

GAC- MAC- IAH-CNC- CSPG	AGC- AMC- AIH-SNC- SCGP	<i>Riding the waves of change Surfer sur la vague du changement</i> 
May 15-18	15-18 mai	

**HALIFAX
2022**

OUTREACH & EDUCATION SESSION

Welcome to the 2-Day Outreach and Education Teacher Workshop for the 2022 Annual Meeting of the Geological Association of Canada (GAC), Mineralogical Association of Canada (MAC), International Association of Hydrogeologists-Canadian National Committee (IAH- CNC), and Canadian Society of Petroleum Geologists (CSPG) being held May 16th & 17th, 2022 at Saint Mary's University

We acknowledge that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People. This territory is covered by the "Treaties of Peace and Friendship" which Mi'kmaq and Wolastoqiyik (Maliseet) People first signed with the British Crown in 1725. The treaties did not deal with surrender of lands and resources but in fact recognized Mi'kmaq and Wolastoqiyik (Maliseet) title and established the rules for what was to be an ongoing relationship between nations.

- The Workshop program is organized into four themes:
- Theme I - Building Blocks of the Earth
 - Theme II - Stories in the Stone
 - Theme III - Geology in Society
 - Theme IV - Indigenous Teachings of the Earth

This Teacher Workshop would not be possible without the very generous support from the following



Nova Scotia Department of Natural Resources and Renewables



Atlantic Geoscience Society



Mineral Association of Canada



EdGEO
Canadian Geoscience Education Network



Saint Mary's University



Association of Professional Engineers and Geoscientists New Brunswick

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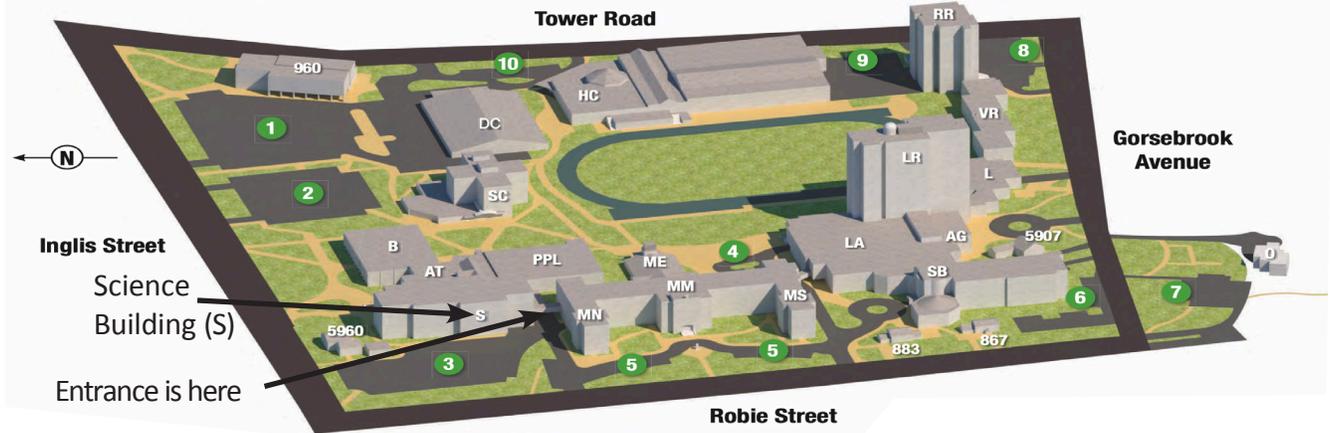
Monday, May 16th

	8:00 - 8:30	S411	Registration	
III	8:30 - 9:30	S408	Stonehammer Geopark: Bringing Geoscience to Society	Catrina Russell
III	9:30 - 10:30	S411	Critical Minerals - World Cafe	Lesley Hymers
	10:30 - 11:00		Session Break	
III	11:00 - noon	S411	Critical Minerals - World Cafe (cont'd)	
	noon - 1:00		Session Lunch	
II	1:00 - 1:45	S408	The Stories in the Stone	Bob Grantham
II	1:45 - 2:30	S411	Plate Tectonic Stories: Why Nova Scotia is the perfect place to learn about this fundamental geoscience concept	Beth McLarty Halfkenny Caleb Grant & Regan Maloney
	2:30 - 3:00		Session Break	
II	3:00 - 4:30	S411	Plate Tectonic Stories (cont'd)	

