



INTERNATIONAL OCEAN INSTITUTE



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

**2016
COURSE REPORT**



**Dalhousie University, Halifax, Canada
18th May – 15th July, 2016**

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INTERNATIONAL OCEAN INSTITUTE

2016 COURSE REPORT

**IOI-Canada
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IOI Course Report

Ocean Governance: Policy, Law and Management

18th May - 15th July, 2016 • Dalhousie University, Halifax, Canada

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INTRODUCTION

This report provides a record of the 2016 training programme on *Ocean Governance: Policy, Law and Management*, conducted by the International Ocean Institute (IOI) at Dalhousie University, Halifax, Canada. Held from 18th May to 15th July, this was the 36th annual course since the training programme was instituted by Elisabeth Mann Borgese, Founder of the IOI.



The programme was attended by 15 participants from a range of disciplines and backgrounds. A good balance of countries and regions was achieved, with participants from 12 countries in Africa, Asia, the Caribbean and South America. 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:** Integrated Coastal and Ocean Management
- Module 4:** Fisheries and Aquaculture
- Module 5:** Law of the Sea and Principled Ocean Governance
- Module 6:** Communication and Negotiation
- Module 7:** Maritime Security
- Module 8:** Marine Transportation
- Module 9:** Energy
- Module 10:** International Round Table and Conclusion of Training Programme

GROUP PHOTOGRAPH



Photo credit: Danny Abriel, Dalhousie University

Front row (from left to right): Meredith Perich, 2016 Course Co-ordinator (Canada), Feno Hanitrinala Ravaoharisoa (Madagascar), Naghmana Zafar (Pakistan), Xu Jinyan (China), Kafi Gumbs (Anguilla), Richard Florizone, President, Dalhousie University (Canada), Felicia Cruz (Belize), Aai Sheau Ye (Malaysia), Mirella de Oliveira Leis (Brazil), Shanna Emmanuel (St Lucia), Madeleine Coffen-Smout, Programme Officer (England)

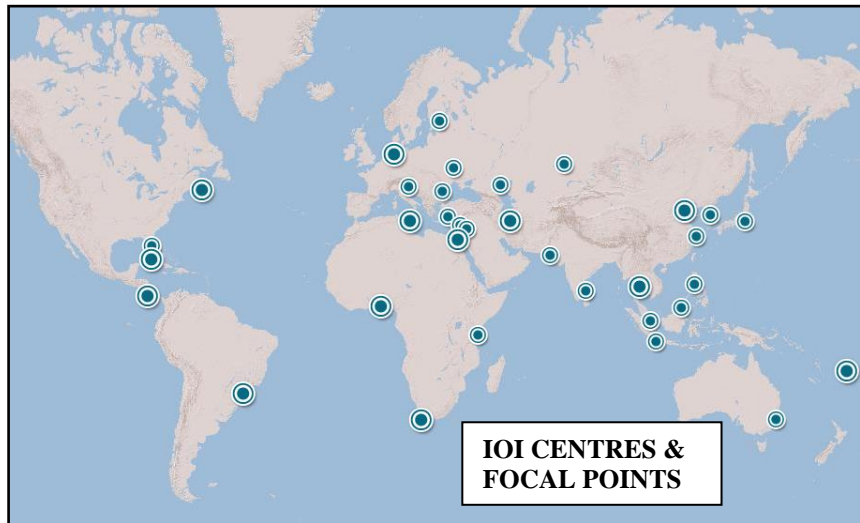
Back row: Wan Fangfang (China), Anusha P. Wijesundara (Sri Lanka), Buh Emmanuel Ndze (Cameroon), Alain Joseph, Module Leader (Canada), Wang Dakui (China), Bob Edwards, Module Leader (Canada), Mike Butler, Director & 2016 Course Director (England/Canada), David Griffiths, Senior Research Fellow (Canada), Jennifer Barr, Finance Officer (Canada), Dylan Letendre, Intern (Canada), Shamal Connell (St Vincent & the Grenadines), Meng Fantao (China), Paul Boudreau, Senior Research Fellow (Canada), Corrine Almeida (Cape Verde)

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.

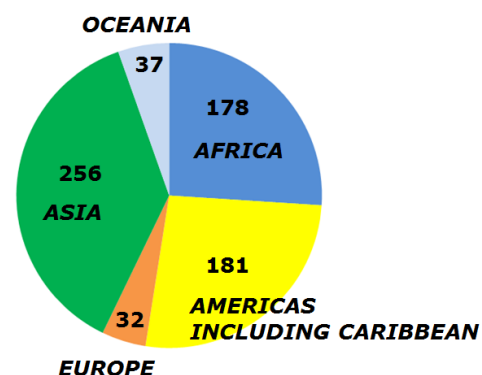


IOI-Canada's mission is to promote responsible ocean governance and the stewardship and sustainable use of coastal and ocean resources in Canada and around the world. Its goals are to encourage and develop the potential and capacity of individuals, institutions and communities to foster:

- 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 680 individuals from over 100 countries around the globe.

ALUMNI BY REGION



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 200 hours of intensive learning. While it is primarily lecture-based, it also includes interactive discussions, participant presentations, exercises and simulations, field trips and an international 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 2016 training programme was organised into 10 modules and covered a wide range of different themes and issues, as set out in the following syllabus. When provided by lecturers, a brief summary of the topics to be covered in their presentation was posted on the IOI-Canada website, and can be reviewed at <http://internationaloceaninstitute.dal.ca/2016LectureTopics.doc>.

