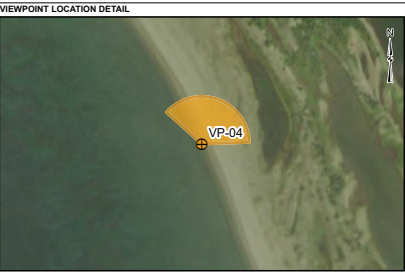
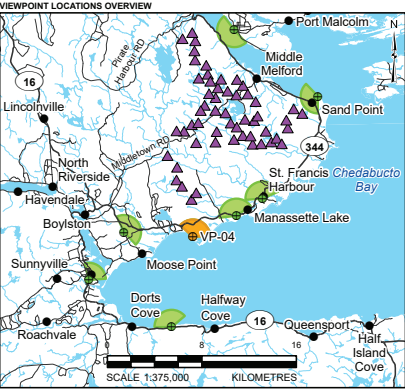


VIEWPOINT SIMULATION



BASELINE PHOTO



LEGEND

— HIGHWAY	● CURRENT VIEWPOINT
— LOCAL ROAD	● VIEWPOINT
▲ TURBINE LOCATION	■ CURRENT VIEWPOINT FIELD OF VIEW
	■ OTHER VIEWPOINT FIELD OF VIEW

VIEWPOINT INFORMATION

VIEWPOINT NUMBER:	VP-04	WEATHER CONDITIONS:	OVERCAST
EASTING:	628073 m	DIRECTION:	NORTHEAST
NORTHING:	5030546 m	FOCAL LENGTH:	50 mm
ELEVATION:	0 m	FIELD OF VIEW:	~135°
DATE:	9 JUNE, 2025	CAMERA HEIGHT ABOVE GROUND:	1.7 m

NOTES AND REFERENCES  
SOME TURBINES MIGHT BE (PARTIALLY) OBSCURED BY VEGETATION IN CLOSE PROXIMITY TO THE VIEWPOINT. TURBINES SHOWN ARE A REPRESENTATION OF THE GOLDWIND 182-8.0 MW. HUB HEIGHT: 130 M ROTOR DIAMETER: 183.4 M TIP HEIGHT: 221.7 M  
DIGITAL BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED  
DATUM: NAD83 PROJECTION: UTM ZONE 20

CLIENT  
EVERWIND  
PROJECT  
WIND FARM 1 GUYSBOROUGH

TITLE  
VISUAL SIMULATION VIEWPOINT 04 - PORT SHOREHAM BEACH

CONSULTANT	YYYY-MM-DD	2025-06-29
	DESIGNED	PT
	PREPARED	BS
	REVIEWED	NLH
	APPROVED	KG

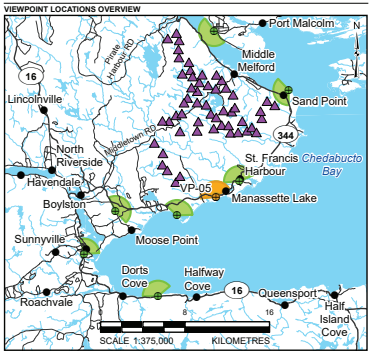
PROJECT NO.	CONTROL	REV.	FIGURE
CA0053365.3535	1000	0	4



VIEWPOINT SIMULATION




BASELINE PHOTO



LEGEND			
	HIGHWAY		CURRENT VIEWPOINT
	LOCAL ROAD		VIEWPOINT
	TURBINE LOCATION		CURRENT VIEWPOINT FIELD OF VIEW
			OTHER VIEWPOINT FIELD OF VIEW

VIEWPOINT INFORMATION		WEATHER CONDITIONS:		OVERCAST
VIEWPOINT NUMBER:	VP-05	DIRECTION:	NORTH	
EASTING:	629764 m	FOCAL LENGTH:	50 mm	
NORTHING:	503212 m	FIELD OF VIEW:	~150°	
ELEVATION:	15 m	CAMERA HEIGHT ABOVE GROUND:	1.7 m	
DATE:	9 JUNE, 2025			

**NOTES AND REFERENCES**  
SOME TURBINES MIGHT BE (PARTIALLY) OBSCURED BY VEGETATION IN CLOSE PROXIMITY TO THE VIEWPOINT. TURBINES SHOWN ARE A REPRESENTATION OF THE GOLDWIND 182-4.0 MW. HUB HEIGHT: 130 M ROTOR DIAMETER: 163.8 M TIP HEIGHT: 221.7 M  
DIGITAL BASE DATA OBTAINED FROM GEOGRATIS. © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED  
DATUM: NAD83 PROJECTION: UTM ZONE 20

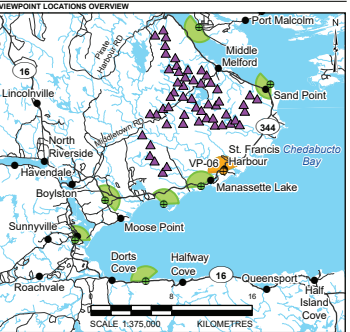
CLIENT			
EVERWIND			
PROJECT			
WIND FARM 1 GUYSBOROUGH			
TITLE			
VISUAL SIMULATION VIEWPOINT 05 - MANASSETTE LAKE			
CONSULTANT		YYYY-MM-DD	
		2025-08-29	
		DESIGNED PT	
		PREPARED BS	
		REVIEWED NLH	
		APPROVED KG	
PROJECT NO.	CONTROL	REV	FIGURE
CA0053365.3535	1000	0	5



VIEWPOINT SIMULATION



BASELINE PHOTO



LEGEND			
—	HIGHWAY	●	CURRENT VIEWPOINT
—	LOCAL ROAD	●	VIEWPOINT
▲	TURBINE LOCATION	■	CURRENT VIEWPOINT FIELD OF VIEW
		■	OTHER VIEWPOINT FIELD OF VIEW

VIEWPOINT INFORMATION			
VIEWPOINT NUMBER:	VP-06	WEATHER CONDITIONS:	OVERCAST
EASTING:	631944 m	DIRECTION:	NORTH
NORTHING:	5033802 m	FOCAL LENGTH:	90 mm
ELEVATION:	38 m	FIELD OF VIEW:	~180°
DATE:	9 JUNE, 2025	CAMERA HEIGHT ABOVE GROUND:	1.7 m

**NOTES AND REFERENCES**

SOME TURBINES MIGHT BE (PARTIALLY) OBSCURED BY VEGETATION IN CLOSE PROXIMITY TO THE VIEWPOINT. TURBINES SHOWN ARE A REPRESENTATION OF THE GOLDWIND 152.8 0 MW. HUB HEIGHT: 130 M ROTOR DIAMETER: 163.4 M TIP HEIGHT: 221.7 M. DIGITAL BASE DATA OBTAINED FROM GEORGAS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. DATUM: NAD83 PROJECTION: UTM ZONE 20

CLIENT: EVERWIND

PROJECT: WIND FARM 1 GUYSBOROUGH

TITLE: VISUAL SIMULATION VIEWPOINT 06 - ST. FRANCIS HALL

CONSULTANT:	YYYYMMDD	2025-08-29
	DESIGNED:	PT
	PREPARED:	BS
	REVIEWED:	NLH
	APPROVED:	KG

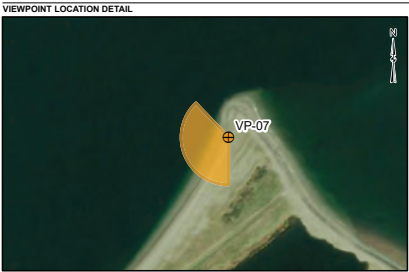
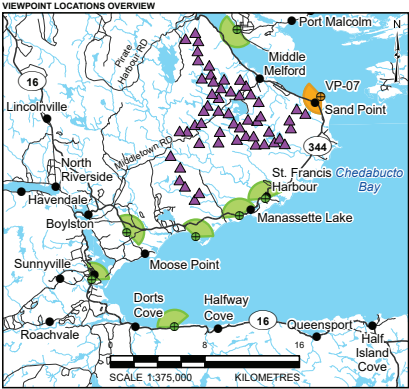
PROJECT NO.	CONTROL	REV.	FIGURE
CA0053365.3535	1000	0	6



VIEWPOINT SIMULATION



BASELINE PHOTO



LEGEND

—	HIGHWAY	●	CURRENT VIEWPOINT
—	LOCAL ROAD	●	VIEWPOINT
▲	TURBINE LOCATION	■	CURRENT VIEWPOINT FIELD OF VIEW
		■	OTHER VIEWPOINT FIELD OF VIEW

VIEWPOINT INFORMATION

VIEWPOINT NUMBER:	VP-07	WEATHER CONDITIONS:	OVERCAST
EASTING:	636646 m	DIRECTION:	WEST
NORTHING:	5042430 m	FOCAL LENGTH:	50 mm
ELEVATION:	0 m	FIELD OF VIEW:	~135°
DATE:	9 JUNE, 2025	CAMERA HEIGHT ABOVE GROUND:	1.7 m

NOTES AND REFERENCES  
SOME TURBINES MIGHT BE (PARTIALLY) OBSCURED BY VEGETATION IN CLOSE PROXIMITY TO THE VIEWPOINT. TURBINES SHOWN ARE A REPRESENTATION OF THE GOLDWIND 182-8.0 MW. HUB HEIGHT: 130 M ROTOR DIAMETER: 183.4 M TIP HEIGHT: 221.7 M  
DIGITAL BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED  
DATUM: NAD83 PROJECTION: UTM ZONE 20

CLIENT  
EVERWIND  
PROJECT  
WIND FARM 1 GUYSBOROUGH

TITLE  
VISUAL SIMULATION VIEWPOINT 07 - SAND POINT

CONSULTANT

YYYY-MM-DD	2025-06-29
DESIGNED	PT
PREPARED	BS
REVIEWED	NLH
APPROVED	KG

PROJECT NO.	CONTROL	REV.	FIGURE
CA0053365.3535	1000	0	7



A wide panoramic view of a harbor or industrial waterfront. In the foreground, a grassy area with a gravel path and a tall light pole is visible. The middle ground shows a body of water with several large industrial barges and ships docked at a pier. The background features rolling green hills under a cloudy sky. Power lines run across the top of the image.



VIEWPOINT INFORMATION			
VIEWPOINT NUMBER:	VP-08	WEATHER CONDITIONS:	OVERCAST
EASTING:	629572 m	DIRECTION:	SOUTHWEST
NORTHING:	5048036 m	FOCAL LENGTH:	39 mm
ELEVATION:	7 m	FIELD OF VIEW:	~18°
DATE:	9 JUNE, 2025	CAMERA HEIGHT ABOVE GROUND:	1.7 m

CLIENT  
EVERWIND

TITLE  
**VISUAL SIMULATION VIEWPOINT 08 - POINT TUPPER**

CONSULTANT	YYYY-MM-DD	2025-08-29
------------	------------	------------

DESIGNED	PT
PREPARED	BS
REVIEWED	NLH
APPROVED	KG

PROJECT NO.	CONTROL	REV.	FIGURE
CA0053365.3535	1000	0	

---

## APPENDIX N

### ARIA CONFIRMATION

---

August 1, 2025

Stephen Garcin  
46 Arlington Ave,  
Halifax, Nova Scotia  
B3T 2A1

Dear Stephen Garcin:

**RE: Heritage Research Permit Report  
A2023NS229 – Windfarm 1**

We have received and reviewed the report on work conducted under the terms of Heritage Research Permit A2023NS229 – Windfarm 1 project in Guysborough County, Nova Scotia.

