Sobey Fund for Oceans

The Marine Affairs Program
Dalhousie University

PRESENTS THE

Sustainable Oceans Conference 2013

Building Bridges in Ocean Management

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

April 12th
Potter Auditorium and Atrium
Kenneth Rowe Management Building,
6100 University Avenue

April 13th
CIBC Auditorium and Atrium
Goldberg Computer Science Building
6050 University Avenue

DALHOUSIE UNIVERSITY
Inspiring Minds

Marine Affairs Program

April 12	Program	Kenneth Rowe Management Building: Atrium & Potter Auditorium (6100 University Ave.)
5.30	**Reception**	**Poster viewing**
6.30	**Welcome**	**Opening remarks**: Dr. Greg Hebb, Director, Rowe School of Business and Acting Dean, Faculty of Management, Dalhousie University Dr. Lucia Fanning, Director, Marine Affairs Program, Dalhousie University Ms Jenna Stoner & Ms. Leah Beveridge, Marine Affairs Program (Conference Co-chairs)
	Sobey Fund for Oceans	**Overview:** Dr. Robert Rangeley, WWF Canada
		Presentation of Scholarship Award to Scott McCain by Mr. Robert Sobey
6.45	**Keynote speaker**	**Ms. Sarika Cullis-Suzuki**, University of York, UK
7.15	**Panel discussion**	**Government:** Ms. Maxine Westhead, Department of Fisheries and Oceans **Industry**: Ms. Christine Penney, Clearwater Seafoods **Academia:** Ms. Jessica MacIntosh, Marine Affairs Program **Science**: Dr. Tyler Eddy, Biology Department, Dalhousie University **Public**: Mr. Iaian Archibald, Surfing Association Nova Scotia **Outreach**: Mr. Jarrett Corke, Conservation Videographer, Co-Founder of Sharks of the Atlantic Research and Conservation Coalition (ShARCC)
	Moderator	**Ms. Jenny Baechler,** Associate Director, Corporate Residency MBA, Faculty of Management, Dalhousie University
8.30	**Commentary**	**Mr. John Lewandowski,** Communications planning and media training
8.45	**Closing remarks**	Ms Jenna Stoner & Ms. Leah Beveridge
9.00	**End of Program**	

April 13	Program	Goldberg Computer Science Building: Atrium & CIBC Auditorium (6050 University Ave.)
8.30	**Registration**	**Poster viewing**
9.00	**Welcome**	**Ms. Leah McConney**, President, Marine Affairs Student Society
9.**05**	**Remarks**	**Aquaculture Association of Nova Scotia**: Responsible industry development in NS
9.15	**Session I**	**Presentations:** Responsible Industry Development
10.45	**Break**	**Poster viewing**
11.15	**Session II**	**Presentations:** Stakeholder Engagement and Public Participation
12.45	**Lunch**	Provided by the Aquaculture Association of Nova Scotia
1.30	**Session III**	**Presentations:** Information & Knowledge Management for Effective Ocean Governance
3.00	**Break**	**Poster viewing**
3.15	**Session IV: Workshop**	**Drafting a blueprint for building bridges in ocean management**
		Group break out
4.00		**Re-group** – Reporting back and plenary style discussion—Editorial
4.30	**Presentation of Prizes**	**Judges and Keynote Speaker**
	Closing remarks	Dr. Lucia Fanning, SFO Committee, Ms Jenna Stoner & Ms. Leah Beveridge
5.00		**End of 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

Building Bridges in Ocean Management

Marine Affairs Student Conference, April 2-13, 2013

An overreaching theme for Sustainable Oceans 2013 is "connecting the science, policy, and public spheres." As such, the student-led conference aims to build bridges by bringing people together – voices from all sectors – so that we can collaboratively develop a strong voice to identify challenges currently undermining sustainable ocean management in Canada and determine potential solutions.

Special objectives of the conference are to:

- Identify challenges currently undermining sustainable ocean 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.
- Bring together members from all sectors of ocean management and provide a platform to communicate and collaborate in order to achieve greater ocean management solution.

Contact Details: Jenna Stoner: oceansconf@dal.ca; http://soceans.wiki.dal.ca

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 of the Marine Affairs Program we would like to warmly welcome you to the Sustainable Oceans Conference: Building Bridges in Ocean Management.

The overarching theme for this year's conference – "connecting science, policy and the public spheres" – stems from the recognition that a platform for engaged discussion and collaborative dialogue is invaluable if we hope to find sustainable solutions to the complex issues currently facing our oceans.

We are fortunate to have many people from various walks of life that are passionate about ocean sustainability, however communication and collaboration between those who contribute to ocean sustainability is often lacking. As such, the Sustainable Oceans Conference aims to bring these people together and create a discourse on how best we can collectively encourage responsible ocean management and development.

Our vision from the outset was to create an environment where everyone's voice can be heard and hence we sincerely hope that an opportunity will arise for each of you to share your thoughts and ideas on how we can ensure a sustainable future for our oceans.

Thank you for your support and participation!

Sincerely,

Jenna Stoner and Leah Beveridge

Keynote Speaker and Panel

Keynote Speaker: Sarika Cullis-Suzuki, University of York, UK

Sarika Cullis-Suzuki is from Vancouver, BC. She is currently finishing her PhD at the University of York, UK, examining the effects of anthropogenic noise on fish along the BC Coast. She is also interested in marine protected areas and the high seas. Sarika obtained her undergraduate degree in Biology at the University of California, Berkeley, and her Master of Science degree at the University of British Columbia.

She is also passionate about science communication, and has filmed 3 episodes for the series 'The Suzuki Diaries' for CBC's The Nature of Things, as well as been part of various other environmental media projects. In 2011, Sarika was named one of Canada's Top 30 Under 30 by Explore Magazine, and in 2012, an influential Canadian millennial by The Huffington Post Canada.

Panel Member (Science): Dr. Tyler Eddy
Biology Department, Dalhousie University

Dr. Eddy is a Postdoctoral Fellowship at Dalhousie University working on a project investigating the ecosystem effects of invertebrate fisheries in New Zealand and Canada, as well as a field project investigating the ecosystem effects of rockweed harvest in Atlantic Canada. Dr. Eddy received his PhD in marine ecology at Victoria University of Wellington, New Zealand studying marine reserves as conservation and management tools, with implications for coastal resource use. Dr. Eddy's research is focused on understanding human impacts on marine ecosystems, which spans the fields of: trophic ecology of fishes, ecosystem modeling, bioeconomic fisheries modeling, and social-ecological systems.

Panel Member (Public) Iaian Archibald, Chair of the Coastal Access Committee, Surfing Association of Nova Scotia (SANS)

Iaian Archibald has been working on coastal issues for 15 years, first on the West Coast of Vancouver Island, and for the past decade here at home in Nova Scotia. Iaian's coastal and ocean work has included being a member of a whale detanglement team, Ecology Action Centre Board Member for Coastal and Water issues, theorganizer of multiple beach clean-ups, and has led the creation of recreational infrastructure for coastal users on both coasts. Iaian is currently the chair of the Coastal Access Committee, Coordinator for the Surfing Association of Nova Scotia and a Consultant specializing in Student Recruitment and Operations.