SYLLABUS

MODULE 1 Orientation and Introduction to the Training Programme

Wednesday, 18th May

10.00 – 10.30	Introductions & Administrative Matters	Ms Meredith Perich (Module Leader)
10.45 – 12.00	Killam Library Tour	Ms Michelle Paon
1.30 – 2.45	Understanding Canada	Dr Jason Grek-Martin
3.00 – 4.00	What is Ocean Governance?	Mr Mike Butler

Thursday, 19th 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, 20th May

9.00 – 12.00	Organisation of Course Work, and Introduction to Modules & Module Leaders	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: Success Stories in Saving the Seas	Dr Tony Charles All

Saturday, 21st May

All day	Free. Optional morning trip to Farmers Market
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Sunday, 22nd May

All day Free

MODULE 2 Ocean Sciences

Monday, 23rd May

9.00 – 12.00	Introduction to Ocean Sciences, and Health of the Oceans	Dr Peter Wells (Module Leader)
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1.30 – 4.00	Participant Presentations	Participants
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Tuesday, 24th May

9.00 – 12.00	Fundamentals of Oceanography	Dr Anna Metaxas
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1.30 – 4.00	Eastern Scotian Shelf: Trophic Dynamics	Dr Mike Sinclair
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Wednesday, 25th May

9.00 – 12.00	Climate Change	Dr John Shaw
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1.30 – 2.45	Vulnerability Assessment for Climate Change	Dr Danika van Proosdij
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3.00 – 4.00	Policy Development	Ms Kerri Graham
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Thursday, 26th May

9.00 – 12.00	Ocean Acidification and its Implications	Dr Kumiko Azetsu-Scott
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1.30 – 4.00	Marine Biodiversity: Census of Marine Life & Ocean Biogeographic Information System	Mr Bob Branton Ms Mary Kennedy Dr Kes Morton
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Friday, 27th May

9.00 – 12.00	Remote Sensing of the Ocean	Mr Dirk Werle
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1.30 – 2.45	Simulation Exercise: Introduction	Mr David Griffiths
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3.00 – 4.00 Module Debrief and Simulation Integration

Dr Peter Wells
 Mr David Griffiths
 Mr Mike Butler

Saturday, 28th May

All day Free

Sunday, 29th May

All day Free

<p>MODULE 3 Integrated Coastal and Ocean Management</p>

Monday, 30th May

9.00 – 12.00 Introduction to Integrated Coastal and Ocean
 Management (ICOM)

Mr Rodrigo Menafrá

1.30 – 4.00 GIS / Web Mapping (*GIS lab – Rowe 4001*)

Mr James Boxall
 Dr Mélanie Fournier

Tuesday, 31st May

9.00 – 12.00 Marine Spatial Planning

Mr Paul Macnab
 Mr Scott Coffen-Smout

1.30 – 4.00 Coastal Information Management

Dr Bertrum MacDonald
 Dr Suzuette Soomai
 Ms Sarah Chamberlain
 Mr James Ross
 Mr Lee Wilson

Wednesday, 1st June

9.00 – 12.00 Ecological Economics

Dr Peter Tyedmers

1.30 – 2.45 Climate Change Adaptation

Dr Robert Fournier

3.00 – 4.00 Ocean Education

Ms Anna Naylor

Thursday, 2nd June

9.00 – 12.00	Project Cycle	Prof. Ian McAllister
1.30 – 2.45	Information Sharing: COINAtlantic (<i>computer lab: FASS 2019</i>)	Mr Andy Sherin Ms Alexi Westcott Mr Jeff McKenna
3.00 – 4.00	Module Debrief and Simulation Integration	Mr Paul Boudreau (Module Leader) Mr David Griffiths Mr Mike Butler

Friday, 3rd June

All day	Field Trip: Bedford Institute of Oceanography	Mr Scott Coffen-Smout Ms Jacinthe Cormier Dr Cesar Fuentes-Yaco Mr Marty King Mr Stephen Locke Dr Youyu Lu Ms Cathy Merriman Dr Hilary Moors-Murphy Capt. Anthony Potts Mr Brian Robinson Dr Alain Vézina Mr Dustin Whalen Ms Meredith Perich
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Saturday, 4th June

All day	Free
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Sunday, 5th June

All day	Free
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MODULE 4 Fisheries and Aquaculture
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Monday, 6th June

9.00 – 12.00	Introduction to Fishery Science in the Canadian Context	Dr Kent Smedbol
1.30 – 4.00	Ecosystem-based Fishery Management	Dr Nancy Shackell

Tuesday, 7th June

9.00 – 10.30	Co-management	Dr Claudio Aporta
10.45 – 12.00	High Seas Fisheries and UNCLOS Implementing Agreement	Dr Susanna Fuller (Module Leader)
1.30 – 4.00	Aboriginal Fisheries	Mr Chris Milley

Wednesday, 8th June (World Ocean Day)

9.00 – 10.30	Fisheries and Large Marine Ecosystems	Dr Barbara Paterson
10.45 – 12.00	Development of Nova Scotia's Aquaculture Policy and Legislation	Mr Brennan Goreham
1.30 – 4.00	Field Trip: Northwest Atlantic Fisheries Organisation	Mr Fred Kingston
7.00 onwards	Elisabeth Mann Borgese Ocean Lecture and reception - <i>Climate Change in Nova Scotia: Are We Ready?</i>	Mr Richard Zurawski Dr Blair Greenan Dr Georgia Klein Dr Tim Webster Ms Shannon Miedema

Thursday, 9th June

9.00 – 12.00	Participant Presentations	Participants
12.15	Class photograph	All
1.30 – 4.00	Ocean Tracking Network and Telemetry Systems	Dr Fred Whoriskey
7.00 onwards	Optional public session of Ocean Literacy Conference: lecture, reception, posters	

Friday, 10th June

9.00 – 10.30	Seafood Value Chain	Dr Megan Bailey
10.45 – 12.00	Aquaculture	Mr David Roberts
1.30 – 2.45	Aquaculture (cont.)	Mr David Roberts
3.00 – 4.00	Module Debrief and Simulation Integration	Dr Susanna Fuller Mr David Griffiths Mr Mike Butler

