

MAP MATTERS

The Newsletter of the Marine Affairs Program, Dalhousie University



Celebrating the MMM Class of 2015



This issue of MAP Matters highlights the accomplishments of the MMM Class of 2015. It also features two new faculty members of MAP.

Congratulations to the MMM class of 2015.

Seven members of the class attended the graduation ceremony on June 1.

(left to right) Kimberly Vardon, Adrian Gerhartz, Wenhui Gao, Elizabeth Baker, Helen McConnell, Kascia White and Elizabeth Edmondson.

Gold Award Recipient

Maryann Watson was selected as the recipient of the [2015 Gold Award](#). The Gold Award is named in honour of Dr. Edgar Gold, one of the founders of the Dalhousie Oceans Studies Program. Maryann is currently working as the Science Officer for Coral Cay Conservation in Southern Leyte, Philippines.



[Marine Affairs Millennium Prize Awards](#) were presented to members of the 2014-2015 MMM class at the Making Waves: Graduate Project Presentations event held in late November 2015. The recipients were (left to right): **Alexandra Chadid** (Marine Policy), **Elizabeth Baker** (Marine Science and Technology), **Julie Hovey** (Marine Management), and **Elizabeth Edmondson** (Interdisciplinary of the Year).

MAP Students Summer 2015 Internships and Graduate Projects

During the summer of 2015, members of the MMM class conducted their research in Nova Scotia, Ontario, British Columbia, Nunavut and Bermuda. The following pages provide information on students' internship placements, research and final graduate project. The electronic version of this document provides direct links to the [students' profiles](#) and their [graduate projects](#).

[Elizabeth Baker](#)

Elizabeth completed her internship with the Fishermen and Scientists Research Society, a non-profit organization that promotes the long-term sustainability of marine fisheries resources through collaboration between fishermen and scientists. Elizabeth regularly accompanied fishers on fishing trips to sample lobsters and additional marine species. She also assisted with the completion of the V-notching conservation program on the Eastern Shore of Nova Scotia. This work allowed Elizabeth to connect with fishers throughout the province to discuss participatory management of the lobster industry. Under the guidance of Chris Milley (Adjunct Professor, Marine Affairs and MMM alumnus) and Claudio Aporta (Associate Professor, Marine Affairs), Elizabeth was able to identify ways in which management of the industry in Nova Scotia can be improved through increased participation of fishers.

Graduate Project [Influential of Ignored? The Role of Fishermen in Management of the Nova Scotia Lobster Industry](#)



(Geographic Information Systems (GIS), Multivariate Analysis, Exploratory Network Analysis (ENA) and Mercurial Version Control). As part of the internship, Alexandra had the opportunity to participate in the NOTES Conference (Newfoundland and Labrador Environmental Industry Associate (NEIA) Oil Industry and the Environment Seminar) in St. John's, NL, gaining relevant insights for her research project. She also participated on MEOPAR scientific training workshop and presented her project at the MEOPAR Annual Scientific Meeting in Vancouver, BC.

Graduate Project [Coastal Vulnerability for Ship-Source Oil Spill Preparedness and Response Planning in Halifax Harbour, Nova Scotia](#)

[Elizabeth Edmondson](#)

Elizabeth interned as a member of the Whale Habitat and Listening Experiment ([WHaLE](#)) project under the supervision of Dr. Dave Duffus, Associate Professor, Geography, University of Victoria in British Columbia. Her internship and graduate project

involved providing a policy and management overview of ship-whale collision measures in British Columbia's waters.



Through a combination of literature and policy reviews, case studies and discussions with individuals in industry, government, First Nations communities, and organizations, Elizabeth identified current initiatives being taken to address whale conservation and gaps in policy and management strategies. The aim of the project was to provide an overview of the current measures being taken and provide recommendations on the opportunities and constraints for future implementation of strategies to reduce ship-whale interactions as shipping increases along the coastline. Her academic supervisor was Dr. Aldo Chircop, Schulich School of Law, Dalhousie University.

