



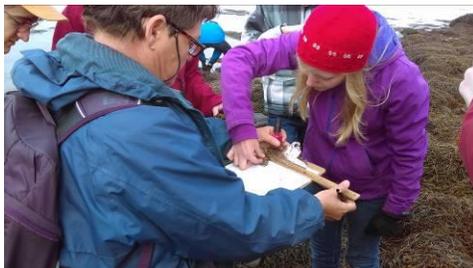
Tour: Bio on the Bay
A Canadian Coldwater Marine Biology Experience

Destination: St. Andrews, New Brunswick, Canada

Specialization: Marine Biology & Oceanography

Itinerary: 6-days / 5-nights
 April through November

Bio On The Bay - Sample Itinerary					
A Canadian Coldwater Marine Biology Experience					
Day	Morning		Afternoon		Evening
1	Travel to St. John New Brunswick, transfer to The Huntsman in St. Andrews by-the-Sea; dorm check-in		Welcome, Safety & Orientation		Fundy Discovery Aquarium Tour Dinner
2	Research Vessel Cruise		Plankton Lab	Rocky Shore Exploration	Marine Lab Dinner
3	Invertebrate Classification Lab	Muddy Shore Exploration		Ministers Island Tour	Dinner Camp Fire Night
4	Echinoderm Lab	Invasive Species Monitoring		St. Andrews by-the-Sea Excursion Dinner	
5	Farmer's Market	Whale & Wildlife Watch		Atlantic Reference Center (ARC) Tour	Dinner Quiz Night or Movie Night
6	Invertebrate Behavior Lab		Transfer to Airport, depart for Home		



As with all sample itineraries, please be advised that this is an 'example' of a schedule and that the activities and hotels shown may be variable dependent upon dates, weather, special requests and other factors. Itineraries will be confirmed prior to travel.



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Day 1

Dinner on arrival, dependent upon flight times

Travel to St. John New Brunswick, arriving in the late afternoon or early evening. After boarding your motorcoach your group will be transferred to the Huntsman Center located in St. Andrews by-the-Sea, approximately a 1.5-hour drive.



Huntsman Ocean Sciences & Marine Science Center: A unique Canadian Institution for Education and Research

- The Huntsman Marine Science Centre is a not-for-profit organization established in 1969 as a complement to the St. Andrews Biological Station. Its mission was to extend the Station's academic and applied research capabilities and provide education in partnership with a large group of Canadian universities. For over 45 years, the Huntsman has fulfilled and expanded this mission. Today it brings together a unique combination of research expertise and educational opportunities in order to promote a better understanding of Canada's marine and coastal environment. Located at the mouth of the Bay of Fundy, the Huntsman is perfectly positioned to access one of the world's most biologically productive ecosystems. The diversity of life found on its shores and in its waters form the basis of the educational programs.

Implementing different learning strategies

- ✓ A unique schedule is set up to meet the needs of each individual school
- ✓ Programs expose students to the "process of science" and connect them with an institution devoted to marine research
- ✓ Local researchers/speakers compliment course work
- ✓ Students work actively in the field – seashore and research boat
- ✓ What students collect is the basis for their lab examination
- ✓ An all-inclusive program allows time for team building
- ✓ Programs introduce possibilities of attending a Maritime University or College
- ✓ Students work outside of the daily classroom routine



On arrival, we'll get checked in, have our **Welcome, Safety & Orientation Meeting** and get ready for a great week of adventure! Students will sleep in dorm accommodations in individual beds, three to a room; staff sleep in adult rooms on the same floor. First stop - the Fundy Discovery Aquarium, home to unique and different animals that call the Bay of Fundy home.



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Fundy Discovery Aquarium – An enormous display that depicts the magnitude of the Bay of Fundy tides anchors the aquarium, while Huntsman's resident harbor seals - Loki and Snorkel, entertain you with their antics. We'll take a Behind-the-Scenes tour to see the workings of the Aquarium and feed some of the animals who live only backstage. Visitors also enjoy sturgeon, seahorses, salmon, intertidal creatures, and underwater viewing of Bay of Fundy fishes.



Dinner will be served on campus.

Day 2

Breakfast, lunch & dinner included

Research Vessel Cruise, Plankton Lab & Rocky Shore Exploration

DEETS: Jump aboard the Huntsman research vessel to gather oceanographic data. Live organisms will be collected using a plankton tow and a benthic drag. Back in the lab use microscopes to identify the amazing creatures that live in a drop of seawater. Round out the day by searching for animals on the shore.