Saturday, 11th June

All day Free

Sunday, 12th June

All day Free

<p>MODULE 5 Law of the Sea and Principled Ocean Governance</p>

Monday, 13th June

9.00 – 12.00	Introduction to Law of the Sea	Mr Hugh Williamson (Module Leader)
1.30 – 4.00	Climate Change: Legal Aspects and Paris COP 21	Dr Meinhard Doelle

Tuesday, 14th June

9.00 – 12.00	Introduction to Law of the Sea (cont.)	Mr Hugh Williamson
1.30 – 4.00	Places of Refuge	Dr Aldo Chircop

Wednesday, 15th June

9.00 – 12.00	Piracy	Mr Hugh Williamson
1.30 – 4.00	Participant Presentations	Participants

Thursday, 16th June

9.00 – 12.00	Precautionary Principle	Dr David VanderZwaag
1.30 – 2.45	Participant Presentations	Participants
3.00 – 4.00	Module Debrief and Simulation Integration	Mr Hugh Williamson Mr David Griffiths Mr Mike Butler

Friday, 17th June

9.00 – 12.00	Technical Aspects of Maritime Boundary Delimitation	Mr Galo Carrera
1.30 onwards	Field Trip to Bay of Fundy: Sustainable Blue Fish Farm, Evangeline Beach	Mr David Roberts Dr Graham Daborn Ms Meredith Perich

Saturday, 18th June

All day	Field Trip to Bay of Fundy: Annapolis Royal Marsh Nature Trail, Annapolis Tidal Power Station, Fort Anne, Annapolis Royal Market, Habitation	Dr Jon Percy Mr Leslie Smith Ms Meredith Perich
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Sunday, 19th June

All day	Field Trip to Bay of Fundy: Fundy Adventures, Port of Digby tour, Stone Bear Tracks and Trails	Ms Wanda VanTassel Mr Edwin Chisholm Mr Frank Meuse Ms Shalan Joudry Ms Meredith Perich
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Monday, 20th June

All day	Field Trip to Bay of Fundy: Acadian Seaplants, Innovative Fishery Products	Mr Will Neily Mr Doug Bertram Ms Meredith Perich
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MODULE 6 Communication and Negotiation
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Tuesday, 21st June

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

Wednesday, 22nd June

All day	Interview and Presentation Skills	Prof. Kim Kierans Mr Ian Porter Mr Tim Tracey
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Thursday, 23rd June

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

Friday, 24th June

9.00 – 12.00	Negotiation Theory and Practice	Mr Hugh Williamson Prof. Diana Ginn
1.30 – 3.30	Legal Aspects of Maritime Boundary Delimitation	Prof. Phillip Saunders, QC
3.30 – 4.30	Module Debrief and Simulation Integration	Mr Ian Porter Mr David Griffiths Mr Mike Butler

Saturday, 25th June

All day	Free
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Sunday, 26th June

All day	Free
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<p>MODULE 7 Maritime Security</p>

Monday, 27th June

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

Tuesday, 28th June

All day	Emergency Management in the Coastal Zone	Ms Murielle Provost Dr Mélanie Fournier Ms Joanne Lawlor Mr David Griffiths
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Wednesday, 29th June

All day	Integrated Maritime Security Policy Exercise	Cdr Bob Edwards (ret'd) Ms Leah Beveridge
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Thursday, 30th June

9.00 – 12.00	Integrated Maritime Security Policy Exercise (cont.)	Cdr Bob Edwards (ret'd) Ms Leah Beveridge
1.10 – 1.30	Optional Briefing: Dalhousie's Marine Affairs Program	Ms Becky Field
1.30 – 2.45	Integrated Maritime Security Policy Exercise (concl.)	Cdr Bob Edwards (ret'd) Ms Leah Beveridge
3.00 – 4.00	Module Debrief and Simulation Integration	Cdr Bob Edwards (ret'd) Mr David Griffiths Mr Mike Butler

Friday, 1st July (Canada Day)

All day	Free
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Saturday, 2nd July

All day Free

Sunday, 3rd July

All day Free

<p>MODULE 8 Marine Transportation</p>
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Monday, 4th July

9.00 – 12.00	Shipping Fundamentals	Capt. Angus McDonald
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1.30 – 4.00	Safety of Ships	Capt. Alan Knight
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Tuesday, 5th July

9.00 – 12.00	The Human Element in International Shipping	Capt. Angus McDonald
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1.30 – 4.00	Participant Presentations & Study Period	Participants
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Wednesday, 6th July

9.00 – 12.00	International Maritime Organisation (IMO)	Mr Bud Streeter
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1.30 – 2.45	Maritime Search and Rescue	Mr John Dalziel
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3.00 – 4.00	Module Debrief and Simulation Integration	Mr David Griffiths Mr Michael Butler
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Thursday, 7th July

9.00 – 10.30	Field Trip: Eastern Canada Response Corporation	Mr Darin Connors Ms Meredith Perich
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10.30 – 12.00	Field Trip: Survival Systems Training Ltd	Mr Peter Konings Ms Meredith Perich
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1.00 – 4.00	Field Trip: Port of Halifax	Mr Lane Farguson Ms Jessica Martin Mr Kevin White Ms Chelsey Schmuland
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<p>MODULE 9 Energy</p>

Friday, 8th July

9.00 – 12.00	Introduction to Module	Dr Alain Joseph (Module Leader)
1.30 – 4.00	Introduction to Geology and Geophysics	Mr David Brown

Saturday, 9th July

All day	Simulation Exercise: Preparation of Presentations	Participants
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Sunday, 10th July

All day	Simulation Exercise: Preparation of Presentations	Participants
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Monday, 11th July