Panel Members

Panel Member (Industry) Christine Penney, Vice President of Sustainability and Public Affairs, Clearwater Seafoods

Ms. Penney plays a leadership role in global sustainability initiatives serving on the Executive Committee for the global Association of Sustainable Fisheries and as a Fisheries Ambassador for Prince Charles Sustainability Unit, Marine Program. Ms. Penney has also served in a variety of roles for industry associations such as the Canadian Association of Prawn Producers, the Seafood Producers Association of Nova Scotia and the Fisheries Council of Canada. As Clearwater's first female executive, Ms. Penney has become a role model and mentor for many women in the industry.

Panel Member (Academia), Jessica MacIntosh, Master of Marine Management Candidate, 2012-2013

Jessica comes from Melmerby Beach, Nova Scotia. She recently earned a Certificate in GIS for Environmental Management from the University of Toronto, and in 2010 she completed her BA (Hon.) in International Development Studies with an emphasis on Caribbean History at Dalhousie University. As a MMM student, Jessica's major research interests are diverse, but motivated by prevalent issues in Nova Scotia, and large marine ecosystems like the Caribbean. Throughout her academic career, Jessica has traveled throughout Canada and the Caribbean on environmental sustainability projects, and facilitated marine education on traditional sailing vessels. She has worked in Search and Rescue with the Canadian Coast Guard, as a Fisheries Observer in the North Pacific, and is pursuing Transport Canada seafarer's certification.

Panel Member (Outreach): Conservation Videographer, Co-Founder of Sharks of the Atlantic Research and Conservation Coalition

Born and raised in Stratford, Ontario, Jarrett has always felt a deep connection to the ocean. Dedicated to conserve the ocean and sharks, Jarrett returned to university and completed a Masters of Resource and Environmental Management at Dalhousie University, Nova Scotia. As one of the directors of the documentary film "Thrill of the Catch" he provided significant insights into some of the underlying features of shark derbies or shark fishing tournaments. Jarrett was recently the co-chair for the annual Halifax Oceans Film festival (2012) and is working on several other film projects related to ocean conservation issues. An avid underwater photographer, he uses both film and photography to communicate key messages and solutions to support sustainable ocean management.

Panel Members

Panel Member (Government), Maxine Westhead, Acting Regional manager for the Department of Fisheries and Oceans (DFO) Species at Risk Program.

Ms. Westhead received her B.Sc. in Marine Biology from the University of Guelph in 1996. She moved to Parrsboro, Nova Scotia with her husband, a paleontologist, in late 1997 and they have never considered moving back. She secured a position with Fisheries and Oceans Canada in early 1998 and has worked in various positions since. In 2006 she completed her M.Sc. from Acadia University where she studied the ecological effects of clam and baitworm harvesting and explored predictive modeling for mudflat communities. Most recently her work has focused on aquatic Species at Risk, Marine Protected Area management and Marine Protected Area network planning.

Panel Moderator: Jenny Baechler - Associate Director, Corporate Residency MBA, Dalhousie University

Jenny Baechler is an interdisciplinary PhD student at Dalhousie University. She holds an MA in Peace and Conflict Studies from the European University Centre for Peace Studies in Austria and a BSc in Marine Biology from Dalhousie University. Her dissertation research is focused on identifying models and mechanisms for collaboration amongst those government departments/units working in the international arena on the prevention of violent conflict. The other focus of her work is the 22-month Personal / Professional Effectiveness curriculum offered to Dalhousie Corporate Residency MBA students to explore topics and skill areas related to leadership development and career management

Friday Evening Commentator: John Lewandowski – Consultant in communications planning and media training

John Lewandowski holds forty years of journalistic experience in private and public broadcasting (CBC and Broadcast News/The Canadian Press) over which time he has worked on all media platforms including radio/ television, print, magazines and digital. His work history includes writing, reporting, editing, on air presentation and newsroom management covering a diverse array of topics from politics, sports, arts and culture. Mr. Lewandowski now works as a consultant in communications planning, issues management, media training, writing and editing.

Conference Committees and Volunteers

Conference Co-chairs
Jenna Stoner, MMM Candidate
Leah Beveridge, MMM Candidate

Submissions Committee

Amber Creamer, MMM Candidate
Jessica MacIntosh, MMM Candidate
Anna Naylor, MMM Candidate
Tamara Wilson, MMM Candidate
Martín Leguizamón, MMM Candidate

Events Committee

Rachel Wang, MMM Candidate
Andrea Flynn, MMM Candidate
Melissa Cano, MMM Candidate
Leah Beveridge, MMM Candidate
Alexandra Vance, MMM Candidate

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Anna Naylor, MMM Candidate
Leah McConney, MMM Candidate
Jeremy Corbin, MMM Candidate
Jessica Corkum, MMM Candidate
Ashley David, MMM Candidate
Alexandra Vance, MMM Candidate
Yue Yao, MREM

Conference Coordinator

Liz Wilson, Interdisciplinary PhD Candidate, Faculty of Graduate Studies, Dalhousie University

Judges

Oral Presentations

Dr. Elizabeth M. De Santo
Assistant Professor
Marine Affairs Program
Faculty of Management
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Ms. Alanna Gauthier, MMM
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Professor Ian McAllister
Department of Economics
Faculty of Science
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Professor Bertrum H. MacDonald
School of Information Management
Faculty of Management
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Poster Presentations

Dr. Vivian Howard
Associate Professor
Associate Dean (Academic)
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Ms. Maria Bugsy Delesalle, MMM
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Liz Wilson
interdisciplinary PhD Candidate,
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Dalhousie University

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Oral Presentations

Responsible Industry Development

Integrating science & management for shipping development & the risk of LNG/Oil spills in the Canadian North

Andrea Flynn, *Marine Affairs Program, Faculty of Management, Dalhousie University,* ***andrea.flynn@dal.ca***

The transportation of liquid natural gas (LNG) and oil products in the marine environment pose some serious risks to natural ecosystems and the people who rely on them. LNG and oil spills or accidents could have serious impacts on Northern ecosystems because of the composition of these substances, the time it takes for these substances to break down in cold environments (compared to warmer environments at lower latitudes), and the ability of emergency units to respond to an accident. This is a serious concern for all parties involved, including government, industry, and local people. With the likely increase of shipping activities in the North and higher risk of accidents as sea ice diminishes due to climate change, managers must know what products are being shipped, the consequences of spilling that product, and the measures that need to be taken to clean up the product in the event of a spill. This paper will focus on the Canadian Arctic and the dangers of shipping development in this region.

Science (i.e. oceanography, biology, chemistry, etc.) plays a major role in providing an understanding of LNG/oil in Northern environments. Managers must then understand not only the science but also the stakeholders involved and the mechanisms that are in place for dealing with shipping accidents and LNG/oil spills. Therefore, collaboration between scientists, managers, and stakeholders is needed in order to effectively prevent, manage, and respond to LNG/oil spills in the face of Northern shipping development. The recognition that the effects of LNG/oil in the Northern marine environment are largely uncertain will be crucial for developing shipping activities in a precautionary and highly regulated fashion. With regard to the Canadian Arctic, this paper will examine the research that is being done now and the existing policies that are in place to incorporate science into management. This study will contribute to an understanding of the LNG/oil spill science that is available to managers and it will highlight the importance of building bridges between science and marine management to achieve sustainable ocean use.

Oral Presentations

Responsible Industry Development

Creating a false shortage within a fishery: Can it be accomplished and if so what are the benefits?