Tuesday, May 17th

IV	8:00 - 9:30	S408	Archaeology & Geology of the Ancestral Sites of the Mi'kmaw	Gerald Gloade
III	9:30 - 10:30	S411	Earth Science & Technology: Meet the Brilliant Labs bBoard	Jeff Hennigar
	10:30 - 11:00		Session Break	
I	11:00 - noon	S408	Minerals: Building Earth, Shaping Society	Eileen van der Flier-Keller
	noon - 1:00		Session Lunch	
I	1:00 - 1:45	S411	Nova Scotia Rocks & Minerals Identification	Regan Maloney
I	1:45 - 2:30	S408	Rock Identification Using Beach Pebbles	Louise Leslie
	2:30 - 3:00		Session Break	
II	3:00 - 4:30	S411	A Smorgasboard of Teaching Ideas and Activities	Tracy Webb

PROGRAM



Location: Science Building rooms S408 and S411 (signs will be posted at entrance)
Hours: daily from 7:30 am to 5 pm Parking: Lot 3 on west side of Science Building

Theme I Building Blocks of the Earth



Presenter - Theme I

Minerals: Building Earth, Shaping Society

Eileen van der Flier-Keller

Alongside being the building blocks of the planet, minerals and the rocks are an integral part of how societies developed. A discussion about the minerals and rocks key to different stages of our history and what it is about them that makes this so.

Eileen is a Teaching Professor in Earth Sciences and Special Advisor to the Dean of Science for Public Education and Outreach at Simon Fraser University (SFU). Eileen's research interests include roles of environmental non-governmental organisations in marine advocacy, Earth science education, and science communication. At SFU she led development of a studio-format, interdisciplinary course to teach science to students intending to become

teachers, and developed science communication programming to support engaging science undergrads and graduate students in communicating more effectively with the public. She is author of the bestseller publication "A Field Guide to the Identification of Pebbles".

Workshops - Theme I

Nova Scotia Rocks and Minerals Identification: Regan Maloney (Fundy Geological Museum)

This hands on workshop will guide participants through the Nova Scotia rocks and minerals identification activity developed by the Fundy Geological Museum. This program was developed to familiarize students with rocks and minerals that can be found along the Bay of Fundy shore. It was designed for students to explore fundamental characteristics of rocks and minerals and learn how to identify them through a series of steps and observations. Using common household items and the rocks and minerals provided, participants will work to correctly identify and place them onto a supplied labeled card. Participants will be using the activity developed for Grade 12 but will also explore the variation.

Regan is the Interpretation and Lab Manager at the Fundy Geological Museum. She moved to Nova Scotia a decade ago to pursue her post-secondary education and hasn't looked back since. Her passion is sharing her love of the natural world, especially fossils! In her spare time, she can be found reading, baking, hiking, and playing Dungeons and Dragons.

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Workshops - Theme I

Rock Identification Using Beach Pebbles: Louise Leslie (GeoLearns)

Using pebbles collected from beaches in the Cliffs of Fundy Geopark, teachers will be walked through how to conduct a hands-on activity to identify the rock types and rock names with the help of a Pebble Guide and field tools, including a hand lens. The Pebble Guide includes geological information about the Earth's Interior, Rock Cycle, and formation of rock types; as well as field forms and a rock identification table.

Louise Leslie is the principal owner of GeoLearns, a company she created that offers field-based, curriculum-focused earth science workshops and educational resources to teachers in Nova Scotia. She has several years experience conducting earth science outreach in Alberta and Nova Scotia. Formal education includes a MSc in Quaternary Geology and MA in Environmental Education and Communication.

Theme II Stories in the Stone



Presenter - Theme II

The Stories in the Stone: Robert (Bob) Grantham

Bob has always been fascinated by time and time travel. So far, Geology is our only known way to time travel and visit the Eras before humankind. Every rock you pick up has a story to tell you. Listening to it and decoding the clues presented are an exploration into paleoenvironments and ancient life. Bob will lead you around Nova Scotia to look at the many stories held in the rocks from hundreds of millions of years ago, through the CSI of a mastodon find, and into today.