9.00 – 10.10	Exploration and Risk	Mr Gareth Stuart
10.10 – 10.30	Sylvia Earle – Protect our Oceans	TED Talk
10.45 – 12.00	Regulation and the Canadian Environmental Assessment Agency (CEAA)	Ms Janice Ray
1.30 – 4.00	Tidal Power: Technical and Biological Aspects	Mr John Woods Ms Darlene Morrison Ms Melissa Oldreive

Tuesday, 12th July

9.00 – 10.30	Wind Power	Mr Aaron Long
10.45 – 12.00	Solar Power	Dr Wayne Groszko
1.30 – 4.00	Blue Economy; Areas Beyond National Jurisdiction	Dr Awni Behnam

MODULE 10
International Round Table
Conclusion of Training Programme

Wednesday, 13th July

All day International Round Table

Dr Awni Behnam
Dr Susanna Fuller
Dr Dan Lane
Dr Tony George Puthucherril
Mr David Griffiths
Participants

Thursday, 14th July

9.00 – 12.00 International Round Table

Dr Awni Behnam
Dr Susanna Fuller
Dr Dan Lane
Dr Tony George Puthucherril
Mr David Griffiths
Participants

4.30 – 6.30 Closing Ceremony and Reception

All

Friday, 15th July

9.30 – 12.00 Feedback, What Next? and Closing Remarks

IOI Staff/Module Leaders
Participants



COURSE DIRECTOR'S REPORT

This year was the 36th offering of the annual Ocean Governance Training Program at Dalhousie University! As has been my experience for the past 10 years, the period of my tenure as Director of IOI-Canada, the organization and delivery of the Program has been a cohesive team effort. Members of the team include the IOI-Canada staff, Madeleine Coffen-Smout (Programme Officer), Jennifer Barr (Finance Officer), and this year's Course Coordinator, Meredith Perich; our three interns; our eight Senior Research Fellows (SRFs) who provide much of the academic “woomph” required of a Course with such a distinguished heritage; and last but by no means least, the Module Leaders who are often SRFs, but not necessarily so, who are sector experts and help the Course Director (me) to provide the necessary linkage and transition between the 10 modules of the Program. The SRFs and Module Leaders are listed elsewhere in the Course Report. The Course-long Simulation Exercise provides a further vehicle to assess and integrate the huge volume of information delivered in the 200 plus hours of lectures, field trips etc.

As reported in the Director's Reports of previous years, the feedback provided by Course participants, both by formal and informal means, enables the organizing team to continuously update and improve the annual offering. We have certainly been able to maintain our scientific currency and credibility; however, the demographic of our participants continues to cause concern. This particularly relates to our own population and specifically our apparent inability to attract our Indigenous people (the First Nations, Inuit and Metis). In general, the lack of adequate funding support for scholarships is a major challenge for most applicants and we anticipate that addressing this issue will continue to exercise a significant portion of our time.

One of the many factors that encourages us to continue Elisabeth Mann Borgese's legacy Training Program at Dalhousie University is the unstinting support of our host university and the loyalty of our 100 plus lecturers who have provided their time and expertise on a *pro bono* basis since the inauguration of the 10-week (now 8-weeks) Training Program in 1981. The fact that Dalhousie University's ocean reputation has been further acknowledged by the recent Canada First Research Excellence Fund award (\$90 million, supplemented from other sources to over \$200 million!) for the inauguration of the Ocean Frontier Institute, will add to the globally significant marine infrastructure and human resources located in the Halifax area, all potential components of, or contributors to, the IOI-Canada Training Program.

This year the traditional Orientation Module began on May 18 and culminated at the end of the week with the Opening Ceremonies in the Great Hall of Dalhousie University. The welcoming panel, loyal friends of IOI-Canada, consisted of Dr David VanderZwaag (Dalhousie University), Ms Jennifer Watts (Halifax Regional Municipality), Mr Bill Whitman on behalf of his Minister (Nova Scotia Department of Fisheries and Aquaculture) and Dr Alain Vézina (Department of Fisheries and Oceans, Bedford Institute of Oceanography). Ms Kafi Gumbs, our first participant from Anguilla, responded to the warm words of welcome, on behalf of this year's 15 course participants. Dr Tony Charles, a professor at Saint Mary's University and a



regular lecturer on the Training Program, presented a fitting conclusion to the formal aspects of the Opening Ceremonies with an upbeat keynote address entitled “Success Stories in Saving the Seas”. The reception which followed provided a relaxed opportunity for staff, lecturers, host families and guests to mingle and get to know this year’s course participants.

The annual Elisabeth Mann Borgese Ocean lecture was again the highlight of our Oceans Day activities on June 8. This annual public lecture was inaugurated in 2005 to commemorate the life and work of our founder. What is perhaps not known is that the designation of an “Oceans Day” was the inspiration of the Canadian delegates attending the Earth Summit in Rio de Janeiro in 1992. The date of June 8 was proposed as it was coincidentally the birthday and wedding anniversary of two of them, one of whom regularly lectures on the course! The date of June 8 as Oceans Day was officially recognized by the UN in 2008. But I digress. Based on last year’s successful Lecture, we again organized a panel to address a very relevant topic, namely “Climate Change in Nova Scotia: Are We Ready?” Chaired by Richard Zurawski, author and radio host (and recently elected as a Councillor to the Halifax Regional Municipality), the panellists included Dr Blair Greenan (Bedford Institute of Oceanography), Dr Tim Webster (Nova Scotia Community College), Shannon Miedema (Halifax Regional Municipality) and Dr Georgia Klein (Dalhousie University). Perhaps a fair summing up of the proceedings was that we have made significant progress but a lot remains to be done. The audience of approximately 150 was fully engaged and many of



them joined the panellists for a reception to conclude the evening’s event in the foyer of Dalhousie’s FASS Building. For this year’s ocean lecture we were pleased to have the publicity support of the Ecology Action Centre, the Museum of Natural

History, the Canadian Network for Ocean Education (CANOE), the Oceans and Coasts Education Awareness Network Society-Nova Scotia (OCEANS-NS), the Discovery Centre, the Roberta Bondar Foundation and Dalhousie University.