EverWind Fuels, as part of their efforts to develop renewable energy generation in Eastern Nova Scotia for the production of hydrogen, wish to construct Wind Farm 1 in Guysborough County, Eskikewa’kik Territory, Nova Scotia. The proposed development area is located nearby the community of Mulgrave and will involve the construction of eighty-four (84) wind turbines and associated ancillaries, overhead and underground medium voltage electrical cabling and access roads and will occupy an approximate area of 1,265 ha. Boreas Heritage Consulting Inc. (Boreas Heritage) was retained to conduct an archaeological resource impact assessment (ARIA) for the proposed development area. This ARIA involved Mi’kmaq engagement, background study, predictive modeling and field reconnaissance.

This project spanned 2023 and 2024, having been delayed due to winter conditions. It was completed under HRP A2024NS010. Of the 84 turbines surveyed, 69 were completed under HRP A2023NS229 in 2023. The remaining 15 were assessed in 2024 under HRP A2024NS010. This report, although specifically citing HRP A2023NS229, does present the observations and recommendations for both A2023NS229 & A2024NS010.

Background study indicated that the general area has been home to the Mi’kmaq for millennia, long prior to the arrival of nonindigenous people. Despite no registered Precontact sites in the vicinity, there are numerous traditional Mi’kmaw placenames within 20 km, and the assessment area is within the Mi’kmaq territory of Eskikewa’kik. European settlement of the area began in the 16<sup>th</sup> century with Basque, Norman and Breton fishermen. French and British would follow. The area is known for Black Loyalist settlement, beginning in 1784. Field reconnaissance showed the areas proposed for wind turbine locations to be characterised by rugged, frequently poorly to moderately drained terrain situated distantly from significant water sources. Boreas noted that much of the assessment area was comprised of proposed updates to existing roads and the existing dam at Englands Lake. Existing road alignments were located within disturbed areas of typically featureless, often rugged terrain. Proposed new road alignments were represented by level to steeply sloping, rugged, undulating, sometimes swampy, and previously harvested terrain. Large amounts of deadfall were observed throughout. **Twelve (12) areas of high archaeological potential – HPAs 01-12 – were identified within the proposed development area.** No other areas of moderate to high archaeological potential, significant archaeological features, or cultural materials were identified during the assessment, and the remainder of the proposed development areas was ascribed low archaeological potential.

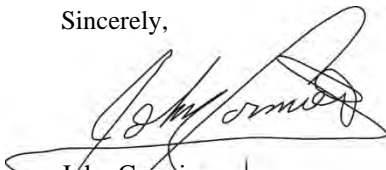
Based on the above, Boreas offered the following recommendations:

1. It is recommended the areas of high archaeological potential (HPA-01 through HPA-12), be avoided during any proposed development and/or ground disturbance activities associated with the proposed Project, to prevent accidental impacts to areas of potential archaeological sensitivity.

2. If the areas of high archaeological potential, or parts thereof, cannot be avoided during development activities related to the proposed Project, it is recommended the area(s) be subjected to a subsurface assessment involving a systematic programme of shovel testing in order to confirm the presence or absence of archaeological resources.
3. If any changes or deviations from the original plans relating to the proposed Project, as provided to Boreas Heritage for this Survey, are necessary, and are found to impact areas outside the Assessment Area described in this report, then additional archaeological resource impact assessment(s) may be warranted for these amended portions of the proposed Project.
4. It is recommended the remainder of the Assessment Area, as described in the report, be cleared of any requirement for further archaeological investigation and that development within these areas may proceed as planned.
5. In the event archaeological resources and/or human remains are encountered, from disturbed or undisturbed contexts, during construction or disturbance activities associated with the proposed Project, works should be halted until contact is made with, and direction(s) on how to proceed has been received from the Coordinator of Special Places, Nova Scotia Department of Communities, Culture and Heritage.

CCTH Staff have reviewed the report and find it acceptable. Please do not hesitate to contact me with any questions or concerns.

Sincerely,



John Cormier  
Coordinator, Special Places



September 22, 2025

Stephen Garcin  
46 Arlington Ave,  
Halifax, Nova Scotia  
B3T 2A1

Dear Stephen Garcin:

**RE: Heritage Research Permit Report  
A2024NS010 – Wind Farm 1**

We have received and reviewed the report on work conducted under the terms of Heritage Research Permit A2024NS010 – Wind Farm 1 project in Guysborough County, Nova Scotia.

EverWind Fuels, as part of their efforts to develop renewable energy generation in Eastern Nova Scotia for the production of hydrogen, wish to construct Wind Farm 1 in Guysborough County, Eskikewa'kik Territory, Nova Scotia. The proposed development area is located nearby the community of Mulgrave and will involve the construction of eighty-four (84) wind turbines and associated ancillaries, overhead and underground medium voltage electrical cabling and access roads and will occupy an approximate area of 1,265 ha. Boreas Heritage Consulting Inc. (Boreas Heritage) was retained to conduct an archaeological resource impact assessment (ARIA) for the proposed development area. This ARIA involved Mi'kmaq engagement, background study, predictive modeling and field reconnaissance.

This project spanned 2023 and 2024, having been delayed due to winter conditions. Though the project was begun under HRP A2023NS229, it was completed under HRP A2024NS010. Of the 84 turbines surveyed, 69 were completed under HRP A2023NS229 in 2023. The remaining 15 were assessed in 2024 under HRP A2024NS010. ***This report presents the observations and recommendations for A2024NS010*** and includes observations for existing road and access road alignments, new access road alignments, Wind Turbine Locations 8, 18, 20, 21, 25, 26, 27, 28, 29, 42, 43, 44, 45, 46, and 47.

Background study indicated that the general area has been home to the Mi'kmaq for millennia, long prior to the arrival of nonindigenous people. Despite no registered Precontact sites in the vicinity, there are numerous traditional Mi'kmaw placenames within 20 km, and the assessment area is within the Mi'kmaq territory of Eskikewa'kik. European settlement of the area began in the 16th century with Basque, Norman and Breton fishermen. French and British would follow. The area is known for Black Loyalist settlement, beginning in 1784. Field reconnaissance showed the areas proposed for wind turbine locations to be characterised by rugged, frequently poorly to moderately drained terrain situated distantly from significant water sources. Boreas noted that much of the assessment area was comprised of proposed updates to existing roads and the existing dam at Englands Lake. Existing road alignments were located within disturbed areas of typically featureless, often rugged terrain. Proposed new road alignments were represented by level to steeply sloping, rugged, undulating, sometimes swampy, and previously harvested terrain. Large amounts of deadfall were observed throughout. **Eight (8) areas deemed to exhibit high potential for encountering archaeological resources were identified.** No other areas of moderate to high archaeological potential, significant archaeological features, or cultural materials were identified during the assessment, and the remainder of the proposed development areas was ascribed low archaeological potential.

Based on the above, Boreas Heritage offered the following recommendations:

1. It is recommended the areas of high archaeological potential encountered during the 2023 Wind Farm 1 Project (Garcin 2023), as well as the areas of high archaeological potential (HPA-01 through HPA-08) encountered during

S. Garcin  
September 22, 2025  
Page 2

the 2024 portion of the Project, be avoided during any proposed development and/or ground disturbance activities associated with the proposed Project, to prevent accidental impacts to areas of potential archaeological sensitivity.

2. If the areas of high archaeological potential, or parts thereof, cannot be avoided during development activities related to the proposed Project, it is recommended the area(s) be subjected to a subsurface assessment involving a systematic programme of shovel testing in order to confirm the presence or absence of archaeological resources.

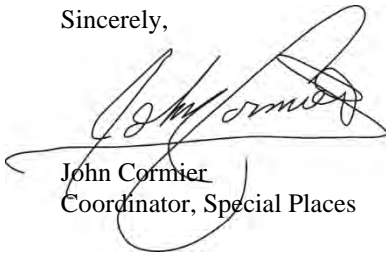
3. If any changes or deviations from the original plans relating to the proposed Project, as provided to Boreas Heritage for this Survey, are necessary, and are found to impact areas outside the Assessment Area described in this report, then additional archaeological resource impact assessment(s) may be warranted for these amended portions of the proposed Project.

4. It is recommended the remainder of the Assessment Area, as described in the report, be cleared of any requirement for further archaeological investigation and that development within these areas may proceed as planned.

5. In the event archaeological resources and/or human remains are encountered, from disturbed or undisturbed contexts, during construction or disturbance activities associated with the proposed Project, works should be halted until contact is made with, and direction(s) on how to proceed has been received from the Coordinator of Special Places, Nova Scotia Department of Communities, Culture and Heritage.

CCTH Staff have reviewed the report and find it acceptable. Please do not hesitate to contact me with any questions or concerns.

Sincerely,



John Cormier  
Coordinator, Special Places



## APPENDIX O

### PROJECT TEAM CVs

---

## AREAS OF SPECIALIZATION

- Project Management
- Environmental Assessment
- Ecological Assessment
- Habitat Assessment
- Regulatory Permitting, Monitoring, and Compliance Assessments
- Environmental Protection Plans
- Wetland/Watercourse Alterations
- Wetland and Fish Habitat Compensation

## RELEVANT EXPERIENCE

Ms. Smith is the Vice President of Environmental Assessments and Approvals. She has a strong background in a variety of environmental program and policy areas. Ms. Smith has extensive experience leading teams, as well as building relationships and communicating with the public, regulators, the Mi'kmaq of Nova Scotia, clients, experts, and other stakeholders.

Prior to her appointment as Vice President of Environmental Assessments and Approvals at Strum, Ms. Smith held a Team Lead position with the Impact Assessment Agency of Canada. That role included the following:

- Led a team of professionals in completing federal environmental and impact assessments to support the Minister in decision making.
- Managed all aspects of assembling project teams, executing priorities, performance, deliverables, and overall quality.
- Supported the team in conducting Indigenous consultation, coordinating with federal and provincial departments, communicating with proponents, and engaging with stakeholders.
- Supported the team in the technical review of regulatory submissions under the *Canadian Environmental Assessment Act, 2022* and the *Impact Assessment Act*.
- Advised senior Agency officials on complex regulatory considerations.

Ms. Smith also held multiple roles with Nova Scotia Environment which included the following responsibilities:

- Led the development, management, and implementation of the Risk-Based Audit Project. The purpose of this corporate priority project was to modernize inspection services by using risk to maximize the allocation of limited resources while fulfilling the Department's mandate.
- Conducted extensive cross-sector collaboration within the Department, including all regions, inspectorates, divisions, and staff levels to ensure the project met the needs of working level staff and the goals of senior management.
- Provided strategic policy support and analysis for departmental programs and policies using the Regulatory Management Process.
- Conducted focus group sessions, coordinated stakeholder consultation, and provided recommendations to senior management.
- Completed inspections, responded to complaints, reviewed applications, and generated approvals related to the protection and sustainable use of air, land, and water resources in NS.

At Strum, Ms. Smith previously held progressive management roles including acting as the Team Lead during a long-term secondment of a senior manager and managed all aspects of a variety of projects within the Environment Group, including environmental assessments, watercourse alteration applications, wetland alteration applications, wetland

## EDUCATION

- MES, Dalhousie University, Halifax, NS (2004)
- BSc. (Honours), Environmental Science, Acadia University, Wolfville, NS (2001)

## TRAINING

- GBA+ Micro-learning Series (2022)
- Cultural Safety (2021)
- Unconscious Bias (2021)
- Emergency First Aid (2021)
- Management Development Program (2019)
- Advanced Training, *Impact Assessment Act* (2019)
- Introduction to CEAA 2012 (November 2012)
- Water Management & Wetland Restoration Training Course, University of Guelph (2010)



compensation, environmental protection plans, environmental monitoring, and ecological assessments. This also included successfully and simultaneously managing multiple provincial Environmental Assessments. Ms. Smith also has extensive experience creating budgets, schedules, staff resourcing and supervision, deliverables, and client communication. She has presented at public open houses, community liaison committee meetings, public hearings, and testified at a UARB hearing.