After a marine lab in the early evening, dinner will be served on Campus.



Day 3

Breakfast, lunch & dinner included

Invertebrate Classification Lab, Muddy Shore Exploration & Ministers Island Tour

DEETS: In the lab, closely observe the animals you have collected. Then visit a local beach to dig into the sediment and discover the weird and wonderful animals that live beneath your toes. Next take a trip across the ocean floor and step back in time for a tour of Ministers Island, the summer estate of Sir William Van Horne, the driving force behind the completion of the Canadian Pacific Railway.

Ministers Island - Canada's largest tidal island and a designated Provincial and Federal historic site. Cross the ocean floor into a world rich in distinctive natural and marine surroundings, cultures and histories. For many centuries the island was the seasonal home of the Passamaquoddy indigenous people. In 1777 the island took on a new identity as Loyalists from the United States moved north to escape the American Revolutionary War and settled what is now Saint Andrews in 1783. "Ministers Island" is named for Parson Andrews who began a ministry in the area after settling on the island in 1790. www.ministersisland.net



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- ✓ Relax, enjoy, and imagine life on the sprawling summer estate of Sir William Van Horne. The American railroad visionary united Canada by completing the railway coast to coast in 1885.
- ✓ Be amazed by the massive and recently restored Maxwell designed barn, once the heart of an innovative agricultural operation.
- ✓ Immerse yourself in a time when the rich and famous of the post-Victorian era came to play in Saint Andrews by-the-Sea.
- ✓ Explore the spectacular 50 room summer cottage which reflects Van Horne's appreciation of art, music, entertainment and the finer things in life.
- ✓ Discover the panoramic views of Passamaquoddy Bay from the iconic Bathhouse.



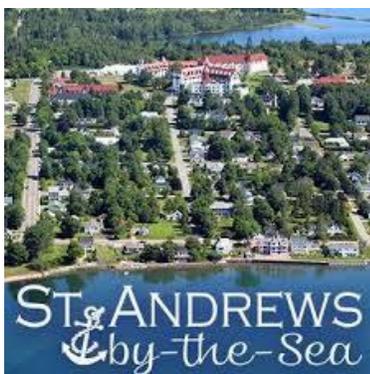
Tonight, we'll have dinner on campus and then kick back with a fabulous bon fire!

Day 4

Breakfast, lunch & dinner included

Echinoderm Lab, Invasive Species Monitoring, Explore St. Andrews by-the-Sea

DEETS: Echinoderms, such as **sea stars** and **urchins**, can only be found in the ocean. Peer closer at these animals while studying their anatomy and behavior. Then we head out on a field trip to help gather data on **invasive green crabs**. At the end of the day take time to explore the historic loyalist town of St. Andrews with its many quaint shops and galleries.



Discover St. Andrews! Everything about our town is special, including our status as a National Historic District, one of the oldest and loveliest in the Maritimes. St. Andrews is a treasure trove of beautiful architecture, unparalleled scenery and rich marine life. Today we offer all the features of a thriving modern resort, yet our streets remain steeped in turn-of-the-century charm. From lobster rolls to fine dining, seaside camping to luxury accommodations, our town is bustling with experiences for you.
<http://standrewsbythesea.ca>

Participate in activities such as seaside signature golf, whale-watching, kayaking, boat tours, and scuba diving. Visit our art galleries, museums and interactive displays. Don't forget to visit Kingsbrae Garden, an enchanting 11-ha (27-acre) horticultural masterpiece. Sunbathe in white sand at our warm, saltwater cove, enjoy a unique downtown shopping excursion



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with our many shops, boutiques and art galleries or find special treasures hand-crafted by locals at our Farmers Market. Surround yourself with the ambiance and hospitality of this seaside resort town.

Tonight, we'll have dinner on campus.

Days 5

Breakfast, lunch & dinner included

Farmers' Market, Whale and Wildlife Watch & ARC Tour

DEETS: This morning we'll visit the local farmers' market to sample delicious local and exotic cuisine and find unique, handcrafted souvenirs. Then travel out onto the bay in search of whales, seals, porpoise, eagles and seabirds. Finish off the day by touring the Atlantic Reference Center (ARC), a research museum that houses preserved specimens from the North Atlantic, including deep sea anglerfish and gulper eels.