The field trips, as always, provide an important complement to the 200 plus hours in the classroom and exposed the participants to the realities of integrated coastal and ocean management. For the three day trip to the Annapolis Valley, we again were located at Cornwallis Park, a former naval training base during the Second World War. En route to this facility we visited a unique land-based aquaculture site (Sustainable Fish Farming Canada Ltd) near Windsor, which was about to harvest its first “crop” of Atlantic salmon destined for the hotel industry. The next scheduled appointment was at Evangeline Beach near Grand Pré, for a briefing by Dr Graham Daborn (Acadia University) on the extraordinary features of the upper Bay of Fundy, including the highest tides in the world! The following day’s visits included the Annapolis Royal Marsh Nature Trail where a man-made lake system functions as a natural component of the town’s sewage treatment process; the Annapolis Tidal Power Station, embedded in a causeway across the Annapolis estuary and still a subject of controversy; the historic Fort Anne; the Annapolis Royal Market; and Habitation, a reconstruction of one of the early French settlements established by Samuel de

Champlain. Visits the following day included a family-run seaweed production facility at Gulliver's Cove; a tour of the port of Digby, an important fishing community on the eastern shore of the Bay of Fundy; a sea cage aquaculture site raising Atlantic salmon; and an evening at Stone Bear Tracks and Trails which provided a unique experience for the participants, namely exposure to Canada's First Nations' culture and specifically that of a Bear River Mi'kmaq community. The concluding day of the Annapolis Valley field trip included a visit to Acadian Seaplants, with its sophisticated research facilities and production infrastructure located at Cornwallis Park. This was followed by a tour of the Innovative Fishery Products facility in Belliveau Cove, to observe a very active clam depuration operation. The drive back to Dalhousie University gave plenty of opportunity to consider the plethora of coastal activities observed, all of which contribute to the complexity of coastal and ocean governance.



Other field trips within the 8-week course included a one day visit to Canada's premier oceanographic research facility, namely Bedford Institute of Oceanography in Dartmouth. This visit was organized by Scott Coffen-Smout, one of IOI-Canada's Senior Research Fellows and an alumnus of the course. In addition to a tour of the extensive research facilities and the largest Canadian ice breaker, the Louis St. Laurent, a variety of lectures were presented by resident researchers.

Another half day field trip in Dartmouth was a visit to the Northwest Atlantic Fisheries Organization (NAFO), as captured in the cover photograph of this report. Fred Kingston and his team provided an overview of this important Regional Fisheries Management Organization (RFMO) with its sophisticated surveillance and monitoring system.

A final full day field trip included a visit to the Eastern Canada Response Corporation which is tasked by major oil corporations to provide an immediate response and remediation to oil spills at land or at sea. Their inventory of equipment on stand-by was understandably extensive! As the name implies, the nearby Survival System Training centre provides training to appropriately respond to all types of marine disasters, including egress from ditched helicopters. The unique facilities are focussed on a customized pool with a wave generator capable of generating 2-3 metre waves, almost instantaneously, with rain and wind and lightning (simulated!). The sound effects were deafening and the impact on our course participants was instructive.

The day concluded with a visit to the Port of Halifax. Following a briefing on the port's primary activities which highlighted the potential of this ice-free, deep water port, the participants were taken on a boat trip around the harbour to view the myriad of facilities and vessels that visit the harbour and contribute significantly to the local and national economies.

David Griffiths, an IOI-Canada SRF, has continued to develop the Course-long Simulation Exercise. This sophisticated exercise involves the participants assuming senior positions in the governments of a group of fictitious land-based and adjacent Island nations. Among many other attributes, including team

building, the simulation is designed primarily to facilitate the integration of the numerous topics presented during the Training Program. With the assistance of Dr Mélanie Fournier, the fictitious geographic area was mapped using ARC GIS. For some of the participants this was their first exposure to this important technology and its numerous applications. A number of the lecturers, throughout the 8-week Program, added simulations of their own to complement the master exercise. One of the important outcomes of the simulation exercise is the preparation by the participants of a Coastal and Ocean Plan for their simulated geographic area. On the final two days of the course, the Plan was presented to a distinguished International Panel. This year's panel consisted of Dr Awni Behnam (IOI Honorary President); Dr Susanna Fuller (Ecology Action Centre and SRF); Dr Daniel Lane (University of Ottawa) and Dr Tony Puthucherril (Marine & Environmental Law Institute, Dalhousie University). The panelists assumed the role of ministers to whom the course participants (senior bureaucrats) were expected to present the proposed Coastal and Ocean Plan. The panelists engaged with each course participant following his/her presentation, based on his/her assigned government portfolio and its contribution to the Plan. An extended series of group discussions then followed to further this important mentoring process. The quality of the individual presentations indicated a marked improvement over previous years. This could be attributed to the addition of specific training in this regard within the Communication and Negotiation Module.

The Closing Ceremonies held in the Great Hall provided an ideal opportunity for me to thank the numerous groups that contribute to the success of the Training Program, including: the host families who provide a 'home away from home' for many of the participants; the Dalhousie/IOI-Canada Ocean Advisory Committee, chaired by Dr David VanderZwaag, which is my direct point of contact with the University; the IOI-Canada Board of Directors, chaired by Dirk Werle, which provides guidance to the IOI-staff; the Ocean Governance Training Foundation, chaired by Brian Flemming, which continues to seek scholarship funds for participants from developing regions of the world. To these many groups we owe our gratitude.

