space for citizen engagement and opportunities to positively educate and create a greater awareness about our ocean connections.

Education can be a powerful tool in creating positive change. For example, ocean science is multidisciplinary and can unify concepts taught within life science, physical science, science and technology, and natural sciences in a way where students are able to see the connectedness between various natural science and social science disciplines. Integrating ocean concepts into science curriculum at the senior high school level creates awareness of ocean related issues among youth, contributing to the development of educated citizens critical to the health of Nova Scotia and the ocean. Within Nova Scotia there are several developing initiatives to integrate ocean concepts into the overall grade 8 curriculum. The further development of these initiatives to include senior high science curriculum would assist in raising awareness for the overall health and sustainability of our oceans both here and beyond our Nova Scotian borders.

Oral Presentations

Community-based Solutions and Outreach

Mobilizing Inuit Qaujimajatuqangit in narwhal management through community empowerment: A case study in Naujaat, NU

Erin Keenan, Lucy Tegumiar, Fish-WIKS, Marine Affairs Program, Dalhousie University

In recent years, Canadian resource management policies addressing Arctic issues have increasingly acknowledged the importance of drawing on Inuit Qaujimajatuqangit (IQ) for decision-making. IQ includes, but is not limited to, Inuit traditional knowledge, cultural values, decision-making practices, and language. However, since the 1950s, the social and environmental conditions of life in Inuit communities have been evolving rapidly, in part due to the introduction of government-based resource management regulation. This in turn has altered the context for the use of IQ in decision-making, ranging from the scale of small communities to the federal government.

This project examines the relationship between government regulations and the use of IQ through a case study focusing on narwhal harvesting in the community of Naujaat, Nunavut. Since Fisheries and Oceans Canada (DFO) introduced a community quota system in 1977, the responsibility for hunting management decision-making has shifted to government (specifically, DFO), rather than hunting communities. This shift corresponds with changes in the use of IQ at the community level. Interviews with relevant individuals in Naujaat (including hunters, elders, and representatives from the Hunters and Trappers Organization) were conducted to provide insight into the nature of these changes, allowing the relationship between government-based management policies and community perspectives, including IQ, to be characterized. The findings are used to identify opportunities for improving the relationship between communities, government management programs, and Inuit Qaujimajatuqangit, culminating in specific recommendations for the relevant management bodies in Nunavut. Ultimately, the goal is to reveal how the narwhal management regime in Nunavut could be improved to reflect Inuit priorities and enable Inuit direction of the management process, based on the experiences of Naujaat.

This research is part of the Fisheries – Western and Indigenous Knowledge Systems (Fish-WIKS) project, which aims to understand the relationship between western and indigenous knowledge systems in the context of Canadian fisheries policy.

Oral Presentations

Community-based Solutions and Outreach

Using local and scientific perspectives to understand factors affecting the distribution of invasive Green Crab (*Carcinus maenas* L.)

Jessica A. Cosham , School for Resource and Environmental Studies, Dalhousie University

Understanding the nature of species' spatial distributions is central to many management regimes, including invasion risk, conservation planning and fisheries management . If there is knowledge of which environmental factors affect species distributions, and how, this may be used to make inferences about distributions within a specific region or scenario. While scientific knowledge has often been used to this purpose, there is increasing support for the incorporation of other knowledge types. As individuals with extensive exposure to their environment, local knowledge holders often have considerable understanding concerning observed distributions of species as well as the factors associated with these distributions. Consequently, multiple knowledge sources may be implemented to improve our understanding of species' distributions.

In this research, we explored the environmental factors driving local-scale distributions of invasive European green crab (Carcinus maenas), using both local and scientific knowledge sources. Information was gathered through 1) extensive review of the scientific literature and 2) interviews with locals who have experience with C. maenas. The most strongly supported environmental factors and conditions were noted, as well as interacting variables (e.g. temporal changes and). Geographic regions for studies were also noted, as there is some evidence that behavioural differences exist among different genotypes of this species.

This presentation will briefly review the rationale behind, methodology for and results of this study, noting key points of agreement as well as incongruences among our knowledge sources. The implications of these findings will also be discussed, such as the potential benefits and limitations of incorporating disparate knowledge sources into management practices.

