



INTERNATIONAL OCEAN INSTITUTE



**TRAINING PROGRAMME ON
*OCEAN GOVERNANCE: POLICY, LAW AND MANAGEMENT***

**2017
COURSE REPORT**



**Dalhousie University, Halifax, Canada
24th May – 21st July, 2017**

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INTERNATIONAL OCEAN INSTITUTE

**2017
COURSE REPORT**

**IOI-Canada
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INTRODUCTION

This report provides a record of the 2017 training programme on *Ocean Governance: Policy, Law and Management*, conducted by the International Ocean Institute (IOI) at Dalhousie University, Halifax, Canada. Held from 24th May to 21st July, this was the 37th annual course since the training programme was instituted by Elisabeth Mann Borgese, Founder of the IOI.



The programme was attended by 17 participants from a range of disciplines and backgrounds. A good balance of countries and regions was achieved, with participants from 11 countries in Africa, Asia, the Caribbean, South America and the South Pacific. As usual, emphasis was placed on having strong female representation among the group. Lectures and presentations were delivered by over 100 speakers, and included local and international experts and practitioners. The course was organised thematically as follows:

- Module 1:** Orientation and Introduction to the Training Programme
- Module 2:** Ocean Sciences
- Module 3:** Law of the Sea and Principled Ocean Governance
- Module 4:** Maritime Security
- Module 5:** Communication and Negotiation
- Module 6:** Fisheries and Aquaculture
- Module 7:** Integrated Coastal and Ocean Management
- Module 8:** Marine Transportation
- Module 9:** Energy
- Module 10:** Round Table and Conclusion of Training Programme

GROUP PHOTOGRAPH



Photo credit: Nick Pearce, Dalhousie University

Front row (from left to right): Richard Florizone, President, Dalhousie University (Canada), Wang Xiumei (China), Xing Yuqing (China), Derrick A. Brathwaite (Barbados), Chen Hua (China), Ming Hongxia (China), Mike Butler, Director & 2017 Course Director (England/Canada)

Second row: Mwanapili Hamisi (Kenya), Orisha Joseph (Grenada), Naomi Nati (Papua New Guinea), Philip O. Sagero (Kenya), Regan Nicholaus Kavishe (Tanzania), Madeleine Coffen-Smout, Programme Officer (England)

Third row: Gao Zhigang (China), Hilroy Simon (Antigua and Barbuda), Daphne Hangatt (Papua New Guinea), Martin A. Sebastian (Malaysia), Audra White, 2017 Course Co-ordinator (Canada), Paul Boudreau, Senior Research Fellow (Canada), Livatiana Ramanjehimanana (Madagascar)

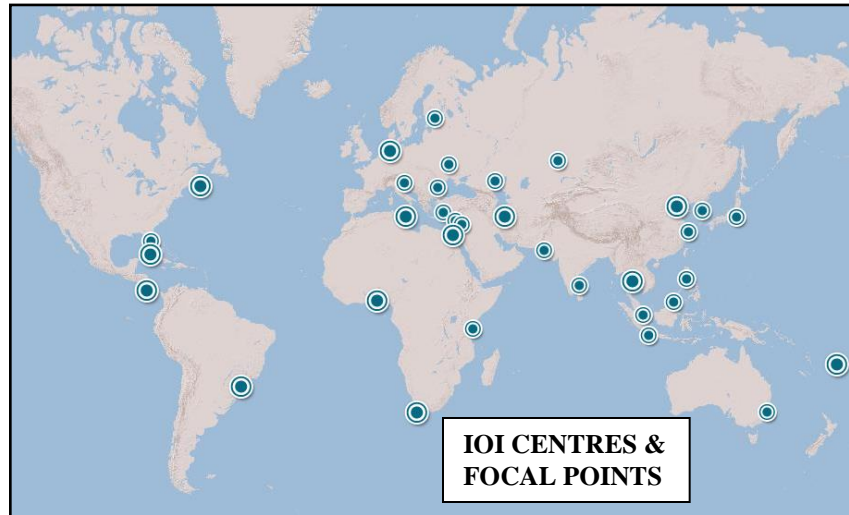
Fourth row: Jennifer Barr, Finance Officer (Canada), Alain Joseph, Module Leader (Canada), Momodou Cham (The Gambia), Bob Edwards, Module Leader (Canada), Hugh Williamson, Senior Research Fellow (Canada), Mikhail Amsterdam (Guyana), David Griffiths, Senior Research Fellow (Canada)

INTERNATIONAL OCEAN INSTITUTE

IOI-Canada is a leading member of the International Ocean Institute's network of centres and focal points operating worldwide in over 30 countries. One of the earliest IOI centres to be established, it was set up by Elisabeth Mann Borgese in 1979 soon after she arrived at Dalhousie University in Halifax, Nova Scotia, and it has been based at the university ever since.

Registered as the "IOI-Canada Association", IOI-Canada is a not-for-profit organisation, federally incorporated under the Canada Corporations Act and governed by a Board of Directors. It is guided by the IOI-Canada/Dalhousie Oceans Advisory Committee and staffed by an experienced team of professionals, augmented by Senior Research Fellows and interns who contribute to its activities. IOI-Canada is the

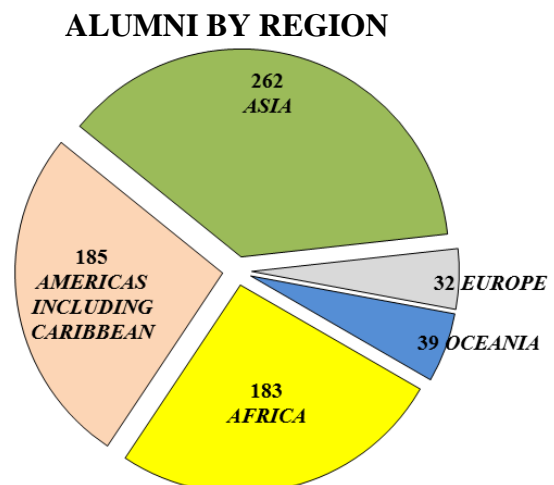
regional co-ordinator of the IOI centres in the Americas, namely IOI-Brazil, IOI-Costa Rica, IOI-Cuba and IOI-USA, in addition to the Canadian centre. The international headquarters of the IOI have been located in Malta since being founded in 1972 by Elisabeth Mann Borgese. Information on IOI headquarters and the network as a whole can be found at www.ioinst.org.



IOI-Canada's mission is to promote responsible ocean governance and the stewardship and sustainable use of coastal and ocean resources in Canada and around the world. Its goals are to encourage and develop the potential and capacity of individuals, institutions and communities to foster:

- a network of individuals dedicated to effective coastal and ocean governance;
- management, education, training, research and outreach; and,
- sustainable and prosperous coastal communities.

IOI-Canada accomplishes its mission and goals through three main activities: education and training, collaborative research and outreach. The provision of interdisciplinary training is its major focus, and through its flagship course in Halifax, it has trained more than 700 individuals from over 100 countries around the globe.



THE TRAINING PROGRAMME

Purpose and Approach

With the support of Dalhousie University, IOI has offered an intensive, interdisciplinary training programme in Halifax annually since 1981. This purpose of this flagship course is to:

- deepen understanding of the ever-increasing importance of the oceans and their resources in world politics and sustainable economic development;
- assist developing countries in the formation of a core of decision-makers fully aware of the complex issues of coastal and ocean management; and,
- maximise benefits to be derived from the United Nations Convention on the Law of the Sea through the proper integration of coastal and ocean management into national and international development strategies.

The programme emphasises the importance of viewing the ocean as a system with varied users and multiple, often competing and conflicting, uses. It also aims to increase awareness of the fact that ocean management requires broad interdisciplinary skills, new institutional and legal infrastructures, and new forms of intergovernmental and non-governmental organisation and cooperation at the local, national and international levels.

The course takes place on the campus of Dalhousie University, and consists of approximately 220 hours of intensive learning. While it is primarily lecture-based, it also includes interactive discussions, participant presentations, exercises and simulations, field trips and a round table.