Bob Grantham is one of the past Presidents of the Atlantic Geoscience Society (AGS). He is the retired Founding Executive Director of the Johnson GEO CENTRE in St John's, Newfoundland and Labrador (www.geocentre.ca). The GEO CENTRE is a 33,000 square foot, 14 million dollar primarily geological museum which opened in 2002. Prior to his work in Newfoundland, Bob was Curator of Geology at the Nova Scotia Museum of Natural History for 27 years, during which time he dug up dinosaurs and mastodons, lead hundreds of field trips, authored scientific papers, answered thousands of public inquiries, and has given many radio, TV and newspaper interviews.

Bob also instructed at St. Francis Xavier University; was a Mine Geologist with INCO in northern Manitoba; was the Public Information Geologist at NS Dept. of Natural Resources; and was the owner operator of the third computer store in Halifax.

Workshops - Theme II

A Smorgasboard of Teaching Ideas and Activities

Tracy Webb (retired teacher, Chair AGS Education Committee, VP AGS Council)

Tracy will be sharing a broad collection of activities, ideas (yes, we want to do a field trip!) and best practices that will support various learning concepts in the earth sciences curriculum. Her main focus will be Gr. 12 Geology, along with Oceans 11, however quite a few activities can be easily adapted for other grades. These represent some of her favourite tried and true lessons filtered through her years of teaching earth sciences. As part of this session, she will encourage and welcome discussions with participants on what their favourite activities/ideas are, what works for them, along with any questions they may have about their own program. (Feel free to bring along any of your own favourite activities or worksheet etc to share!)

Tracy Webb has always loved rocks - somewhere in Canada is a 57-year-old box (large sparkly rock collection) "accidentally" left on a cross-country family camping trip. After taking Gr. 12 Geology, plans switched from being a veterinarian or teacher to being a paleontologist: BSc in Geology, Acadia. Then an opportunity came up at Horton High School. In the best of both worlds, she taught Gr. 12 Geology, among other sciences, allowing her to share with students her lifelong passion for learning. Tracy has been actively involved in local to national organizations, including the Atlantic Science Teachers, and was acknowledged with an Excellence in Science Teaching

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Workshops - Theme II

Plate Tectonic Stories: Why Nova Scotia is the perfect place to learn about this fundamental geoscience concept

Beth McLarty Halfkenny (Carleton University and Canadian Geoscience Education Network (CGEN)),
Caleb Grant (Cliffs of Fundy Geopark), and **Regan Maloney** (Fundy Geological Museum)

This session will help teachers to understand and explain Plate Tectonic theory and mechanisms, via exploration of a variety of hands-on, inquiry-based activities. We will make connections to the evidence within Nova Scotia's landforms, rocks and fossils, evidence that has drawn geologists from around the world to study here. We will be able to make curriculum connections as well as connections to the new edition of the "Last Billion Years" book that participants will receive in their teaching resource kit. This session will help teachers communicate these complex topics in an engaging way through the use of interpretive storytelling.

Lead Presenter: Beth McLarty Halfkenny is Curator/Outreach Coordinator for Carleton University, Earth Sciences. She creates informal education opportunities for youth, teachers and the public, delivering inquiry-based hands-on activities and events for K-12 students, PD opportunities for educators, and runs Geoheritage Day, an annual public event. Beth is Past President of CGEN, President-Elect of Canadian Federation of Earth Sciences (CFES), on the National Committee of EdGEO Canadian Earth Science Teacher Workshop Program, a member of the Ottawa-Gatineau Geoheritage Project and a National Geographic Certified Educator.

Co-presenter: Caleb Grant is the resident Geoscientist at the Cliffs of Fundy UNESCO Global Geopark. His passion lies in bridging the gap that often exists between the academic community and the general public when communicating complex topics in Earth Sciences in a fun, and engaging, way.

Co-presenter: Regan Maloney is the Interpretation and Lab Manager at the Fundy Geological Museum. She moved to Nova Scotia a decade ago to pursue her post-secondary education and hasn't looked back since. Her passion is sharing her love of the natural world, especially fossils! In her spare time, she can be found reading, baking, hiking, and playing Dungeons and Dragons.