Dan Mombourquette, *Department of Environmental Science, Saint Mary's University,* ***dmombour81@hotmail.com***

This report details that creating a false shortage of a fishery product could potentially have several benefits. A false shortage restricts/limits a product's abundance or supply onto the market place when the products abundance is not in short supply. Based on the price-quantity theory of microeconomics, if the supply of product onto the marketplace is limited then demand will consequently increase; thus, a false shortage could have the unique benefit of increasing a product's price (per unit). Another indirect benefit which could arise from creating a false shortage might be: as effort is reduced (catching less product), this would reduce harvesting pressure on the stock and thus could increase the sustainability of the fishery. This report also relates false shortage to fisheries bio-economics. Within this theory, it states that as effort is reduced to a specific point, costs will also be reduced thus maximizing profits (maximum economic yield; MEY). After an introduction into fisheries economics, the report will draw on several case studies (American eel, Spanish hake and Canadian silver hake) as a comparison of price-quantity relationships to articulate the arguments. Following the comparative analysis, the author will complete a cost/benefit analysis of predicted outcomes of creating a false shortage. Lastly, the author will provide recommendations on how to promote this as a management strategy.

Oral Presentations

Responsible Industry Development

Strengthening shark product trade management law and policy in Canada

Yue Yao, *School for Resource and Environmental Studies, Alumni, Dalhousie University,* ***yue.yao@dal.ca***

The objective of this paper is to analyze the flaws in Canadian shark product trade management, and to provide recommendations in order to improve the current practices. Using data provided by the FAO and DFO, Canadian shark product imports and exports are analyzed in comparison with global totals. It demonstrates Canada does not play a significant role in shark product / shark fin trade worldwide. However, problems in the current management approaches are also discovered. First, the federal government departments responsible for Canadian shark trade management do not cooperate enough in regulating the trade, which results in lack of identification of species involved. Second, the municipal shark fin bans, that have emerged in recent years in a number of Canadian cities, face difficulties of enforcement due to their unclear objectives, lack of legislative authority and lack of consideration of cultural differences. Thus, it is recommended that (1) government departments should work together to conduct a management plan for shark product trade in Canada; (2) data accuracy of shark product trade should be improved by recording species cross Canadian borders.

Oral Presentations

Stakeholder Engagement and Public Participation

Integrated coastal zone management or integrated climate change management? The case of the Venice Lagoon, Italy

Leah Beveridge, *Marine Affairs Program, Faculty of Management, Dalhousie University,* ***leah.beveridge@dal.ca***

The health of the coastal environment is not only a concern for conservationists and ecologists, but also for anyone that lives near or depends upon the coast and its ecosystem goods and services. The presence and activities of people within the coastal zone have severely degraded the natural environment. This calls for management to find a balance between the social, economic, and environmental systems within the coastal zone. It has been recognized at an international level that the most appropriate way to achieve this is through integrated coastal zone management (ICZM): a process whereby integration occurs vertically, between multiple levels (e.g. local, regional, national), and horizontally, bringing together all sectors and interests, to develop long-term adaptive management plans for sustainable coastal use. Relatively recent additions to the incredibly long list of issues that need to be addressed are the impacts of climate change, particularly sea level rise and increased storminess. Such impacts, such as flooding, are often much more dramatic than the cryptic issues associated with human development, like pollution. Thus, it seems plausible that management would focus on climate change issues.

Through an analysis of the issues being addressed by management within the Venice Lagoon of Italy, this paper demonstrates that this is, in fact occurring, and instead of ICZM, coastal managers are practicing integrated climate change management (ICCM). ICCM is a form of coastal management that integrates stakeholders and develops long-term adaptive management plans, but focuses solely on climate change issues. The replacement of ICZM with ICCM is an additional threat to the coastal zone because it provides a false sense that ICZM is being achieved while the non-climate change issues go unrecognized or addressed. The Intergovernmental Panel on Climate Change, the international scientific body addressing global climate change, recommends ICZM as the best method for addressing coastal climate change issues as well as non-climate change issues. Therefore, ICZM and not ICCM should be used to sustainably manage the coastal zone in the face of climate change.

Oral Presentations

Stakeholder Engagement and Public Participation

Problems of Scale

Francois Bregha, *School for Resource and Environmental Studies, Dalhousie University,* ***francois.bregha@dal.ca***

Ocean management is faced with a plethora of challenges, but in recent decades some truly global problems have emerged. Ocean acidification is a relatively new phenomenon, a consequence of increased carbon dioxide emissions into the atmosphere. Though the predictions concerning ocean acidification are dire, the context for the information is still restricted to the international level. Not only is it important to understand the effects of ocean acidification, but in order for society to successfully mitigate its impacts, a proper transmission of information is necessary. This requires and understanding of the enablers and barriers that appear during the transmission of information from an international community to a local community in Nova Scotia. Similar information barriers may exist between different scales of governance, however their relative importance will differ.

Informing stakeholders at a local scale will require information to change hands multiple times, and at each stage, a different level of understanding is required. Furthermore the salience of information changes based on the perspectives of a given governance scale. Concerning a problem as complex and evolving as ocean acidification, information flow will require a different approach in order to be salient to local stakeholders. This will require adapting the knowledge to Nova Scotia's situation, establishing trusted sources that can reach the coastal communities of Nova Scotia, and empower coastal communities to coordinate their efforts with the global community.

Global problems in ocean management will require a re-evaluation of how information is transmitted to the public. This will affect not only the channel but also the form such information takes. Modern ocean management requires small areas of control to expand their scope to consider the influences of large scale processes. Ocean sustainability will require many small actors to take a concerted effort, given the information concerning the state of the ocean itself. It is therefore crucial to understand how global information scales down to a sub-regional level, as well as identify the appropriate method to transmit such information between each level.

Oral Presentations

Stakeholder Engagement and Public Participation

Alternative dispute resolution: Can it advance the stated policies of integrated coastal zone management in Canadian fisheries and oceans?

Courtenay. E. Parlee, *Interdisciplinary Studies, School of Graduate Studies, University of New Brunswick,* ***Courtenay.parlee@gmail.com***

The Canadian government agreed to support and participate in integrated coastal zone management as a policy objective when it ratified the 1992 Rio Declaration on Environment and Development (UNEP 1992) and the Oceans Act, SC 1996, c 31. Finite economic, environmental, political and cultural resources associated with fisheries must be shared by stakeholders who have valid yet divergent interests and values. Power struggles and conflicts are inevitable (Bastien Daigle et al 2008:121). Using Clam Harvesting Area Two in Southwest Nova Scotia, Canada as a case study, this presentation will explore the consultation and collaborative processes associated with integrated coastal zone management. I will do this through the lens of lternative dispute resolution, specifically the transformative approach. More particularly, the presentation will demonstrate how failure to adhere to basic dispute-resolution engagement principles produced conflict escalation that continues to impede relations between governing authorities and independent clam harvesters today. Although conflict has proven to be a significant barrier to sustainable coastal management, this research will suggest that alternative dispute resolution processes can resolve conflict and achieve better standards of conflict management and governance. The outcomes are the result of research that I conducted between 2008 and 2011, as a Coastal CURA Masters student. This involved a participatory action research approach and the data for this study were collected using three methods: (i) tape recording public information sessions regarding clam harvesting issues; (ii) two focus group sessions; and (iii) individual interviews. In total, six independent clam harvesters participated in two focus group sessions and eight government regulators were individually interviewed.