Participants

The training programme is primarily designed for developing country mid-career professionals with responsibility for some aspect of coastal or ocean governance. Given the under-representation of women in the upper echelons of administration and policy-making worldwide, particular emphasis is placed on trying to achieve equal numbers of female and male participants, and to creating a forum where men and women can learn together, sharing different perspectives and examining issues from different viewpoints.



Course Content

The course is a foundational programme in a very important field of development strategy; it is not intended to provide specialised training. Participants are therefore expected to step out of their fields of specialisation and be exposed to broadly interdisciplinary work.

The 2017 training programme was organised into 10 modules covering a wide range of themes and issues, as set out in the following syllabus. When provided by lecturers, a brief summary of their presentation's topics was posted online at <http://internationaloceaninstitute.dal.ca/2017LectureTopics.doc>.

SYLLABUS

MODULE 1 Orientation and Introduction to the Training Programme

Wednesday, 24th May

10.00 – 10.30	Introductions & Administrative Matters	Ms Audra White (Module Leader)
10.45 – 12.00	Killam Library Tour	Mr Creighton Barrett
1.30 – 4.00	Understanding Canada	Dr Jason Grek-Martin

Thursday, 25th May

9.00 – 10.30	Intercultural Awareness	Ms Joanne Fraser
10.45 – 12.00	Managing at University	Dr David Mensink
1.30 – 4.00	Ethical Issues in Ocean Governance	Prof. Ian McAllister

Friday, 26th May

9.00 – 12.00	Introduction to: Course Organisation, Ocean Governance, Simulation/Integration Exercise	Mr Mike Butler Module Leaders IOI staff
1.30 – 2.30	The Sea in Human History	Mr David Griffiths
4.00 – 6.00	Opening Ceremony with Keynote Address: Catch A Wave	Dr Wendy Watson-Wright All

Saturday, 27th May

All day	Free. Optional morning trip to Farmers Market
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Sunday, 28th May

All day	Free
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MODULE 2 Ocean Sciences

Monday, 29th May

9.00 – 12.00	Introduction to Ocean Sciences, and Health of the Oceans	Dr Peter Wells (Module Leader)
1.30 – 4.00	Fundamentals of Climate Change	Mr Alexander MacDonald

Tuesday, 30th May

9.00 – 12.00	Vulnerability Assessment and Adaptation to Climate Change	Dr Danika van Proosdij
1.30 – 4.00	Ocean Acidification and its Implications	Dr Kumiko Azetsu-Scott

Wednesday, 31st May

9.00 – 12.00	Fundamentals of Oceanography	Dr Anna Metaxas
1.30 – 4.00	Marine Biodiversity: Census of Marine Life & Ocean Biogeographic Information System	Mr Bob Branton Ms Mary Kennedy

Thursday, 1st June

9.00 – 10.30	Participant Presentations	Participants
10.45 – 12.00	Whales and Fisheries	Dr Sean Brilliant
1.30 – 4.00	The Land-Sea Interface	Dr Graham Daborn

Friday, 2nd June

9.00 – 12.00	Remote Sensing of the Ocean	Mr Dirk Werle
1.30 – 4.00	Module Summary and Integration Exercise	Dr Peter Wells Mr David Griffiths Dr Sean Brilliant Mr Mike Butler

Saturday, 3rd June

All day Free

Sunday, 4th June

All day Free

<p>MODULE 3 Law of the Sea and Principled Ocean Governance</p>
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Monday, 5th June

9.00 – 12.00	Introduction to Law of the Sea – Part 1	Mr Hugh Williamson (Module Leader)
1.30 – 4.00	Legal Aspects of Climate Change	Dr Meinhard Doelle

Tuesday, 6th June

9.00 – 10.30	Introduction to Law of the Sea – Part 2	Mr Hugh Williamson
10.30 – 11.00	Group Photograph	All
11.00 – 12.00	Introduction to Law of the Sea – Part 2 (cont.)	Mr Hugh Williamson
1.30 – 4.00	Ecosystem Approach	Ms Olga Koubrak

Wednesday, 7th June

9.00 – 12.00	Precautionary Principle	Dr Tony George Puthucherril
1.30 – 4.00	Legal Aspects of Maritime Boundary Delimitation	Prof. Phillip Saunders, QC

Thursday, 8th June – World Oceans Day

9.00 – 10.30	Article 76 of UNCLOS	Mr Galo Carrera
10.45 – 12.00	Technical Aspects of Maritime Boundary Delimitation	Mr Galo Carrera

1.30 – 2.45	Participant Presentations	Participants
3.00 – 4.00	Module Summary and Integration Exercise	Mr David Griffiths Mr Mike Butler
7.00 onwards	Elisabeth Mann Borgese Ocean Lecture: Marine Protected Areas – For Whom?	Dr Sean Brilliant (Moderator) Mr Paul Barnes Ms Veronika Brzeski Mr Ken Paul Ms Maxine Westhead <i>And via video-conferencing:</i> Dr Ratana Chuenpagdee Dr Susanna Fuller Mr Kevin Stringer

Friday, 9th June

All day	Field Trip: Bedford Institute of Oceanography	Ms Stephanie Clay Mr Scott Coffen-Smout Ms Jacinthe Cormier Dr Mary-Lynn Dickson Dr Cesar Fuentes-Yaco Mr Jeff Graves Mr Stephen Locke Dr Hilary Moors-Murphy Mr Brian Robinson Dr Alain Vézina Ms Audra White
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Saturday, 10th June

All day	Free
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Sunday, 11th June

All day	Free
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MODULE 4 Maritime Security

Monday, 12th June

9.00 – 12.00	Introduction to Module, and Maritime Security	Cdr Bob Edwards (ret'd) (Module Leader) Mr Glen Herbert
1.30 – 2.45	Maritime Security (cont.)	Cdr Bob Edwards (ret'd)
3.00 – 4.00	Participant Presentations	Participants

Tuesday, 13th June

9.00 – 9.45	Concepts of Emergency Management and Application to Coastal Communities	Mr David Griffiths
9.45 – 10.30	Technology and Emergency Management	Dr Mélanie Fournier
10.45 – 12.00	Disaster Risk Reduction Internationally; & Case Study	Mr David Griffiths
1.30 – 4.00	Field Trip to Nova Scotia Emergency Management Office (EMO)	Ms Joan Mahoney Mr Brian Barr

Wednesday, 14th June

All day	Integrated Maritime Security Policy Exercise	Cdr Bob Edwards (ret'd) Mr Glen Herbert
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Thursday, 15th June

All day	Integrated Maritime Security Policy Exercise (cont.)	Cdr Bob Edwards (ret'd) Mr Glen Herbert
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Friday, 16th June

9.00 – 10.30	Integrated Maritime Security Policy Presentations	Participants Cdr Bob Edwards (ret'd) Mr Glen Herbert Ms Leah Beveridge
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10.45 – 12.00	Module Summary and Integration Exercise	Cdr Bob Edwards (ret'd) Mr David Griffiths Mr Mike Butler
1.00 onwards	Field Trip to Bay of Fundy: Sustainable Blue Fish Farm, Evangeline Beach	Mr David Roberts Dr Graham Daborn Ms Audra White

Saturday, 17th June

All day	Field Trip to Bay of Fundy: Annapolis Royal Marsh Nature Trail, Annapolis Tidal Power Station, Fort Anne, Annapolis Royal Market, Habitation	Mr Leslie Smith Ms Audra White
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Sunday, 18th June

All day	Field Trip to Bay of Fundy: Fundy Adventures, Port of Digby, Stone Bear Tracks and Trails	Ms Wanda VanTassel Mr Edwin Chisholm Mr Frank Meuse Ms Shalan Joudry Ms Audra White
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Monday, 19th June

All day	Field Trip to Bay of Fundy: Acadian Seaplants, Grand Pré	Mr Will Neily Ms Audra White
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<p style="text-align: center;">MODULE 5 Communication and Negotiation</p>
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Tuesday, 20th June

9.00 – 12.00	Recuperation/Study Period	Participants
1.30 – 4.00	Introduction to Module, and Media	Mr Ian Porter (Module Leader)