Graduate Project [Advancing an Integrated Management approach to Ship Strikes with Baleen whales on Canada's Pacific Coast](#)

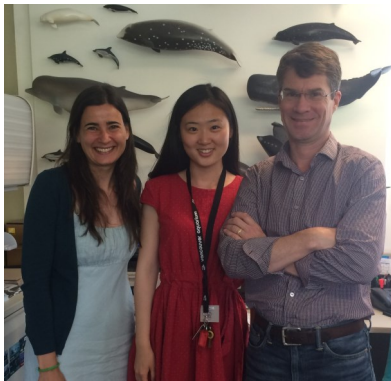
[Alexandra Chadid](#)

Alexandra Chadid participated as an intern at the Maritime Activity and Risk Investigation Network ([MARIN](#)) Research Group in the Industrial Engineering Department, Dalhousie University. She worked on a project that focused on the assessment of shoreline vulnerability posed by ship-based oil spill risk. The project supervised by Dr. Ronald Pelot, and MARIN Research Associate Dr. Hilario Calderon, and was funded by the Marine Environmental Observation, Prediction and Response Network ([MEOPAR](#)). During the internship, Alexandra gained technical skills by using different engineering and decision making technical tools



Wenhui Gao

Wenhui's internship was with the Coastal Ocean Research Institute at the Vancouver Aquarium (CORI-VA). Wenhui worked with members of the Pollution Watch Project (PWP) in British Columbia as part of the Ocean Pollution Research Program (OPRP). PWP conducts original research on contaminants with the aim to establish a cooperative environmental monitoring framework using data, resources, and expertise from multiple collaborating partners. Under the supervision Dr. Lucia Fanning, Professor, Marine Affairs and Dr. Carmen Morales, research scientist, Wenhui analyzed the current management approaches for monitoring water and sediment qualities in Halifax Harbour to contribute to efforts aimed at minimizing both the level and exposure to contaminants in Halifax Harbour by both humans and marine organisms that use the harbour environment.



Graduate Project [Sediment Quality Analysis and Related Management Approaches in Halifax Harbour](#)

Adrian Gerhartz

Adrian completed his internship with the Oceans and Coastal Management Division of Fisheries and Oceans Canada (DFO). He worked with Marty King on design strategies for the conservation priorities identified as part of the MPA network development being led by DFO. Adrian's project explores how the creation of a conservation network for the Scotian shelf affects other sea uses that are of economic importance for the area. He compared different scenarios and estimates of how much is lost in terms of adequacy and representation of the network if spatial conflicts with all other marine uses (such as oil & gas, fishery, renewable energies, aquaculture etc.) are minimized. His academic supervisor and internship host was Maxine Westhead, Adjunct Professor, Marine Affairs and Section Head of Protected Areas and Conservation Planning in Oceans and Coastal Management division, DFO Maritimes.



Graduate Project [Systematic Marine Conservation Planning in the Scotian Shelf Bioregion](#)

Julie Hovey

Julie completed her internship with the Marine Environmental Observation, Prediction, and Response Network ([MEOPAR](#)), conducting research for the Whale Habitat and Listening Experiment ([WHaLE](#)) under the supervision of Dr. Christopher Taggart, Oceanography Department, Dalhousie University. During the internship, Julie and the research team partnered with the Shipping Federation of Canada (SFC) to conduct a survey of its membership on the knowledge, awareness, and receptivity of the Canadian shipping fleet to existing and emerging conservation technologies. Julie's research was to understand the needs and restrictions of the shipping fleet with respect to the implementation of technologies that report on the location of baleen whales

in near real-time. This research will allow future scientific research to better address the needs of industry, and will potentially improve the efficacy of future conservation measures. During her internship, Julie had the opportunity to cruise aboard the Nova Star ferry from Yarmouth, NS to Portland, ME with Dr. Moira Brown



to present information on the endangered North Atlantic right whale and the risk of vessel strikes to whales with crew and passengers. In June, Julie presented her research at MEOPAR's Annual Science Meeting in Vancouver, BC, representing a management perspective of ocean sciences and emphasizing the need for impactful, purposeful research.