Oral Presentations

Community-based Solutions and Outreach

Youth and the sea: Ocean literacy in Nova Scotia, Canada

Haley Guest, Departament of Biology, Dalhousie University

Ocean literacy, defined as 'understanding the ocean's influence on you – and your influence on the ocean,' in many ways mirrors the 'Healthy Oceans, Healthy Canada' theme of this year's Sustainable Oceans Conference. Ocean literate citizens understand ocean science concepts, can communicate about the ocean in a meaningful way, and use that knowledge to make responsible, informed decisions. An ocean literate citizenry contributes to a healthy ocean and also understands how the ocean keeps them healthy. Yet the concept of ocean literacy is relatively new, and there is evidence to suggest that people in many countries lack a developed understanding of ocean science and issues affecting the ocean. This study evaluated the level of ocean valuation, knowledge, interaction and interest of public school students grade 7-12 (ages 12-18) in Nova Scotia, Canada, a region with strong connections with the sea. To do this, a quiz and survey were used in 11 public schools across the province, with a total of 723 students participating in November and December of 2013. Many quiz questions were aligned with the 'Ocean Literacy Principles' established by the Centers for Ocean Sciences Education Excellence in the United States, and quiz 'scores' were assessed for each student. While the average quiz score was below 50%, students reported a high valuation of the marine environment and diverse interest in the oceans, including jobs and careers. Notably, students had greater knowledge and interest in topics concerning ocean life compared to abiotic features of the ocean such as tides and currents. A positive correlation between students' knowledge and value for the ocean identified a relationship that should be considered when approaching marine education. Students who reported greater interaction with the ocean also exhibited higher knowledge levels, and students with higher knowledge levels were more likely to be interested in ocean-related jobs and careers. As both personal value for the ocean and quiz score were found to be significant indicators of a student's interest in ocean jobs and careers, an important link between ocean literacy and economic benefit is evident. We suggest that ocean life can be used as 'hooks' to interest students in learning chemical and physical ocean topics, an area where a clear knowledge gap exists today. Additionally, enhancing direct interactions with the ocean through experiential learning (such as visits to the ocean or 'touch tanks') could be the most effective way of improving ocean literacy as well as marine stewardship. This research provides insight to young peoples' relationship with the ocean and contributes to an understanding of baseline ocean literacy in Canada.

Oral Presentations

Ocean and Coastal Management and Policy

Offshore oil and gas in Nunavut: A place for Inuit Knowledge?

Taylor Mason, Marine Affairs Program, Dalhousie University

In the 1960s, it was found that Nunavut's Arctic waters are rich with oil and gas reserves. Throughout this period, however, extremely high infrastructure costs and the challenge and inexperience of operating in a cold and unpredictable environment put a halt to exploration and oil and gas development. More recently, factors like climate change and reduced ice cover, as well as socio-political and economic incentives, are increasingly attracting corporate attention towards the Canadian North. Oil and gas companies have renewed their interests in extracting these offshore hydrocarbon resources, and are now seeking and receiving exploration licenses to begin their search for oil throughout Nunavut's offshore. In the Baffin Bay and Davis Strait, seismic surveying for oil and gas is dated to begin in the summer of 2016, leaving the government with a limited time frame to create and establish legislation that will define the role of Nunavummiut in these developments. The Nunavut government is the only Canadian legislation that has publicly promised to incorporate local Inuit perspectives and Knowledge into all aspects of its operations, including oil and gas. Information about the territory's socio-economic and natural environment is embedded within Inuit Knowledge, and can serve to inform policy development for the industry. Within the current political regime, can Inuit Knowledge be effectively incorporated in the development of an offshore oil and gas policy? This research will look at the potential means to bring community members and Knowledge holders to the decision-making table, and the effectiveness of these processes within offshore oil and gas development in Nunavut.

Oral Presentations

Ocean and Coastal Management and Policy

Atlantic coral conservation: Skeleton of international protection, but no muscle

Shane Belbin, Schulich School of Law, Dalhousie University

Scientific attention is increasingly focussing on the role of coral in marine ecosystems. In Atlantic Canada, there is a growing body of knowledge on the distribution of cold-water coral, but the governance framework to manage and protect it has made little progress. This presentation assesses the adequacy of the existing framework, and suggests improvements for further policy development.

Corals are subject to threats caused and influenced by human activities. In addition to ongoing issues such as climate change and ocean acidification, a primary threat is damage from fisheries. Many species of coral are slow-growing, with low capacity to respond to change. This means that disturbances can have a long-term impact.

Properly protecting coral requires international cooperation. While significant coral deposits are within Canada's jurisdiction, the distribution extends in to the high seas. This area is subject to regulation by both international agreements and regional arrangements under the auspice of the Northwest Atlantic Fisheries Organization (NAFO).

Although cold-water corals are protected by general measures, there are few binding provisions that specifically consider coral conservation. As a result of this, restrictions are strong on paper, but weak in practice.

To demonstrate this issue, this presentation discusses agreements and legislation found at all levels of government. Analysis at the global, regional, and domestic scale indicates a recurring commitment to the precautionary principle and ecosystem-based management, however, implementation of these principles has been limited.

A proper coral conservation framework should utilize science to properly design protected areas, and mandate non-destructive fishing practices. Integrating the precautionary principle and ecosystem-based management at all levels would be consistent with obligations under international law, and contribute to the sustainability of both the fishery and the marine environment.