Wednesday, 21st June

All day	Interview and Presentation Skills	Mr Ian Porter Mr Tim Tracey
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Thursday, 22nd June

9.00 – 12.00	Marine Managers and the News	Mr Ian Porter
1.30 – 4.00	Communication	Mr Peter MacLellan

Friday, 23rd June

9.00 – 12.00	Negotiation Theory and Practice	Mr Hugh Williamson Prof. Diana Ginn
1.30 – 2.45	Module Summary and Integration Exercise	Mr Ian Porter Mr David Griffiths Mr Mike Butler
3.00 – 4.30	International Centre for Ocean Development (ICOD): History and Future?	Mr Chris Milley Mr Garry Comber

Saturday, 24th June

All day	Free
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Sunday, 25th June

All day	Free
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<p>MODULE 6 Fisheries and Aquaculture</p>
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Monday, 26th June

9.00 – 10.30	Introduction to Fisheries Science	Dr Ross Claytor
10.45 – 12.30	Ecosystem- based Fisheries Management	Dr Nancy Shackell
1.30 – 4.00	Participant Presentations	Participants

Tuesday, 27th June

9.00 – 10.30	Co-management	Dr Claudio Aporta
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10.45 – 12.00	SDG 14 and UN Goals	Dr Susanna Fuller
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1.30 – 4.00	Community-based Fisheries	Mr Chris Milley
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Wednesday, 28th June

9.00 – 10.30	Policy Development	Ms Kerri Graham
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10.45 – 12.00	Development of Nova Scotia's Aquaculture Policy and Legislation	Mr Brennan Goreham
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1.30 – 4.00	Ocean Tracking Network and Telemetry Systems	Dr Fred Whoriskey
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Thursday, 29th June

9.00 – 12.00	Seafood Value Chain	Dr Megan Bailey
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1.30 – 4.00	Field Trip: Northwest Atlantic Fisheries Organisation	Mr Fred Kingston Mr Ricardo Federizon
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Friday, 30th June

9.00 – 12.00	Aquaculture	Mr David Roberts
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1.30 – 4.00	Indigenous Fisheries	Mr Ken Paul
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4.00 – 4.30	Module Summary and Integration Exercise	Mr Mike Butler (Module Leader) Mr David Griffiths
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Saturday, 1st July (Canada Day)

All day	Free	
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Sunday, 2nd July

All day	Free	
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Monday, 3rd July

All day	Free – holiday in lieu of Canada Day	
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MODULE 7 Integrated Coastal and Ocean Management
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Tuesday, 4th July

9.00 – 12.00	Introduction to Integrated Coastal and Ocean Management (ICOM)	Dr Lucia Fanning
1.30 – 4.00	Marine Spatial Planning and MPAs	Mr Paul Macnab Mr Scott Coffen-Smout

Wednesday, 5th July

9.00 – 12.00	GIS Web Mapping and Simulation (GIS Lab: Rowe 4001)	Dr Mélanie Fournier Mr James Boxall Mr David Griffiths
1.30 – 4.00	Coastal Information Management	Dr Bertrum MacDonald Dr Suzuette Soomai Mr James Ross Ms Sarah Chamberlain Ms Rachael Cadman Ms Diana Castillo Ms Kalene Eck

Thursday, 6th July

9.00 – 12.00	Project Cycle	Prof. Ian McAllister
1.30 – 2.45	Participant Presentations	Participants
3.00 – 4.00	Ocean Education, Literacy and Awareness	Ms Anna Naylor
4.00 – 4.30	Tour of CERC.Ocean Lab (Steele Ocean Sciences Building)	Dr Doug Wallace

Friday, 7th July

9.00 – 12.00	Ecological Economics	Dr Peter Tyedmers
1.05 – 1.25	Optional Briefing: Dalhousie's Marine Affairs Program	Ms Becky Field

1.30 – 4.00	Module Summary and Integration Exercise	Mr Paul Boudreau (Module Leader) Mr David Griffiths Mr Mike Butler
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Saturday, 8th July

All day Free

Sunday, 9th July

All day Free

<p align="center">MODULE 8 Marine Transportation</p>

Monday, 10th July

9.00 – 12.00	Shipping Fundamentals	Capt. Jim Calvesbert
1.30 – 2.45	Human Elements of International Shipping	Capt. Angus McDonald
3.00 – 4.00	Evolution of Containerisation	Mr Jim Frost

Tuesday, 11th July

9.00 – 12.00	Safety of Ships	Capt. Alan Knight
2.00 – 3.30	Field trip: Ecology Action Centre	Dr Susanna Fuller

Wednesday, 12th July

9.00 – 12.00	Port Governance and Reform	Dr Mary Brooks
1.30 – 2.45	Maritime Search and Rescue	Mr John Dalziel
3.00 – 4.00	Module Summary and Integration Exercise	Mr Patrick Bohan (Module Leader) Mr John Dalziel Mr David Griffiths Mr Mike Butler

Thursday, 13th July

9.00 – 10.30	Field Trip: Eastern Canada Response Corporation	Mr Darin Connors
10.30 – 12.00	Field Trip: Survival Systems Training Ltd	Mr Dan Latremouille
1.00 – 4.00	Field Trip: Port of Halifax	Mr Patrick Bohan Ms Audra White

MODULE 9 Energy

Friday, 14th July

9.00 – 12.00	Introduction to Module	Dr Alain Joseph (Module Leader)
1.30 – 2.45	Introduction to Geology	Mr David Brown
3.00 – 4.00	Introduction to Geophysics	Mr Kris Kendell

Saturday, 15th July

All day	Integration Exercise: Preparation of Presentations	Participants
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Sunday, 16th July

All day	Integration Exercise: Preparation of Presentations	Participants
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Monday, 17th July

9.00 – 10.30	Exploration and Risk	Mr Paul Barnes
10.45 – 12.00	Regulation and the Canadian Environmental Assessment Agency (CEAA)	Ms Elizabeth MacDonald
1.30 – 4.00	Tidal Power	Ms Melissa Oldreive

Tuesday, 18th July

9.00 – 10.30	Wind Power	Mr Aaron Long
10.45 – 12.00	Solar Power	Dr Peter Allen
1.30 – 2.30	Module Summary and Integration Exercise	Dr Alain Joseph Mr David Griffiths Mr Mike Butler
2.45 – 4.00	UNCLOS Evolution and Implementation History, and the Current Processes and Challenges of Ocean Governance	Dr Awni Behnam (via video/Skype)

<p>MODULE 10 Round Table Conclusion of Training Programme</p>
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Wednesday, 19th July

All day	Round Table	Ms Leah Beveridge Dr Tony Charles Dr Dan Lane Dr Suzuette Soomai Mr David Griffiths Participants
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Thursday, 20th July

9.00 – 12.00	Round Table	Ms Leah Beveridge Dr Tony Charles Dr Dan Lane Dr Suzuette Soomai Mr David Griffiths Participants
1.30 – 3.00	Round Table	Ms Leah Beveridge Dr Tony Charles Dr Dan Lane Dr Suzuette Soomai Mr David Griffiths Participants
4.30 – 6.30	Closing Ceremony and Reception	All

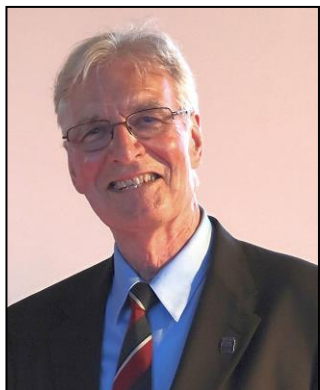
Friday, 21st July

9.00 – 12.00 Feedback, What Next? and Closing Remarks

IOI Staff
Module Leaders
Participants



COURSE DIRECTOR'S REPORT



The 37th offering of IOI-Canada's Training Program "Ocean Governance: Policy, Law and Management" represents the seventh time that I have had the privilege of being the Course Director in addition to my eleven year role as Director of IOI-Canada. Together with my colleagues Madeleine Coffen-Smout (Programme Officer) and Jennifer Barr (Finance Officer), and with the support of our nine Senior Research Fellows, the syllabus of the annual 8-week Training Program, is reviewed and revised each year based on feedback from the previous year's program. We are always cognisant of recent academic and other advances in the field of ocean governance. This year the Program was again presented in terms of ten modules, covering the major thematic components of ocean governance. Each module was assigned a module leader, usually a Senior Research Fellow with the appropriate sector credentials. Together with the Course Director, the module leaders were responsible for emphasising the thematic linkages within and between modules. The Course Director was present for all lectures to facilitate the proceedings and, when necessary, to encourage interactivity between the participants and the lecturer.

