



Fundy in Flux: Challenges for Science, Policy and Society

11th BoFEP Bay of Fundy Science Workshop

**St. Thomas University Conference Centre
Fredericton, New Brunswick
8–11 June 2016**



	Wednesday 8 June	Thursday 9 June	Friday 10 June		Saturday 11 June	
8:00		Registration		Registration		Field Trip by Boat on the Oromocto River (Meet at STU Conference Centre entrance)
8:30		Opening & Keynote Presentation Dr. Katherine Mills		Ocean Health Index	MPAs & Coastal Management	
10:00		Break		Break		
10:30		Ocean Observation Network	Seabirds	Aquatic Ecology	Geology	
12:00		Lunch		Lunch & Special Presentation by Brent Suttie		
1:30		Tidal Power & Renewable Energy	Coastal Monitoring	Building Better Governance for Sustainable Resources & Workshop Closing		
3:00		Break				
3:30		Tidal Power & Renewable Energy	Mudflat Ecology			
4:00			Poster Session			
5:00						
5:30			Reception			
6:00						
6:30–	<i>Voices on the River</i> Special Event	Dinner on own				

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Welcoming Remarks



Here we are at the 11th BoFEP Bay of Fundy Science Workshop and it is 2016, twenty years since the founding of this organization. BoFEP workshops have always been an important component of the work that BoFEP does. Our mandate is to inform about new science/research/knowledge of the Bay of Fundy. So this is what we will do over four days—we will learn of new research, much of it from students who have been mentored by the impressive array of academics we have in New Brunswick and Nova Scotia.

We are pleased to have two plenary speakers. Kate Mills, a quantitative fisheries ecologist, will speak at the opening ceremony and we are anticipating that she will share insights on the impact of climate change on marine resource populations and fisheries. At the luncheon on Friday, Brent Suttie, NB Provincial Archaeologist, will speak about the landscape and peoples of the Bay—some exciting new information on the land and people beginnings of the Bay as we know it.

Mudflat ecology, a mainstay in BoFEP workshops, will be covered as will aquatic ecology, MPAs and coastal management, tidal energy, coastal monitoring, seabirds and geology of the region. And there are special sessions on renewable energy and ocean observation and data management. This year we have incorporated ample time for discussion in sessions, notably the two-session timeframe for alternate energy and on the Ocean Health Index recently completed by BoFEP on a portion of the Bay.

A special session on Wednesday night will give us insights into an important feature of the Bay of Fundy ecosystem, the Saint John River. Indigenous Elders, Aboriginal Traditional Knowledge holders, and Indigenous Environmental Technicians will share traditional knowledge about the river, current relationships to water, how knowledge comes from the land—its embeddedness in the river—and use of that knowledge in water protection at the community and watershed levels.

Our closing session, primarily student papers, will lead into a forum on effective governance structures to enhance the Bay's viability both for the animal, plant and human worlds, to maintain and improve the health of the Bay, another of BoFEP's mandates.

We are especially pleased that we can offer Workshop participants a chance to explore the Oromocto River and its wetlands and floodplain ecosystems on Saturday morning. We would like to extend heartfelt thanks to the NB Department of Natural Resources for sponsoring this field trip.

All of this exciting work has been brought together by a wonderful team of BoFEP members and friends. I am so pleased to be a Chair of this wonderful workshop. Thank you all for your support.

Sincerely,

Marianne Janowicz
Chair, Bay of Fundy Ecosystem Partnership & 11th BoFEP Bay of Fundy Science Workshop

Keynote Speakers



Dr. Katherine Mills is an associate research scientist at the Gulf of Maine Research Institute in Portland, Maine. As a quantitative fisheries ecologist, Kathy has studied ecosystem change and fish-ecosystem relationships in the Gulf of Maine region for over a decade. Much of her work is interdisciplinary, seeking to understand and inform management of fisheries as coupled social-ecological systems. Her recent work focuses on (1) understanding the potential impacts of environmental variability and climate change on marine resource populations and fisheries and (2) assessing climate adaptation strategies and providing information needed to advance adaptation planning in marine fisheries and fishing communities.



Brent Suttie is the New Brunswick Provincial Archaeologist and Director of the Archaeology Branch of the NB Department of Tourism, Heritage and Culture. His specialty is reconstructing past landscapes and determining when they were occupied. Suttie He has been a professional archaeologist for 16 years and has been involved with over 100 sites in New Brunswick. He has also worked internationally on archaeological sites in Britain, Belize, Turkey, and Egypt. In 1995, when he was still in high school and hanging around the family cottage in Charlotte County's Lake Utopia, he ventured out on a hike that eventually propelled him on his career path. Mr. Suttie stumbled across some stone tools. His discovery led to the oldest radiocarbon-dated archaeological site in New Brunswick. "I have always been interested in archaeology and the stone tools only heightened my interest," said Mr. Suttie, a native of Black's Harbour. "When I found them, I had no idea how old any of them were. Since coming to UNB, I've been able to find out so much more about them." Brent was trained at the University of New Brunswick, receiving his undergraduate diplomas there and then his Masters. Much of his time involves field work in various locations along coastal New Brunswick and developing a unifying model for coastal submergence.