Oral Presentations

Ocean and Coastal Management and Policy

Maritime traffic in the Canadian Arctic: Answering the question of who

Leah Beveridge, Department of Industrial Engineering, Dalhousie University

Marine, vessel-based activities in the Canadian Arctic have historically been minimal; aside from some offshore oil and gas exploration in the Beaufort Sea, uses have been limited to annual community resupply, some commercial fishing, but largely local subsistence harvesting. As the climate warms and the sea ice progressively diminishes, it is likely that the Canadian Arctic will gain increasing attention as a potential business arena. It is important that the Canadian Government take a proactive approach to the management of maritime activities because it is much more difficult to try to manage activities after they have begun.

Improved stakeholder integration for more effective governance of maritime activities is being promoted at several scales, for example the Marine Spatial Planning initiative of the Intergovernmental Oceanographic Commission, the integrated ocean management approach of the Canadian Department of Fisheries and Oceans, or the requirement to finalize an Inuit Impact and Benefit Agreement before beginning any major development project in Nunavut.
Understanding the stakeholder environment and coordinating their efforts is no easy feat, though, as the number of actors involved is ever increasing, each operating at its own scale and bring its own set of interests.

Through an international partnership we have been studying the risks, opportunities, and future needs associated with a potential increase in shipping in the Canadian Arctic, and we noticed that the literature on the stakeholders of maritime Arctic activities lacks a holistic view of the wide range of actors involved and the relationships among them.

Furthermore, the reader is often overwhelmed in the literature that does exist by the amount of details, and the sheer volume of information available makes it difficult to see the connections between stakeholders.

We gathered information on the stakeholders through literature reviews, official website mandates, and interviews, and analyzed them based on the scale at which they operate and their interests. We developed a holistic understanding of the stakeholders involved in marine vessel-based activities in Canada's Arctic, and to display the results in a user-friendly visualization tool. We identified 27 stakeholder groups, including Inuit and northern populations, government departments, and industries that use vessels (e.g., shipping, fishing, and cruise). The visualization tool was developed using the programing language D3.js and is publicly available online. With this tool, the user is able to see all the stakeholder groups at once, bundled by operating scale(s) and connected to their interests.

Oral Presentations

Ocean and Coastal Management and Policy

Historical abundances of fish in coastal habitats: Revealing implications of Fisheries Act changes

J. Scott McCain, Department of Biology, Dalhousie University

Coastal habitats are a critical resource for many fish populations. Specifically, vegetated habitats, such as seagrass and rockweed beds, provide essential nursery and juvenile habitat for many commercially important fish. Recent changes to the Fisheries Act of Canada (2012) limit the protection of fish habitat to only those areas that currently have fish which support a commercial, recreational or aboriginal fishery. However, if habitats are currently not used by fish populations, the reason may be due to historical population depletion rather than a lack of importance. This overlooks the potential contributing role of coastal habitats in recovering collapsed fish stocks in Atlantic Canada.

Here, we present results from a series of case studies that aimed to quantify historical changes in fish abundance in coastal habitats. First, we identified several scientific studies in Atlantic Canada which quantified abundances of commercially important fish in coastal vegetated habitats in the past. These studies ranged from the early 1960s to the late 1980s and early 1990s. We then replicated these studies in the same location as the original study site using the same field sampling methods. Comparing current and past fish abundances, we found significant declines and changes in the abundance of Atlantic cod and pollock in different coastal vegetated habitats in New Brunswick, Nova Scotia and Newfoundland. These results indicate that historical levels of fish abundance in coastal habitats were much higher than current levels, highlighting the potentially damaging implications the Fisheries Act changes may have.

Poster Presentations

Science and Technology

A look at the effects anthropogenic noise has on whales in the Arctic marine soundscape: How science can inform policy and influence decision-making

Helen McConnell, Marine Affairs Program, Dalhousie University

The Arctic is experiencing increased attention for resource development resulting from enhanced accessibility from global warming. This significantly increases human presence in relatively pristine areas of the region. This increase activity will result in increased anthropogenic noise in the arctic marine soundscape, thus potentially impacting marine animals. Increased anthropogenic sound, whether intentional or not, has become a controversial topic within government, local communities, NGO's and industry, as we attempt to manage this issue and mitigate any negative impacts. Much research has been conducted internationally on the effects of sound on marine organisms, with limited reference to the arctic marine environment. This project addresses the information gap by conducting a comprehensive literature review, using a multiple sources such as academic journal articles, government documents and NGO reports, to create a summary of relevant scientific research and identify key information regarding the impacts from various human activities on arctic marine organisms. The project specifically focuses on cetaceans due to their dependence on sound for communication, their importance to Inuit culture and livelihoods. This information can then be used to influence and inform management and policy.