## REPRESENTATIVE PROJECTS AND ROLES

### Strum Consulting (current)

**Wind Power Environmental Assessments, 2022-Present – Senior Reviewer:** Providing senior review and management on several 100 MW+ wind farms in Nova Scotia.

**Post-Approval Work, EverWind Point Tupper Green Hydrogen/Ammonia Project Phase 1, NS, 2023 – Senior Reviewer:** On-going post-approval work (following approval of the EA Registration Document) including the development of environmental management and monitoring plans. These plans are developed to avoid/mitigate potential impacts to nearby environmental and residential receptors throughout the lifespan of the Project.

**Environmental Assessment EverWind Point Tupper Green Hydrogen/Ammonia Project - Phase 1, NS, 2022 – Senior Reviewer:** Completed senior review of field studies and key reporting requirements for the submission of an EA Registration Document for a green ammonia/hydrogen facility located in Cape Breton, NS. This was the first green ammonia/hydrogen facility to be approved in both Nova Scotia and Canada.

### Impact Assessment Agency

**Boat Harbour Remediation Project, 2018-2022 – Team Lead:** Team Lead for the Agency's technical review of this project, as well as associated consultation with the Mi'kmaq of Nova Scotia and public engagement. This project conducted the Agency's first external technical review as part of the process.

**Beaver Dam Mine Project, Fifteen Mile Stream Project, 2017-2022– Team Lead:** Team Lead for the Agency's technical review of these gold mining projects, as well as associated consultation with the Mi'kmaq of Nova Scotia and public engagement.

**Canso Space Port, Northern Pulp Replacement Effluent Treatment System, Touquoy Mine Expansion, Goldboro Gold Mine, 2017-2021 – Team Lead:** Team Lead for requests to the Minister for these projects to be subject to the *Impact Assessment Act*. Review and analysis involved input from federal departments and a decision package to the Minister.

**Howse Property Iron Mine Project, 2018– Team Lead:** Team Lead for the Minister's decision package for the Howse Property Iron Mine.

### Strum Consulting (past)

**Wind Power Environmental Assessments, 2011-2014 – Project Manager/Team Lead:** Project managed and coordinated all aspects of the provincial EA process for seven wind power projects ranging in size from 4 MW to 10 MW. Project components included wetlands, watercourses, wildlife, avifauna, bats, sound, shadow flicker, visual aesthetics, socio-economic conditions, and effects assessment. Also highly involved in public engagement activities including participation at several municipal planning meetings and project open houses, as well as the preparation of presentation materials (e.g. posters, handouts, etc.).

**South Canoe Wind Project, 2011-2013 – Project Manager/Team Lead:** Project managed and coordinated the completion of numerous desktop and field studies in support of a 100 MW wind power project. Studies included exclusion mapping; a desktop review of site habitat, species at risk (including flora, fauna, and avian species), and archaeological resources; a sound and shadow flicker assessment; a visual impact assessment; and field assessment for wetlands, watercourses, wildlife, and avian species. Managed the launch of the project website and completed the effects assessment for the biophysical components of the provincial environmental assessment registration document. Also developed presentation materials for and attended three public open houses and delivered multiple technical presentations to the Community Liaison Committee and as part of the Development Agreement Public Hearing process.

## AREAS OF SPECIALIZATION

- Field Program Design and Logistics Coordination
- Environmental Assessment
- Renewable Energy
- Marine near-shore and Water Quality Monitoring
- Regulatory and Public Engagement

## RELEVANT EXPERIENCE

Mr. Doane joined the Strum team in 2020 as an Environmental Intern, while working towards his Master of Resource and Environmental Management degree at Dalhousie. While studying at Dalhousie, Angus specialized in natural resource management in Nova Scotia, especially in the coastal zone. Angus obtained his Bachelor of Science degree in 2019 from Mount Allison University, where he specialized in Environmental Chemistry and Microbiology. His primary focus with the Environmental Assessments & Approvals team at Strum is project management, where he applies his depth of knowledge in field studies and coordination to guide projects through the regulatory processes required for development.

Angus is active in leading environmental assessments, biophysical component studies, and completing radar and wildlife surveys, and other ecological studies. He has planned and coordinated multi-team fieldwork across large projects throughout Nova Scotia, New Brunswick and Newfoundland. He is knowledgeable in provincial and federal approvals and permitting processes and works closely with all staff to prepare and review reports and regulatory submissions, as well as prepare materials for, and participate in, public and regulator consultation and engagement activities for Environmental Assessments. He serves on the Joint Occupational Health and Safety committee as a group and regional representative for Antigonish.

Angus held a previous position with Environment and Climate Change Canada (ECCC) as a water quality technician. He conducted water sampling in many bays, harbours, and estuaries around Nova Scotia from Pubnico to Cape North, dealing with all matters of leading a field crew on a day-to-day basis. This included trailering, launch and recover practices, regular boat, motor, trailer and vehicle maintenance, as well as training and aiding new staff. Processing of samples was also completed daily using the modified A1 method in a level 3 CALA certified microbiology lab.

## REPRESENTATIVE PROJECTS AND ROLES

**Wind Power Environmental Assessments, NS, NB, NL 2020-Present – Environmental Scientist/Project Manager:** Providing project management, coordination and field work on several 100 MW+ wind farms in Nova Scotia. Coordinated and completed all aspects of field surveys for environmental assessments, including wetland, watercourse, fish & fish habitat, avian, avian radar, bat, wildlife, flora, and lichen surveys. Preparing, reviewing, and organizing field data using several methods of

## EDUCATION

- Master of Resource and Environmental Management (MREM) - Dalhousie University, Halifax, NS (2021)
- Bachelor of Science (Hons.) - Mount Allison University, Sackville, NB (2019)

## TRAINING

- Wetland Ecosystem Service Protocol – Atlantic Canada (WESP-AC) – Maritime College of Forest Technology (2021)
- Wetland Delineation Training – Maritime College of Forest Technology (2020)
- Small Vessel Operator Proficiency “SVOP” and Marine Emergency Duties “MED A3” - Survival Systems Training Limited (2017)
- Wilderness First Aid - St. John’s Ambulance (2022)
- Backpack Electrofishing – Canadian Rivers Institute (2021)
- VHF Radio Restricted Operators Certificate – Industry Canada (2017)



collection. Preparing materials for and leading public engagement activities, as well as aiding in the preparation of materials for public outreach. Leading regulatory meetings to brief provincial and federal agencies on project activities. Preparing EA related documents, including methodologies, effects assessments, and desktop reviews.

**Melford Atlantic Gateway Terminal Project, NS, 2020-Present – Environmental Scientist:** Completed comprehensive research as partial fulfillment of the wetland compensation requirement for the Melford Terminal's wetland alteration. This included a comprehensive search of potential sites across Antigonish and Guysborough counties based on the precedence of other wetland compensation projects, as well as aiding in the design and implementation of the engineered wetlands to be created. Supported regulatory consultation for watercourse alteration applications and impacts to fish and fish habitat, especially salmonid species.

**Hydroelectric System regulatory upkeep and Monitoring, NS, 2021-Present - Project Coordinator/ Environmental Scientist:** Completed swallow nesting/monitoring surveys during the fall migration period. Designed, coordinated, and conducted a wetland and wetland fish & fish habitat monitoring program considering wetland fish habitat functions.

**Environmental Management Plan Development for Mining, NS, 2023-Present – Project Manager:** Overseeing the development of Environmental Management Plan documents for an industrial scale export-focused mining operation in the Strait Area. Aiding Junior staff in the development of plan documents and reviewing plans prior to submission to regulators.

**Avian Radar Studies for Wind Development, NL, 2022-2024 – Environmental Scientist –** Aided in the design and construction of avian radar monitoring systems for four season deployment in harsh coastal and inland environments in Newfoundland, including siting and remote monitoring.

**Environmental Assessment EverWind Point Tupper Green Hydrogen/Ammonia Project - Phase 1, NS, 2022 – Environmental Scientist:** Completed field studies and key reporting requirements for the submission of the EA Registration Document for a green ammonia/hydrogen facility located in Cape Breton, NS. This was the first green ammonia/hydrogen facility to be approved in Canada.

**Transmission Line Project, NS, 2020-2023 – Environmental Scientist/Field Coordinator:** Planned, coordinated and completed Wetland and watercourse assessments, wildlife surveys, and rare plant and lichen surveys, along the linear corridor spanning 100 km. These surveys involved preparing desktop and safety tools for field staff, as well as preparing reports respective to each of the surveys.

**Boat Harbor Remediation Project, NS, 2021, Environmental Scientist –** Monitored water quality through seasonal tide cycles, before aiding in the research and installation of mitigations to improve water quality and reduce fish mortalities at the Boat Harbor remediation site.

**Watercourse Alteration Approval and Fish Surveys, NS, 2021 – Environmental Scientist:** Conducted electrofishing / fish salvage for an emergency watercourse alteration along a section of railway. This involved the capture, identification, documentation, and release of fish from the impacted section of the watercourse. Conducted further watercourse assessments to aid in the alteration approval process.

**Canadian Shellfish Sanitation Plan – Shellfish Water Classification Program, NS, 2017-2019 – Water Quality Technician:** Completed three summers of fecal coliform testing of coastal waters around the province of Nova Scotia to aid in the classification of areas for shellfish harvesting. This involved extensive travel, sample collection, processing and overall upkeep of field equipment across a fleet of boats, vehicles, and associated gear. Lab and sample processing work included QA and QC procedures, sample reading, media production, waste management, and sample inoculation.

**Strengths and Weaknesses of Avian Radar for Management and Monitoring Applications, 2020 – MREM Final Research Project:** As a final project for the Master of Resource and Environmental Management program, an extensive research project on the topic of marine radar for avian applications was undertaken. This included literature research across all jurisdictions for information regarding the use of radar of tracking birds, either for monitoring or other applications. On top of the literature research, there was extensive discussion with industry users on the advantages and disadvantages of the technology, data processing techniques, and overall limitations. The findings of this project were paired directly with Radar Assessments undertaken with Strum Consulting.

## AREAS OF SPECIALIZATION

- Environmental Assessment
- Environmental Approvals & Permitting
- Industrial Approvals
- Management & Monitoring Planning
- Wildlife, Wetland, & Watercourse Assessments
- Dangerous Goods Assessment

## RELEVANT EXPERIENCE

Lyndsay has worked across a variety of roles, from field intern to project manager, focusing on energy projects within Western and Atlantic Canada. She is active in the development and coordination of environmental assessments, industrial approvals, environmental approvals/permitting, along with field and monitoring programs. Lyndsay also has valued experience with and knowledge of provincial and federal regulations, allowing her to provide advisory services for various projects. More recently, she has been responsible for post-approval regulatory compliance and associated management and monitoring planning for both small-scale and large-scale projects.

Ms. Eichinger first joined the Strum team in 2020 as an Environmental Intern, while working towards her Masters of Resource and Environmental Management degree at Dalhousie. While studying at Dalhousie, Lyndsay specialized in remediation, environmental assessment, and natural resource management in Nova Scotia. Lyndsay also obtained her Bachelor of Science degree in 2019 from the University of British Columbia where she specialized in Earth and Environmental Science with a minor in Economics.

During her graduate studies, Lyndsay researched the Boat Harbor Remediation Project, producing a technical review paper evaluating the cost-effectiveness of the different remedial components and technologies considered by the project. This paper has since been published in the journal Remediation titled: Review of remedial options for the Boat Harbour remediation project in Nova Scotia, Canada.

