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Making Waves 2013

The **Master of Marine Management class of 2013** will present the results of their graduate project research on **Tuesday August 27, 2013 in Room 1020, Rowe Management Building, 6100 University Ave.** All are welcome to attend. This issue of MAP Matters features the wide variety of internships and research undertaken by the students during the summer of 2013.

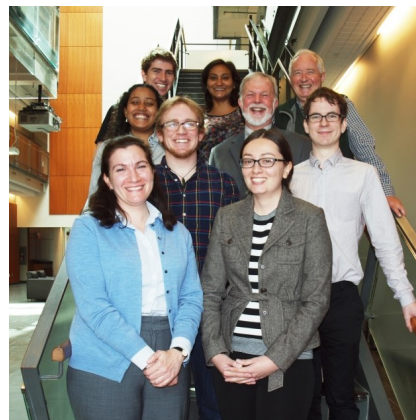
Leah Beveridge

Leah's internship was with the Geological Survey of Canada - Atlantic Branch at the Bedford Institute of Oceanography in Dartmouth, NS. Gavin Manson supervised the internship, which involved digitizing and mapping coastal data in GIS. Particularly for the graduate project, supervised by Dr. Don Forbes, Research Scientist Emeritus, Geological Survey of Canada, Leah analyzed and mapped socioeconomic and biophysical exposure and sensitivity indicators of Tuktoyaktuk, NWT to climate change. Her graduate project aimed to create a framework to be used by Arctic communities to evaluate the distribution of coastal vulnerabilities to climate change within their area of interest. Graduate Project title: *A Method for Assessing Coastal Vulnerabilities to Climate Change within an Arctic Community: The Example of Tuktoyaktuk, Northwest Territories.*



Melissa Cano Chacon

The Environmental Information: Use and Influence research (EIUI) group in the School of Information Management at Dalhousie hosted Melissa as an intern. During the internship, Melissa conducted a literature review on the Marine Stewardship Council certification process with particular interest in the influence of the program in developing countries. The goal of her graduate project is to understand the information that is used for the Marine Stewardship Council certification process and the life-cycle of the reports, as well as the awareness and use of the Marine Stewardship Council reports resulting from the certification of two Mexican case studies. Melissa's academic supervisor is Bertrum MacDonald, Professor in the School of Information Management. Graduate Project title: *The Role of Information of the Marine Stewardship Council Certification in Developing Countries: A Case Study of Two Mexico MSC Fisheries Certified in Mexico.*



Melissa Cano (on the left of the middle row) with members of the EIUI team.

Jeremy Corbin

Jeremy interned at Charles Darwin University's Research Institute for the Environment and Livelihoods (Darwin, Australia) under the supervision of Dr. Lindsay Hutley. His research focused on market-based environmental management with the aim of contributing primarily to the ongoing development of a market-based incentive (MBI) program in Indonesia's Tanjung Panjang region, where excessive shrimp and milkfish farming have led to the widespread destruction of mangrove habitat. This program, aptly named the Rehabilitating Blue Carbon Habitats program, aims to restore this region's mangrove forest through the provision of sustainable conservation-based livelihood opportunities. By investigating the role that various finance mechanisms, investor types and payment distribution models play in shaping a successful MBI program, Jeremy has provided valuable insight for coastal managers, NGOs, the Indonesian government and all other parties involved in managing Tanjung Panjang's natural coastal resources. Jeremy's academic supervisor is Tony George Puthucherril, JSD Candidate in the Schulich School of Law, Dalhousie University. Graduate Project title: *Restoring Mangrove Forests in Indonesia's Tanjung Panjang Area through the Use of Market-based Incentives: Lessons Learned from International Case Studies.*



Jessica Corkum

Jessica completed her internship with the Oceans and Coastal Management Division of Fisheries and Oceans Canada (DFO). Jessica worked with Penny Doherty, under the supervision of Glen Herbert, MMM Alumni. Her graduate project and internship involved assessing and providing advice for the further development of participatory approaches to the management of Musquash Estuary Marine Protected Area (MPA) in order to promote management efficiencies and public stewardship. Specifically, she conducted a survey with local community members to assess the past effectiveness and future potential of the "Musquash Watch" community surveillance program to contribute to enforcement and compliance efforts for the MPA. She also assessed the feasibility and provided guidance for the development of citizen monitoring of the Musquash Estuary ecosystem. Her academic supervisor is Peter Wells, an adjunct professor in the Marine Affairs Program and the School of Resource and Environmental Studies,

and a Senior Research Fellow at the International Oceans Institute, at Dalhousie. Graduate Project title: *Incorporating Participatory Approaches into the Management of Musquash Estuary Marine Protected Area.*