This is a particularly complex topic because of the wide variety of sources of human generated sound, such as shipping, seismic surveys, military and navigational sonar, coastal construction and tourism. All of these activities create sounds of various frequency (Hz) and intensity (dB), and the responses by cetaceans vary based on the behaviour and activity (feeding, migrating, breeding, etc.) of the individual, the species, and the nature of marine environment. Generally, it can be stated that there remains significant uncertainty regarding the actual level and significance of impact that anthropogenic sound can have on cetaceans and which mitigation measures are most effective in reducing negative impacts, which implies that the precautionary principle should applied.

Poster Presentations
Science and Technology

Using vitality indicators to assess handling methods for chum salmon bycatch in commercial purse seine fisheries

Maryann Watson, Katrina Cook, and Scott G. Hinch, Marine Affairs Program Dalhousie University; Pacific Salmon Ecology and Conservation Laboratory, University of British Columbia

In the commercial Pacific salmon fishery, management regulations aimed at conserving less abundant species which cannot sustain exploitation dictate that fishers must sort their catch as it is brought on board and release all non-target species. On the north coast of British Columbia, the commercial purse seine fishery is largely comprised of harvesting abundant pink salmon. Chum salmon (*Oncorhynchus keta*), a species of conservation concern, are also frequently encountered and must be released. There are concerns that the handling practices employed to sort and release chum exacerbate the stress associated with capture and result in high post-release mortality. Our study aims to quantify the condition of chum salmon under different handling methods immediately following capture using measures of vitality or reflex impairment. Reflex action mortality predictors (RAMP) are used to check for the presence or absence of natural animal reflexes to generate a condition (RAMP) score in response to stressors and have been used to predict stress and mortality of fisheries bycatch. Chum salmon were caught on a purse seine vessel where fishers conducted a range of sets and handling scenarios that are representative of conditions fish experience during regular fisheries. Fishing methods included different lengths of time fish were held in the net, air exposure time on deck, and the tightness of the net as it was held alongside boats during sorting. RAMP scores were assigned to individual fish immediately upon capture. Reflex impairment was increased (higher RAMP scores) with longer air exposure and increased sorting time. The ultimate goal is that these results can be used in conjunction with other information, such as injury evaluation, and interviews with fishermen and managers, to inform and improve handling and thus the survival of released fish.

Poster Presentations

Science and Technology

Coastal vulnerability to ship-based oil spills in Atlantic Canada

Alexandra Chadid, Hilario Calderon, and Ronald Pelot, Maritime Activity and Research Investigation Network (MARIN), Dalhousie University

Ship-source oil spills are amongst the major sources of oil affecting coastal areas. An end-to-end marine oil spill analysis may provide a model to better allocate response resources or prepare contingency plans for highly vulnerable zones. A consequence assessment is a key aspect of this type of analysis, considering economic, social and environmental aspects of a geographic area; presented in this study as a GIS index tool, which can be applied in the context of Atlantic Canada. A theoretical framework and conceptual model is developed using a literature review of oil spill state-of-art, using Exploratory Network Analysis; and tested using a case study (Halifax Harbour, NS). The novel approach for reviewing the literature provided sound criteria for the conceptual model, which fitted the end-to-end marine oil spill analysis, segregating elements regarding exposure and oil behaviour. Besides, oil spill management indicators were tailored using expertise from Atlantic Canada's Oil Spill Responders, and many gaps were identified to later refine the model as well. Finally, this model considers the range of aspects that influence the consequences of a ship-based oil spill, using readily available information and considering relevant stakeholder's interests.

Poster Presentations

Community-based Solutions and Outreach

CaNOE: Advancing ocean literacy in Canada

Haley Guest, Research Associate, Department of Biology/CERC Lab, Dalhousie University

Ocean literacy is defined as 'understanding the ocean's influence on you – and your influence on the ocean.' There is a clear connection between this definition and the 'Healthy Oceans, Healthy Canada' theme of the Sustainable Oceans 2015 Conference. An ocean literate citizen understands that their health, and the health of all Canadians, relies on a healthy ocean environment – yet low levels of ocean literacy have been identified in Canada. The Canadian Network for Ocean Education (CaNOE) is a new organization that aims to advance ocean literacy by connecting individuals and groups engaged in marine education across the country. Though current ocean education initiatives in Canada are doing excellent work, they are predominantly uncoordinated and insular, leaving a need for a unifying body. CaNOE's mission is to act as a platform for dialogue, sharing, and learning among marine educators and scientists while supporting Canada's international responsibilities in advancing ocean literacy. Since its inception in late 2013, CaNOE's online presence and outreach at both national and international conferences have attracted a membership of almost two hundred. At present, most members are based on the West Coast; however a strong contingent is rapidly building on the East Coast and a priority exists to ensure equal national representation. Current outreach initiatives strive to keep both bases growing while drawing in members from Central and Northern Canada. Continued outreach and a growing membership will help build momentum towards CaNOE's first conference and AGM, scheduled for June 17-18 2015 in Vancouver, British Columbia. By sharing a poster at Sustainable Oceans 2015, CaNOE hopes to link those with an interest in ocean education into the network to advance ocean literacy and contribute to a healthy ocean and a healthy Canada.