Theme III Geology in Society



Presenter - Theme III

Stonehammer Geopark: Bringing Geoscience to Society

Catrina Russell

This talk will introduce participants to the UNESCO Global Geopark model, focussing on Stonehammer Geopark, located in southern New Brunswick. Geoparks are holistically managed organizations that strive to create better access to geological topics through education and engagement strategies. One such strategy employed by Stonehammer is to explore the connections that exist between geology and the region's natural, cultural and intangible heritage. This allows for the introduction of geoscience themes in not only science classes, but throughout the entire curriculum. This interdisciplinary approach provides the opportunity to explore society's intrinsic connections to the land with new

program offerings that include a virtual geoheritage program that weaves together topics of indigenous culture and custom with the region's geological history, as well as a short video exploring themes of geologic exploration, with more to come!

Catrina Russell has always had a passion for geoscience education and has presented nationally and internationally on the subject. In her current role as Geoscientist and Education Coordinator for Stonehammer UNESCO Global Geopark she has the opportunity to educate and engage youth with all things geology and geoheritage on a daily basis. Catrina hopes that her knowledge and enthusiasm for what she teaches help to inspire the next generation to pursue their passions just as her incredible teachers and mentors inspired her.

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Workshops - Theme III

Critical Minerals - World Cafe: Lesley Hymers (Mining Matters)

In this session, teachers will participate in and evaluate a new Critical Minerals educational activity that uses a World Cafe model. The activity will open with an introduction to Critical Minerals and their uses. Teachers will then engage in rounds of rotating discussions exploring a particular Critical Minerals question. During each round, teachers' ideas, thoughts, and questions will be captured, visually. The activity will conclude with a broad, facilitated discussion about the outcomes of the exercise. Teachers will then provide feedback to the activity including its effectiveness at achieving its expected learning outcomes.

Lesley Hymers is an Earth Science Specialist, Educator and Science Communicator. In her role as Manager, Education and Outreach Programs with Mining Matters, she serves as project and program manager providing Earth Science and mineral resources education to students and the public, and professional learning programs to Educators. Lesley is an active member of the national Earth Science Education and Outreach community and has Undergraduate and Graduate degrees from the University of Guelph.

Earth Science and Technology: Meet the Brilliant Labs bBoard: Jeff Hennigar (Brilliant Labs)

Empower your students to bring their inventions to life with working prototypes. The Brilliant Labs bBoard is an accessible tool with limitless uses. Join us as we share some sample projects related to collecting, measuring, and displaying real-time environmental data such as temperature, humidity, CO2, sound, and light levels, and get hands-on with the bBoard to experience the potential that physical coding tools can have for your students.

Jeff Hennigar is an HRCE teacher currently working with Brilliant Labs to support teachers and students to integrate STEM and maker education into their everyday learning activities. From in-class and virtual sessions to PD and project planning, reach out if you'd like to work with us! jeff.hennigar@brilliantlabs.ca

Theme IV Indigenous Teachings of the Earth



Presenter & Workshop - Theme IV

Archaeology and Geology of the Ancestral Sites of the Mi'kmaq **Gerald Gloade** (The Confederacy of Mainland Mi'kmaq)

The Archaeological tools found in different parts of Nova Scotia tell the stories of our earliest inhabitants. We will look at these tools and see how they are connected to Nova Scotia's unique geological inventory. Gerald Gloade is an artist, carver and educator from the Mi'kmaq First Nation, Millbrook, Truro, Nova Scotia. Gerald started his career working as a Graphic Designer for the Nova Scotia Department of Natural Resources' Communications and Education Branch. The focus of his work with the Province moved from Forestry Education to Wildlife, Wildlife to Nature and then from Nature to Native. After 25 years

with the Department of Natural Resources, Gerald is currently assigned to the Confederacy of Mainland Mikmag to work on the Mikmawey Debert Project through the Office of Aboriginal Affairs.

Located near a 13,000 year old Paleo Indian site, the Mikmawey Debert Project's primary goal is to build a Mikmaw Cultural Centre to protect the sites and share their stories. As an artist, educator and Mi'kmaq storyteller, Gerald has become both an advocate and spokesperson for the project. In his capacity as the Program Development Officer for Mikmawey Debert he guides the development of visitor and educational programs for the future cultural centre. His stories and interpretations of the Kluskap legends have captured many audiences.

This new position has taken Gerald and his wife Natalie, and their 2 sons, Gerald Donovan and Kyle, on the road throughout Mikma'ki, revisiting the Sacred Places found in the Kluskap legends.