Graduate Project [Vessel needs, preferences, and restrictions related to minimizing risk to whales without compromising vessel operations and the safety of navigation](#)

Erin Keenan

Under the supervision of Janelle Kennedy, MMM alumna, Erin completed her internship in Iqaluit and Naujaat, NU, with the Government of Nunavut (GN) Department of Environment, Fisheries and Sealing Division. As the Master's student for the Arctic component of the [Fish-WIKS](#) Project, she conducted research on behalf of Fish-WIKS through its existing partnership with the GN and the community of Naujaat, NU. Her work addressed the relationship between government-based narwhal management programs and the use of Inuit Qaujimagatuqangit (Inuit traditional knowledge) in community-based decision making. Her internship involved meeting with representatives of the Nunavut Wildlife Management Board (NWMB) and Nunavut Research Institute. The internship continued in Naujaat where she met with the hamlet council and Hunters and Trappers Organization (HTO) to conduct interviews with a range of local narwhal management stakeholders about their views on changes in narwhal harvesting over time.



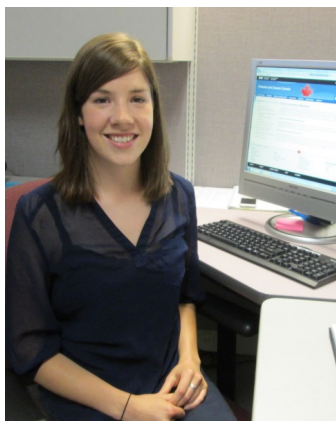
Her graduate project was the result of the analysis of the results of her interviews and literature-based research in order to identify opportunities for improving the relationship between communities, government management programs, and Inuit Qaujimagatuqangit, culminating in specific recommendations for the

relevant management bodies (including DFO, the NWMB, and HTO). This research falls under the umbrella of the Fish-WIKS project's focus on understanding western and indigenous knowledge systems in the context of Canadian fisheries policy. Chris Milley, Adjunct Professor, Marine Affairs and MMM alumnus, served as Erin's supervisor.

Graduate Project [Mobilizing Inuit Qaujimagatuqangit in narwhal management through community empowerment: A case study in Naujaat, Nunavut](#)

[Hilary MacDonell](#)

Hilary completed her internship with the Oceans and Coastal Management Division (OCMD) of Fisheries and Oceans Canada (DFO) at the Bedford Institute of Oceanography. Hilary worked under the supervision of Kattie Calleja and Glen Herbert MMM alumnus. While completing her internship at DFO, Hilary had the opportunity to participate in inter-governmental meetings and work on a variety of projects ranging from environmental incident response planning to the conservation of sensitive marine habitats. Hilary gained invaluable experience and skills related to DFO program delivery, project management, stakeholder engagement, outreach, and communications. Her academic supervisor was Dr. James Ford, Associate Professor, Department of Geography, McGill University.



Graduate Project [Examining community adaptation readiness to climate change in the Inuvialuit Settlement Region, Northwest Territories](#)

[Taylor Mason](#)

Taylor Mason completed her internship with the Qikiqtani Inuit Association (QIA) in Iqaluit, Nunavut under the supervision of the Director of Lands and Resources, Rosanne D'Orazio. Taylor's graduate project and internship focused on assessing Inuit participation and community involvement in policy development for offshore oil and gas in Nunavut. Taylor spent her time in Iqaluit preparing a feedback report for the QIA outlining thirteen recommendations based on QIA's mandate.

The report is based on information gathered from Nunavut Tunngavik Incorporated's (NTI) Policy Background Paper for Offshore Oil and Gas Development in Nunavut, and includes NTI's draft policy framework for a seismic



policy, relevant reports and literature, and the student's own understanding of the various processes and activities involved in these developments. During the internship, Taylor met with members of the QIA, Aboriginal Affairs and Northern Development Canada, NTI, the Government of Nunavut and the Nunavut Impact Review Board. The research was done under the supervision of Claudio Aporta, Associate Professor, Marine Affairs and Chris Milley, Adjunct Professor, Marine Affairs and MMM alumnus.