Poster Presentations

Community-based Solutions and Outreach

The evolution of subsistence and commercial fisheries in the eastern Canadian Arctic

Jessica Hurtubise and Mirjam Held, TOSST/Fish-WIKS co-op student

Eastern Canadian Arctic Inuit have hunted marine mammals for subsistence for over 4000 years. Historical landing estimates remain incomplete but archaeological sites suggest hunting pressure for each species varied in intensity over time depending on culture and climatic conditions. Today, marine mammals are still hunted including several other fish and invertebrates species. Gear type has greatly changed over time as metal tools, wood, motors and explosives appeared in northern communities. This research aims to investigate the evolution of Nunavut fisheries, both subsistence and commercial, by assessing gear type, landings and quotas, species abundance, use, and conservation status. Gear type was found to be greatly influenced by climatic variations, and exchanging goods with fur traders and whalers. Landings increased over time for most species, which could be the result of Inuit population growth or gear technology development. Restrictions such as harvest quotas or seasonal and area closures were introduced in the late 20th century to comply with species conservation goals. Commercial fisheries continue to grow since the 1960s, targeting Greenland halibut and northern shrimp, and employing more Inuit each year in its fishing plants. The Inuit are interested in developing future commercial fisheries in Nunavut such as invertebrate fisheries. They further wish to increase whale harvesting quotas in order to continue traditional practices and maintain cultural identity. One challenge faced in managing Nunavut fisheries is combining the very different knowledge systems of Western science and Inuit Qaujimajatuqangit. However, collaboration is necessary in further developing Arctic fisheries knowledge and respecting the Nunavut Land Claims Agreement signed in 1993. Commercial fisheries, although typically not involving traditional Inuit hunting practices, can be an important source for local economy by providing employment for fishermen and fisheries observers. Arctic subsistence and commercial fisheries research should continue to better understand Arctic species and accurately record harvest totals.

Poster Presentations

Community-based Solutions and Outreach

Connecting graduate student project deliverables with oceans and coastal education in Nova Scotia

Karen Devitt, Jessica MacIntosh, Elizabeth Edmondson, Maryann Watson, Erin Keenan, Helen McConnell, Anna Naylor Kerri McPherson, Gillian Fielding and Liz Wilson: Oceans and Coasts Education Awareness Network Society – Nova Scotia (OCEANS-NS)

Two examples of oceans and coastal education projects from Nova Scotia are presented. The first describes a professional development (PD) workshop for Oceans 11 teachers that emerged from a Management Without Borders (Faculty of Management, Dalhousie University) project, done in partnership with the International Ocean Institute. The PD workshop hosted by the Department of Education and Early Childhood Development, was facilitated by OCEANS-NS and included an ocean careers section. The second example discusses the development of a series of oceans and coastal books for primary grade levels by students from the Marine Affairs Program, through their fisheries management course. The books have an accompanying teachers guide and support OCEANS-NS education outreach. Both projects reflect on approaches for connecting graduate course deliverables with practical hands-on learning to address social and environmental issues. These experiences are enhanced by strong community engagement and support by partners from the public, NGO and industry sectors.

Poster Presentations

Community-based Solutions and Outreach

A Wave of Waste to a Wave of Change: Engaging community and students through an innovative project

Anika Riopel, Your Environmental Student Association (YESS) and OCEANS-NS, Dalhousie University

A 2014 study by researchers from the US, France, Chile, Australia and New Zealand suggest that there is a “minimum of 5.25 trillion [plastic] particles weighing 268,940 tons” currently floating in our oceans. Most of it is plastic and can take many years to degrade. Earlier this year, a CBC news report described the case of a pigmy whale that washed up on McNabs Island, Halifax. The animal had died with a belly full of plastic, including bags and strapping that would be found on paper or fish bait boxes. These and many other similar stories involving marine turtles, mammals, sea birds and other marine life indicate that we need to be more responsible about how we reduce, recycle and reinvent our waste material.

The purpose of this Wave of Waste project was to generate community awareness of marine waste through a thought provoking sculpture. This collaborative presentation describes the planning, process, implementation and lessons learned. This project took place in May-June, and was organised by students from the YESS, supported by professors and local organisations (Awesome Foundation, OCEANS -NS, 100In1day Festival). Working with student and public volunteers, the team designed and constructed a replica of Donna Hiebert ‘s iconic Halifax sculpture “The Wave”, made mainly out of local marine waste. During the project our volunteers were able to (a) learn about the impacts of marine waste, (b) design and create a community event using an innovative sculptor, and (c) engage with the 100in1 Day Halifax citizen-driven festival of action and other oceans week activities.