Amber Creamer

Amber was an intern for the Northwest Atlantic Seal Research Consortium in Cape Cod, Massachusetts. She worked on a project led by her internship host, Owen Nichols, to examine conflict with grey seals in the Cape Cod weir fishery. The internship involved collecting data on seal depredation in collaboration with local fishermen, and analyzing data to contribute to a scientific publication. Amber also had the opportunity to work with other researchers at the Provincetown Centre for Coastal Studies and Woods Hole Oceanographic Institute on seal population surveys and grey seal tagging. Amber's internship provided insight for her graduate project, which focuses on forming a management plan for seal and fishery interactions in Atlantic Canada. Her academic supervisor is Don Bowen, research scientist at Fisheries and Oceans Canada. Graduate Project title: *Operational Conflict between Seals and Fisheries: Recommendations for Approaching the Problem in Atlantic Canada.*



Amber holding a lumpfish, *Cyclopterus lumpus* in Cape Cod.



Andrea Flynn

Andrea completed her internship with NEXUS Coastal Resource Management, based in Halifax, NS where she worked closely with the principals and associates of the company, that includes MMM alumni. Andrea gained experience in proposal writing, preparing technical reports, collaborating on projects, and working in the consulting world. Through this internship, Andrea was able to secure funding through the Mitacs Accelerate Graduate Research Internship Program (www.mitacs.ca) for travel to Nunavut in order to complete research for her graduate project. In Nunavut, Andrea had the opportunity to better understand issues in the north surrounding marine shipping, governance, and the use of traditional knowledge in management. Andrea is grateful to NEXUS for providing the contacts needed to conduct her research. Andrea's research will be shared with participating government bodies and Inuit organizations to assist with improving the incorporation of Inuit knowledge and perspectives in marine shipping decisions in Nunavut. Graduate Project title: *A Guide for Integrating Inuit Qaujimajatuqangit into Decision-making for Marine Shipping Development in Nunavut.*

Shawn MacDonald

Shawn interned with Department of Fisheries and Oceans in the Oceans and Coastal Management Division (OCMD), and expanded on previous work that he carried out with them in 2011 that produced a geospatial roadmap and data-model for marine spatial planning (MSP). This most recent collaboration with OCMD coincided with Shawn's graduate project that explored the potential for performance-based ocean zoning techniques for MSP and place-based oceans management. Shawn worked under the supervision of Glen Herbert, MMM alumni, while interning at OCMD and his academic supervisor is Tundi Agardy, renown marine conservationist and author of several books including, *Ocean Zoning*. Graduate Project title: *Exploring the Potential for Performance Zoning Within the Practice of Marine Spatial Planning.*

Jessica MacIntosh

Jessica MacIntosh completed her internship with the Social Research for Sustainable Fisheries research group under the supervision of Dr. Anthony Davis at Mount Saint Vincent University. She began investigating the kinship networks present in small boat dependent fisheries communities in Nova Scotia, and how they influence traditional



patterns of recruitment into the fishery. Through a combination of a literature review, case studies and a secondary data analysis of social surveys from the past thirty years, Jessica examined how the political economy has challenged social and economic qualities that underwrite family and community in coastal settings, and the effects of this on the sustainability and dynamism of small boat dependent fisheries communities. Her research provides recommendations on how to achieve sustainable fisheries communities by discussing opportunities for supporting young people entering the fishery via policies that are based on a sustainable livelihoods framework. Graduate Project title: *The Tragedy of the Independent: Public Policy and Traditional Recruitment in Nova Scotia's Small Boat Industry.*

Leah McConney

Leah completed an internship with the Oceans and Coastal Management Division of Fisheries and Oceans Canada (DFO) at the Bedford Institute of Oceanography in Dartmouth, NS. Leah worked with Penny Doherty and Tanya Koropatnick under the supervision of Glen Herbert, MMM Alumni. Leah worked on creating an indicator toolkit and monitoring plan template for Oceans Act marine protected areas (MPAs). Governance, socio-cultural, and socio-economic indicators were recommended for *Oceans Act* MPAs to accompany ecological indicators currently being monitored through analysis of case studies and consultation with MPA practitioners across Canada. Her academic supervisor was Dr. Patricia Lane, Professor in the Biology Department. The title of her graduate project is *Monitoring and Evaluation of Canada's Oceans Act Marine Protected Areas: Recommendations for Governance, Socio-cultural and Socio-economic indicators.*



Leah McConney (centre) with Anna Naylor (lobster) at World Oceans Day at the Maritime Museum of the Atlantic.