Graduate Project [A Role for Inuit: How northern communities can inform and influence the dynamics of offshore oil and gas development in Nunavut](#)

[Helen McConnell](#)

Helen completed two internships, one with the Fisheries Management Division of Fisheries and Oceans Canada (DFO) in Vancouver, and the other with NEXUS Coastal Resource Management, based out of Halifax. At DFO, Helen worked with Paul Cottrell, the Pacific Marine Mammal Coordinator on various projects; tracking marine mammal response efforts in BC, examining the Joint Marine Mammal Oil Spill Response Plan between Canada and the United States, and assisting with a hydrophone project at the Sand Heads Lighthouse Station. During the internship with NEXUS, she worked with the Nunavut Impact Re-



view Board (NIRB) in Cambridge Bay, Nunavut. Through this internship, Helen was able to secure funding through the Mitacs Accelerate Graduate Research Internship Program (www.mitacs.ca) to support travel to Nunavut. This allowed her to gain invaluable experience working on environmental impacts assessments, as well as conduct additional research for her graduate project. Her graduate project involved researching the effects of anthropogenic sound in the marine soundscape on marine mammals, with a focus on the Arctic. By conducting both a comprehensive literature review and a policy analysis, Helen was able to provide invaluable research that will be used by various companies and organizations working in Nunavut, including a strategic environmental assessment which will be conducted by the NIRB. Her academic supervisors were Dr. Claudio Aporta, Associate Professor of the Marine Affairs and Dr. Hillary Moors-Murphy, biologist at DFO and a member of the National Marine Mammal Peer-Review Committee.

Graduate Project [Shipping and Seismic Exploration Noise in the Arctic Marine Soundscape: A look at Mitigation Measures for Cetaceans](#)

[Kimberly Vardon](#)

Kimberly completed her internship at the National Fisheries Policy Branch of Fisheries and Oceans Canada, National Capital Region. She worked closely with marine mammal coordinators across Canada. Over the summer Kimberly



worked on several interdepartmental projects spanning from proposed regulatory amendment processes to Conservation and Protection and Species at Risk Act. Her main tasks involved operations regarding the Marine Mammal Response Program. In addition to contributing to ongoing DFO projects, Kimberly worked on her graduate project that explores the development of marine mammal oil spill response guidelines. Her academic supervisor was Pierre-Yves Daoust, Professor of Anatomic and Wildlife Pathology at the Atlantic Veterinary College in Prince Edward Island and coordinator of the Canadian Cooperative Wildlife Health Centre for the Atlantic.

Graduate Project [Examining the Feasibility of Implementing a Marine Mammal Oil Spill Response in Canada](#)

[Maryann Watson](#)

Maryann's project aimed to improve handling practices of chum salmon before they are released through study of their physiology, injury sustained from fishing and handling, and

their vitality when brought onboard. All of these factors contribute to the post-release survival of the fish. Maryann interviewed fishermen and managers of the fishery to gain a better understanding of the opinions of commercial Pacific salmon fishers on suggested handling practices for salmon bycatch.

She also wanted to learn more about practical solutions to current management issues within the industry and opinions on how to improve survival of released fish. Maryann assisted with the vitality study onboard purse seine vessels during the fishery. The goal of the project was to improve handling of salmon bycatch in this fishery so that more chum salmon survive to spawning post-release from the pink salmon fishery.



Graduate Project [Bycatch 22: Regulatory pressures of selective fishing on commercial salmon fishers and impacts of handling on chum salmon \(*Onchorhynchus keta*\) released from purse seine fisheries in Northern British Columbia](#)

[Kascia White](#)

Kascia undertook an internship with the Department of Environmental Protection, Marine Resources Section, Bermuda, under the supervision of Dr. Joanna Pitt, Marine Resources Officer. Kascia worked on analyzing fisheries databases for shallow water snapper species to aid in understanding how fish stocks react to their environment and increased fishing pressures. In addition, she conducted surveys with local commercial and recreational snapper fishers. The goal of Kascia's research is to aid in determining how Bermuda's snapper fishery can be more efficiently managed with an effective management strategy. While at the Department of Environmental Protection, Kascia also assisted with the Bermuda Lionfish Control Plan that involved deploying and collecting deep-water lionfish traps at known lionfish aggregation sites. Her academic supervisors were Dr. Tammy Trott, Senior Marine Resources Officer and Mr. Paul Fanning, Chief Technical Advisor, Fisheries and Aquaculture Organizations (FAO), Pakistan.



Graduate Project [Applying Adaptive Management Approaches to Data Limited Fisheries: The Case of Bermuda's Shallow Water Snapper Species](#)

MAP News

Two faculty joined the MAP family in the last 12 months. Megan Bailey, Assistant Professor and Tier II Canada Research Chair, and Ramon Filgueira, Assistant Professor. The following are brief profiles. We invite you to the MAP website to learn more about their research backgrounds and interests.