By sharing our project we hope to create conversations around practical community engagement strategies to support actions for enhancing and maintaining sustainable oceans – Healthy Canada, Health Planet.

Poster Presentations

Community-based Solutions and Outreach

When wellbeing matters: Shantytown fishers in a highly industrialized Brazilian estuary—Lessons from the Newfoundland fisheries collapse

Cintia Gillam, Master candidate, International Development Studies, Saint Mary's University

This paper demonstrates how a wellbeing approach may contribute to better assessing poverty and other factors that affect fishers' wellbeing, through a case study of the mangrove community of Vila dos Pescadores, in the city of Cubatão, Brazil. The 3-dimensional wellbeing approach (material, relational and subjective) highlights the importance of wellbeing for the development of sustainable fishing at Vila dos Pescadores. Specifically, we argue that a pre-existing state of relational wellbeing enables fishers to deal with environmental shocks. This is seen following the fish mortality caused by a fire at the fuel storage facility of a Brazilian company in the Santos estuary in April 2015, which provided an impetus to fishers, community members and policy makers of the city of Cubatão to organize themselves against environmental disasters. The impact of the Newfoundland fisheries closure in Newfoundland led to a loss of non-material benefits to fishers such as loss of relational wellbeing. We will apply lessons about wellbeing in Newfoundland fishing communities to this Brazilian coastal community, and compare the forms of wellbeing in Vila dos Pescadores with Newfoundland fishing communities. The analysis of fishers' wellbeing is important at a policy level in order to support interventions such as selective urbanization, involvement of fishers in conservation initiatives and implementation of racial consciousness projects.

Poster Presentations

Community-based Solutions and Outreach

Examining community adaptation in the Inuvialuit Settlement Region, Northwest Territories

Hillary MacDonell, Marine Affairs Program, Dalhousie University

The Inuit have been adapting to changing environmental and social conditions for centuries, however, the current rate of anthropogenic driven climate change is unprecedented and threatening the social, cultural and ecological characteristics of many Arctic communities. In the Inuvialuit Settlement Region (ISR), dramatic changes in climatic conditions have been documented, including some of the greatest temperature changes recorded globally. The Government of the Northwest Territories, Inuit Organizations, and the scientific community have identified adaptation planning as a priority; however, no formal long-term adaptation planning for climate change has been undertaken in the ISR. The current study identifies community vulnerabilities and the adaptation actions taking place in three communities in the ISR, Inuvik, Aklavik and Tuktoyaktuk, followed by an examination of community adaptation readiness. This study is the first to examine community adaptation readiness in the ISR. An adaptation readiness framework was used to examine the existence of government structures and policy processes required for adaptation to take place. A systematic literature review was used to identify adaptation readiness indicators to support the existence or absence of those factors essential for successful adaptation. The results of the study will inform regional and local decision makers regarding community capacity to adapt to climate change and identify trends in community adaptation readiness in the ISR. Recommendations are provided to local and regional governments concerning the potential gaps or barriers that may be hindering community readiness and steps to overcome adaptation barriers are identified. The outcomes of this research will contribute to planning and policy development in the ISR and provide insight on community climate change adaptation in the Canadian Arctic.

Poster Presentations

Community-based Solutions and Outreach

The lure of the ocean: Engaging youth to stay and work in Nova Scotia

Danielle Scriven, Marine Affairs Alumnus/OCEANS-NS

Many of Nova Scotia's youth are leaving the province to work elsewhere. Oceans and Coasts Education Awareness Network Society – Nova Scotia (OCEANS-NS) is interested in promoting education and career opportunities in the oceans science, arts and technology sectors to retain youth in Nova Scotia. This study surveyed youth to understand factors affecting youth retention, and measured youth perceptions of available opportunities. Findings suggest that respondents are most likely to stay because of lifestyle, proximity to the ocean, and job opportunities with desirable salaries, but are likely to leave because of a lack of jobs and low salaries. Findings also suggest that respondents are not interested in, or are not aware of, the key Nova Scotia growth sectors. It is recommend that OCEANS-NS hosts a youth summit that advertises opportunities in sectors that will have the most job opportunities in order to increase awareness of and interest in careers that will help strengthen the Nova Scotian economy.

Poster Presentations

Community-based Solutions and Outreach

Bycatch mitigation measures for five marine species in Atlantic Canada

Stephanie Maasik, School for Resource and Environmental Studies, Dalhousie University

The level of bycatch mortality globally may threaten the long-term sustainability of valuable fisheries, and impact biodiversity in our oceans. Canada has a critical role to play to help reduce bycatch levels as these species are important components of the Canadian marine ecosystem. Little initiative has been taken in Atlantic Canada to regulate bycatch in its fisheries.