Anna Naylor

Anna Naylor completed her internship at Fisheries and Oceans Canada (DFO) under the supervision of Heather Breeze, Catherin Johnson, and Glen Herbert MMM alumni. Anna's research examined the ecological goals and objectives for the Eastern Scotian Shelf with particular emphasis on key elements for successful monitoring. She further aligned these objectives to Canada's national and international commitments, identifying potential gaps and areas for improvement. In addition, she used case study analysis to provide recommendations for moving forward. Her academic supervisor is Tony Charles, of the Management Science and Environmental Studies at Saint Mary's University and Adjunct Professor of the Marine Affairs Program. Graduate Project title: *Integrated Ocean Management—Making Local Global: the Role of Monitoring in Reaching National and International commitments.*

Jenna Stoner

Jenna completed her internship with the David Suzuki Foundation (DSF) in Vancouver, BC under the guidance and supervision of Scott Wallace, MMM alumni and the Western Canada Team. During her three months at the DSF, Jenna created a background report on the environmental tradeoffs of different protein sources in the human diet. The report aims to provide a broader context for the DSF's current work on sustainable seafood and to help inform their transition towards taking a more encompassing

approach to sustainable food systems. This project was separate from, but relevant to, Jenna's graduate project which aimed to assess the sustainability implications of seafood loss through the supply chain. Jenna's academic supervisor is Dr. Peter Tyedmers, Director of the School of Resource and Environmental



Studies. Graduate Project title: *Applying the Concept of Sustainable Consumption to Seafood: How Product Loss Through Post-Harvest Seafood Supply Chains Undermines Seafood Sustainability.*

Alexandra Vance

Alexandra completed two internships this summer; the first was with the Science Branch at the Department of Fisheries and Oceans Canada (DFO) Gulf Fisheries Center in Moncton, NB, and the second with the Water Branch at Nova Scotia Environment (NSE) in Halifax, NS. Under the supervision of Hieke Lotze, Dalhousie University, Alexandra worked closely with Andrea Locke and Monique Niles at DFO and with John Brazner at NSE to assess the relationship between suspended bag oyster aquaculture (SBOA) and eelgrass (*Zostera marina*) coverage along eastern NB coastal zones at multiple spatial scales. The purpose of the project was to initiate an ecosystem-based risk management (EBRM) analysis of the SBOA-eelgrass relationship to allow science to better inform provincial and federal policies and management measures. Although further research is needed to complete the EBRM analysis, the goal of the project is to ensure the long-term sustainable development of the eastern NB aquaculture industry and the health of local coastal ecosystems along the southern Gulf of St Lawrence. The title of her graduate project is *An Ecosystem-based Risk Management Analysis of the Relationship between Eelgrass (*Zostera marina*) and American Oyster (*Crassostrea virginica*) Aquaculture for Multiple Spatial Scales in the Southern Gulf of St. Lawrence, Atlantic Canada.*

Rachel Wang

Rachel completed her internship at the World Wildlife Fund-Canada office in Halifax Nova Scotia. Under the supervision of Lucia Fanning (Director of the Marine Affairs Program), Tonya Wimmer (WWF Species Conservation Manager), and Bettina Saier (WWF Director of the Oceans Program), Rachel undertook a project analyzing the Marine Stewardship Council (MSC) and its certification of the Northwest Atlantic Canada longline swordfish fishery. This certification had received sharp criticisms, particularly regarding the bycatch of sharks and sea turtles in this fishery. Rachel's project aimed to determine the adequacy of bycatch measures under this fishery's certification and provide recommendations moving forward. She also examined national and international MSC-certified fisheries to develop a more comprehensive plan for bycatch mitigation in the Northwest Atlantic Canada longline swordfish fishery. The title of Rachel's graduate project is *Analyzing Bycatch Mitigation in the MSC-certified Canadian Northwest Atlantic Longline Swordfish Fishery*.



Rachel Wang and Alexandra Vance at the Maritime Museum of the Atlantic on World Oceans Day, 2013.

Building Bridges in Ocean Sustainability

The 'Sustainable Oceans 2013: Building Bridges in Ocean Management' conference took place on Friday, April 12 and Saturday, April 13 at Dalhousie University. Organized and led by students of the Marine Affairs Program (2012-2013) the conference is a key activity of the Sobey Fund for Oceans. The purpose of this conference was to connect the science, policy, and public spheres by bringing people together from all sectors to collaboratively identify the challenges currently undermining sustainable ocean management in Canada.