Some of the unique features of the IOI-Canada program, in contrast to offerings by the other five IOI Training Centres, are the length of the Program (twice the average) and the fact that we have access to over 100 world class lecturers who provide their time and expertise on a *pro bono* basis. These highly valued "assets" and their historic loyalty, initially to Elisabeth Mann Borgese and subsequently to one of her legacies, namely IOI-Canada, are probably unique in the world and without them IOI-Canada could not have delivered the course for the past 37 years! In addition, the fact that Halifax is the home of Dalhousie University, one of Canada's pre-eminent ocean educational and research institutions, the Bedford Institute of Oceanography, Canada's East Coast navy and numerous private sector ocean incubators and related industries, makes the city the ideal location for IOI-Canada's Training Program. Halifax also boasts four other Universities, Community College campuses, and the Port of Halifax. Numerous nearby coastal communities and their resource industries all contribute to an ideal environ for training and education in the multiple facets of Ocean Governance.

The Orientation module began on Wednesday, May 24 culminating at the end of the week in the official Opening Ceremony. For many years, this has been held in Dalhousie's Great Hall, an appropriately grand setting! This year the Welcoming Panel of guests, all loyal friends of IOI-Canada and representing their respective Institutions, consisted of Dr Alain Boutet (Dalhousie University); Mr Richard Zurawski (Halifax Regional Municipality); Mr Frank Dunn (Nova Scotia Department of Fisheries and Aquaculture) and Dr Alain Vézina (Department of Fisheries and Oceans, Bedford Institute of Oceanography). Ms Orisha Joseph, on behalf of this year's course participants, responded to the panelists' warm words of welcome. The Keynote address was then presented by Dr Wendy Watson-Wright, Chief Executive Officer of the newly established Ocean Frontier Institute based at Dalhousie University. Dr Watson-



Wright's topic was encouraging and aptly entitled "Catch a Wave". All present were then invited to join the course participants at a reception, an ideal opportunity to meet and greet faculty, staff, host families, lecturers, senior research fellows and the numerous friends of IOI-Canada.

We make a special effort to celebrate World Oceans Day, June 8, each year with the annual Elisabeth Mann Borgese Ocean Lecture, an appropriate way to commemorate the life and work of our founder. This year was the 13th presentation in the series, inaugurated in 2005. We have found that panel sessions tend to engage a rather larger and diverse audience. This year we invited four panelists to address the



controversial topic of "Marine Protected Areas: For Whom?" The panelists were Ms Maxine Westhead (Department of Fisheries and Oceans), Mr Ken Paul (Atlantic Policy Congress of First Nations Chiefs Secretariat), Mr Paul Barnes (Canadian Association of Petroleum Producers) and Ms Veronika Brzeski (Cape Breton Fish Harvesters Association). To complement the perspectives of the panelists we (bravely) arranged a live video 'feed' from the first UN Ocean Conference in New York. Two of our Senior Research Fellows, Drs Ratana Chuenpagdee (Memorial University) and Susanna Fuller (Ecology Action Centre) provided their impressions of the Conference proceedings particularly in relation to the MPA topic in question. Mr Kevin Stringer, the Associate Deputy Minister of the Department of Fisheries and Oceans, also added from New York the official position of the federal government. The live feed was glitch-free thanks to the efficiency of Dalhousie's technical support. I think the consensus of opinion was that the evening's deliberations were successful, other than the lack of time to fully engage the audience. The success was in large part due to the skill of the Moderator, Dr Sean Brilliant (Canadian Wildlife Federation), who performed with great enthusiasm. Following some concluding remarks by Ms Anita Coady, a Governor and Director respectively of the IOI and IOI-Canada's Board of Directors, the audience of approximately 120 were invited to join the panelists and organizers for a reception in the foyer of Dalhousie's FASS building. Support for the evening's event was kindly provided by WWF-Canada, the Ecology Action Centre, Too Big to Ignore and IOI-Canada. Publicity was provided by the above, in addition to many other organizations including Dalhousie University, the Roberta Bondar Foundation and the ubiquitous Facebook and Twitter operatives.



As in previous years, the field trips represent important components of the Training Program, with the three-day trip to the Annapolis Valley as the major highlight of the Course. The 200+ hours of classroom time necessitate breaks from the intensive and exhausting lecture series, which also provide an opportunity to view Ocean Governance in practice, as a complement to the theory. For the Annapolis trip we were again located, and well looked after, at Cornwallis Park, a former naval base overlooking the Cornwallis estuary and the distant port of Digby. En route we visited Sustainable Fish Farming Canada Ltd, a unique land-based aquaculture operation near Windsor. Perhaps one of the most sophisticated operations of its type, it provides top quality Atlantic salmon to a particularly demanding clientele, the Halifax hotels. Dr Graham Daborn (Acadia University) then met us at Evangeline Beach, near the historic UNESCO World Heritage site of Grand Pré, to brief the participants on the ecology of the Upper Bay of Fundy. This was the first opportunity for the class to observe the extensive mud flats and tidal amplitude of the Bay...it was low tide.

The following day's visits, under heavy rain, included the Annapolis Royal Marsh Nature Trail which surrounds a man-made lake, functioning as a component of the town of Annapolis Royal's sewage treatment system; the Annapolis Tidal Power Station, still generating electricity and controversy; the Annapolis Royal market; the historic Fort Anne; and Habitation at Port-Royal, originally established by Samuel de Champlain in 1605. On our return from



Port Royal we visited the nearby fishing harbour of Parkers Cove to appreciate at least one of the impacts of