Megan Bailey

Megan joined MAP as the Tier II Canada Research Chair in Integrated Ocean and Coastal Governance and Assistant Professor in August 2015. As a fisheries economist, her research focus is on the global cooperation required for sustainable seafood governance. In her work, Megan examines ways to facilitate more cooperation between countries and how governance arrangements like certification and traceability can help push the sustainability agenda, especially in developing countries.



Through the lens of game theory in economics, she believes “self-interest always trumps the collective good.” This is a classic example of the prisoner’s dilemma: every country doing what’s right for themselves so the greater good

takes a back seat. But as climate changes, and with it the behavior of fish, everyone must start thinking on a mutually beneficial global scale. Her research will focus on starting a dialogue that better recognizes the value of fisheries above and beyond the number of fish caught, like positive international relations and seafood processing employment opportunities for women in developing countries.

Megan grew up in London, ON and after studying at Western University and UBC, she spent three years as a Post-Doctoral Fellow with the Environmental Policy Group at Wageningen University in the Netherlands.

Ramón Filgueira

An expert in aquaculture management, Ramón Filgueira joined the Marine Affairs Program in March 2016. His past research in ecosystem modeling has contributed to worldwide understanding of sustainable aquaculture and protecting marine ecosystems.

Originally from Galicia, Spain, Filgueira will share with the Marine Affairs community his knowledge on shellfish and finfish aquaculture and coastal aquaculture health. Ramón applies real-world implications to his research, exploring effective ecosystem functioning.

“Science is a learning process in which new questions and perspective are always being generated. Therefore, my research interests continuously develop as my research experience and collaborations increase,” says Filgueira.



Ramón’s research goal is to promote the sustainable management of coastal aquaculture sites and to define ecological indicators to monitor the ecosystem health. His primary research tool is ecosystem modelling which is applied to ecosystem-based management. Ramón’s research interests tackle several aspects of shellfish and finfish aquaculture such as phytoplankton-bivalve trophic interaction, carrying capacity, organic loading, coastal connectivity, pest and disease transmission, and implications on climate change.

MAP Publications - Selected recent publications of MAP faculty, students and alumni. For a full list of publications, visit the [MAP Research](#) tab on the MAP website.

- * **Filgueira, R.**, Guyondet, T., Comeau, L.A. & Tremblay, R. Bivalve aquaculture environment interactions in the context of climate change *Global Change Biology* (in press)
- * Bayer, S.R., **Cheney, T.**, Guenther, C. & Sameoto, J.A. (2016) Proceedings of the US and Canada Scallop Science Summit: St. Andrews, New Brunswick, May 6–8, 2014. *Can. Tech. Rep. Aquat. Sci.* 3151: v + 48 p.
- * **Reimer, J.**, Gravel, C., Brown, M.W. & Taggart, C.T. (2016). Mitigating vessel strikes: The problem of the peripatetic whales and the peripatetic fleet. *Marine Policy* 68 (91-99).
- * **Bailey, M.**, Bush, S., Oosterveer, P. & Larastiti, L. (2016). Fishers, Fair Trade, and finding middle ground. *Fisheries Research* 182: 59-68
- * MacDonald, B. H., **Soomai, S.S.**, De Santo, E. M. & **Wells, P.G.** (Eds). *Science, Information and Policy Interface for Effective Coastal and Ocean Management*. Boca Raton, FL: CRC Press.
- * **Aporta, C.** (2016) The Power of Maps: Inuit Land Use and Occupancy Project (1976) as a Landmark in Inuit Land Use Studies. In I. Krupnik (Ed.), *Early Inuit studies: themes and transitions, 1850s-1080s* (pages 354-373). Washington D.C.: Smithsonian Institution Scholarly Press.
- * **Giles, A.**, **Fanning, L.**, **Denny, S.** & Paul, T. (2016). Improving the American Eel Fishery Through the Incorporation of Indigenous Knowledge into Policy Level Decision Making in Canada. *Human Ecology* DOI 10.1007/s10745-016-9814-0
- * Botero, C.M., **Fanning, L.M.**, Milanés, C. & **Planas, J.A.** (2016). An indicator framework for assessing progress in land and marine planning in Colombia and Cuba. *Ecological Indicators* 64 (181-193).