The presentation of Certificates to the participants was carried out by Dr Behnam, Dr Alain Boutet (Executive Director of International Relations at Dalhousie), Meredith Perich and myself. Cecilia Engler, an alumna of the 2006 Course and now completing her doctorate at the Schulich School of Law, welcomed this year's participants to their membership of the IOI-Canada Alumni. Aai Sheau Ye of Malaysia responded on behalf of the participants. A reception concluded the official proceedings and provided a final opportunity for the participants to mingle with the "home team".



The all-important debriefing session took place the following morning. This exercise provides us with one more critical input to our ongoing efforts to improve each and every training program organized by IOI-

Canada. By this time in the program, most of the participants feel far more comfortable to express their opinions, either positive or negative, than earlier in the course! Additional confirmation of the continuing value and impact of the Program is provided after the course by our alumni, currently numbering 684 from over 100 countries. A couple of examples from this year's group will provide some indication of their critically important feedback:

- Feno Hanitrinala Ravaoharisoa (Madagascar) - <https://blog.blueventures.org/journey-education-madagascar-canada-study-ocean-governance/>;
- Mirella de Oliveira Leis (Brazil) - <http://toobigtoignore.net/student/tbti-student-reflects-on-ioi-2016-training-programme/>.

As Course Director, it was a particular pleasure interacting with this year's participants. Not every course provides us with such a cohesive and congenial group of individuals..... with such a positive course dynamic. I wish this cohort of "Ocean Ambassadors" every success in their future endeavours!

Michael J.A. Butler
2016 Course Director



PARTICIPANTS



Anguilla: Ms Kafi Gumbs, Director, Department of Fisheries and Marine Resources, Government of Anguilla, Crocus Hill, The Valley

Belize: Ms Felicia A. Cruz, Fisheries Officer, Fisheries Department, Ministry of Agriculture, Fisheries, Forestry, Environment and Sustainable Development, Belize City

Brazil: Ms Mirella de Oliveira Leis, Graduate Student (*to May 2016*), Department of Geography, Memorial University of Newfoundland, St John's, Newfoundland, Canada

Cameroon: Mr Buh Emmanuel Ndze, Lecturer and Acting Head, Department of Maritime Transport, Higher Institute of Transport & Logistics, University of Bamenda, Bambili, North-West Region

Cape Verde: Dr Corrine Almeida, Lecturer and Researcher, Department of Engineering and Marine Science, University of Cabo Verde, Ribeira de Juliao, Sao Vicente

China: Mr Meng Fantao, Engineer, Marine Society Management Office, State Oceanic Administration, Beijing

China: Ms Wan Fangfang, Associate Researcher, National Marine Data and Information Service, State Oceanic Administration, Hedong District, Tianjin

China: Dr Wang Dakui, Assistant Research Fellow, National Marine Environmental Forecasting Centre, State Oceanic Administration, Haidian District, Beijing

China: Dr Xu Jinyan, Assistant Research Fellow, Island Research Centre, State Oceanic Administration, Pingtan, Fujian

Madagascar: Ms Feno Hanitriniala Ravaoharisoa, School Scholarship Officer, Blue Ventures Conservation Andavadoaka, Toliara

Malaysia: Ms Aai Sheau Ye, Senior Researcher, Centre for Ocean Law and Policy, Maritime Institute of Malaysia, Kuala Lumpur

Pakistan: Ms Naghmana Zafar, Staff Officer (Research) and Lecturer, National Centre for Maritime Policy Research, Bahria University (Karachi Campus), Karachi

Sri Lanka: Ms Anusha P. Wijesundara, Hydrographer, National Hydrographic Office, National Aquatic Resources Research and Development Agency, Crow Island, Colombo

St Lucia: Ms Shanna Emmanuel, Fisheries Biologist, Department of Fisheries, Ministry of Agriculture, Food Production, Fisheries and Rural Development, Pointe Seraphine, Castries

St Vincent and the Grenadines: Mr Shamal Connell, Senior Fisheries Assistant , Fisheries Division, Ministry of Agriculture, Forestry, Fisheries and Rural Transformation, Kingstown



FUNDERS

IOI-Canada wishes to acknowledge the very generous support for the 2016 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: Blue Ventures, Caribbean Regional Fisheries Mechanism, CERC.OCEAN research group under the Canada Excellence Research Chair programme, Earthwatch Institute, Maritime Institute of Malaysia, MAVA, Ministry of Infrastructure (Anguilla), National Centre for Maritime Policy Research – Bahria University, National Science Foundation (Sri Lanka), Protected Areas Conservation Trust, Scientific Committee on Oceanic Research, State Oceanic Administration of China (CSO, NMDIS, NMEFC, IRC), Western Indian Ocean Marine Science Association and World Wildlife Fund – US through its Russell E. Train *Education for Nature Program*. A brief profile of each of these organisations, listed alphabetically, is provided in the following pages.

In addition, sincere thanks are due to the various organisations which contributed to the 2016 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, Discovery Centre, Eastern Canada Response Corporation, Ecology Action Centre, Fundy Adventures, Halifax Port Authority, Innovative Fishery Products, Museum of Natural History, Northwest Atlantic Fisheries Organization, OCEANS-NS, Port of Digby, Survival Systems Training Ltd and Sustainable Blue/Sustainable Fish Farming Canada. Finally, acknowledgement should also be given to Cape Breton University for generously contributing to the expenses of sending a staff member to lecture on the course.



Blue Ventures

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Blue Ventures is an award-winning marine conservation organisation working to rebuild tropical fisheries with coastal communities in Madagascar, Belize and Timor-Leste. It is committed to protecting marine biodiversity in ways that benefit coastal people, and it works in places where the ocean is vital to local cultures and economies, and where there is a fundamental unmet need to support human development.