WEDNESDAY, 9 JUNE

Voices on the River

Speakers:

Wendy Wetteland, President & Chief, New Brunswick Aboriginal Peoples Council

Chris Brooks, Community Drum, St. Mary's First Nation

Amber Giles, Grand Chief, Wolastoq Grand Council

Jason Harquail, Aboriginal Seafood Network, New Brunswick Aboriginal Peoples Council

Joshua McNeilly, IKANAWTIKET, Maritime Aboriginal Peoples Council

Elders

In this collective workshop, at the confluence of the Wolastoq and Nashwaak Rivers, the Drum will open the session. Indigenous Elders, Aboriginal Traditional Knowledge (ATK) holders, and Indigenous Environmental Technicians will share traditional knowledge about the river, current relationships to water, how knowledge comes from the land — its embeddedness in the river — and use of that knowledge in water protection at the community and watershed levels. Everyone in attendance will also be invited to share their ideas in a Talking Circle.

6:00 pm	Meet outside St. Thomas University Conference Centre to share-a-ride
6:15	Last vehicle will leave for meeting venue
6:30-	Session will commence
	At conclusion of session and Talking Circle return to STU with shared ride

THURSDAY, 9 JUNE

REGISTRATION

Plenary Room - Maple & Elm

8:00–	Registration
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PLENARY AND OPENING

8:30-10:00

Plenary Room - Maple & Elm

8:30	Marianne Janowicz, BoFEP Chair	Welcome
8:45		Special Remarks
8:55	Peter Wells	Introduction of Speaker
9:00	Dr. Katherine Mills, Gulf of Maine Research Institute	<i>Warming, Ecosystem Change and Fisheries in the Gulf of Maine: From Understanding to Adaptation</i>
9:40		Discussion & Announcements

Break

10:00-10:30

Plenary Room – Maple & Elm

CONCURRENT SESSIONS – 10:30 to 12:00

Towards a National Network for Ocean Observation Convenors: Lee T. Wilson, MEOPAR, Dalhousie University, Halifax, NS, and Andrew Sherin, COINAtlantic, Halifax, NS <i>Pine Room</i>		
This session will report on the results of expert forum on ocean data management organized by the Marine Environmental Observation Prediction and Response Network (MEOPAR) and held in Montreal in November of 2015. The forum brought together members of the ocean data management community of practice to map out a future direction for collaboration in ocean observation in Canada. The main result was a commitment to work towards a Canadian Integrated Ocean Observation System (CIOOS). The session will solicit from participants in a workshop forum responses to the initial vision of CIOOS. The results of the session will be reported back to MEOPAR and the Conference of Parties. Holders of ocean observation data and users of ocean observation are encouraged to attend.		

Seabirds Chair: Owen Washburn, Fredericton, NB <i>Oak Room</i>		
10:30-10:50	Tony Diamond	<i>Accelerating Changes in the Seabird Community of Machias Seal Island</i>
10:50-11:10	Stephanie Symons & Tony Diamond	<i>Atlantic Puffins and Razorbills May Be Using Several Strategies to Partition Resources on Machias Seal Island, NB</i>
11:10-11:30	Lauren Scopel & Tony Diamond	<i>Colony Collapse in an Arctic Tern Metapopulation: Food, Weather, or Predation?</i>
11:30-12:00	Discussion	

Lunch 12:00-1:30 <i>Plenary Room – Maple & Elm</i>		
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CONCURRENT SESSIONS – 1:30 to 5:00

Tidal Power & Renewable Energy - Part 1 Moderator: Anna Redden, Acadia University, Wolfville, NS <i>Pine Room</i>		
1:30-1:35	Welcome	
1:35-1:55	Emma Andrews	<i>Review and Analysis of Policies Pertaining to Tidal Power in Canada and the United States</i>
1:55-2:15	Anna Redden et al	<i>Life in the Fast Lane: Assessing the Potential for Turbine-Marine Life Interactions in Minas Passage</i>
2:15-2:35	Meghan Swanberg et al, presented by Elizabeth Nagel	<i>The Nova Scotia Tidal Energy Atlas: An Enabling Initiative for the Emerging Tidal Energy Industry</i>
2:35-3:00	Discussion	