Oral Presentations

Information & Knowledge Management for Effective Ocean Governance

Sustaining American eels: A slippery species for science and governance

Cecilia Engler, *Marine & Environmental Law Institute, Schulich School of Law, Dalhousie University,* ***mcengler@gmail.com***

For centuries, American eel has been an important food source and a significant social and cultural icon for Indigenous Peoples throughout Eastern North America. Today, it sustains a commercial fishery based on exports to Asian and European markets. Despite this significance, American eel seem to have slipped through the cracks of both science and governance. Many aspects of eels' life cycle remain a scientific mystery. In turn, management regimes at the global, regional and domestic level have failed to grasp the complexities of the elusive species. With a declining stock (American eel has been assessed as depleted in United States and threatened in Canada), the time is pressing to ensure science-based and effective management regimes throughout eels' range of distribution.

The Ocean Tracking Network (OTN) American Eel Project is currently addressing the many unknowns of the American eel migration pathways in continental waters and as they move to their breeding grounds in the Sargasso Sea. As the mysteries of eel are unraveled, management needs and challenges come to the forefront. The presentation has three main objectives. First, it outlines and assesses the current governance framework, which is best described through three images: a slippery global framework, limited bilateral cooperation, and a fragmented domestic framework. Secondly, it outlines the governance challenges resulting from new scientific knowledge. And thirdly, it suggests possible future governance developments based on existing domestic, bilateral and international arrangements and agreements and rooted in ecosystem and precautionary approaches. Particular emphasis is placed in cooperative governance arrangements that ensure a consistent management regime for the American eel throughout its range of distribution.

The American eel case study provides lessons on oceans governance, generally, and on scientific-based adaptive management, in particular. The full integration of the best scientific knowledge within responsive management regimes at the appropriate scale remains a challenge for this species, as is the case for many others.

Oral Presentations

Information & Knowledge Management for Effective Ocean Governance

Understanding the science-policy interface: Measuring use and influence of information in policy-making

Suzuette. S. Soomai, *Interdisciplinary PhD Program, Faculty of Graduate Studies, Dalhousie University,* ***suzuette.soomai@dal.ca***

Evidence-based policy-making recognizes the need for advice in environmental decision-making and has influenced governmental organizations to produce vast quantities of scientific information on stresses on the oceans including the loss of marine biodiversity, declining fisheries, increased pollution, climate change, the ecological impacts of introduced species, uncontrolled coastal development, and others. However, proof of the movement of scientific information into action remains limited. The apparent disconnect between science and policy making has prompted global action to address problems at the science-policy interface, including improved exchange of and access to information; the provision of timely, accurate, and transparent scientific information; and more effective use of information and communication technologies. In spite of increased knowledge and international commitment, understanding and enhancing the role that scientific information plays in marine environmental policy and decision-making is not commonly considered to be an issue for urgent and targeted attention and the role is not clearly defined.

This paper posits that research on the use and influence of scientific information in policy-making is worthy of detailed study rather than being considered to be implicit in management processes. Case studies of governmental organizations producing marine environmental information can be used to understand how information is produced, how it is used, and how it influences environmental policy-making. Based on a literature review, aspects of communication of information have been highlighted as a main problem at the science-policy interface. This paper uses examples of case studies from Trinidad and Tobago, Nova Scotia, and the Gulf of Maine/Bay of Fundy region to demonstrate the use of a suite of methods to gain a comprehensive understanding of the awareness, use, and influence of coastal and marine environmental information in public policy settings. Methods include interviews and surveys of multiple stakeholders, e.g., policy and decision-makers, scientists, industry, and the public; web analytics, media scans, and citation analysis. Measuring the use and influence of scientific information can identify the opportunities and barriers in the policy-making process.

Oral Presentations

Information & Knowledge Management for Effective Ocean Governance

Changing Environments: Tracking the scientific, socio-political, legal, and ethical currents of the Grey Seal - Cod debate In Atlantic Canada

Katie Sykes, *Ocean Tracking Network/Schulich School of Law Dalhousie University,* ***katieskyes@mac.com*** ***Co-Authors:*****Tsafrir Gazit,** *Department of Sociology and Social Anthropology Faculty of Arts and Social Science; and* ***Damian Lisgard****, Department of Biology, Faculty of Science, Dalhousie University,*

Our study is an interdisciplinary paper prepared by scholars with backgrounds in biology, law and social science. It is part of the Ocean Tracking Network project of compiling comprehensive data on marine animals and food webs to support ecosystem-based marine management.
The interaction of two species in the oceans off Atlantic Canada, the grey seal and the Atlantic cod, raises a host of interconnected questions – not just empirical scientific questions but also legal, ethical and sociopolitical ones. Successful management of the marine ecosystem requires collaboration and effective communication between stakeholders, including fishing communities, environmental and animal welfare activists, policymakers and scientists, but achieving this is a challenge because of their often radically different perspectives. New scientific research methods offer some promise of bridging the gap between stakeholders, although many challenges remain.

After the Atlantic cod population collapsed in the 1990s, a moratorium on commercial fishing was imposed to allow the cod stocks to recover, but cod populations are still severely depleted. One hypothesis is that predation by grey seals is stopping the cod from recovering. So far there is no clear scientific answer as to whether the hypothesis is correct. New research from the Ocean Tracking Network, Dalhousie University, uses acoustic and satellite tracking technology to gather data on the role of Atlantic cod in the grey seal diet.

Meanwhile, the question of whether grey seals are “to blame” has an altogether different complexion in the social and political spheres. To many fishermen, based on anecdotal evidence and personal observation, it seems self-evident that a concentrated grey seal cull would help to bring the cod back. To the politicians charged with making decisions on the issue, the lack of clear scientific evidence that grey seal predation is impeding cod recovery is not reason enough to hold back from authorizing a “targeted removal” of grey seals by increasing the number that hunters are allowed to kill.

Poster Presentations

Responsible Industry Development

Acoustic detection ranges for marine mammal monitoring at a tidal turbine site in Grand Passage, Nova Scotia.

Chloe Malinka, *Department of Oceanography, Faculty of Science, Dalhousie University,* ***chloe.malinka@dal.ca***

Passive acoustic monitoring for marine mammals at tidal energy developments requires an understanding of site-specific acoustic detection ranges. Since underwater sound is used as a tool for detecting marine mammal presence via their vocalizations, sounds mimicking that of marine mammals were projected to assess the feasibility of a marine mammal monitoring system at a proposed small-scale (<2 MW) tidal energy site (Fundy Tidal Inc.) in Grand Passage, NS. Consecutive sweeps (up to 20 kHz at 160 dB re 1µPa) were transmitted with an underwater projector (icTalk) from a rigid inflatable boat as it drifted over a moored hydrophone (Ocean Sonics, up to 250 kHz, ~14 m depth, July 2012). A vector mounted velocity sensor co-located with the hydrophone on the frame measured the flow to estimate the hydrophone's effective detection range over the phase of the tide; Flows were also predicted with a tidal current model. Preliminary results from acoustic analysis determined under what conditions the projected sounds were detectable.

Furthermore, the naturally occurring ambient noise in the high-flow environments that characterize tidal energy sites imposes rather severe constraints on detection limits. Noise cancellation techniques, including open-cell polyurethane foam surrounding the moored hydrophone, were field-tested in an attempt to extend acoustic detection ranges. In addition, ambient noise levels were measured with a drifting hydrophone to establish baseline acoustic conditions prior to turbine installation, relevant to the tidal project's environmental assessment process. This work will contribute to the future monitoring of marine mammal presence in the vicinity, and potentially also lead to further understandings of marine mammal interactions with turbine installations.