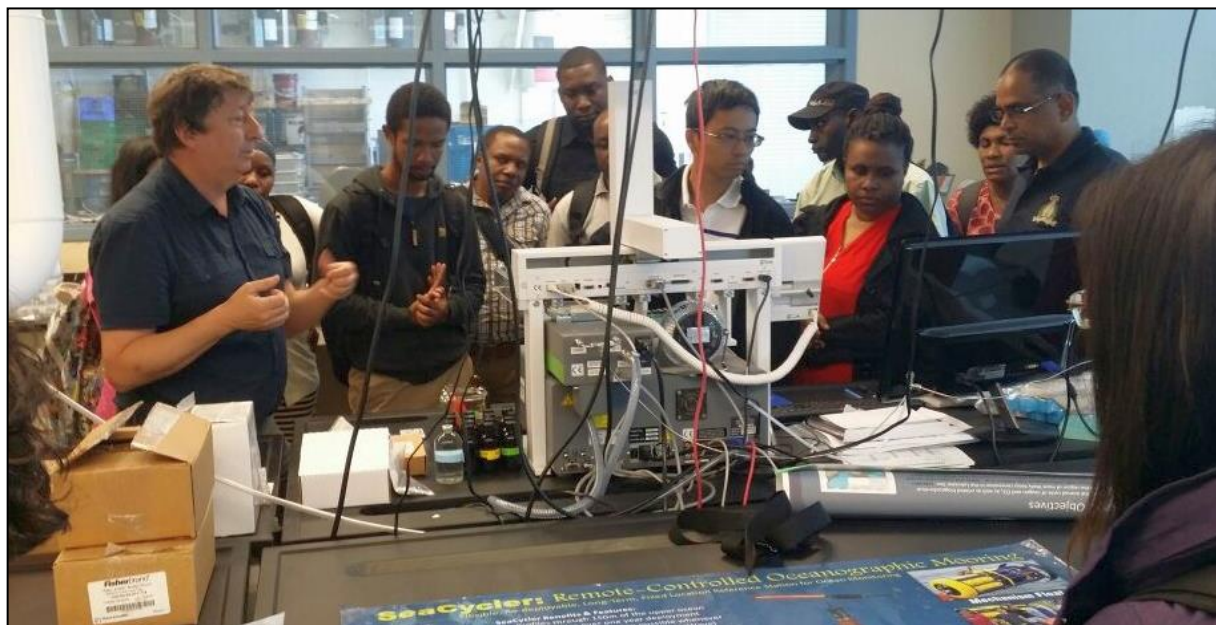


the Bay's tidal amplitude; the Cape Island fishing boats were sitting at least four metres below the level of the dock, on the mud substrate, and propped up with framed supports to prevent them rolling on their sides. Only at the head of the Bay do the world record tidal amplitudes exist. The following day visits included a family run seaweed production facility at Gulliver's Cove; a viewing of a sea cage aquaculture operation for Atlantic salmon in Digby Gut; a tour of the Port of Digby with its fleet of lobster and scallop vessels; and finally for that day, a visit to the Bear River Mi'kmaq "Stone Bear Tracks and Trails" encampment, to enable the participants to experience some of the culture of one of Canada's First Nations. The final day of the field trip began with a visit to the Acadian Seaplants research facility at Cornwallis Park. The attributes and commercial potential of the various seaweed species under investigation were clearly apparent. The health, cosmetic, culinary, and growth enhancing products are exported worldwide. The planned visit to the Innovative Fishery Products and its depuration facility in Belliveau Cove was unfortunately cancelled at the last minute due to unforeseen circumstances. However, it gave us an opportunity to

visit the UNESCO site at Grand Pré which celebrates Acadian heritage, and also to view Evangeline Beach at high tide, to fully appreciate the magnitude of the tidal amplitude. Yes, an exhausting three day trip in three 7-seat minivans. A half day of relaxation the following morning was fully deserved.

Canada's premier oceanographic research establishment, the Bedford Institute of Oceanography in Dartmouth, was the focus of a full day field trip organized by Scott Coffen-Smout, a DFO biologist, a Senior Research Fellow at IOI-Canada, and an alumnus of the Training Program (1988). A series of lectures were presented by BIO researchers, followed by a tour of the facilities. A persistent torrential downpour limited the dockside experience and a planned tour on one of the resident research vessels. But, nevertheless, an excellent and informative visit.

Another half day in Dartmouth was spent visiting the Northwest Atlantic Fisheries Organization (NAFO), an important Regional Fisheries Management Organization. Fred Kingston and his staff, flanked by the flags of the member nations, provided an overview of their responsibilities, which included the policing, with a sophisticated monitoring system, of the fishing fleets of member nations operating within the NAFO region. Additional shorter field trips, but no less important, were visits to: the impressive NS Emergency Management Office (EMO); the Ecology Action Centre -- one of the most influential NGOs in Atlantic Canada -- under the guidance of Dr Susanna Fuller, their Marine Conservation Coordinator and Senior Research Fellow at IOI-Canada; and Dr Douglas Wallace's CERC laboratory in Dalhousie's



Steele Ocean Sciences Building. This was an important experience for the participants and exposed them to a very sophisticated chemical oceanographic facility and its novel portable component (a modified TEU container) for use on a variety of ships, not necessarily research vessels.

Towards the end of the Course, a final one-day field trip involved visits to a number of establishments: the Eastern Canada Response Corporation (ECRC), funded primarily by the major oil companies, provides a rapid response to, and remediation of, oil and chemical spills on land or at sea with the aid of an enormous inventory of equipment, operated by skilled personnel. The nearby Survival System Training Centre, as the name implies, provides training to respond to marine disasters. With one of the

most sophisticated facilities in the world, personnel undertaking training (for example, all staff working on offshore rigs) are subjected to frighteningly realistic scenarios, including egress from an upturned

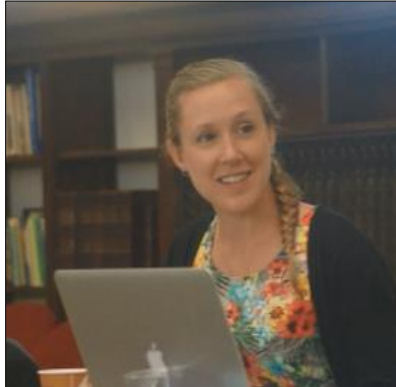


helicopter in a huge indoor pool where the controlled conditions include wave height, rain, wind, sound and simulated lightning. An extraordinary and deafening experience! We then visited the famous ice-free and deep-water Port of Halifax where the participants were briefed on the complexity of operating a multi-purpose port in a very competitive world market. The visit concluded with a tour of the harbour by boat to observe the numerous types of port facilities and equipment utilized, and vessels that are resident or visitors to the port, including container ships and Cruise liners.

The Course-long Simulation Exercise has become an increasingly important component of the Training Program. Over the past five years David Griffiths, a Senior Research Fellow at IOI-Canada, has revised and improved the simulation, based on feedback from the participants and Module Leaders and from enlightened brain storming sessions. ARC GIS technology was also introduced in 2016 with the technical assistance of Dr Mélanie Fournier. The Simulation involves the participants assuming senior positions in the government of a fictitious coastal state (Sepiana) adjacent to the Lambent Sea with two neighbouring island nations (Antillia and Kallisto). The region is accurately mapped, both topographically and bathymetrically with both potential and actual resources identified. The participants, in their respective roles, are tasked with developing a national and regional ocean governance plan, utilising the descriptive material that is provided to supplement the mapped information together with the eight weeks of lecture material. This simulation is designed to facilitate the comprehension and integration of the voluminous Course subject matter, and to highlight the challenges of policy development in potentially adversarial situations. The exercise also encourages teamwork and leadership development. Many of the lecturers develop their own subject related simulation exercises as a contribution to the Course-long simulation. On the final two days of the Course the participants present their Ocean Governance Plan to a panel of experts (“The Roundtable”) who critique the presentations. This year the panelists



were: Dr Dan Lane (Chair of the IOI-Canada Board of Directors, and Professor Emeritus, University of Ottawa), Dr Tony Charles (St. Mary's University), Dr Suzette Soomai (Dalhousie University) and Ms Leah Beveridge (Ph.D candidate, Dalhousie University). The panelists subsequently mentored the participants in small group sessions, discussing various aspects of the presented governance plan in more detail. The benefits of the Communication and Negotiation Module were clearly apparent in the increased confidence and eloquence of the participants.



As with the Opening Ceremonies, the Closing Ceremonies were held in the Great Hall of Dalhousie University. On this occasion it was rather more extravagantly laid out because of a scheduled wedding celebration the following day! Once again I took the opportunity to thank the numerous groups and individuals that contribute to the success of the annual Training Program. These include the IOI-Canada Board of Directors, chaired by Dr Dan Lane; the IOI-Canada/Dalhousie Ocean Advisory Committee, chaired by Dr David VanderZwaag; the Ocean Governance Training Foundation, chaired by Professor Brian Flemming; the host families; and our host, Dalhousie University. To these groups, organizations, and many other individuals, our sincere thanks for their steadfast loyalty over many years, in fact decades! In the regrettable absence of Dr Awni Behnam, the IOI Honorary President, Dr Larry Hildebrand (World Maritime University and IOI Board of Directors) and Ms Anita Coady (IOI-Canada Board of Directors) kindly agreed to officiate and present the certificates to the participants, assisted by the Course Coordinator, Ms Audra White. Dr Suzette Soomai, an alumna of the Training Program in 2006, then welcomed the participants to the Alumni Association, now numbering more than 700. Dr Ming Hongxia responded on behalf of the participants. Her comedic and heart-felt presentation was obviously appreciated by everyone – as was the entertaining course video put together by Mr Mikhail Amsterdam, now available on the IOI-Canada website at http://internationaloceaninstitute.dal.ca/2017_Closing.mp4! A reception concluded the Ceremonies, perhaps the last opportunity for the participants to mingle with the lecturers, host families and friends. It was a happy event.