Lyndsay held a previous position with RAM Environmental Response as a HAZMAT Responder based in the BC interior. Her role was fast-paced and multidisciplinary, working in tandem with senior management on emergency response planning and remediation teams on site. Lyndsay has responded to an array of emergency situations involving dangerous goods, such as train derailments and fuel spills, all requiring coordination between clients, contractors, first responders, and government parties. She has a strong background in safety protocols, erosion control implementation, response tactics, and emergency remediation measures for a variety of contaminants. Lyndsay is well practiced in remote travel along with ATV, snowmobile, and 4x4 use.

## REPRESENTATIVE PROJECTS AND ROLES

**Post-Approval Work, EverWind Point Tupper Green Hydrogen/Ammonia Project Phase 1, NS, 2023 – Environmental Scientist:** On-going post-approval work (following approval of the EA Registration Document) including the development of environmental management and monitoring plans. These plans are developed to avoid/mitigate potential impacts to nearby environmental and residential receptors throughout the lifespan of the Project.

## EDUCATION

- Masters of Resource and Environmental Management (MREM) - Dalhousie University, Halifax, NS (2021)
- Bachelor of Science - University of British Columbia (2019)

## TRAINING

- ATV Certification (2022)
- RPAS Pilot Certification (2022)
- BICO – Search and Rescue Program (2022)
- Wetland Delineation Certification (2022)
- Electrofishing Certification (2021)
- Standard First Aid and WHMIS (2021)
- Stream Gauging Training from UBC (2019).
- Environmental Impact Assessment Certificate received from the Centre for Environmental Assessment Research at UBC (2019).
- Derailment Response - CP Railway (2018)
- Railway Safety Training (2018)



**Environmental Assessment EverWind Point Tupper Green Hydrogen/Ammonia Project - Phase 1, NS, 2022 –**

**Environmental Scientist:** Completed field studies and key reporting requirements for the submission of an EA Registration Document for a green ammonia/hydrogen facility located in Cape Breton, NS. This was the first green ammonia/hydrogen facility to be approved in both Nova Scotia and Canada.

**Post-Approval Work, Various Wind Developments, 2023 – Environmental Scientist:** On-going post-approval work for various wind projects (following approval of the EA Registration Document) including the development of environmental management and monitoring plans. These plans are developed to avoid/mitigate potential impacts to nearby environmental and residential receptors throughout the lifespan of the Project.

**Wind Development Environmental Assessments, 2022-Present – Environmental Scientist:** Providing project coordination and report writing on several 100 MW+ wind farms in Nova Scotia.

**Environmental Assessment Registration and Environmental Protection Plan, NL, 2022 – Junior Environmental**

**Professional:** Completed reporting requirements for the submission of an EA Registration Document and associated Environmental Protection Plan for a transmission line decommissioning project located in Newfoundland and Labrador.

**Windsor Forks Wetland Compensation Project, NS, 2021-2022 – Junior Environmental Professional:** Completed reporting requirements for the final year of wetland monitoring and assessment for a constructed wetland.

**Watercourse Alteration Approval and Fish Surveys, NS, 2021 – Junior Environmental Professional:** Conducted electrofishing / fish salvage for an emergency watercourse alteration along a section of railway. This involved the capture, identification, documentation, and release of fish from the impacted section of the watercourse.

**Mahone Bay Well Installation and Monitoring, NS, 2021 – Junior Environmental Professional:** Groundwater well installs were completed at a construction site in Mahone Bay, NS along with vegetation transects to characterize the sites environmental features.

**Pirate Harbour Wind Farm Project, NS) 2021-Present – Junior Environmental Professional:** Participated in field

**Melford Atlantic Gateway Project, NS, 2020-Present – Junior Environmental Professional:** Completed various reporting and background research requirements such as consultation documents, engagement record keeping, and the development of a wetland compensation plan.

**Transmission Line, NS, 2020 – Environmental Technician:** Participated in wetland and watercourse assessments, Wildlife surveys, and rare plant and lichen surveys, along the linear corridor spanning 100kms from the NS/NB border to Onslow, NS.

**Shellfish Harvesting and the Persistent Threat of Sewage Pollution, NS, 2020 – MREM Tri-course project:** Working in a multi-disciplinary team to assess the threat of sewage pollution on the shellfish industry of Nova Scotia, including the biophysical, socio-political, law and policy aspects of the greater issue of pollution in the near shore environment. This involved research into government programs, policies and regulations, as well as different stakeholders in the industry.

## AREAS OF SPECIALIZATION

- Environmental Assessments
- Fish community & habitat assessments
- Fish rescues
- Wetland delineation and functional assessment
- Species at Risk Evaluation
- Flora and Fauna surveys
- Avian surveys
- Public Consultation

## RELEVANT EXPERIENCE

Ms. Juurlink is a Senior Environmental Scientist, with the role of Project Manager and the Ecology Lead of Environmental Assessments & Approvals. She is highly skilled at completing ecological habitat assessments via geospatial desktop review (GIS) and implementation of field studies. She has an in-depth knowledge of NS flora and fauna which has provided her with the tools to determine habitat uniqueness and ecological sensitivity.

Before joining Strum, Melanie was the Senior Ecologist at McCallum Environmental Ltd., in NS. In that role, Melanie coordinated all McCallum field biologists required to complete all environmental baseline and ecological inventory programs for Provincial and Federal Environmental Assessment registration. She has been responsible for the implementation of environmental baseline programs in mining, quarry development, and energy sector development projects in advance of environmental assessment registration. In addition, Melanie has been responsible for communicating the results of baseline environmental conditions to industry and project-related stakeholders. Her effective communication skills, broad technical knowledge, and personability have furthered her involvement in public consultation sessions and community engagement.

Melanie held previous positions as the Environmental Specialist and Area Environmental Lead for the Shell/Albian Sands Expansion and the Regulatory and Environmental Specialist for the Canadian Natural Resources, Ltd. both in Fort McMurray, AB. Melanie is a volunteer hike leader and trail steward in the Blue Mountain Birch Cove Lakes Wilderness Area.

## REPRESENTATIVE PROJECTS

**Environmental Assessment, Clydesdale Ridge Wind Project, NS, 2024 – Project Manager:** Completed environmental baseline surveys and Environmental Assessment Registration Document for the Clydesdale Wind Project, consisting of a proposed 18 wind turbine generators and all associated infrastructure. As the Project Manager, Strum implemented all of the field programs, and prepared the EARD for submission to NSECC in August 2024.

## EDUCATION

- Masters of Resource and Environmental Management, Dalhousie University, Halifax, NS (2011)
- Bachelor of Science (Advanced Major in Biology & Interdisciplinary Studies in Aquatic Resources), St. Francis Xavier University, Antigonish, NS (2005)

## TRAINING

- Standard First Aid, AED, CPR (A) (2023)
- Joint Occupational Health and Safety Committee Level 1 (2023)
- Avian Nest Sweeps & Monitoring (2021)
- Fish Habitat Restoration, In-stream Techniques (2021)
- Fish Habitat Assessments (2019)
- eDNA Methods (2019)
- Freshwater & Diadromous Fishes of New England (2019)
- Field Hike Leader Certification, Basic and Winter Modules, Outdoor Council of Canada (2015 & 2018)
- Wetland Ecosystem Services Protocol (WESP-AC) (2017)
- WHMIS (2017)
- Electrofishing Crew Leader (2015)
- Wetland Delineation Certification (2013)
- Small Vessel Operator Proficiency & Marine Emergency Duties A3 Certified (2006)



**Environmental Impact Statement, Wejipek Wind Project, PEI, 2024 – Project Manager:** Completed environmental baseline surveys and Environmental Impact Statement document for the Clydesdale Wind Project, consisting of a proposed three wind turbine generators and all associated infrastructure. As the Project Manager, Strum implemented all of the field programs, and prepared the EIS for submission to PEI Energy, Environment and Climate Action.

**WESP-AC Functional Assessment Training, MCFT, NS, 2023-2024 – Trainer:** Invited by the Maritime College of Forest Technology (MCFT) to lead the Wetland Ecosystem Services Protocol for Atlantic Canada (WESP-AC) training in Amherst, Nova Scotia. Provided training to a multi-disciplinary group of practitioners from all four maritime provinces. Provided training on WESP-AC internally to McCallum Environmental Ltd. and Strum personnel since 2018 as well.

**Fish Rescues, NS, 2020-2024 – Project Manager:** Completed more than 75 fish rescues in the past four years to support various transportation projects throughout Nova Scotia. Acted as both field crew and Project Manager, depending on the specific Project.

**Fish & Fish Habitat Assessment, NS, 2019-2024 – Project Manager:** Completed detailed evaluation of effects to fish and fish habitat to support application for Harmful Alteration, Disruption, and Destruction of Fish Habitat for one provincially approved gold project. This involved detailed fish habitat assessment, fish community structure evaluation, effects assessment based on direct impact and flow reduction, and compensation for residual effects.

**Herpetology Field Programs – 2015-2024 – Environmental Scientist & Project Manager:** Developed and implemented multiple targeted surveys for herpetofauna, specifically wood turtle, bandings turtle, and ribbonsnake, for EAS and development related permitting projects. Completed field programs and regulatory consultation to clearly communicate Project implications of rare species and their habitats.

**Environmental Baseline Surveys, NS, 2013-2024 – Project Manager and Environmental Scientist:** Completion of environmental baseline surveys for multiple provincial environmental assessments for various wind power projects and quarries. This involves detailed desktop and constraints analyses to determine required field assessments, implementation of all field programs, interpretation and reporting of results, across multiple taxa and habitat types.

**Avian Surveys, NS, 2012-2024 – Environmental Scientist:** Completion of avian surveys, including baseline studies, post-construction studies and pre-construction nest searches for over ten projects, such as mines, quarries, wind power projects and residential development. Implemented and completed avian surveys from 2015-2018. From 2018-2024, guided implementation of programs and interpretation of results.

**Wetland Delineation, Functional Assessments, NS, 2011-2024 – Environmental Scientist & Trainer:** Completed wetland delineation and functional assessment for over 1000 wetlands in support of multiple development projects in both permitting and environmental assessments. Instructed wetland delineation training with Fern Hills institute, and internally within both McCallum Environmental Ltd. and Strum Consulting. Wetland delineation and instruction includes teaching botany identification and habitat association, soil ecology, and hydrology.

**Lighthouse Trail Re-Route – Botanical Survey – 2023 – Project Manager:** Liaised with the prime consultant, Parks Canada, and our field biologists to safely execute a botanical assessment along a proposed re-route of the Lighthouse Trail in Louisbourg, Nova Scotia. The re-route was required due to extensive damage from Hurricane Fiona. Our team provided a report to Parks Canada identifying results of a botanical survey to be used to advise trail re-route design and construction.

**Environmental Baseline Surveys, Mining, NS, 2016-2023 – Environmental Scientist & Project Manager:** Completion of environmental baseline surveys for the federal and provincial environmental assessment process for proposed development of four separate gold mines in eastern Nova Scotia. This involved collection of baseline data and effects assessment for terrestrial habitats (flora and fauna), avifauna, wetlands, fish and fish habitats, including completion of the Cumulative Effects Assessments for those projects within the federal process.

**Baseline Studies, WESP-AC Calibration Study, NS, 2018 – Environmental Scientist:** Completed baseline studies on 125 wetlands across the province to implement a new wetland functional assessment technique (WESP-AC) to the Nova Scotian regulatory landscape.