Poster Number 1

Poster Presentations

Responsible Industry Development

A critical assessment of “soft” and “hard” structure approaches and their effectiveness in supporting integrated coastal zone management (ICZM) in the context of climate change

Alexandra Vance, *Marine Affairs Program, Faculty of Management, Dalhousie University,* ***alexandra.vance@dal.ca***

In recognition of the growing vulnerability of coastal social and ecological systems (SES) due to the coupling of growing coastal population densities and enhanced climate change impacts, the international committee has promoted the widespread implementation of integrated coastal zone management (ICZM). ICZM frameworks are used to help mitigate climate change effects onto coastal communities by promoting the sustainable development of the coastal zone. Within an ICZM framework, there are three broad ways in which a coastal community can adapt to the growing threats of climate change: 1) retreat; 2) accommodate; 3) protect. This paper will focus upon the coastal protection adaptation strategy, and in particular on so-called ?hard? and ?soft? structure approaches to achieving coastal protection. More specifically, this paper will provide a broad overview of the ecological, social, and economic benefits and limitations associated with both "hard" and "soft" structure approaches to coastal zone protection. Two case studies will be critically assessed using a resource-based strengths, weaknesses, opportunities, and threats (SWOT) analysis framework in order to determine which structural approach is more efficient and effective in protecting the coastal SES. “Hard” and “soft” structural approaches will be represented by the seawalls constructed along Oahu, Hawaii Islands, USA and the eelgrass restoration project within the Virginia Coast Reserve, Virginia, USA, respectively. This paper will suggest some environmental, economic, social, cultural, legal, and institutional implications of adopting either structural approach, as well as provide some priorities for achieving coastal zone protection. The paper will conclude that ICZM plans that incorporate “soft” structures are more efficient, effective, and sustainable approaches to accomplish long-term coastal SES protection.

Poster Number 2

Poster Presentations

Stakeholder Engagement and Public Participation

Investigation of the expansion of salmon farming on the Eastern Shore of Nova Scotia

Vanja Avdic, Scott Biggar, Karen Devitt, Robin McCullough, and Katie Paroschy*, *School for Resource and Environmental Studies, Faculty of Management, Dalhousie University,* ***mrem.aquaculture@gmail.com***

The United Nations Food and Agriculture Organization estimates that by 2025 the annual demand for seafood will outstrip the capacity of wild fisheries by 55 million tons or more. Aquaculture has been proposed as a promising avenue to decrease pressure on marine fisheries and enhance food security. As a result, the industry is currently expanding throughout the globe and within Canada. Given the environmentally suitable conditions for ocean-based Atlantic salmon (Salmo salar) farming along the Nova Scotia coastline, the provincial government plans to expand the industry and increase production. This will benefit the province through an increase in job prospects and economic development in rural coastal communities. Despite this, the expansion of ocean -based salmon aquaculture in Nova Scotia has been met with resistance from community groups, non-governmental organizations, environmentalists, and traditional fisheries. Our research focuses on understanding the conflict that has arisen between the general public and the aquaculture industry, particularly along the Eastern Shore. To address this, we investigated how the socio-political, biophysical, and policy dimensions have accounted for the social, environmental and economic challenges and opportunities of salmon aquaculture. An extensive review of relevant literature and media, as well as interviews with key stakeholders was conducted. The stakeholders interviewed were recruited from a diverse range of backgrounds and knowledge of Nova Scotian aquaculture. Our research indicates that a lack of community and stakeholder engagement, as well as media focus on the negative aspects of the industry has led to negative perceptions of aquaculture, particularly with respect to appropriate site selection. The legislation pertaining to aquaculture indicates this industry is regulated by many federal and provincial departments and they often conflict with each other. The majority of this legislation was originally intended for purposes other than aquaculture and has ultimately created confusion and inefficiencies. We suggest that industry and government involve communities in the development, management and monitoring of aquaculture projects. It is essential that all parties recognize the key role of communities in aquaculture development, particularly their local ecological knowledge that can contribute both to the success of an aquaculture operation and the management of the local marine ecosystem.

Poster Number 4

Poster Presentations

Stakeholder Engagement and Public Participation

Connecting knowledge and value for our marine environment: A social survey in coastal Nova Scotia

Hayley Guest, *Environmental Science Program, Faculty of Science, Dalhousie University,* ***hayley.guest@dal.ca***

Our global oceans are currently under high levels of negative anthropogenic stress. In Nova Scotia, only 0.59% of our marine environment is protected under federal legislation. As a coastal community with a history of cultural and economic connection to the sea, we wonder why this is the case. How much do Nova Scotians understand about marine environmental issues; and how much do they value the ocean? Furthermore, what is the public perception of current ocean management in the province?

A social survey was developed to better understand Nova Scotians' current value and knowledge of the marine environment. Over 1500 surveys were sent to randomly-selected postal codes in coastal Nova Scotia, with the result of 160 returned surveys (10% response rate). Most respondents were life-long residents of the province who were over 50 years old (73%), held a University or College degree (39%), and lived within 1km of the sea (58%). Initial descriptive statistics yield interesting results; 75% (n=160) of respondents held the marine environment to be "Very" or "Extremely" important to them, mostly (99%) for 'Environmental' Reasons. A majority (71%) of individuals believe Nova Scotia's marine environment to be under threat, and over 50% (n=159) of the participants believe there is need for better ocean management in Nova Scotia, and desired to see legislative protection of at least half of Nova Scotia's physical marine environment; a drastically larger amount than what is protected today. However, half of the respondents considered themselves to be only "Somewhat Aware" of marine environmental issues; indicating a potential weakness in provincial marine education.

There is a need for further survey conduction in Nova Scotia to capture missed demographic groups such as youth, fishermen, and aboriginal peoples. The final results of this study will provide valuable insight to policy makers and environmental educators, and connect citizen values with applied marine policy.

Poster Number 5

Poster Presentations

Stakeholder Engagement and Public Participation

Narwhal co-management in Nunavut: Deepened collaboration needed to improve partnership, process and outcome

Mirjam Held, *Marine Affairs Program Alumni, Dalhousie University,*
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Since the ratification of the Nunavut Land Claims Agreement (NLCA) in 1993, narwhal harvesting in Nunavut has been governed by a formalized co-management regime. The Nunavut Wildlife Management Board, a body created under the NLCA, has decision-making power, while the ultimate management authority remains with Fisheries and Oceans Canada as marine mammals are a federal responsibility. Calling for an effective system of wildlife management that complements Inuit harvesting rights, fosters public participation, and reflects the traditional and current patterns of Inuit harvesting and wildlife management, the NLCA provides an adequate framework for co-management. However, co-management processes take a long time to mature and the Nunavut narwhal co-management is no exception. While there have been attempts to devolve management responsibility to the local level, cooperation between the co-management partners is challenged by a lack of capacity among the local and regional hunters organizations as well as a lack of trust. The assessment of the shortcomings of the current co-management process revealed issues regarding communication, power sharing and the limited inclusion of Inuit knowledge and values in the decision-making process. A number of recommendations on advancing narwhal co-management are proposed, including capacity building among hunters, a true commitment to adaptive co-management which will facilitate social learning, and the engagement of a facilitator to assist in developing collaborative and effective ways of collecting and sharing information. Such co-production of knowledge would help the Nunavut narwhal co-management partners to form their recommendations and decisions on a more inclusive and equitable knowledge base. Only a co-management regime whose partners are truly committed to power sharing and knowledge co-production will be environmentally, socially and economically sustainable, thus allowing both the narwhals and the Inuit that depend on them to prosper.