This report aims to review bycatch mitigation measures that have been proposed, tested or considered for five species: North Atlantic right whale (Eubalaena glacialis), porbeagle (Lamna nasus) and Greenland (Somniosus microcephalus) sharks, and loggerhead (Caretta caretta) and leatherback (Dermochelys coriacea) sea turtles within Canada and globally. Bycatch is the primary threat foreseen for Greenland sharks, and represents the main impediment to the recovery of the remaining at-risk species. Changes to fishing practices (e.g. disentanglement and handling protocols, reduction and change of set soaktime, and depth of gear), seasonal closures of fishing areas, fleet communication of bycatch hotspots, and gear modifications to reduce hooking and entanglement (e.g. reduction in amount of line, changes in bait and hook type, and changes in rope material) will be examined. Maintaining target catch rates, and collaboration with fishers on the proposed mitigation measures are essential for successful implementation and maximizing the possible reduction in bycatch rates.

From an in-depth analysis, recommendations for measures government and industry can take to reduce bycatch levels for the five species will be developed. This includes Canadian legislation, management, and policy that can be used to implement and enforce the recommended mitigation measures. By taking steps to reduce bycatch of these marine mammals, Atlantic Canada can help maintain a healthy ocean.

Poster Presentations

The role of fishers in the management of the Nova Scotia lobster industry

Elizabeth Baker, Marine Affairs Program, Dalhousie University

The Nova Scotia lobster industry is the highest valued fishery in Canada, with over 3000 licenses held within the province. The industry supports many coastal communities and plays an important role in the livelihoods of many families who participate in the harvesting, processing, transporting, or selling of lobster. As catches have steadily risen over the past decade, new challenges have evolved surrounding management of the fishery. Concerns are developing among stakeholders of how the industry will develop and the role they play in its management.

This research examines the role of Nova Scotia lobster license-holders (fishers) in the management of the lobster fishery. While Fisheries and Oceans Canada (DFO) uses advisory committees as well as other forms of consultation with industry, there is no framework in place to advance change in the system so that fishers can share power with the government in making final management decisions. This results in inconsistencies in terms of the levels to which fishers' concerns are addressed. Semi-structured interviews were conducted with fishers from three lobster-fishing areas (LFAs) in Eastern Nova Scotia to provide insights into current consultation and decision-making practices. Barriers to fisher participation in management were also identified by those interviewed. The results are used to identify areas within DFO's consultation and decision-making methods requiring improvement, in order to encourage the development of participatory management of the lobster industry.

Poster Presentations

Ocean and Coastal Management and Policy

Addressing the threat of ship strikes to baleen whales (Mysticeti) along British Columbia's coastline

Elizabeth Edmondson, Marine Affairs Program, Dalhousie University

Within British Columbia's waters the majority of species of Baleen whales that can be found are listed as threatened or endangered under the Species at Risk Act. Collisions with vessels have been documented as an impediment to population recovery and is noted as a threat within Recovery Plans. The degree of overlap between vessels and Baleen whales in British Columbia is undocumented, which has resulted in a knowledge gap of the impact that collisions have on Baleen whale species. Current management frameworks of marine activities and policies that are meant to support the conservation of whale species are not integrated which has resulted in a lack of consideration for measures that would reduce the impact of shipping on whale species.

As the volume of commercial shipping along British Columbia's coastline is expected to increase, management planning of vessel activity along in British Columbia should be integrated with conservation efforts that concern Baleen whale species under SARA. Identifying areas of ship-whale overlap, how current management and policy concerning the marine environment can support or integrate measures that reduce ship-whale interactions and recommendations that promote vessel activity while maintaining Canada's obligation to protecting endangered species is needed.

This research examines current measures and policies in British Columbia related to the protection of Baleen whale species from vessels strikes, identifies gaps as well as opportunities and constraints for implementing measures and provides recommendations based on case studies from Canada, United States, and Oceania which identify measures that have been implemented to address the issue of vessel strikes. Addressing ship strikes through management and policy measures requires ongoing data collection, implementation of measures by different stakeholders and enforcement. Taking proactive steps to assess the current state of policy and management measure sin British Columbia in relation to conservation of Baleen whale species and reducing ship strikes can lead to clearer mitigation measures being implemented over time.

Poster Presentations

Ocean and Coastal Management and Policy

Harbour divestiture in Canada: Implications of changing governance

Shauna Pettipas, School for Resource and Environmental Studies, Dalhousie University

Legislation aimed at protecting the marine ecosystems has direct impacts on environmental management of port and harbour operations. As such, environmental management of harbours requires a great deal of technical and financial resources to operate effectively. In Canada, this technical expertise and governance has been provided by the federal government for federally owned harbours, but are often contaminated from historical industrial activities and pose potential risks to marine ecosystems. Following divestiture there may be consequences associated with change of governance, because new harbour managers may lack technical and financial resources to follow existing management protocols. Harbour uses often do not change appreciably once divested, thus impacts to sediments, or requirements for maintenance and upgrades will typically continue following change of authority. Policies to implement education and training are therefore essential following change of authority for new custodians to properly understand historical contamination impacts and associated environmental liabilities. Adhering to established management protocols will enable new harbour managers to more effectively manage potential environmental liabilities associated with divested harbours; therefore, improving the health of Canadian oceans.