The following morning was spent reviewing the Training Program with the participants, as well as challenging them to identify how they would share and use their new knowledge and skills at home to create a multiplier effect. Throughout the Course the participants filled out questionnaires on each lecture, this year via the software program “Survey Monkey”. The final morning’s detailed review was intended to complement and extend the rigour and breadth of the questionnaires, particularly as the participants were now confident to express their opinions without embarrassment or perceived fear of “retribution”! The following year’s Training Program is reliant on this objective review, among other metrics, to ensure that the standard of the program is continually improved and academically current. Next year we are planning an external review of the course, which will hopefully justify our confidence and pride.

This year we almost reached our optimum number of participants which, because of the classroom configuration, I think is 18. The high degree of interactivity of the 17 participants this year was particularly appreciated by myself, as Course Director, and our 100 plus lecturers. The comprehensive coverage of the Ocean Governance subject matter, however limited in detail, could not be delivered in less than eight weeks. In this context, it is particularly noticeable that the sixth week appears to represent a “tipping point” at which the timid gain a degree of confidence and the confident begin to show genuine leadership potential. Indeed, the Training Program has an important, perhaps underappreciated, education and leadership component.

I always think that the current year class is the best in my experience of 11 years at IOI-Canada. But I can confidently say that this year’s participants were particularly vibrant and interactive. I know they will more than fulfill their future roles as Elisabeth Mann Borgese’s “Ocean Ambassadors”.

Michael J.A. Butler
2017 Course Director



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FUNDERS

IOI-Canada wishes to acknowledge the very generous support for the 2017 training programme, which it received from a number of sources. Dalhousie University continues to provide significant in-kind support for the programme. Major scholarship funding for the course was made available by the Stiftung für Meereswissenschaft und -forschung (Ocean Science and Research Foundation) both generally and through the Danielle de St Jorre Scholarship. Acknowledgement is also gratefully given to the following organisations for their contributions towards individual participant expenses: Caribbean Regional Fisheries Mechanism, CERC.OCEAN research group under the Canada Excellence Research Chair programme, IOI-China, Maritime Institute of Malaysia, Ocean Frontier Institute, Pacific Islands Forum Fisheries Agency through the Project Development Fund allocation of the Government of Papua New Guinea, PADI Foundation, Scientific Committee on Oceanic Research, State Oceanic Administration of China (COMRA, NCOSM, NMDIS, NMEFC, SCSMTC) and World Wildlife Fund – US through its Russell E. Train Education for Nature Program. In addition, funding was provided for the 2017 EMB Lecture by the Ecology Action Centre and World Wildlife Fund – Canada. A brief profile of each of these organisations, listed alphabetically, is provided in the following pages.

Sincere thanks are also due to the various organisations which contributed to the 2017 programme by hosting the class and/or assisting with field trips or the EMB Lecture. These included Acadian Seaplants, Annapolis Tidal Power Station, Bear River First Nation Cultural Centre - Stone Bear Tracks and Trails, Bedford Institute of Oceanography/Department of Fisheries and Oceans, Canadian Wildlife Federation, CERC.OCEAN lab, Eastern Canada Response Corporation, Ecology Action Centre, Fundy Adventures, Halifax Port Authority, Northwest Atlantic Fisheries Organization, Nova Scotia Emergency Management Office, Port of Digby, Survival Systems Training Ltd, and Sustainable Blue/Sustainable Fish Farming Canada.

Caribbean Regional Fisheries Mechanism

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Inaugurated in 2003 and headquartered in Belize, the Caribbean Regional Fisheries Mechanism (CRFM) is an intergovernmental organisation with a mission to “promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region.” Its members are Anguilla, Antigua & Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St Kitts & Nevis, St Lucia, St Vincent & the Grenadines, Suriname, Trinidad & Tobago, and Turks & Caicos Islands.

The CRFM consists of three bodies – the Ministerial Council, the Caribbean Fisheries Forum, and the CRFM Secretariat. The Ministerial Council is the highest decision-making body of the CRFM, and is responsible for formulating the policy of the Mechanism. It is comprised of the Ministers responsible for Fisheries in each Member State. Supported by the Executive Committee, the Forum is made up of one representative from each Member, each Associate Member and each Observer. The CRFM Secretariat is the technical unit, located in offices in Belize and the eastern Caribbean (St Vincent and the Grenadines), comprising a permanent body of technical, scientific and support staff.

Under a Memorandum of Understanding with IOI, the CRFM provides funding to cover travel expenses of participants from its member countries. This year's three travel grants enabled fisheries and coast guard staff from Antigua & Barbuda, Barbados and Guyana to attend the course.

CERC.OCEAN Research Group

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Established at Dalhousie in 2011, the CERC.OCEAN research group is a world-class research programme led by chemical oceanographer, Doug Wallace. It falls under the prestigious Canada Excellence Research Chairs (CERC) Program which supports Canadian universities in their efforts to build on Canada's growing reputation as a global leader in research and innovation. Top researchers and their teams are funded to establish ambitious research programmes at Canadian universities, with each chair receiving \$10 million over seven years from the Government of Canada. Of the 18 chairs awarded across the country, Dr Wallace's CERC in Ocean Science and Technology is one of just two in the Maritimes.

CERC.OCEAN's focus is on the cycling of the three key chemical controls on life in the ocean (carbon, oxygen and nitrogen), which is undergoing unprecedented change in the oceans as a result of human activities. The research group therefore aims to observe, understand and predict complex interactions within these biogeochemical cycles in order to increase understanding of the implications of these changes for marine life and the climate. The research is based on:

- ocean observations and technology,
- field and laboratory-based experimentation, and
- coupled physical, biogeochemical and ecological modelling.

The CERC.OCEAN is a diverse group which includes students, research associates and technicians, whose interests range from pure ocean chemistry to developing new technologies. The projects and opportunities in the CERC.OCEAN group range correspondingly, with undergraduates on oceanic science cruises and PhD students developing their own technologies. Examples of current research by the group include:

- the SeaCycler, a new oceanographic mooring system that profiles a large suite of sensors through the upper ocean to collect simultaneous, high vertical resolution measurements near the surface while avoiding dangerous storm waves;
- Ships of Opportunity, where the CERC group is working to equip commercial vessels with robust observation equipment and to leverage existing routes in order to gain additional data without the need for dedicated ocean science vessels;
- research into water exchanges and microbial transformation of nitrogen within coastal systems using stable isotopes as tracers.

CERC.OCEAN sponsored a Research Scientist from the Marine and Oceanography Division of the Kenya Meteorological Department by providing a scholarship for his course-related expenses in Canada.

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Founded by the ninth Earl of Dalhousie in 1818, Dalhousie University has grown from being the little “college by the sea” into one of Canada’s leading research and teaching universities. Spread over nearly 80 acres in Halifax and with an agricultural campus in Truro, it currently offers 4,000 courses in more than 180 undergraduate, graduate and professional degree programmes, as well as an extensive continuing education programme. Its 18,200 students come from across Canada and more than 115 countries around the globe, and enjoy one of the lowest student-professor ratios in the country. Dalhousie’s graduates form a powerful network making important contributions in all walks of life, and include the first female Supreme Court of Canada judge, the first American woman to walk in space, and 89 Rhodes Scholars.

Dalhousie’s teaching and research strengths go hand in hand, with a strong core of talented and dedicated researchers conducting basic and applied research. As Atlantic Canada’s leading research university, Dalhousie attracts almost \$140 million in external research grants and awards each year. Many of its researchers are nationally and internationally recognised for their work, and the university is home to 50 Canada Research Chairs – more than any other university in the region. Chairholders advance the frontiers of knowledge in their fields, not only through their own work, but also by teaching and supervising students and co-ordinating the work of other researchers.