Atlantic Reference Center – At the ARC, visits are encouraged for graduate and postdoctoral students, researchers and more. Huntsman's excellent laboratory space and facilities are well-equipped and ready to handle researchers from a variety of disciplines within the field of aquatic sciences. Some examples of recent research topics studied at the center include:

- ✓ Marine biodiversity, ecology, and community structure – coastal, continental shelf, and deep-sea benthos, plankton, and fishes
- ✓ Characterization of zooplankton community structure in Canadian Arctic, Newfoundland, and Pacific waters
- ✓ Census of Marine Life: analysis of nearshore benthos at geographically widely dispersed sites
- ✓ Demersal fish fauna of the continental slope off Nova Scotia, Canada based on trawl surveys
- ✓ Ichthyoplankton community structure in Passamaquoddy Bay
- ✓ Environmental baseline research, monitoring, and impact assessment
- ✓ Benthic effects from aquaculture in the lower Bay of Fundy
- ✓ Impacts of rockweed harvesting on resident fishes; rockweed habitat utilization by lobster
- ✓ Chemical therapeutic benthic environmental assessment
- ✓ Biodiversity assessment of existing or potential Marine Protected Areas
- ✓ Ichthyoplankton in Saint John Harbor, NB – development of a monitoring program
- ✓ Census and monitoring of species in nearshore habitats of Atlantic Canada, New England, and western Africa (part of global Census of Marine Life program)
- ✓ Ontogeny, biogeography, taxonomy, systematics, and evolution of crustaceans and fishes
- ✓ Baltic prawn *Palaemonetes adspersus* – first record in northwest Atlantic waters
- ✓ Plankton-caught zoeal stages and megalopa of the mud shrimp *Axius serratus*
- ✓ New annelid species from whalebones in Greenland and aquaculture sites in Newfoundland
- ✓ Molecular taxonomy
- ✓ DNA “barcoding” of Canadian biodiversity: select invertebrate groups and Canadian Atlantic fishes, A Fish Barcode of Life program of the Consortium for the Barcode of Life initiative

- ✓ Biodiversity information management
- ✓ Online placement of ARC species information on global OBIS database
- ✓ Regional (e.g. Bay of Fundy) and Canadian marine species registers; history of Canadian registers of marine species 2001- Can. Tech. Rep. Fish. Aquat. Sci. 2906
- ✓ Procedures for biological sample processing and museum curation
- ✓ Monitoring protocol for marine benthos: intertidal and subtidal macrofauna.

Tonight, we'll have dinner on campus and then free time for packing and fun.

Day 6

Breakfast and lunch included but dependent upon departure time

Invertebrate Behavior Lab, Departure

DEETS: What is your best sense? How about the animals you've collected? Conduct behavior experiments in the lab to test their senses and response to environmental stimuli. Then pack up and take one last selfie before departing the Huntsman campus.

In the afternoon, we'll transfer back to the St John New Brunswick Airport, departing Canada for home.



BIO ON THE BAY - CANADA

Minimum Booking Numbers: 20 students

What's Included:

- Roundtrip flights
- 6-nights' dorm accommodation in Huntsman
- Airport transfers to/from St. Andrews by-the-Sea
- Breakfasts, lunches & dinners starting with dinner on arrival and ending with lunch on departure
- Fundy Discovery Aquarium Tour
- Marine Research Vessel Cruise & Master Class
- Plankton Lab
- Rocky Shore Exploration
- Invertebrate Classification Lab
- Muddy Shore Exploration
- Minister's Island Tour
- Camp Fire evening
- Echinoderm Lab
- Invasive Species Monitoring Program
- St. Andrews by-the-Sea Excursion
- Farmer's Market Excursion
- Whale & Wildlife Watch Master Class
- Atlantic Research Center Tour
- Invertebrate Behavior Lab
- Personal Tour Ambassador
- Fund-a-Forest: A tree is planted in the name of each guest
- Dollar\$ For Scholars: \$2 donation in the name of each guest
- 24-hour emergency cover

What's Not Included:

- Fully comprehensive insurance (mandatory)
- Transfers to/from home airport
- Meals and snacks not shown
- Cost of visas, full or collective passports
- Cost of inoculations or medication required for travel
- Sightseeing / Entertainment Options not shown in Itinerary
- Hotel incidental deposits & bills – meals, mini-bar items, recreation charges, purchases billed to room,
- Any gratuities – coach drivers, maid/ bellman services, Ambassador, local guides

As always, our staff are always available to you to answer any questions you may have regarding programming. If we may serve you in any way, please do not hesitate to contact us.



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