Programmes include temporary fishery closures, payment for mangrove ecosystem services, aquaculture enterprises, community-based reproductive health service delivery and ecotourism businesses. As a social enterprise, Blue Ventures organises marine conservation expeditions in which volunteers from around the world help support its projects working closely with the organisation's field research teams and in partnership with local communities. Its expeditions combine conservation research, education and adventure travel to give volunteers high quality and productive conservation tourism experiences which benefit host communities.

Blue Ventures has already created the largest locally managed marine protected areas in the Indian Ocean and has impacted the lives of more than 150,000 coastal people. The organisation now aims to engage three million people in tropical coastal communities by 2020 in the belief that this is the scale required to drive systemic change, by creating a new paradigm in which marine conservation works for – rather than against – fishing communities.

Education is also an important component of the work of Blue Ventures. Activities since 2007 include the provision of school scholarships as well as the delivery of environmental education and marine science courses in line with the government's plan for sustainable development. This programming contributes to the resilience of coastal communities to climate change and also means that young people are involved in the management of marine resources.

Blue Conservation provided a grant towards the accommodation and tuition costs of a staff member from Madagascar who is part of their education team.

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 the airfares and transit expenses of participants from its member countries. This year's four travel grants enabled fisheries staff from Anguilla, Belize, St Lucia and St Vincent & the Grenadines 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 the participant from Brazil by providing a scholarship for all her course-related expenses in Canada.

Dalhousie University

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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 18,500 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 more than \$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.

Earthwatch Institute

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Earthwatch Institute is a leading global non-profit organisation operating from offices in the United States, the United Kingdom, India, Hong Kong, Japan and Australia. The Earthwatch Institute engages communities in environmental projects in more than 40 countries around the world. Scientists, educators, students, corporations and the general public take part in initiatives to promote the understanding and actions necessary for a sustainable environment.

Earthwatch's projects are based on the charity's philosophy of:

- engaging people worldwide,
- enabling scientific field research,
- promoting education, and
- creating a sustainable environment.

Its scientific research focuses on four areas in response to environmental challenges: Wildlife and Ecosystems, Ocean Health, Climate Change, and Archaeology and Culture.

Since 1971, Earthwatch has invested in nearly 1,400 conservation research projects in more than 120 countries. The majority of its costs are funded by companies, charitable trusts and foundations, international institutions, government agencies, individual memberships and donations, and other sources.

Through its Shulman Award programme for future leaders, Earthwatch provided a contribution towards accommodation and tuition for the participant from Madagascar.

Maritime Institute of Malaysia

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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. Its mission is to “provide maritime-related advice and consultancy 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. Its principal activities are conducting policy research on maritime issues to safeguard Malaysia's maritime interests and to disseminate 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 policy options for the establishment of an Admiralty Court in Malaysia; and,
- contributing to maritime literature and safeguarding Malaysia's maritime interests

In line with its commitment to building capacity among its staff, MIMA supported the participation of one of its staff members by covering her airfare and providing a contribution to her tuition.

MAVA

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Web: mava-foundation.org

MAVA, *Fondation pour la Nature*, is a private foundation under Swiss law which aims to promote the protection and sustainable management of nature, biodiversity and natural resources. Based in the IUCN building in Gland, Switzerland, it also has a regional office in Dakar, Senegal.

MAVA was established in 1994 by Luc Hoffmann (1923-2016) and reflects his belief that science and research are prerequisites for success and that conservation can only happen when people join forces and work together in partnership. His underlying philosophy is captured via the four MAVA values:

- **unifying** key players;
- **empowering** local organisations;
- being **flexible** in approach; and
- **persevering** in pursuit of long-term conservation success.

With a mission to conserve biodiversity for the benefit of people and nature by funding, mobilising and strengthening its partners and the conservation community, MAVA focuses particularly on freshwater and coastal ecosystems and cultural landscapes. It has played a transformational role in advancing innovative conservation across the Mediterranean, West Africa, the Alps and beyond. Its final grant-making will be in 2022, after which the foundation will wind down its activities as planned by the founder many years ago. Until then, its commitment to biodiversity conservation, the sustainable use of natural resources and vibrant conservation communities remains as strong as ever.

MAVA awarded a scholarship to the Cape Verdean participant to cover all her course-related expenses in Canada.

Ministry of Infrastructure

Government of Anguilla
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Anguilla

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Web: www.gov.ai

Anguilla is the most northerly of the Leeward Islands and is an internally self-governing British Overseas Territory with a population of approximately 14,000. The government has four main ministries, one of which is the Ministry of Infrastructure, Communications, Utility and Housing (MICUH).

MICUH is made up of the:

- Department of Infrastructure
- Department of Information Technology and E-Government Services
- Anguilla Fire and Rescue Service
- Clayton J. Lloyd International Airport
- Department of Fisheries & Marine Resources (since 2015)

The ministry contributed towards the living expenses of the Director of Fisheries to help enable her to participate in the training programme as the first ever representative of Anguilla.

National Centre for Maritime Policy Research

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Bahria University is a Federally Chartered Public Sector University with campuses in Islamabad, Karachi and Lahore. Established by the Pakistan Navy in 2000, it has steadily grown into one of the leading higher education institutions in Pakistan. In 2007, the National Centre for Maritime Policy Research (NCMPR) was established at the Karachi campus as an institute of maritime policy research and to serve as a think tank for the analysis and study of maritime affairs. It provides important guidelines and solutions for national stakeholders to meet challenges in the maritime domain.

The objectives of NCMPR are to:

- analyse national and international maritime issues;
- assist government and private sector in developing policies and enhancing maritime cooperation;
- promote maritime awareness amongst Pakistani people;
- establish mutually beneficial linkages with similar organisations and academia;
- establish a comprehensive library and data bank on maritime matters; and,
- organise and participate in maritime seminars and conferences.