Poster Number 3

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Connecting the science, policy, and public spheres to address climate change issues: A multi-use pre-assessment tool to support coastal integrated management in Nova Scotia

Paola Cisneros, *Marine Affairs Program Alumni,* ***Dalhousie University,*** ***Paola.cisneros@dal.ca***

The scientific community predicts that climate change will have a significant impact on coastal zones. Nova Scotia (NS) is not exempted from this predicament, and as such, the ability to address such issues requires the collaboration of a number of federal, provincial, municipality agencies, academic institutions, and the public. Working waterfront facilities, such as small-craft harbors and wharves, are infrastructures constantly exposed to weather events (e.g. hurricanes, storm surges), and future coastal hazards (e.g. sea level rise). To determine the level of risk a facility is exposed to, detailed vulnerability/risk assessments evaluations are undertaken. However, prior to conducting the detailed assessment, pre-assessment approaches represent useful and cost-effective tools to identify/prioritize the most vulnerable working waterfront infrastructures. The NS Department of Fisheries and Aquaculture has recognized the need to address climate change implications, and a vulnerability pre-assessment tool has been developed to determine the economic vulnerability of working waterfronts (focusing on fisheries values). However, as working waterfront infrastructures are a key component of coastal development, and social and cultural well-being for local citizens and visitors, it is important that management and vulnerability pre-assessment approaches provide for multiple uses and perspective. This poster will describe the process and integration of a social and non-fishery economic component to the current fisheries vulnerability pre-assessment tool. The development of this tool was done in collaboration with federal and provincial coastal managers, and academic representatives. The poster will present key stages in the development of this tool, including the identification of socio-economic criteria, stakeholders and tools to engage public participation. Recommendations are provided that encourage and support the use of an integrated coastal pre-assessment tool to complement the existing single use approach. The benefit of this integrated tool is that it provides a more comprehensive approach to sustainable oceans and coastal management. For instance, it provides an opportunity for fisheries values to be communicated and assessed alongside social and non-fishery economic factors, so that decisions in which different stakeholder's interest are taken into account by coastal managers. Furthermore, this integrated management tool could also help to allocate human and financial resources (especially if the budget is limited) to priority areas, and as such, help build much needed communication and resource bridges among Government agencies, key stakeholders, coastal communities, visitors and the public in general.

Poster Number 11

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Information accessibility for coastal adaptation

Brownwyn Deslauriers *(School of Public Administration)*, **Andrea Flynn** *(Marine Affairs Program),* **Jen Jackson** *(Rowe School of Business),* **Julie Sylvestre** *(School for Resource and Environmental Studies), and* **Jordan Cook** (*School of Information Management), Faculty of Management, Dalhousie University*

The collaborative sharing of information between different sectors and across organizations is essential for achieving sustainable ocean management. The Atlantic Coastal Zone Information Steering Committee (ACZISC) aims to bring together government, industry, NGOs, and other interested stakeholders to promote integrated coastal and ocean management (ICOM). This project aimed to develop a theme and workshop plan for the ACZISC Secretariat to use at their annual meeting, which was held in January 2013, in order to help meet their strategic plan objectives.

To begin, the project team conducted a PESTE analysis, in which they identified the Political, Economic, Social, Technological, and Environmental factors working upon the ACZISC. From there, a list of five possible workshop themes were developed and presented to the ACZISC Secretariat. Collaboratively, both groups arrived at the three themes that best advanced the ACZISC strategic plan. The three themes were: Renewable Energy, Sustainable Fisheries, and Climate Change. The team then conducted a feasibility study of each of these to identify one final theme that would be most appropriate and achievable. This feasibility study was conducted using a SWOT analysis, which provided an opportunity to explore the possibilities and drawbacks inherent in each theme. Upon completion of this study, the team met with the ACZISC Secretariat to determine the final workshop theme: Exploring Information Accessibility Policy Best Practices for Coastal Adaptation: Current Realities.

This workshop provided participating organizations with an understanding of data accessibility policies, and advanced the adoption of best practices by organizations involved in the collection, management and dissemination of data and information supporting coastal climate change issues. The workshop development plan included an agenda, a workshop budget, a logistics plan, and a communication plan. To successfully host this workshop, as well as any workshops held in the future, our group developed both short and long term recommendations for the ACZISC.

Poster Number 6

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Using passive acoustic surveys to determine the occurrence of odontocetes (particularly northern bottlenose whales, Hyperoodon ampullatus) off U.S.A., Nova Scotia and Newfoundland

Clair Evers, *Department of Biology/Collage of Sustainability, Dalhousie University,* ***cl720761@dal.ca***

Passive acoustic monitoring (PAM) provides an alternative to visual methods for assessing the occurrence of cetaceans. Visual and acoustic surveys for cetaceans were conducted along the 1000m contour of the Scotian Slope (June -Aug 2001), and the Newfoundland-Labrador Slope (July-Aug 2003). Recordings were collected from a hydrophone deployed over the side of the research vessel. The objectives of this study are to investigate the occurrence of cetaceans, particularly northern bottlenose whales, off eastern Canada using PAM, and to compare acoustic detections to visual sightings. Recordings were analyzed aurally and visually for the presence of cetacean vocalizations, which were categorized as northern bottlenose whale, sperm whale or delphinid detections. When possible, delphinid detections were classified as either pilot whales or dolphins. Maps showing the location of cetaceans acoustically detected and visually sighted were constructed. The percentage of acoustic detections which correspond to sightings, and the percentage of recordings with detections of each group of cetaceans examined, were compared between five regions: the United States (U.S.A.), western Scotian Shelf (WSS), eastern Scotian Shelf (ESS), southern Newfoundland (SNFLD) and northern Newfoundland (NNFLD). Northern bottlenose whales were only aurally detected off U.S.A., ESS and SNFLD on 2-5% of recordings which was too small to be analyzed statistically.

Across all locations, sperm whales were acoustically detected on 14-44% of recordings. The WSS had a significantly higher rate of sperm detections than SNFLD, and NNFLD had a higher rate than SNFLD. There was no significant difference between the rate of occurrence of delphinid detections between locations as they were heard on 82-92% of recordings. Dolphin vocalizations were more common off Nova Scotia, while pilot whale vocalizations were more common off Newfoundland. There was rarely a sperm whale or delphinid sighting without a corresponding acoustic detection, suggesting that these cetaceans can be acoustically detected from a greater distance than they can be visually observed. Bottlenose whales were sighted more than they were acoustically detected, although there were acoustic detections that were unaccompanied by sightings. This study identifies important habitats for cetaceans off Eastern Canada. Results can support conservation and management decisions regarding protected areas off the Scotian Shelf as canyons of the ESS seem to be an important cetacean habitat, not only to bottlenose whales but also for sperms and delphinids. In addition to the Gully, Shortland and Haldimand canyons should also be designated as Marine Protected Areas. This research can also be used to assess the usefulness of PAM off Eastern Canada.