Coastal Monitoring Chair: Sarah Chamberlain, Dalhousie University, Halifax, NS <i>Oak Room</i>		
1:30-1:50	Christine Tilburg et al, presented by Heather Breeze	<i>ESIP (EcoSystem Indicator Partnership): Using your smartphone to monitor the Gulf of Maine Region</i>
1:50-2:10	Robert Thieler et al	<i>Going Mobile: Doing and Delivering USGS Coastal Change Science on Smartphones</i>
2:10-2:30	Claudio Aporta	<i>The Potential Role of Atlases in Knowledge Mobilization Regarding the Bay of Fundy</i>
2:30-3:00	Discussion	

Break 3:00-3:30 <i>Plenary Room – Maple & Elm</i>

Tidal Power & Renewable Energy - Part 2 <i>Pine Room</i>		
3:30-3:50	Lee Wilson	<i>Communication in Tidal Power Networks Operating in the Bay of Fundy: The Important Role of Bridger Organizations</i>
3:50-4:10	Sarah Saunders et al	<i>WWF's Habitat Friendly Renewable Energy Framework: Assessment and Application in the St. John River (NB) and the Bay of Fundy</i>
4:10-5:00	Discussion	

Mudflat Ecology Chair: Tony Diamond, University of New Brunswick, Fredericton, NB <i>Pine Room</i>		
3:30-3:50	Sarah Neima et al	<i>Movements and Duration of Stay of Semipalmated Sandpipers (Calidris pusilla) During Migratory Stopover in the Upper Bay of Fundy, Canada</i>
3:50-4:10	Diana Hamilton et al	<i>Composition and Quality of Diet, and Morphological Adaptations for Foraging in Semipalmated Sandpipers Migrating through the Upper Bay of Fundy</i>
4:10-4:30	Anthony Einfeldt & Jason Addison	<i>Historic Introduction and Limited Population Connectivity of the Ecosystem Engineers Corophium volutator and Hediste diversicolor in the Bay of Fundy</i>
4:30-4:50	Kirby Morrill & Gary Saunders	<i>Re-evaluating Green Algal Biodiversity in the Bay of Fundy: A Molecular and Morphological Assessment of Broadly Bladed Ulva spp (Chlorophyta)</i>
4:50-5:00	Discussion	

Poster Session**5:00-6:00***Plenary Room – Maple & Elm***Reception****5:30-6:30***Room 204/205, STU Conference Centre****Dinner on own***

FRIDAY, 10 JUNE

REGISTRATION*Plenary Room – Maple & Elm*

8:00–

Registration

CONCURRENT SESSIONS – 8:30 to 10:00

Ocean Health Index

Convenors: Rémi Daigle, Université du Québec à Rimouski, Rimouski, QC, and Scott Kidd, Quispamsis, NB

Pine Room

This session will provide background on the Ocean Health Index (OHI) framework and previous research on the OHI in Canada, detail the findings of BoFEP's project in the Southwest New Brunswick Bay of Fundy Marine Resources Planning Area, and engage attendees in a discussion on future directions of applying the OHI to the entire Bay of Fundy, Gulf of Maine, or Atlantic Canada.

MPAs & Coastal Management

Moderator: Heather Breeze, Fisheries and Oceans Canada, Dartmouth, NS

Oak Room

8:30-8:50

Penny **Doherty** et al

Meeting Canada's Commitment to the Aichi Targets: Marine Protected Area Network Development in the Scotian Shelf Bioregion – Progress to Date

8:50-9:10

Reba McIver,
presented by Peter
Fenety

Preliminary Identification and Quantification of Coastline Marine Debris in the Southwest Fundy Region

9:10-10:00

Discussion

Break**10:00-10:30***Plenary Room – Maple & Elm*

CONCURRENT SESSIONS – 10:30 to 12:00

Aquatic Ecology Chair: Jack Fife, St. Andrews Biological Station, St. Andrews, NB <i>Pine Room</i>		
10:30-10:50	Donald Killorn	<i>The Coastal Soundscape in the Outer Bay of Fundy</i>
10:50-11:10	Rod Bradford et al	<i>Demographic Changes in Bay of Fundy Striped Bass: Apparent or Real?</i>
11:10-11:30	Ian Stewart & Peter Wells	<i>Diluted Bitumen Spills in the Bay of Fundy: An Update on the Scientific and Technological Challenges</i>
11:30-12:00	Discussion	

Geology Chair: Peter Fenety, St. Andrews, NB <i>Oak Room</i>		
10:30-10:50	Tim Fedak et al	An Update on the Fundy Rift Aspiring Geopark
10:50-11:10	Tim Fedak & Kevin Snair	Reflections on the Collapse of Long Island Arch and Elephant Rock
11:10-11:30	Randall Miller	Palaeontology along the Bay Fundy Coast, New Brunswick, Canada
11:30-12:00	Discussion	