As a think tank, NCMPR participates in and hosts national and international seminars and conferences on maritime matters with the aim of representing Pakistan's viewpoint and establishing linkages with other think tanks to benefit from their research. In this regard, it has signed MOUs with many educational and research institutes around the world, including the Centre for Foreign Policy Studies (CFPS) at Dalhousie University. It also has a Statement of Collaboration with Dalhousie's Marine Affairs Program (MAP).

NCMPR provided the airfare for one of their research/lecturing staff to attend the 2016 training programme.

National Science Foundation

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The National Science Foundation (NSF) is a state-funded institution under the Ministry of Technology and Research. It was established in 1998 as the successor to the Natural Resources Energy & Science Authority of Sri Lanka, which had itself been set up in 1981 as the successor to the National Science Council founded in 1968.

The NSF is mandated to serve and strengthen the Science and Technology sectors in Sri Lanka and its activities conform to the National Science & Technology Policy. Accordingly, the NSF facilitates research, development and innovation to create a knowledge economy. It also facilitates capacity building, infrastructure development, technology transfer, knowledge creation and sharing in all fields of science and technology to improve the quality of life of the people. Its five scientific divisions focus respectively on:

- Research
- Technology
- Science & Technology Policy Research
- Science Popularisation
- International Liaison

The NSF is governed by a Board of Management, which consists of the Chairman; the Director; a member representing each of the University Grant Commission, the Sri Lanka Association for the Advancement of Science, the Institute of Engineers of Sri Lanka, the National Institute of Education, and the Ministry of Finance; and four members appointed by the Minister of Technology and Research. The Director functions as the Chief Executive Officer.

Recognising that scientific knowledge and its applications are central for national development at all levels, the NSF administers the Overseas Special Training Programme (OSTP) in alignment with the National Science Technology and Innovation Strategy. This scheme provides financial assistance to scientific and technical personnel and full-time research students so they can acquire overseas training for up to 12 months.

Under the OSTP, NSF provided a grant as a partial contribution to help the Sri Lankan participant attend the 2016 training programme.

Protected Areas Conservation Trust

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Web: www.pactbelize.org

Established in 1996, the Protected Areas Conservation Trust (PACT) is Belize's national conservation Trust. Revenues for the Trust are primarily derived from a Conservation Fee of US\$ 3.75 paid by overnight visitors, a 15% commission from cruise ship passenger head tax, fiduciary services, and interest earned on its term deposits. PACT redistributes the revenue throughout the National Protected Areas System (NPAS) by providing funding for activities which support conservation and promote environmentally sound management of Belize's natural and cultural resources.

PACT's Grants Programme offers grants under two broad categories, namely Project Grants and Capacity Building Grants. Capacity Building Grants were established to enable administrative and technical staff, and decision-makers of eligible organisations to attend short courses, conferences, workshops, seminars, or symposiums that are designed to strengthen their capacities to more effectively and efficiently manage Belize's natural resources and protected areas. These take the form of Individual Professional Development Grants, Workshop Grants and Environmental Fellowships.

An Individual Professional Development Grant was awarded to the participant from Belize, as a contribution to her 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 Pakistan and Sri Lanka.

State Oceanic Administration

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

- the supervision and management of 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 ten departments in its Beijing-based headquarters, three branches, seven 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 2016 course, SOA provided four full scholarships through its Chinese Society for Oceanography (Beijing), National Marine Data & Information Service (Tianjin), National Marine Environmental Forecasting Centre (Beijing) and Island Research Centre (Fujian) to enable a staff member from each of these units to receive training.

Stiftung für Meereswissenschaft und -forschung (Ocean Science and Research Foundation)

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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 2016 training programme, which enabled full scholarships to be awarded to the participants from Cameroon and St Vincent & the Grenadines (excluding travel costs), and partial expenses to be covered through “top-up funding” for those from Anguilla, Belize, Brazil, Cape Verde, Madagascar, Malaysia, Pakistan and Sri Lanka. In addition, OSRF provided funding through the Danielle de St Jorre Scholarship (DDSJS).

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 the IOI Headquarters. The 2016 recipient, a Fisheries Biologist from St Lucia, used the award to participate in the IOI-Canada training programme. Top-up funding to cover her remaining course expenses (excluding travel) was provided from general OSRF training support.

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Western Indian Ocean Marine Science Association (WIOMSA) is a regional professional, non-governmental, non-profit, membership organisation, registered in Zanzibar, Tanzania. It is dedicated to promoting the educational, scientific and technological development of all aspects of marine sciences throughout the region of Western Indian Ocean – Somalia, Kenya, Tanzania, Mozambique, South Africa, Comoros, Madagascar, Seychelles, Mauritius, Reunion – with a view to sustaining the use and conservation of its marine resources. In pursuit of this, the Association:

- provides a forum for communication and exchange of information amongst its members that promotes and fosters inter-institutional linkages within and beyond the region;
- supports marine research by offering research grants;
- implements programmes to build the capacity of marine scientists and coastal management practitioners; and,
- works to promote policy dialogue on key topics by organising meetings and seminars on the findings and policy implications of science.

WIOMSA has approximately 1,000 individual members as well as about 50 institutional members from within and outside the region. This interdisciplinary membership consists of marine scientists, coastal practitioners and institutions involved in the advancement of marine science research and development.

WIOMSA promotes marine science research through the award of research grants under the Marine Science for Management (MASMA) and the Marine Research Grant (MARG) programmes. Support in the form of a MARG III grant was given to the participant from Madagascar to cover her airfare.

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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 1.2 million members in the United States and nearly 5 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.

A Professional Development Grant was provided by EFN to the participant from Belize as a contribution towards her course expenses.

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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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