## AREAS OF SPECIALIZATION

- Environmental Assessments
- Flora and Fauna Surveys
- Species at Risk Assessments
- Field Implementation
- Technical Review
- Project Management
- Project Design
- Staff Training

## RELEVANT EXPERIENCE

Mr. MacDonald a Senior Project Manager and Terrestrial Lead. He has a strong terrestrial survey design and oversight background and extensive experience in avian and botanical studies. Mark provides survey design and oversees the drafting of terrestrial baseline reports and effects assessments for many projects. He has consulted regularly with provincial regulatory agencies, local landowners, and other stakeholder groups.

Mark is a versatile, conservation-focused ecologist with over 18 years in adaptive project management in challenging environments. He is a dedicated learner with a proven record of quickly developing new skills and an excellent writer for both a technical and general audience. He is diplomatic and capable when navigating differing values of multiple stakeholders.

## REPRESENTATIVE PROJECTS AND ROLES

**Environmental Baseline Surveys, NS, 2022-Present – Project Manager:** Completion of environmental baseline surveys for multiple provincial environmental assessments for various wind power projects and quarries. This involves detailed desktop and constraints analyses to determine required field assessments, implementation of all field programs, interpretation and reporting of results, across multiple taxa and habitat types.

**Environmental Assessment, Various Projects, 2022-Present – Project Manager:** Lead terrestrial baseline reporting and environmental effects chapters for various mine, quarry, and wind projects, as well as other development projects across the maritime provinces (e.g., Walden Quarry Expansion, Six Mile Brook Quarry Expansion, Rhodena Wind Project, Wedgeport Wind Project, Caribou and Wood Islands Ferry Terminal Expansion Projects).

**Botanical Surveys, NS, 2022-2024 – Project Manager:** Planned and developed botanical survey programs, including species at risk and habitat assessments, for various mine, quarry, solar, and wind projects, as well as other development projects across the maritime provinces (e.g., Walden Quarry Expansion, Six Mile Brook Quarry Expansion, Shaw Sand Pit, Wedgeport Wind Project, Clydesdale Wind Project, Rhodena Wind Project, Wejipek Wind Project, Apitamkiejit Wind Project, Upper Afton Wind Project, New Prospect Wind Project, White Cedar Wind Project, Port Malcolm Solar Project, Caribou and Wood Islands Ferry Terminal Expansion Projects, Sungro Horticuture Peat Harvesting Projects, etc.).

**Avian Survey Design and Completion, 2022-2024 – Project Manager:** Planned and developed avian survey programs, including species at risk, coastal, migration, nocturnal owl surveys, breeding, and raptor/diurnal watch count surveys, for various mine, quarry, solar, and wind projects, as well as other development projects across the maritime provinces (e.g., Walden Quarry Expansion, Six Mile Brook Quarry Expansion, Shaw Sand Pit, Wedgeport Wind Project, Clydesdale Wind Project, Rhodena Wind Project, Wejipek Wind Project, Apitamkiejit Wind Project, Upper Afton Wind Project, New Prospect Wind Project, White Cedar Wind Project, Port Malcolm Solar Project, Caribou and Wood Islands Ferry Terminal Expansion Projects, Sungro Horticuture Peat Harvesting Projects, etc.).

## EDUCATION

- Masters of Science in Forestry, University of New Brunswick, Fredericton, NB (2012)
- Bachelor of Science in Forestry (Major in Forest Management, Minor in Wildlife Ecology), University of New Brunswick, Fredericton, NB (2004)

## TRAINING

- Emergency First Response & CPR (2022)
- Wilderness First Responder (2014)

## AREAS OF SPECIALIZATION

- Forest management and characterization
- Environmental and carbon modelling
- Urban forest assessment
- Stakeholder engagement
- Hydrologic assessment and modelling

## RELEVANT EXPERIENCE

Dr. Foster is an environmental scientist with a special interest in forests, their management, and how people relate to them. More broadly, he is interested in natural resource management and how resources can be utilized sustainably. He has experience in a variety of fieldwork and teaches field work planning, methods, and reporting to undergraduate students at Saint Mary's University.

Dr. Foster completed his PhD in 2024, researching the relationship between forest management and water treatability for potable water supplies. Specifically, his research examined how timber harvesting can be used to reduce watershed dissolved organic carbon (DOC) production to reduce the chemical and financial cost of water treatment in the face of continual and concerning increases in DOC. This study resulted in academic publications on its findings, and forest management recommendations to the region's water utility.

Before this research, David worked for two years as a research associate at Dalhousie University, studying various urban forest and non-urban forest matters. In addition to a contracted characterization of Halifax Regional Municipality's (HRM), urban forest, during this time, he also served as research associate for Prof. William Lahey during the Nova Scotia Independent Review of Forest Practices. He contributed research services, assisted with logistics, and provided writing input, including a report on the history of forest practices review. During this process, he had the opportunity to hear a diverse range of perspectives from stakeholders with contrasting perspectives on natural resource usage, helping to develop an understanding of what is at stake in the management of the natural environment.

## REPRESENTATIVE PROJECTS AND ROLES

### **Wind Power and Infrastructure Environmental Assessments, NS (2024-Ongoing) – Environmental Scientist:**

Supporting writing and editing several sections of a variety of environmental assessment for proposed wind farms and associated infrastructure. Contributions in several biophysical and socioeconomic sections, demonstrating a breadth in competencies related to communicating the findings of environmental assessment. Includes writing the terrestrial flora, fauna, and habitat sections of the recently approved Rhodena Wind Project in Cape Breton, NS, and the same sections plus human health effects and effects of the environment on the undertaking for the recently approved Melvin Lake Wind Project in Halifax Regional Municipality and East Hants, NS.

### **Navigating the Social Acceptability of Forest Biomass Utilization, NS (2024-ongoing) – Environmental Scientist:**

Working with a client in the forest biomass utilization industry to help understand the aspects that contribute to the social acceptability of forest biomass usage in an evolving economy and modern society. Collaborating to help establish a roadmap for future entrants into the market to better understand the landscape and plan for successful development of projects that contribute an economy that makes sustainable use of Nova Scotia's natural resources.

## EDUCATION

- Doctor of Philosophy, Interdisciplinary PhD Program, Dalhousie University, Halifax, NS (2024). Thesis: Mitigating forested water supply carbon loading through timber harvesting.
- Master of Resource and Environmental Management, Dalhousie University, Halifax, NS (2016). Report: Location matters: the importance of tree placement to urban forest values.
- Bachelor of Science, Combined Honours in Biology and Sustainability, Dalhousie University, Halifax, NS (2014). Thesis: Strategic environmental assessment of changes in Bill C-45 to the Navigable Waters Protection Act and potential effects of environmental protection in Canada.

## TRAINING

- Forest Ecosystem Classification qualified (NS, 2024)
- St. John's Ambulance First Aid & CPR/AED Level C (2024)
- Environmental Impact Assessment certificate (2014)



**Crown Land Forest Stakeholder Engagement, NS (2023-Ongoing) – Chair/Facilitator:** Work with the NS Natural Resources and Renewables as Chair of the Nova Scotia Western Region Crown Land Stakeholder Interaction Committee (WRSIC). This committee is comprised of diverse stakeholders that come together to learn about and contribute to the management of public forests in Nova Scotia. Stakeholders include representatives from industry (mills and silvicultural contractors), Indigenous groups with a specific environmental mandate, NGOs including recreationalist and research groups, elected members of local government, private forest landowners, and more. The group meets at least twice a year to receive updates and provide input on public forest management policy and practice, and to review harvest proposals.

**Pockwock Watershed Carbon Loading Study, NS (2018-2024) – PhD Candidate/Lead Researcher:** Completed extensive study of the Pockwock watershed, source of water for more than 1/5<sup>th</sup> of Nova Scotians. Led three summers of fieldwork with research assistants to characterize forest composition, determine hydrologic carbon export, and model watershed hydrology. Wrote custom forest management model and novel implementation of Natural Resources Canada's Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3) for use in a programming environment (R). Research was conducted in partnership through a pan-Canadian research network (the forWater network) including other researchers, forest regulators, the regional water utility, forest managers, forestry contractors, ENGOs, and more. He coordinated with diverse stakeholders to ensure that forest management within the watershed during the study period met research objectives and was properly implemented and characterized and met the research goals of the network.

**Community Greening Program, NS (2013-2017) – Coordinator:** Developed and implemented a program of urban green space appreciation, education, and improvement. Creating a program of the Sierra Club Canada Foundation Atlantic Canada Chapter focused on urban green spaces, worked with a diverse range of stakeholders to plan, fund, and carry out urban greening initiatives in HRM, including numerous tree plantings. This required working with local government to obtain permission and support for initiatives, members of the public to gain support and to solicit for participation in local events, and business and organizations to find and otherwise support initiatives. These efforts led to planting over 2,700 trees in HRM and establishing the municipality's first publicly hosted community urban orchard.

## AREAS OF SPECIALIZATION

- Wetland and Watercourse Assessment
- Wildlife Surveying and Assessment
- Ecological Forestry and Agriculture
- Benthic Invertebrate Analysis
- Environmental Data Collection, Interpretation, and Reporting

## RELEVANT EXPERIENCE

Ms. Schultz joined the Strum team in 2022 as an Environmental Scientist upon completing her coursework for her Masters of Resource and Environmental Management degree at Dalhousie. While studying at Dalhousie, Ms. Schultz specialized in a number of different areas of natural resource management in Nova Scotia, such as forestry, agriculture, and wetlands. She obtained her Bachelor of Science degree in 2019 from the University of Manitoba in the department of biological sciences where she specialized in ecology and environmental sciences. Her honours thesis focused on the ecological application of double-stranded RNA-based pesticides to control flea beetles in canola cropping systems in Manitoba. This project incorporated both field-based sample collection and lab-based sample preparation using techniques in molecular biology. During her graduate studies, Ms. Schultz worked on a number of large projects, collaborating with multidisciplinary teams to contribute to local issues. As her final MREM Research Project, she produced GIS and statistics-based recommendations for Nova Scotia Natural Resources and Renewables regarding identification of old-growth forest locations in the province. Through the Dalhousie Faculty of Management's 'Management Without Borders' course, Ms. Schultz helped develop recommendations for pest control in the Municipality of the District of Argyle. She also developed an understory vegetation sampling protocol to be used in the Acadia Research Forest by the Canadian Forestry Service.

Ms. Schultz has previously contributed to a research project on bat activity hosted by a global non-profit organization by conducting statistical analysis on acoustic data. Ms. Schultz also held a previous position with Nova Scotia Department of Lands and Forestry as a summer intern while completing her graduate studies. This role required remote field work to carry out the provincial old-growth scoring protocol, and desktop GIS-based work to plan and navigate to study locations. Prior to this internship, Ms. Schultz held a position with Agriculture and Agri-Foods Canada as a Junior Policy Analyst. In this role, she focused on the development of the Clean Fuel Standard, which included significant correspondence with agricultural stakeholders and a major deliverable of a jurisdictional scan of clean fuel regulations across the world.

Ms. Schultz is active in conducting ecological studies to contribute to a variety of environmental assessments. She has conducted significant fieldwork across large projects in remote locations, in both Nova Scotia and Manitoba. She is knowledgeable with provincial and federal regulations, working closely with senior staff preparing reports and regulatory submissions.