On Friday April 12, in the Kenneth Rowe Management Building, our keynote speaker Sarika Cullis-Suzuki delivered a moving talk that spoke to the progress that has been made in ocean management and what still needs to be done. She quoted a senior scientist who had

said "I am a scientist – it is not my job to communicate" several years earlier, illustrating the lack of willingness to work with other disciplines. However, Sarika noted that our current environmental crisis calls for interdisciplinarity, diversity, and above all – urgency.

Sarika's talk was followed by a discussion panel moderated by Jenny Baechler (Associate Director, Corporate Residency MBA, Dalhousie University). Panelists included Maxine Westhead (government representative from the Department of Fisheries and Oceans), Christine Penny (industry representative from Clearwater Seafoods), Jessica MacIntosh (academia representative from the Marine Affairs Program 2012-2013, Dalhousie University), Tyler Eddy (science representative from the Biology Department, Dalhousie University), Iain Archibald (public representative



from the Surfing Association of Nova Scotia), and Jarrett Corke (outreach representative and Co-Founder of ShARCC). The emergent themes from this discussion included the value of physically sitting all sectors at a table and having a conversation about contentious issues, building personal relationships with other sectors, connecting with the younger generation through social media and TED talks, and maintaining a continuous and respectful dialogue with stakeholders. This discussion was concluded by a commentary by John Lewandowski (life-long journalist), who reasserted the importance of communication in breaking down the barriers between silos of knowledge and truly bridging all sectors together.

On Saturday April 13 in the Goldberg Computer Science Building, oral and poster presentations occurred throughout the day under three broad topics: responsible industry development, stakeholder engagement and public participation, and information and knowledge management for effective ocean governance. The poster and oral presentation judges had the difficult task of selecting winners as the quality of the work produced by all the presenters was outstanding. Yue Yao, School of Resource and Environmental Studies Alumni, critically analyzed Canadian law and policy concerning the importation and exportation of shark products and was selected as the top oral presenter in the category of responsible industry development. First runner up in the oral presentations was Francois Bregha, Master of Environmental Studies candidate, who spoke on the problems of scale and the flow of information. The Building Bridges award – which represented the oral presentation that best spoke to the overarching theme of the conference – was presented to Suzuette Soomai, an Interdisciplinary PhD candidate, who gave an insightful presentation on the quantification of the use and influence of information in policy-making with case studies focusing on Trinidad and Tobago, Nova Scotia and the Gulf of Maine.

In the poster categories, the best undergraduate poster was awarded to Haley Guest (Environmental Sciences, Dalhousie University). The focus of her poster was on connecting value and knowledge of marine environmental issues. The runner up in the undergraduate category was Emilie Novaczek (Environmental Science Program, Dalhousie University, and Kings College University) whose poster used both quantitative and qualitative data to provide baseline information on the marine impacts of the local tourism industry in San Andr es. In the graduate category, Christine Stortini's (School of Environmental Resources and Studies, Dalhousie University) poster on the use of a spatially explicit, species-level Vulnerability Assessment to aid in the adaptation of local marine management to Climate Change won the best award.

The runner up poster was presented by Amy Ryan (co-authors Sean Brilliant, David Browne), and was focused on how to determine the most common threat to marine species at risk of extinction (SAR) in Canada. Vanja Avdic, Scott Biggar, Karen Devitt, Robin McCullough, and Katie Paroschy from the School for Resource and Environmental Studies, Dalhousie University, won the People's Choice Award, with their poster titled an "Investigation of the expansion of salmon farming on the Easter Shore of Nova Scotia"

Following these presentations, *the Drafting a Blueprint for Building Bridges in Ocean Management* workshop facilitated by the students took place to allow the presenters and attendees the opportunity to openly discuss the major issues from this two-day conference. Information captured during the workshop will be used to develop an editorial around a call for action to outline the next steps towards sustainable oceans management; the article will be submitted to leading local and national newspapers and other media forums.

Prior to the conference, a public "dreamwall" was also used to capture the thoughts from passersby's on what they could do to make oceans sustainable. The dreamwall was stationed at the Life Sciences Building, Student Union Building, and the Kenneth Rowe School of Business, Dalhousie University. During the conference a similar question was provided on a postcard for participants to complete. In mid May these postcards would be mailed to individual participants by the conference organizers as a gentle reminder of what they said they would do.



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Rachel Wang & Leah McConney, Master of Marine Management Candidates -2012-2013

For further information please contact Jenna Stoner, conference co-chair, at oceansconf@dal.ca, www.soceans.wiki.dal.ca