Ocean studies are one of Dalhousie’s main focuses and strengths. Building on its proximity to the sea, Dalhousie played a pioneering role in oceans education as the first university in Canada with an Oceanography Department. Subsequent Canadian firsts have been its Marine and Environmental Law Program, its Marine Affairs Program, and its undergraduate degree in Ocean Sciences. Linked to its ocean learning, Dalhousie has developed a broad range of expertise in ocean research and is increasingly defined as a world leader in this field. Its researchers work on discovering innovative answers to the world’s ocean-related questions in areas such as:

- Ocean Law and Governance
- Marine Affairs
- Marine Biological Resources and Conservation of Biodiversity
- Marine Technologies
- Ocean Environmental Processes
- Arctic Studies
- Atmospheric Science
- Marine Bio-Resources

Each year since the inception of the IOI course in 1981, Dalhousie University has provided crucial in-kind support to this training programme. With the ocean at its doorstep, and with ready access to one of the highest concentrations of marine experts in the world, the university is an ideal host for a course of this kind.

Ecology Action Centre

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The Ecology Action Centre (EAC) has acted as a voice for the environment for over 45 years. Springing from a Dalhousie University course on Living Ecology, it has grown from a group of enthusiastic students in a private home to an organisation with over 5,000 members, 300 volunteers and 40 full/part-time staff working at the local, regional, national and more recently, international level to build a healthier and more sustainable world. It is now housed in a 19th Century building which has been converted into one of the most environmentally friendly offices in Canada, providing a model of what can be achieved by eco-renovation.

The EAC works closely with communities as well as social and natural scientists, and it makes strong use of science in communicating its message. Its earliest projects included recycling, composting and energy conservation, all of which are now widely recognised environmental issues.

The EAC provided a donation towards the expenses of the 2017 Elisabeth Mann Borgese Ocean Lecture. Focusing on *Marine Protected Areas – For Whom?*, the evening included an interdisciplinary panel discussing a wide range of related issues, as well as live streaming and updates from New York where the first UN Oceans Conference was taking place.

IOI-China

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IOI-China was established in 1994 as one of the earliest Operational Centres in the International Ocean Institute's network, and in 2010 it evolved into the Regional Centre for the Western Pacific Region. It is hosted by the State Oceanic Administration and operates out of SOA's National Marine Data and Information Service in Tianjin.

IOI-China focuses on interdisciplinary and intersectoral training and research covering:

- ocean governance, policy, law, EEZ and coastal community management, and development of related resources for the sustainable livelihoods in coastal areas;
- fisheries and coastal aquaculture management;
- sustainable development of seabed resources;
- development and protection of island resources;
- management of ports and harbours, and sustainable development of large coastal urban centres;
- marine pollution abatement, prevention, and control;
- advancement of marine science and technology and related training;
- development of national marine related legislation and marine policy and building of national infrastructure;
- national and regional multi-hazards disaster early warning systems, shoreline change and erosion, sea level rise due to impacts of climate change, community awareness and resilience, and community and school-based adaptive management;
- marine and other related forms of eco-tourism; and,
- regional and international co-operation and co-ordination.

Its main activities include:

- training courses with ship-board training using SOA research vessels;
- research projects on the implications of UNCLOS and UNCED;
- organisation of regional hearings on ocean affairs for the Asia-Pacific Region;
- contributions to the preparation of the China Ocean Agenda 21;
- organisation of seminars on the implementation of UNCLOS and harmonisation of national marine laws and regulations with UNCLOS provisions;
- organisation of Pacem in Maribus Conference XXIV (1996) and XXXIII (2010);
- publication of newsletters and reports; and,
- organisation of international alumni workshops.

IOI-China provided the airfare for a staff member to attend the course from SOA's National Marine Data and Information Service.

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Incorporated in 1993, the Maritime Institute of Malaysia (MIMA) is a policy research institute established by the Malaysian government to deal with national, regional and global maritime issues. In accordance with the Federal Government Ministers' Order (No. 2) 2013, MIMA is to provide consultancy services to stakeholders through policy research, training, education and public awareness programmes.”

MIMA has five research centres supported by an Administration Unit and a Resource Centre. Through these Centres, MIMA also conducts cross-sectoral policy research on maritime matters for government agencies, industry and the maritime community. Its principal activities are: conducting policy research on maritime issues to safeguard Malaysia's maritime interests; being involved in regional, extra-regional and global events to share expertise on maritime policy matters; and disseminating information on maritime matters to the public. Among the products and services offered by MIMA are policy papers, publications (in print and online), advisory, consultancy, workshops/training courses and events such as talks, forums, seminars and conferences, all related to maritime issues.

The research areas of MIMA mirror the organisational set-up of its research centres, namely:

- Coastal and Marine Environment
- Maritime Economics and Industries
- Maritime Security and Diplomacy
- Ocean Law and Policy
- Straits of Malacca and other sealanes vital to Malaysia's interests.

Among the achievements of MIMA since its establishment are:

- facilitating the signing of the Prevention of Incidents at Sea (INCSEA) Agreement between the Malaysian and Indonesian navies;
- providing research support that led to the establishment of the Malaysian Maritime Enforcement Agency;
- organising a series of international conferences on the Straits of Malacca and South China Sea;
- publishing Malaysia's first ever Maritime Realm Atlas;
- providing the policy for private maritime security companies. and policy options for the establishment of an Admiralty Court in Malaysia;
- contributing to maritime literature and safeguarding Malaysia's maritime interests;
- facilitating the development of the Malaysian Shipping Master Plan (MSMP)

In line with its commitment to building capacity among its staff, MIMA supported the participation of the Head of the Centre for Maritime Security and Diplomacy by covering his airfare and providing a contribution towards his course expenses.

Ocean Frontier Institute

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The Ocean Frontier Institute (OFI) is an international hub for ocean research which was established in September 2016 through funding from the Government of Canada, the Governments of Nova Scotia and Newfoundland and Labrador, industry and eight international research organisations. It is headquartered at Dalhousie University and has an additional centre at Memorial University of Newfoundland in St John's.

As a collaborative research initiative to harness the vast potential of the world's ocean, the OFI has a mandate to:

- understand ocean and ecosystem change and develop strategic, effective solutions that can be applied both locally and globally; and,
- conduct research that advances policy decisions and the development of a sustainable, blue economy.

With its main focus on the North Atlantic and Canadian Arctic Gateway, the OFI brings together experts from both sides of the North Atlantic to conduct major research projects which will:

- improve prediction and mitigation of major storms;
- help manage human activities as they relate to ocean resources;
- improve the potential for fisheries and aquaculture industries to meet global seafood demand in a sustainable manner;
- strengthen marine safety; and,
- transform ocean monitoring with new data capture and IT tools.

OFI also prioritises education and the advancement of ocean literacy. It offers a range of opportunities for “people exchange” through its International Postdoctoral Program, Visiting Fellows Program and Bilateral Doctoral Program. It also participates in Ocean School which develops ocean literacy exhibits, online and classroom-based learning resources, social media-driven dialogue and other activities that illustrate the complex relationship between humans and the ocean. Learning tools include short films, digital games and 360-degree ‘immersive’ ocean experiences using head-mounted virtual reality displays and tablets.

OFI agreed to sponsor the participant from Antigua and Barbuda with a scholarship for his course-related expenses in Canada.

Pacific Islands Forum Fisheries Agency

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The Pacific Islands Forum Fisheries Agency (FFA) was established in 1979 to strengthen national capacity and regional solidarity, so its members could manage, control and develop their tuna fisheries in the present and the future. As an advisory body it provides expertise, technical assistance and other support to its members who make sovereign decisions about their tuna resources and participate in regional decision-making on tuna management through agencies such as the Western and Central Pacific Fisheries Commission.

The FFA consists of the Forum Fisheries Committee (FFC) as the governing body comprising a representative from each member Country and Territory; and the FFA Secretariat based in Honiara, Solomon Islands. A Council of Ministers meets annually to provide strategic oversight of regional fisheries matters. Its original membership of 10 countries has now increased to 17: Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu

One of FFA's activities is to administer the US Multilateral Treaty between the USA and Pacific Island Countries and act as custodian of the Project Development Funds (PDF) set up under it. Through this treaty and the PDF, certain portions of funds are allocated for each member country to draw from for e.g. fisheries-related activities.

The Government of Papua New Guinea, through its National Fisheries Authority, Department of Foreign Affairs and Department of Justice and Attorney General, accordingly authorised the use of its PDF to provide airfares and full scholarships to two government officials. Drawn from the Department of Foreign Affairs and the Department of Justice and Attorney General, both of these sponsored officers already had experience working on Ocean Governance in PNG. Given the capacity-building needs and the officers' direct involvement in developing a National Oceans Policy for PNG, they were highly suitable for this training.