## REPRESENTATIVE PROJECTS AND ROLES

**Wind Power Environmental Assessments, 2022-Present – Environmental Scientist/Field Coordinator:** Providing coordination and field work on several 100 MW+ wind farms in Nova Scotia. Coordinated and completed all aspects of field surveys for environmental assessments, including wetland, watercourse, fish & fish habitat, avian, avian radar,

## EDUCATION

- Masters of Resource and Environmental Management (MREM) - Dalhousie University, Halifax, NS (2022)
- Bachelor of Science (Hons.) - University of Manitoba, Winnipeg, MB (2019)

## TRAINING

- Nova Scotia Watercourse Alteration for Installers (2023)
- Wetland Ecosystem Services Protocol for Atlantic Canada Training – Maritime College of Forest Technology (2022)
- Wetland Delineation Training – Maritime College of Forest Technology (2022)
- Backpack Electrofishing – Canadian Rivers Institute (2022)
- Pilot Certificate for Small Remotely Piloted Aircraft System (RPAS), Visual line-of-sight (VLOS) – Transport Canada (2022)
- Wilderness First Aid and CPR "C" – St. John's Ambulance (2022)

bat, wildlife, flora, and lichen surveys. Prepared, reviewed, and organized field data using several methods of collection. Prepared materials for and participated in public consultation meetings, as well as aiding in the preparation of materials for public outreach. Led regulatory meetings to brief provincial and federal agencies on project activities. Prepared EA related documents, including methodologies, effects assessments, and desktop reviews.

**Environmental Effects Monitoring Program, Halifax International Airport Authority, NS, 2022-Present –**

**Environmental Scientist:** Conducting preliminary research, planning, field work, data composition, and reporting for benthic macroinvertebrate monitoring plan following CABIN protocol.

**Environmental Assessment EverWind Point Tupper Green Hydrogen/Ammonia Project - Phase 1, NS, 2022 –**

**Environmental Scientist:** Completed field studies and key reporting requirements for the submission of an EA Registration Document for a green ammonia/hydrogen facility located in Cape Breton, NS. This was the first green ammonia/hydrogen facility to be approved in both Nova Scotia and Canada.

**Environmental Study, Wind Farm, NS, 2022 – Environmental Scientist:** Reporting on winter wildlife tracking and winter avian surveys for several Environmental Screening Reports.

**Environmental Study, Transmission Line, NS, 2022 – Environmental Scientist:** Collecting winter wildlife data, reviewing a summary report of winter field work, and preparing a proposal for an old-growth forest assessment within the transmission line right-of-way.

**Contaminated Site Assessment, Ross Bay Junction, NL, 2022 – Environmental Scientist:** Identifying previously collected benthic macroinvertebrate samples and preparing a report and data summary on the diversity and abundance of species present on the Project site.



## AREAS OF SPECIALIZATION

- Statistical and spatial analysis
- Biophysical survey design
- Impacts of climate change on natural systems
- Species conservation
- Effects of disturbance on plant communities

## RELEVANT EXPERIENCE

Dr. Emma Davis is a landscape ecologist with an interest in the effects of disturbance and climate change on plant community dynamics. In particular, Emma has completed several research projects aimed at understanding how anthropogenic factors interact with natural process to cause changes in forest systems, particularly as it relates to rare and sensitive plant species and communities.

Emma completed her PhD at the University of Guelph in 2018 studying the long-term impacts of climate change on the distribution of alpine treelines in Canada's Rocky Mountain region. Her research involved combining data from a series of field experiments with greenhouse studies and dendrochronology to understand how soil characteristics, herbivory, and climate variables determine the ability of trees to establish at the edges of their distributional range.

Following the completion of her PhD, Emma held Postdoctoral Fellowships at the University of Guelph Arboretum and the University of Waterloo, where she worked with a multidisciplinary team of researchers and conservation practitioners to develop skills in conservation planning, remote sensing and spatial modelling. From 2022 to 2023, Emma held a position with the Government of Newfoundland and Labrador Wildlife Division as an Ecosystem Management Ecologist where she was responsible for drafting species recovery documents and coordinating recovery teams. Throughout her academic and professional career, Emma has enjoyed opportunities to collaborate with individuals from diverse backgrounds and areas of expertise while maintaining a strong record of publication in peer-reviewed journals.

## REPRESENTATIVE PROJECTS AND ROLES

**Renewable Energy and Infrastructure Environmental Assessments, NS (2025-Ongoing) – Environmental Scientist:** Provided writing and editorial support during the preparation of several environmental assessment documents for proposed renewable energy projects and associated infrastructure.

**Quality Control/Quality Assurance for Biophysical Field Data Collection, NS (2025-Ongoing) – Environmental Scientist:** Coordinated timely reviews of incoming data from wetland and watercourse field programs to ensure the collection of complete and accurate data.

## EDUCATION

- Doctor of Philosophy, Department of Geography, Environment & Geomatics, University of Guelph, Guelph, ON (2018). Thesis: An evaluation of constraints to treeline advance across multiple scales in the Canadian Rocky Mountains.
- Master of Science, Department of Geography, Carleton University, Ottawa, ON (2014) Thesis: The influence of vegetation and climate on wildfires in Jasper, Alberta, over the last ~3,500 years.
- Bachelor of Science, Environmental Science (Honours), Mount Allison University, Sackville, NB (2012). Thesis: Dendrochronology in the Canadian Prairies: Evaluating the Usefulness of Shelterbelt Species Now and in the Future.

## TRAINING

- St. John's Ambulance First Aid & CPR/AED Level C (2025)

## AREAS OF SPECIALIZATION

- Data Management & Analysis
- Environmental Assessment
- Environmental Reporting
- Task Coordination & Management

## RELEVANT EXPERIENCE

Ms. Nguyen joined the Strum team in 2023 as a Junior Environmental Scientist upon completing her coursework for her Resource and Environmental Management degree at Dalhousie University. While at Dalhousie, Ms. Nguyen engaged in a variety of interdisciplinary areas of natural resource management, including nature-based solutions, socio-ecological studies, and environmental impact assessment. Her diverse professional and academic experiences demonstrate strong adaptability to different fields and a wide breadth of skill sets.

During her graduate studies, Polly focused on improving her strengths in socio-ecological studies while fostering her interests in natural resources management and field-based assessment. She worked as a Knowledge Mobilization Assistant for the Natural Sciences and Engineering Research Council (NSERC) – ResNet organization where she participated in researching and drafting policy briefs on climate sustainability and resiliency within the landscape of the Bay of Fundy dykelands. She engaged in various academic opportunities to build upon her experiences in natural resource management and assessment, such as drafting a policy commentary on the lack of diverse socio-economic factors within the environmental impact assessment and collaborating with multidisciplinary teams to contribute to local issues. As a culmination of her strengths and interests, Polly researched on the interconnected relationship between intersectionality and mental health in influencing environmental participation in the climate movement within Nova Scotia for her final MREM Research Project.

To further build her field-based experiences, Polly worked as a teaching assistant for introductory and advanced environmental science courses, including Field Methods in Environmental Science where Polly led field programs and guided university students with scientific field notes and report writing. Polly also completed an intensive field course during her Master's degree where she conducted forestry composition surveys, CABIN protocols, avian surveys, benthic invertebrates surveys, herpetofauna surveys, nocturnal invertebrates surveys, data analysis, and report writing. Alongside her MREM internship with NSERC ResNet, Polly collaborated with natural sciences scholars on the completion of a decadal review of natural resources and social sciences for the International Association for Society and Natural Resources (IASNR) where she liaised with editors on chapters completion and compiled qualitative data on trends within social and natural resources for the introductory chapter. Through these experiences, Polly has gained experience in adapting her skills to a diverse range of experiences and further improving her skill sets.

Polly is active in conducting environmental assessments, wetland delineations, watercourse assessments, old-growth forest surveys, avian surveys, and other ecological studies. She has experience in utilization of specialized monitoring equipment and data analysis, such as avian acoustic monitor, trail cameras, and ambient noise monitors. She is knowledgeable with provincial and federal regulations and works closely with senior staff and field leads in conducting significant fieldwork and preparing reports.

## EDUCATION

- Master of Resource and Environmental Management (MREM) - Dalhousie University, Halifax, NS (2023)
- Bachelor of Arts, Major in International Relations and Economics – Boston University (2021)

## TRAINING

- UTV Certification – Canada Safety Council (2023)
- Workplace First Aid & CPR/AED – (2023)
- WHMIS (2023)
- Trailer training (2023)
- Bear Awareness (2023)
- Wetland Ecosystem Services Protocol for Atlantic Canada Training (2024)
- Wetland Delineation Training (2024)

## REPRESENTATIVE PROJECTS AND ROLES

**Wind Power Environmental Assessments, NS, 2023-Present – Environmental Scientist:** Conduct field work on several 100 MW+ wind farms in Nova Scotia, including wetland, watercourse, fish and fish habitat, old-growth, avian, avian radar, bat, wildlife, flora, and lichen surveys. Prepared, reviewed, and organized field data using several methods of collection. Inventoried and configured specialized monitoring gears, such as trail cameras and acoustic monitors, and regularly performed maintenance checks. Prepared EA related documents, including methodologies, effects assessments, and desktop reviews.

**Radar and Acoustic Assessment, NS, 2023-Present – Environmental Scientist:** Conduct radar analysis on a specialized program to collect avifauna presence on project sites. Conducted quantitative analysis on processed radar and acoustic data to support technical reports on avifauna presence and remote sensing. Lead report coordination and completion of these technical reports for wind projects and other relevant projects.

**Post-Approval Works, NS, 2023-Present – Junior Environmental Scientist:** Conduct data compilation and reports for various wind farm projects, such as Goose Harbour Lake Wind Farm, Mersey Wind Farm, and Weavers Wind Farm, to fulfill post-approval conditions, such as the creation of Wildlife Management Plans, Contingency Plans, Baseline Noise Monitoring, and Watercourse Alteration applications.

**Environmental Noise Measurement, NS, 2023-Present – Junior Environmental Scientist:** Configure noise monitors with correct data collection settings prior to field deployment. Initiated noise monitoring deployment for various projects, including the Mersey Wind Farm Project and EverWind Point Tupper Green Hydrogen/Ammonia Project, and compiled data for data analysis and completion of noise monitoring plans. Initiated proposals for baseline noise monitoring programs with appropriate field schedules, required equipment, and budget calculations. Complete a standard operating procedure for deployment procedures, data analysis, and report compilation.

**Avian Surveys, NS, 2023-Present – Junior Environmental Scientist:** Conducted diurnal watch counts, breeding bird surveys and nightjar surveys for various wind projects, including Mersey Wind Farm Project and Goose Harbour Lake Wind Farm Project.

**Orbital Marine Tidal Project, NS, 2023 – Junior Environmental Scientist:** Completed desktop reviews and analysis on ambient noise and environmental effects of tidal turbines on marine species within the Minas Passage of the Bay of Fundy. Helped completed a supplemental information report to be sent to relevant regulatory agencies.

**Urban Nature and Infrastructure in the Face of Increasing Storm Events 2022 – MREM Tri-course Project:** Worked on a multi-disciplinary team to address the biophysical, environmental law and policy, and sociopolitical challenges of urban planning and the incorporation of urban nature in the face of increasing severe storms in Nova Scotia. This involved research into the interconnected relationship between urban trees and utility infrastructure, relevant regulatory bodies and policies, and recommendations into establishing nature-based solutions and smart urban forest management within HRM and the province.



## PROFESSIONAL ASSOCIATIONS

- PADI Professional

## AREAS OF SPECIALIZATION

- Fish and Fish Habitat
- Fish Rescue
- Freshwater Mussels
- Environmental Monitoring

## RELEVANT EXPERIENCE

Ms. Ferrari has been in the environmental consulting industry since June 2020. She primarily specializes in fish and fish habitat sciences. Ms. Ferrari has a range of experience in the planning and implementation of aquatic field programs, as well as experience in regulatory permitting. She has worked as a field biologist responsible for conducting a variety of biophysical assessments including wetland delineation, watercourse delineation, fish habitat surveys, fish collection, benthic invertebrate sampling, periphyton sampling, sediment sampling, fish rescues, turtle surveys, snorkel surveys, water quality sampling, flow monitoring, and brook floater surveys.