Poster Number 12

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Is tourism an enemy to anemones? Examining the impacts of tourism on coral reefs in San Andrés, Colombia

Emilie Novaczek, *Environmental Science Program, Faculty of Science / Collage of Sustainability, Dalhousie University,* ***enovaczek@gmail.com***

San Andrés attracts roughly 400 000 tourists annually to white sand beaches and coral reefs. The island sits within the Seaflower Marine Protected Area, which covers 75% of Colombia's coral reefs, including the western Caribbean biodiversity hotspot. A study of marine tourism was requested by MPA managers to support policy, monitoring and enforcement decisions. This paper uses quantitative and qualitative information on tourism activity types, user density and coral reef condition to provide baseline information on the marine impacts of the local tourism industry. Data was collected through interviews with marine tour operators and shallow reef transects following Reef Check protocols.

Poster Number 7

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Exploring marine protected areas: A baseline governance assessment of the Sian Ka'an Biosphere Reserve

Robyn Pirie, *Department of Biology/Faculty of Science/Collage of Sustainability Dalhousie University,* ***rb659841@dal.ca***

Governance is a key component of sustainable ocean management and utilizes stakeholder collaboration to build resilient conservation and management schemes. Marine protected areas are governed from a op-down, bottom-up, market-based or cooperative approach, all of which involve a variety of actors. The ability of a reserve to meet its objectives, particularly those focused on conservation, depend heavily on the ability of stakeholder groups to communicate effectively and work cohesively to protect and promote the mandates of a reserve. The diverse nature of marine protected areas and their management schemes can make it difficult to determine and develop methods for assessing the success of a reserve in meeting its objectives. The purpose of this case study was to create a baseline governance assessment of a UNESCO World Heritage, the Site Sian Ka'an Biosphere Reserve, located in the Mexican state of Quintana Roo. The analysis will begin to determine how well the reserve is meeting its conservation objectives from a governance perspective. The focus is placed on investigating the five variables of governance outlined by Jones et al. (2011) in the Marine Protected Area Governance (MPAG) framework. These five variables include: legal, economic, knowledge (role of science), interpretative, and participation incentives. An extensive desktop analysis of peer-reviewed and gray literature was conducted alongside informal stakeholder communication to determine how well the Sian Ka'an Reserve is meeting its conservation objectives. The analysis identified areas where the Sian Ka'an Reserve has excelled; it has also uncovered deficiencies in the application of good governance, e.g. the lack of a comprehensive legal framework. The discovery of these shortfalls and successes aims to improve governance in the Sian Ka'an Reserve and to identify transferable lessons for other MPAs.

Poster Number 8

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Evaluating the role and identification of critical habitat for conserving Canadian marine species at risk: A decision framework

Amy Ryan, *Marine Affairs Program Alumni, Dalhousie University, Sean Brillant, Department of Oceanography, Faculty of Science, Dalhousie University and David Browne, Canadian Wildlife Federation,*
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Human activities are increasing the rate at which species and their habitats are declining. The Canadian Species at Risk Act (SARA) offers a protective framework for species and their habitat. Identifying and protecting critical habitat are central components of SARA. However, we have shown here that the most pervasive threat to marine species at risk (SAR) is human-induced mortality, not the destruction of critical habitat that SARA is intended to prevent. This knowledge can help prioritize the way in which we protect marine SAR under SARA, such that in cases where species are threatened by activities that kill, harm or harass, management efforts are directed at mitigating these threats. Of the 69 marine SAR examined in this study, 97% were threatened by exploitation. Abating this threat is essential for their survival and recovery. In contrast, 27 (39%) marine SAR were threatened by habitat destruction. Identifying critical habitat for these species will likely improve their protection and recovery. For the majority of marine SAR affected by non-habitat threats, the main reason to identify critical habitat is to meet legal requirements of SARA and to expedite threat abatement. We propose a decision framework that provides a consistent approach to determine the most effective way to conserve SAR. Within this decision framework, there are two methods through which critical habitat would be identified: (1) critical habitat is identified immediately with current existing knowledge, or (2) critical habitat is identified through a detailed examination of habitat features and the threats to those features. The method chosen is based on knowledge about habitat loss and threats to the SAR. The implementation of this decision framework would render recovery planning for, and management of, these species under SARA more transparent, defensible, and will reduce the time it takes to get to the action phase. As such, the decision framework serves as a tool that integrates science with management by providing a means to recognize the importance of habitat from an ecological perspective, while avoiding unnecessary studies of critical habitat requirements for a species in instances where their recovery is not limited by habitat. Determining the most effective way to conserve marine SAR in Canada represents a critical step forward in the conservation of biological diversity, thus contributing to our commitment to the sustainable use and protection of our ocean resources.

Poster Number 10

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Characterizing species vulnerabilities to global warming at a regional scale: Use of a spatially explicit vulnerability assessment as a tool for climate adaptation

Christine Stortini, *School for Resource and Environmental Studies, Dalhousie University,* ***Christine.Stortini@dfo-mpo.gc.ca***

As global warming progresses, ocean and fisheries managers should begin to consider projected biological changes when planning for the long term. Vulnerability assessments show great potential as valuable additions to this climate adaptation process as they can provide useful insight into which species will be most and least vulnerable to warming. Here, we have developed a novel assessment, generalized for international use, which considers spatially explicit projections at a regional scale and species life history and habitat characteristics. We employ this methodology to assess the vulnerabilities of 44 key fish and invertebrate species to projected patterns of warming for the next 20 and 50 years on the Scotian Shelf, Canada. Our results indicate that, on both timescales, Snow Crab, redfish and American Plaice may be very vulnerable to the effects of regional warming; Capelin and Moustache Sculpin may be extirpated from the area in 50 years; Wolffish and Turbot may be very vulnerable on a 50-year time-frame, but could benefit from protection on a shorter timeframe; Halibut, Little Skate, Yellowtail Flounder, Atlantic Cod, Summer Flounder, Winter Flounder and Spiny Dogfish are not likely to be as vulnerable to regional warming as they are to other stressors and so should be prioritized in regional conserva-tion plans; and commercial species, Jonah Crab, Rock Crab, Red Crab and Offshore Hake appear invulnerable to warming on the Scotian Shelf and are likely to increase in abundance in the area. This information can help govern-ment sectors prioritize resources and plan conservation and fisheries efforts with consideration of climate-related biological changes.

Poster Number 9

Poster Presentations

Information & Knowledge Management for Effective Ocean Governance

Bridging between data providers and coastal and ocean managers

Andy Sherin and Alexi Baccardax Westcott, Atlantic Coastal Zone Information Steering Committee (ACZISC) Secretariat, aczisc@dal.ca

The Atlantic Coastal Zone Information Steering Committee (ACZISC) was established in 1992 to foster cooperation in Atlantic Canada with regard to integrated coastal and ocean management (ICOM) and the sharing of the spatial data and information needed for informed decisions and good management. The presentation will illustrate the information challenges faced by ICOM managers by analyzing the information requirements for the manager of one significant piece of Canadian legislation (Canada's Oceans Act). It will describe the work of the ACZISC so far to meet these challenges: including the development of the Coastal and Ocean Information Network Atlantic's (COINAtlantic) Chain or 'Bridge' for Information Access; and web-based tools including the COINAtlantic GeoContent Generator and the COINAtlantic Search Utility. Remaining barriers to be surmounted and the vision of the ACZISC and COINAtlantic for the future will also be described.