The Sobey Fund for Oceans

Made possible by a generous and innovative gift by Donald R. Sobey, a unique partnership has been formed by the Marine Affairs Program (MAP) at Dalhousie University, “Canada’s Ocean University,” in Halifax, Nova Scotia, and WWF-Canada, a leader in marine conservation.

The goal of the Sobey Fund for Oceans is to inspire innovative multi-disciplinary approaches for creating healthy oceans and sustainable economies. The Sobey Fund for Oceans provides resources to support scholarships and work placements to help tomorrow’s leaders see “beneath the surface” of our oceans’ problems to find lasting solutions.

Sobey Fund for Oceans Scholarship Recipients 2014-2015

Alba Garcia

My main goal while studying at Dalhousie is to enhance my knowledge about the marine environment and the management measures that can be implemented to improve the current ocean situation in an ecological, social, and economic sense. I want to collaborate and work in the development and implementation of new marine management approaches to combine ocean conservation with the sustainable use of marine resources. I am really grateful to the Sobey Fund for Oceans for this opportunity, and I hope this knowledge will enable me to keep fighting for our oceans and the sustainable use of its resources.

Monica Reed

I am thrilled to have the support of the Sobey’s Fund for Oceans to pursue my interests in sustainable management of the marine environment. My research aims to promote integrated coastal management of seagrass ecosystems, with a specific focus on the potential of participatory conservation efforts and community based ecological monitoring. Ultimately, I hope to contribute to adaptable management strategies that encourage resilience as coastal ecosystems become increasingly stressed by the pressures of climate change.

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WWF-Canada has an ambitious national oceans program and eight offices across the country. The Atlantic Region is home to two of them, one in Halifax, NS since 2001 and one in St. John's, NL since 2007, both of which focus on issues pertaining to marine conservation. www.wwf.ca

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Acknowledgements

Our sincere thanks to the presenters, participants, chairs, judges, photographers, rapporteurs and volunteers who have contributed their time and talent to make this a memorable event!

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We sincerely thank Mr. Robert Sobey for his remarks and presentation of the Sobeys Scholarship awards that are generously providing educational opportunities for future ocean leaders.

We would like to thank and recognize those who made our opening program so special and without whose presence our conference would have been much diminished. Special thanks to our keynote speaker, Cristina Mittermeier, and to our panelists, James Boxall, Naiomi Metallic, and Paul MacNab, as well as our moderator Julie Reimer. A big thank you to Dr. Claudio Aporta, Director of the Marine Affairs Program, for his opening remarks

Special thanks to our presentation and poster judges, Kes Morten, Alanna Gauthier, Megan Bailey, Hugh Williamson, and Kascia White, and to our photography competition judges, Cristina Mittermeier, Jessica Conrod, Maria Delasalle, and Becky Field.

A very special thank you is due to Becky Field for her guidance and support in helping us plan for this conference. Others without whom our efforts would not have been possible include Nikki Comeau, respondents of the Sustainable Oceans questionnaire, and those that provided food services and material to make this event possible.

The organization and support of the sub-committees, made this conference a reality. A special thank you goes out to the Submissions Sub-Committee – Adrian Gerhartz (Chair), Helen McConnell, Erin Keenan, Elizabeth Baker, and Kelsey Desnoyers, the Event planning Sub-Committee – Julie Reimer (Chair), Kimberley Vardon, and Alexandra Chadid, and the Outreach Sub-Committee – Taylor Mason (Chair), Hillary MacDonell, Giselle Gao, and Kascia White.

In particular, we would like to acknowledge Hillary MacDonell for her hard work on fundraising and assisting with the questionnaire, Elizabeth Baker for efforts in coordinating poster and paper presenters and judges, Alexandra Chadid for sourcing and coordinating food services, and we thank Adrian Gerhartz and Liz Wilson for creating this abstract booklet. Thank you to everyone who spent time putting up posters, and helping out with conference promotion whenever they could. We would also like to thank Alexandra Chadid and Jamie Cordwell for their creativity in designing our conference logos.

We also extend our thanks to those from the incoming 2015-2016 Marine Affairs class volunteering their time during this conference!

A sincere thank you also goes to Liz Wilson, our co-coordinator, her guidance, patience, and support have been key elements in making this event possible.

This conference reflects the dedicated teamwork of the students of the Marine Affairs Program 2014-2015, under the leadership of the conference co-chairs, Elizabeth Edmondson and Maryann Watson.

Photo: Jamie Swenson

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