## EDUCATION

- Bachelor of Science (Biology), Saint Francis Xavier University, Antigonish, NS (2019)

## TRAINING

- Intermediate Workplace First Aid Level C CPR & AED (2023)
- WHMIS Certificate (2023)
- PADI Open Water Scuba Diving Instructor (2022)
- Backpack Electrofishing Certificate (2020)
- Pleasure Craft Operator (2020)

## REPRESENTATIVE PROJECTS AND ROLES

**Fisheries Act Authorization, Elmsdale, NS, 2025 – Aquatic Disciple Lead:** Fisheries disciple lead and main author of the Fisheries Act Authorization (FAA).

**Fisheries Act Authorization and Request for Review, Upper Fox Island, NS, 2024-2025 – Field Lead and Aquatic Disciple Lead:** Acted as a field lead for the submission of both the Request for Review (RfR) and FAA. Ms. Ferrari was the primary author for both the RfR and the FAA.

**Fisheries Act Authorization, Fishermans Harbor, NS, 2024 – Field Lead and Aquatic Disciple Lead:** Acted as a field lead for a shoreline assessment to prevent erosion during large storm events. Ms. Ferrari was the primary author for the FAA.

**Federal Environmental Assessment, Tratalgar, NS, 2024 – Field Technician:** Acted as a field technician for a gold mine federal EA in Tratalgar, NS. The scope of work included fish collection, periphyton sampling, eDNA, benthic invertebrate sampling, geomorphological surveys, water quality sampling, moose surveys, flow monitoring, and detailed fish habitat assessment. Ms. Ferrari was the primary author of the baseline report submitted in 2024.

**Environmental Assessment, Cook Brook, NS, 2023 – Field Lead:** Acted as a field lead for a biophysical and provincial gypsum mine Environmental Assessment. The scope of work included a preliminary bank survey and habitat assessment for brook floaters, detailed habitat assessment, wetland delineation, and fish collection. Ms. Ferrari was the primary author for the biophysical report submitted in 2023.

**Biophysical Assessment, Cooks Brook, NS, 2023 – Technician:** Acted as a technician for a biophysical report in Cooks Brook, NS. The scope of work included a preliminary bank survey and instream brook floater survey along a portion of the Gays River to identify brook floaters or their habitat.

**Federal Environmental Assessment, Sherbrooke, NS, 2023 – Field Technician:** Acted as a field technician for a gold mine federal Environmental Assessment in Sherbrooke, NS. The scope of work included fish collection, periphyton sampling, benthic invertebrate sampling, water quality sampling, flow monitoring, and detailed fish habitat assessment. Ms. Ferrari was the primary author of the baseline report submitted within 2023.

**Highway Twinning Project, New Glasgow to Antigonish, NS, 2021-2023 – Field Technician:** Acted as a field technician for a highway twinning project along Highway 104 from New Glasgow to Antigonish. The scope of work included completing various sized fish rescues, detailed fish habitat assessment, and turtle surveys. Ms. Ferrari was also the primary author of various fish rescue reports.

**Environmental Assessment, Goldboro, NS, 2021-2023– Field Technician:** Completed field work for a provincial gold mine Environmental Assessment in Goldboro, NS. The scope of work included detailed fish habitat assessment, eDNA, redd surveys, benthic surveys, and fish collection. Ms. Ferrari was the primary author of various baseline reports and supported the submission of the EARD, FAA, Aquatic Effectiveness Monitoring Plan (AEMP), and Offsetting Plan.

**Environmental Monitoring, Pickle Lake, ON, 2020-2023 – Environmental Monitor:** Acted as an environmental monitor for a 1300 km transmission line project. Completed regulatory advising, spill response, erosion/sediment control, wildlife monitoring, water quality monitoring, and reporting on construction activity.

**Fisheries and Oceans Canada (DFO) Request for Review, Halifax, NS, 2022 – Field Technician:** Acted as field technician for DFO Request for Review (RfR) to upgrade a boat ramp within the Halifax Harbour. The scope of work included fish collection, shoreline assessment and water quality. Ms. Ferrari was the primary author.

**Federal Environmental Assessment, Marinette, NS, 2020– Field Technician:** Acted as a field technician for a gold mine federal Environmental Assessment in Marinette, NS. The scope of work included fish collection, eDNA sampling, water quality sampling, flow monitoring, and detailed fish habitat assessment.

## AREAS OF SPECIALIZATION

- Wetland and Watercourse Assessment
- Old Growth Scoring
- Wildlife Surveying and Assessment
- Bat Call Spectrogram Analysis
- Environmental Data Collection, Analysis, and Reporting

## RELEVANT EXPERIENCE

Leah Riehl joined the Strum team in 2023 as an Environmental Scientist with a specialization in environmental data collection and analysis. While studying at Saint Mary's University (SMU), Leah majored in environmental science and gained experience in a wide variety of academic disciplines including geology, geography, physics, chemistry, and biology. She is an experienced field scientist and has an in-depth knowledge of various on the ground field protocols.

## EDUCATION

- Bachelor of Science, Major in Environmental Science, Saint Mary's University, Halifax, NS (2023)

## TRAINING

- Pleasure Craft Operator License, Transport Canada (2021)
- WHIMIS (2023)
- Emergency First Aid & CPR/AED Level C, St. John Ambulance (2023)
- Bear Awareness Training, Worksite Safety (2023)
- Wetland Ecosystem Services Protocol for Atlantic Canada (WESPAC), Maritime College of Forest Technology (2023)
- Trailer/Towing Training (2023)
- Utility Vehicle Training, Canada Safety Council (2023)

Leah completed her Bachelor of Science at Saint Mary's University in 2023. During her studies, Leah specialized in environmental management, conservation, and remediation. Through completion of academic assignments throughout her degree, Leah has designed a watershed management plan for a local watershed, a remediation plan for an urban park in Halifax, and a habitat model for an endangered lichen species. She also became familiar with ArcGIS, QGIS, and the Forest Ecosystem Classification system, and gained baseline knowledge of species identification with a focus on plants and herpetofauna of Nova Scotia.

Leah also completed the Cooperative Education program during her undergraduate degree at SMU, gaining professional experience through three summer work placements at the Discovery Centre, the Mersey Tobeatic Research Institute (MTRI), and Nature Conservancy Canada (NCC), respectively. Through these placements, Leah gained experience in environmental education, species at risk research and management, protected areas management, and invasive species management.

At MTRI, Leah planned and participated in field surveys for species at risk including Blanding's turtles, Eastern ribbonsnakes, and various bat species. Leah became experienced with turtle nesting surveys, snake and turtle visual surveys, bat roost surveys, radio tracking, and acoustic monitoring. At NCC, Leah gained experience writing reports summarizing conditions of conserved areas and using ArcGIS to create maps of protected areas. She also gained further experience with species surveys by conducting surveys for both invasive and at risk species.

At Strum, Leah is active in conducting field work to support environmental assessments, including but not limited to wetland delineations, watercourse assessments, old growth scoring, rare plant surveys, bird surveys, acoustic monitoring, pellet group inventory assessments, and wildlife surveys. She is also experienced in data compilation, data analysis, and report preparation and is trained in the operation of utility vehicles, trailer towing, and WESPAC assessment. She has participated in work across large projects and works closely with senior staff to prepare reports and regulatory submissions.



## REPRESENTATIVE PROJECTS AND ROLES

**Wind Power Environmental Assessments, 2023- Present:** Conducted field work and data compilation and analysis to support environmental assessments for a number of 100MW+ wind farms across Nova Scotia including but not limited to wetland and watercourse assessments, old growth scoring, avian and bat acoustic monitoring, rare plant surveys, and specialized species surveys. Prepared, interpreted, and organized field data. Prepared various environmental assessment documents, including desktop reviews, field methodologies, and effects assessments.

**Post-Approval Work, NS, 2023-Present – Junior Environmental Scientist:** Conducted data compilation and reports for various wind farm projects to fulfill post-approval conditions such as additional wetland and watercourse data collection and post-approval bat monitoring.

## AREAS OF SPECIALIZATION

- Avian Surveys (e.g., breeding, migration, SAR surveys, nocturnal owl surveys, nightjar, diurnal raptor surveys, etc.)
- Fish Habitat Assessment and Electrofishing/Fish Collection
- Wetland and Watercourse Assessment and Delineations
- Wildlife and Habitat Surveys
- Surface and Groundwater
- Construction Monitoring
- Field Survey Design and GIS
- Spatial Analysis and Creation of Maps using QGIS and ARCGIS
- Data Management
- Industrial Approvals
- Environmental Approvals and Technical Reporting
- Company Mentor – Avian Training (i.e., bird identification and nest sweeps)

## EDUCATION

- Bachelor of Science (Biology Honours and Co-op), Environment, Sustainability and Society, Dalhousie University, Halifax, NS (2016)

## TRAINING

- Emergency First Aid AED CPR “C”, Red Cross (2024)
- Pleasure Craft License (2024)
- WESP-AC (2023)
- WHMIS (2023)
- Electrofishing Certification – Crew Supervisor (2021)
- Introduction to the Care and Use of Wildlife (2016)

## RELEVANT EXPERIENCE

Ms. Lohnes has been in the environmental consulting profession since May 2021. She primarily performs environmental monitoring for a variety of large and small-scale development, construction and exploration initiatives, as well as project related field assessments across Nova Scotia, Prince Edward Island, Ontario, and Alberta, Canada. Ms. Lohnes has completed environmental assessment reporting, specialized avifauna surveys, nest sweeps, species at risk assessments, various fauna and habitat assessments, wetland delineation, watercourse assessments, fish and fish habitat assessments, fish rescues, and construction monitoring. She also has experience with independent/remote field work, GIS, environmental regulation, and project management/coordination (e.g., regulator and client collaboration, budgets, proposals, and survey design/scoping). Ms. Lohnes has been an avid bird watcher since 2014, is skilled in identifying bird species by sight and sound, and is also skilled in identifying nests. Ms. Lohnes also participates in the ECCC/CWS North American breeding bird survey and the Christmas Bird Count yearly through the Audubon Society and volunteers with the Marine Animal Rescue Society, the Back to Sea Society, as well as Hope for Wildlife.

## REPRESENTATIVE PROJECTS AND ROLES

**Environmental Monitoring and Various Assessments/Surveys, Transmission Line Construction Project, ON, 2021 – Present – Environmental Scientist:** Environmental monitoring of a transmission line construction project (Wataynikaneyap Power Transmission Project) that includes regulatory advising, spill response/reporting, erosion/sediment control, wildlife monitoring/reporting, wildlife surveys (e.g., nest sweeps and caribou surveys), water quality monitoring, hazardous waste and environmental supply management, camp/equipment inspections, watercourse delineation, and reporting on construction activity.

**Environmental Assessment, Various Projects, 2021-2024 – Environmental Scientist:** Worked on terrestrial and fish baseline reports and environmental effects chapters for various mine, quarry, and wind projects, as well as other development projects across the maritime provinces (e.g., Lantz Quarry Expansion, Walden Quarry Expansion, Six Mile Brook Quarry Expansion, Tote Road Quarry Expansion, Shaw Sand Pit, Goldboro Gold Mine, Wedgeport Wind Project, Clydesdale Wind Project, Rhodena Wind Project, Wejipek Wind Project, Antrim Gypsum Mine, and the Caribou and Wood Islands Ferry Terminal Expansion Projects). Also involved in the development of management and monitoring plans regarding birds and species at risk for the Fifteen Mile Stream Gold Mine Project.