PADI Foundation

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The PADI Foundation is an IRC Section 501 (c)(3) non-profit, tax exempt organisation. It is a separate and distinct organisation, corporately unrelated to PADI, Inc. and its affiliates, but funded through International PADI, Inc.

The Foundation encourages and supports research and education related to aquatic environments. It funds and assists worthwhile projects which:

- enrich mankind's understanding of aquatic environments and encourage sensitivity to and protection of ecosystems;
- increase understanding of sport diving physics and physiology that will benefit the general diving public and add to the scientific understanding of man's relationship and ability to survive in the underwater environment; and/or,
- improve understanding of, and response to, hazards to humans and ecosystems related to climate change in coastal and ocean environments.

Since 1992, the Foundation has awarded almost \$4.7 million to nearly 900 projects. In 2017, there were over 380 grant applications of which 50 received grants aggregating \$277,622. One of these was the participant from Madagascar, who was awarded a contribution towards his course expenses.

Scientific Committee on Oceanic Research

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The Scientific Committee on Oceanic Research (SCOR) is an international, non-governmental, non-profit organisation with a mission to help the global ocean science community advance knowledge of the ocean. Established in 1957 and originally known as the Special Committee on Oceanic Research, SCOR was the first interdisciplinary body to be formed by the International Council for Science.

SCOR covers all areas of ocean science and co-operates with other organisations with common interests. Its activities focus on promoting international cooperation in planning and conducting large-scale ocean research projects studying complex natural phenomena, and it provides a mechanism to bring together international scientists for this purpose. SCOR also forms working groups to prioritise science within certain themes, conduct intercomparisons and developments of standards, and focus on solving methodological and scientific barriers to research. Scientists from 38 nations participate in its working groups and steering committees, with approximately 250 involved in SCOR activities on a voluntary basis at any given time.

Capacity building is a key activity and dates back to the very beginning of the organisation. The focus has primarily been on helping individual scientists from developing countries to be involved in SCOR activities and to network with scientists from developed countries. To facilitate these activities, the SCOR Committee on Capacity Building works to:

- provide direction for SCOR's capacity-building activities: participation of scientists from developing countries and countries with economies in transition in SCOR activities (e.g., guidelines for WG proposals), the POGO-SCOR Fellowship Program, travel grants (e.g., guidelines for grants), and the SCOR Visiting Scholars Program;
- guide and assist the SCOR Executive Director in development of new capacity-building activities, particularly the Regional Graduate Networks of Oceanography activity;
- assist SCOR-sponsored projects and working groups in developing and implementing their capacity-building activities;
- help SCOR arrange funding for existing and new capacity-building activities; and,
- assist SCOR in interacting with regional and international groups related to capacity building in ocean sciences, such as the ICSU regional centers, START, IOC regional programs, etc.

Through the Committee on Capacity Building, SCOR approved a grant towards course tuition for the participants from The Gambia and Guyana.

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The State Oceanic Administration (SOA) is the government administrative agency in China responsible for:

- supervising and managing sea area use, marine environment protection, marine disaster forecasting and mitigation;
- ensuring China's marine sovereignty and rights; and
- promoting research in marine science and technology.

Within the SOA framework, there are 14 departments in its Beijing-based headquarters, three branches, 12 national-level operational centres, five oceanography institutes and two offices responsible for polar affairs and international sea bed mineral resources research and exploration affairs respectively. Its main functions include:

- the supervision and management of sea area use, marine environment protection, marine disaster forecasting and mitigation;
- ensuring comprehensive coordination of marine environmental monitoring, scientific research, waste disposal and ocean resources exploitation;
- formulation of national marine strategy and policies; planning and supervising the implementation of medium and long term National Development Plans for marine issues and a National Development Plan for the marine economy;
- establishing and improving systems concerning marine management, and drafting marine laws and regulations concerning the coastal zone, islands and sea areas;
- supervision, evaluation and information dissemination on marine economic performance;
- regulating, supervising and managing sea area uses;
- island ecological protection and legitimate use of uninhabited islands;
- protection of the marine environment;
- implementing marine research and surveys, promoting marine scientific and technological innovations, undertaking research into – and application and management of – seawater use and marine renewable energy resources, and managing the marine series satellites and ground application system;
- marine environmental observation and forecasting, and marine disaster warning;
- international cooperation and exchange activities;
- safeguarding national maritime rights and interests according to international and domestic laws.

For the 2017 course, SOA provided five scholarships in conjunction with one travel grant from IOI-China. This funding enabled SOA staff members to attend the course from the China Ocean Mineral Resources R&D Association (Beijing), National Centre of Ocean Standards and Metrology (Tianjin), National Marine Data and Information Service (Tianjin), National Marine Environmental Monitoring Centre (Dalian) and South China Sea Marine Survey and Technology Centre (Guangzhou).

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The Ocean Science and Research Foundation (OSRF) is a charitable foundation registered in Switzerland. Its general objective is to promote research in the social and natural sciences pertaining to the oceans by granting financial contributions to appropriate research and training projects.

OSRF provided general training funds for the 2017 training programme, which covered a combination of full scholarships and partial “top-up” funding for the participants from Barbados, The Gambia, Guyana, Kenya (female only), Malaysia and Tanzania. In addition, OSRF provided funding through the Danielle de St Jorre Scholarship (DDSJS) – see below.

Established by the IOI in 1999, the DDSJS honours the memory of the late Danielle de St Jorre, Minister for Foreign Affairs, the Environment and Tourism of the Republic of the Seychelles, and a member of the Governing Board of the IOI, in consideration of all she did in her short life for the benefit of her country, small island developing states (SIDS), and the world at large. With a value of Swiss Francs 10,000, this annual scholarship is open to women from SIDS who wish to attend a training programmes or university degree programme in ocean affairs. Candidates are selected in consultation with the Alliance of Small Island States (AOSIS) and the scholarship is administered by IOI. The 2017 recipient from Grenada works as the Programme Manager of an environmental NGO based in St Vincent and the Grenadines. She used the award to participate in the IOI-Canada training programme.

World Wildlife Fund

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Founded in 1961, World Wildlife Fund (WWF) has been protecting the future of nature for over 50 years. The world's leading conservation organization works in 100 countries and is supported by over one million members in the United States and nearly five million globally. WWF's unique way of working combines global reach with a foundation in science, involves action at every level from local to global, and ensures the delivery of innovative solutions that meet the needs of both people and nature. WWF is committed to reversing the degradation of our planet's natural environment and to building a future in which human needs are met in harmony with nature. Its mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth.

In recognition of the fact that effective policy, education, fieldwork, and other conservation initiatives depend on sound technical knowledge and skills, WWF's Russell E. Train Education for Nature Programme (EFN) was established in 1994. Dedicated to Russell E. Train, WWF's founding trustee, past president, and former chairman of the board, the programme aims to build a dynamic and highly qualified corps of conservation leaders in Africa, Asia and Latin America. Through a number of initiatives that help build the capacity of individuals and institutions, EFN provides proven and potential leaders with financial support to pursue degrees, attend short-term training, and conduct local conservation workshops. These initiatives provide conservationists with the skills they need to take on conservation challenges in their home countries and regions.

Two Professional Development Grants were provided by EFN to participants from Kenya and Madagascar as a contribution towards their course expenses.

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For the 2017 training programme, support was also received from WWF-Canada which is headquartered in Toronto and has offices across the country including Halifax. A donation was provided towards the expenses of the 2017 Elisabeth Mann Borgese Ocean Lecture. Focusing on *Marine Protected Areas – For Whom?*, the evening included an interdisciplinary panel discussing a wide range of related issues, as well as live streaming and updates from New York where the first UN Oceans Conference was taking place.

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Special thanks are due to all the lecturers and field trip co-ordinators, and particularly the key individuals who acted as module leaders, for their invaluable donation of time and expertise. Their contribution to the success of the training programme is gratefully acknowledged.



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