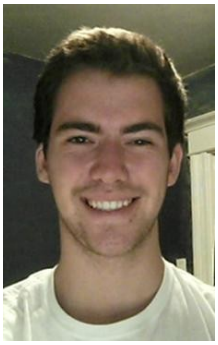
Poster Number 13

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 Recipient 2013-1014



Scott McCain

I am fascinated by the processes that occur in oceans. Alongside our increasing dependence on marine resources, we must understand these processes to learn how to mitigate our effects on marine environments. I am incredibly thankful and excited to have received the Sobey Fund for Oceans Graduate Scholarship, and I am looking forward to studying at Dalhousie!

Sobey Fund for Oceans Committee

Lucia Fanning Dalhousie University	**Robert Rangeley** WWF Canada	**Jon Grant** Dalhousie University
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Marine Affairs Program

Vision

To be the foremost provider of interdisciplinary education for marine management professionals, thereby advancing sustainable ocean uses and healthy marine environments.

The MAP Mission, with its emphasis on education, research and service, creates an inquiring and stimulating learning environment that supports the Dalhousie Faculty of Management's vision of "Management Without Borders" by building on extensive global-to-local marine management networks.

MAP offers the Master of Marine Management degree, a one-year, professional, non-thesis and interdisciplinary program offering required classes in the marine and social sciences as well as a choice of electives from approved marine-related classes. The subject areas addressed include coastal zone management, sea use planning, fisheries management, marine law and policy, maritime transport, development of non-living resources, protection and preservation of the coastal and marine environment, coastal tourism, maritime enforcement, and conflict management.

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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

Art Display

Briget Turner (Bridget Turner Jewellery Design), info@bridgetturner.ca
Bridget is a graduate of Jewellery Design and Metalsmithing from the Nova Scotia College of Art and Design. “Inspiration comes from spending time with those I love, surfing and walks on the beach. The materials I use are always associated with the sport of surfing in some way. Some materials are part of the nature that surrounds us such as the shells and imagery. I also strive to use materials that industry leaves behind, such as recycled wetsuits.”

Daina Scarola (Ocean Art Studio),daina@artbydaina.com
Daina is a full-time artist whose work is inspired by coastal life on the eastern shore of Nova Scotia. Originally from Northern Ontario, Daina has called Nova Scotia home since 1994. As an artist, she strives to paint her passion for the ocean while raising environmental awareness of our ocean planet through connecting with surf cultures around the world.

Jessica Lynn Wiebe (NSCAD), lynn.jessica29@gmail.com
Jessica is originally from Brandon Manitoba. She came to Halifax to pursue an interdisciplinary program at the Nova Scotia Collage of Art and Design where she is currently minoring in textiles and drawing. Jessica will be displaying her piece, “A synthetic ocean”. The synthetic dye on resisted cotton creates an imaginary ocean, with the movement of the waves lost in the harsh chemicals. The textile industry discharges large amounts of these toxic chemicals into surrounding watersheds via wastewater. “A synthetic ocean” is a reflection of the pressures that our society of aesthetics and convenience places on the oceans.

Mike Connors, aleceiffel_@msn.com
Mike Connors was born and raised in Moncton, NB, where he continues to live and work as a tattoo artist at Hell or High Water Tattoo Parlour. “I believe that everyone should be aware of the current and realistic state of the oceans, which is ongoing degradation. The red waves in my piece are symbolic of this, and are meant to inspire greater awareness so that people acknowledge how badly the oceans need our help, and that ocean sustainability can’t be taken lightly.”

Trevor Nicodemo (RNG Media)m trevor@rngmedia.com
Trevor Nicodemo is a freelance outdoor photographer based out of Lawrencetown, Nova Scotia. He is originally from Montreal, Quebec. “My images try to share brief moments of the unrelenting power and rugged beauty that is the Nova Scotia coastline. Growing up in an urban setting, I had no direct connection with the ocean. After exploring the coast in Cape Breton on a trip years ago, I was seduced by the ocean, wild coastlines and picturesque landscapes of Nova Scotia. Never could I have prepared for the profound effect the ocean has had on my life. I love the ocean; I fear it, respect it, and will always try to protect it.”

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

We are very grateful to all of our sponsors and supporters: the Sobey Fund for Oceans, Dalhousie Association of Graduate Students, Aquaculture Association of Nova Scotia, Nexus Coastal, AGAT Laboratories, Dalhousie Faculty of Management Alumni Relations, Marine Affairs Student Society, MBA Cooperate Residency Program, the Dean's Office - Faculty of Management, the Dalhousie Bookstore, and the Sobey Fund for Oceans Committee.

We would like to specially thank Dr. Lucia Fanning for her wonderful guidance in the lead-up to, and during the conference, our keynote speaker, Ms Sarika Culis-Suzuki, panelists, Maxine Westhead, Christine Penney, Jessica MacIntosh, Tonya Wimmer, Iaian Archibald, Jarrett Corke, moderator, Jenny Baechler, and commentator, John Lewandowski. A big thank you to Dr. Peggy Cunningham, Dean, Faculty of Management for her opening remarks, our judges Vivian Howard, Bertram McDonald, Ian McAllister, Elizabeth De Santo, John Kearney, Alanna Gauthier, Maria Bugsy Delesalle, and Amber Creamer. We would also like to acknowledge Chris Milley, Peter Tyedmers, Tony Charles, Scott Comber, Glen Herbert, Justin Huston, MAP Alumni, and the many others who have generously given up their time to support our conference and students.

Our conference would not have been successful without the ongoing support and patience provided by Heather Frausell, Becky Field, Marianne Hagen, Colin Craig, Sarah Berrigan, Anne Publicover, Bahaiyyih Pride, Natalie Stocker, Katheryn Minty, Graham Tolliver, Greg Wright, and Sarah Schwarz, Campus Copy (Dalhousie Student Union). We would like to thank Leann Grosvold, Clean Nova Scotia communications coordinator, for her guidance on our communications plan. We would also like to acknowledge the staff and faculty of the Marine Affairs Program.

A special thank you to all our student volunteers—dream wall organisers, Rachel Wang (co-lead), Melissa Cano (co-lead), Anna Naylor, Ashley Davis, and volunteers including our MAP team, and Danielle Horne.We would like to acknowledge Jeremy Corbin for his work on the wiki and Anna Naylor for the abstract booklet, as well as the submissions committee, Amber Creamer (lead), Jessica MacIntosh, Tamara Wilson, and Martin Leguizamon, for their work on reviewing and selecting abstracts. We are very grateful to the work that Jessica MacIntosh and Andrea Flynn have put into organizing the Building Bridges workshop, and conference postcard.

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

We would like to note the significant contributions from the outreach, media, and social media team, Anna Naylor (social media), Leah McConney (external outreach and registrations), Ashley Davis (media lead), Yue Yao (social media and registrations). We would also like to thank our conference communications team Jessica McIntosh, Amber Creamer and Jenna Stoner (presenters, judges, keynote speaker and panellists) and Jessica Corkum, (internal outreach lead) who also organised the art display. We are very grateful to the tireless and enthusiastic support from the event's committee, led by Rachel Wang (logistics), Leah Beveridge (conference co-chair, and appreciation organizer), Melissa Cano (nametags and bar services), and Alexandra Vance (catering and conference evaluations). Thank you to everyone who attended the conference meetings and helped out whenever they could.

A sincere thank you also goes to Liz Wilson – a fantastic conference co-ordinator whose patience and guidance have been a key element in making this possible. This conference reflects the dedicated teamwork demonstrated by the fulltime and part time students of the Marine Affairs Program 2013-2014 year, under the excellent leadership of the lead conference co-chair and principle fund raiser, Jenna Stoner.

Thank You to our Sponsors!

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.