Lunch 12:00-1:30 Brent Suttie, NB Department of Tourism, Heritage and Culture <i>Near Coastal and Submerged Land and Evidence of Past Occupation within the Bay of Fundy</i> Introduction of Speaker by Hugh Akagi <i>Plenary Room – Maple & Elm</i>		
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CONCLUDING SESSION – 1:30 to 4:00 (see next page)

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Building Better Governance for Sustainable Resources Plenary and Workshop Closing Chair: Melanie Wiber, Department of Anthropology, University of New Brunswick, Fredericton, NB <i>Plenary Room – Maple & Elm</i>		
1:30-1:35	Introduction and Welcome	
1:35-1:55	Courtenay Parlee	<i>Risk Management through the Use of Community Values Criteria: Bridges and Barriers to Strengthening Governance Institutions</i>
1:55-2:15	Allain Barnett & Melanie Wiber	<i>Assessing Anthropogenic Risk in the Marine Environment: How do We Measure the Impact of Aquaculture on Lobsters</i>
2:15-2:35	Donna Curtis Maillet	<i>A Clearer Understanding of Knowledge Co-Construction: A Case Study Analysis of a Joint Fishermen/Scientists Research Project on the Abundance of Ovigerous Female Lobsters (Homarus americanus) In Southwestern New Brunswick</i>
2:35-2:55	Robin Messenger	<i>Responding to Risk: A Case Study on Season Change Requests and the Role of Managing Institutions in Eastern Nova Scotia's Lobster Industry</i>
2:55-3:30	Discussion & Wrap-Up	
3:30-4:00	Presentation of Student Awards and Workshop Closing	

SATURDAY, 11 JUNE

Field Trip on the Oromocto River <i>Level One, St. Thomas University Convention Centre</i>	
8:00-12:00 (approx.)	Meet outside STU Convention Centre for transportation to boats (Pre-registration required)

**A special thank you to AMEC Foster Wheeler,
Mountain Equipment Coop and
the New Brunswick Department of Natural
Resources for their support**



Workshop Organizing Committee

Marianne Janowicz, Chair
Sarah Chamberlain
Blythe Chang
Jon Percy
Susan Rolston
Peter Wells

Program Committee

Blythe Chang, Chair
Ken Adams
Hugh Akagi
Jack Fife
Marianne Janowicz
Joshua McNeely

Logistics Committee

Sarah Chamberlain, Chair
Susan Rolston
Owen Washburn

St. Thomas University Forest Hill Summer Hotel and Conference Centre is located at 368 Forest Hill Road, Fredericton, NB



St. Thomas University

1. **Holy Cross House**
Classrooms
Residence
Faculty Offices (Catholic Studies, English as a Second Language, Human Rights, Native Studies, Philosophy, Political Science)

2. **Vanier Hall**
Residence

3. **George Martin Hall**
Campus Ministry
Chapel
Classrooms
Dining Room
Special Projects
Financial Services
Human Resources
President's Office
Registrar's Office
Media Relations and Communications
University Advancement
Vice-President (Academic)
Vice-President (Finance/Admin.)

4. **Harrington Hall**
Residence

5. **Sir James Dunn Hall**
Black Box Theatre
Cafeteria
Classrooms
Computer Labs
Co-operative Education
Information Technology Services
Native Student Council
Student Help Centre
Study Lounges

6. **Edmund Casey Hall**
Classrooms
Faculty Lounge
Faculty Offices (Anthropology, Economics, English, History, Math, Psychology, Religious Studies, Romance Languages, Sociology)
Students' Union Used Book Room
Ted Daigle Auditorium
University Services Office

7. **J. B. O'Keefe Fitness Centre**
Athletics Department
Fitness Facilities

8. **Brian Mulroney Hall**
Alumni Hall (common room)
Classrooms
Computer Labs
Faculty Offices (Criminology, Education, Gerontology, Journalism, Social Work)

Fair Trade Café
Third Age Centre
Multi-media Centre
Faculty/staff lounge

9. **Welcome Centre**
Admissions
Student Affairs (including Academic Advising)
Boardroom

10. **Margaret Norrie McCain Hall**

11. **Multi-Purpose Court**

12. **Student Union Building**
Students' Union

13. **Harriet Irving Library**

14. **University Bookstore/Bank of Montreal**

15. **Rigby Hall/Forest Hill**
Residence
Banquet/Meeting Rooms/Dining Room

16. **Chatham Hall**
Residence

- U1. **UNB - Wu Centre**

- U2. **UNB - Ludlow Hall**

Parking
P1 - General Parking with Permit
P2 - Students only with Permit
P3 - Faculty and Staff Parking with Permit
P4 - 30 minutes Visitor Parking - No Permit