**Avian Survey Design and Completion/Project Coordination, 2021-2024 – Environmental Scientist:** Planned and developed avian survey programs, including species at risk, coastal, migration, nocturnal owl surveys, breeding, and raptor/diurnal watch count surveys, for various mine, quarry, solar, and wind projects, as well as other development projects across the maritime provinces (e.g., Tote Road Quarry Expansion, Lantz Quarry Expansion, Walden Quarry Expansion, Six Mile Brook Quarry Expansion, Shaw Sand Pit, Goldboro Gold Mine, Wedgeport Wind Project, Clydesdale Wind Project, Rhodena Wind Project, Wejipek Wind Project, Apitamkiejit Wind Project, Upper Afton Wind Project, New Prospect Wind Project, White Cedar Wind Project, Port Malcolm Solar Project, Caribou and Wood Islands Ferry Terminal Expansion Projects, Sungro Horticuture Peat Harvesting Projects, etc.). During the avian survey design and planning process, the applicable governmental regulators (e.g., through CWS and NSNRR) were consulted, as well as project managers and clients. Once design and planning was completed, surveys were scheduled and completed by Jessica and other bird surveyors on the team.

**Wildlife, Fish, and Habitat Surveys, 2021-2024 – Environmental Scientist:** Conducted avifauna surveys: nest sweeps, nocturnal owl surveys, diurnal raptor surveys, nightjar surveys, species at risk surveys, spring/fall migration surveys, and breeding bird surveys. Conducted fauna surveys (e.g., species at risk, turtle surveys, moose surveys, PGI, and wildlife track surveys). Conducted water quality sampling and surface water flow sampling. Conducted watercourse assessments and wetland monitoring. Conducted fish and fish habitat assessments including electrofishing, fish collection, and fish rescues during construction. Completion of watercourse and wetland boundary determination and characterizations for regulatory wetland and watercourse alteration permitting. Conducted forest habitat assessments using the FEC guide. Surveys were completed for various mine, quarry, solar, and wind EA, and other small- or large-scale development projects across the maritime provinces.

**Wetland Restoration and Fish-Offsetting Projects, 2021-2024 – Environmental Scientist:** Level-logger and piezometer monitoring well installation and maintenance, wetland and watercourse delineation and data collection, as well as fish collection and fish habitat suitability index surveys to contribute to various wetland restoration and fish-offsetting programs in Nova Scotia.

## PROFESSIONAL ASSOCIATIONS

- Association of Professional Engineers of Nova Scotia

## AREAS OF SPECIALIZATION

- Industrial Approvals
- Environmental Approvals
- Hydrology/Hydrogeology
- Water Treatment
- Climate Change and GHG Assessments
- Dangerous Goods Assessments

## RELEVANT EXPERIENCE

### EDUCATION

- Bachelor of Engineering (Environmental), Dalhousie University, Halifax, NS (2020)
- Civil/Mining Technician, Collège Boréal, Sudbury, ON (2010)

### TRAINING

- Wilderness First Aid (2022)
- Standard First Aid & CPR (2021)
- WHMIS (2021)
- Confined Spaces (2021)
- Excavation and Trenching (2020)
- Pleasure Craft Operator License (2002)

Mr. Gascon joined the Strum team in 2021 and leads a team with the Environmental Assessment and Approvals Group. Mr. Gascon is experienced in project management, engineering design, environmental monitoring, groundwater assessments, hazard assessments, environmental assessments, project reporting, and regulatory compliance.

Mr. Gascon has worked in various roles, from field technician to project manager, on numerous projects throughout Atlantic Canada, including various Industrial Approval applications, renewals, and amendments, dangerous goods permitting, and environmental monitoring. Additionally, he has valuable experience developing potable groundwater supplies, evaluating and treating water quality issues, and reviewing factors contributing to groundwater resource degradation at residential sites. His responsibilities lie in managing and coordinating these projects, completing various field programs, collecting, compiling, and analyzing data, developing mitigative measures/plans, and preparing reports and related regulatory paperwork.

More recently, Mr. Gascon has been developing and implementing Environmental Management Plans for a variety of small- and large-scale projects, including environmental monitoring and compliance components for groundwater, surface water, air quality, soil quality, erosion and sedimentation controls, vegetation/wildlife management, hazardous and non-hazardous waste management, spill response, remediation, and decommissioning works.

Mr. Gascon previously worked as a Research Assistant with the Centre for Water Resources Studies. His role involved researching the management and disposal options for municipal drinking water treatment plant waste residuals in the Northwest Territories.

Prior to completing his bachelor's degree, Mr. Gascon was a Mechanical Designer, developing and designing 3D renderings for heavy-duty industrial enclosures. Tasks included designing structures with computer-aided design software, formatting designs compatible with the water jet cutter, configuring assembly plans, and inspecting units for fabrication and assembly deficiencies.

## REPRESENTATIVE PROJECTS AND ROLES

### **Environmental Assessment, Simply Blue Group's Green Hydrogen to SAF Project, NS, 2024-Present –**

**Environmental Engineer:** On-going environmental assessment work (development of the EA Registration Document), including the development of technical and environmental component studies. Involved in coordinating the environmental considerations for the Pre-FEED.

### **Post-Approval Work, EverWind Point Tupper Green Hydrogen/Ammonia Project Phase 1, NS, 2023-Present –**

**Environmental Engineer:** On-going post-approval work (following approval of the EA Registration Document), including the development of environmental management and monitoring plans. These plans are developed to avoid/mitigate potential impacts to nearby environmental and residential receptors throughout the project lifespan.



**Greenhouse Gas Assessments, NS and NL, 2022-Present – Environmental Engineer** – Complete a greenhouse gas inventory for various projects across the Atlantic provinces. Quantifying the GHG generation/sinking potential of a project is becoming a requirement for regulatory, financial, and incentivized institutions. Understanding the GHG contributions from projects increases the requirements to offset and adapt to meet federal and provincial net-zero goals.

**Waste Transfer Station Permitting, NS, 2022-Present – Intermediate Engineer:** Complete regulatory outreach for the permitting of new waste transfer stations. The permitting process requires detailed engineering plans and specifications, contingency planning, air quality, noise, surface water, and groundwater management and monitoring.

**Pyrolysis and Biochar Facilities, NS, 2021-Present – Intermediate Engineer:** Complete field studies and key reporting requirements for Environmental Assessment and Industrial Approvals. The permitting process requires detailed engineering plans and specifications, contingency planning, air quality and dispersion modelling, and surface water and groundwater management and monitoring.

**Compost Facility Environmental Monitoring Program, NS, 2021-Present – Intermediate Engineer:** Monitoring groundwater and surface water sampling, data compilation, data analysis, and regulatory reporting. Prepared various approval amendment applications for submission to NSECC, direct correspondence with NSECC, and streamlined the monitoring and reporting program.

**Wind Power Environmental Assessments, NS, 2021-Present – Intermediate Engineer:** Conducted watercourse, wetland, fish/fish habitat, wildlife and avian assessments required, and environmental assessment reporting. Developed greenhouse gas and climate change assessment criteria for quantifying the effects or impacts of the Projects on the environment and climate change on the Projects.

**Groundwater Geothermal Heating and Cooling System Review and Permitting, NS, 2021-Present – Intermediate Engineer:** Withdrawal flow monitoring, water level monitoring, equipment inspection, water quality sampling, data compilation, data analysis, and regulatory reporting.

**Municipal Compost Facility Leachate Handling System, NS, 2021-Present – Intermediate Engineer:** Design, specification, and industrial approval amendment.

**Level I and II Groundwater Assessments, NS, 2021-Present – Intermediate Engineer:** Supervise well installation, pump testing (i.e., step and constant), sampling, analysis of aquifer characteristics, groundwater modelling, and regulatory reporting.

**Groundwater Geothermal Cooling Systems, NS, 2021-Present – Intermediate Engineer:** Withdrawal flow monitoring, water level monitoring, equipment inspection, water quality sampling, data compilation, data analysis, and regulatory reporting.

**Environmental Assessment, EverWind Point Tupper Green Hydrogen/Ammonia Project, NS – Phase 1, NS, 2022 – Environmental Engineer:** Completed field studies and key reporting requirements for the submission of an EA Registration Document for a green ammonia/hydrogen facility. This was the first green ammonia/hydrogen facility to be approved in both Nova Scotia and Canada.

**Production Field Centre Hazardous Materials Assessment, NS, 2021 – Junior Engineer:** Hazardous Materials inventory, coordinate sampling, data analysis, and reporting.

**Greenhouse Gas Inventory Audit, NS, 2021 – Junior Engineer:** Greenhouse Gas auditing for Fisheries and Oceans Canada (DFO) application.

**Air Quality Improvement Design, Labrador, NL, 2021 – Junior Engineer:** Design, specification, stack testing, data analysis, and construction of ventilation improvements.

**Drinking and Wastewater Treatment Plant System Assessments, NS, 2021 – Junior Engineer:** Assess water and wastewater infrastructure, establish an asset inventory, and reporting.

**Municipal Groundwater Withdrawal Compliance, NS, 2021 – Junior Engineer:** Review pumping rates and withdrawal volumes, spatial interferences, sustainability concerns, data analysis, and regulatory compliance.

**Registered Potable Groundwater Supply Assessment, NS, 2021 – Junior Engineer:** Review design specifications, well logs, water quality, data compilation, data analysis, and regulatory compliance.

## PROFESSIONAL ASSOCIATIONS

- Eco Canada (Environmental Professional in-training)

## AREAS OF SPECIALIZATION

- Wetland and Watercourse Assessment and Delineations
- Wildlife Surveys
- Surface and Groundwater
- Climate Change and GHG Assessments
- Industrial Approvals
- Environmental Approvals

## RELEVANT EXPERIENCE

Mr. Scott joined the Strum team in 2022 and is working as a Junior Environmental Scientist with the Environmental Assessment and Approvals Group. Mr. Scott is experienced in many components of Environmental Assessments, including field surveys, delineations, avian radar analysis, wildlife acoustic analysis, and GHG quantification. In an industrial setting, Mr. Scott has experience managing projects and ensuring regulatory compliance and successful approvals. Mr. Scott is experienced in groundwater monitoring, groundwater development, sampling, and conducting aquifer testing and interpreting results.

Mr. Scott has completed fieldwork and report writing to support wetland permitting, Environmental Management Plans and Environmental Assessments for numerous projects across Nova Scotia. Additionally, Mr. Scott has been involved in fieldwork, report writing, and analysis concerning projects throughout the province relating to Level I/II Groundwater Assessments for Subdivisions, groundwater withdrawal approvals, and groundwater monitoring plan programs.

## REPRESENTATIVE PROJECTS AND ROLES

**Municipal Groundwater Supply Assessment, NS, 2023 – Junior Environmental Scientist:** Worked with a team of groundwater experts to analyze well logs, available pump tests and well chemistry data to inform municipal planning around groundwater supply development. This assessment involved determining the depth and stratification of sediments, yields and water quality to understand the yield and safety of a potential groundwater supply.

**Groundwater Monitoring Program, Canso, NS, 2023 – Junior Environmental Scientist:** Ongoing groundwater monitoring work (following approval of the groundwater monitoring plan), including developing groundwater wells, groundwater sampling, aquifer testing and analysis. The purpose of the monitoring plan is to avoid/mitigate potential impacts to nearby environmental receptors throughout the lifespan of the Project.

**Greenhouse Gas Inventories, NS, 2023 – Present – Junior Environmental Scientist:** Experienced in conducting direct and indirect GHG emission inventories to quantify large-scale industrial impacts and identify areas for mitigation.

**Post-Approval Work, Point Tupper Green Hydrogen/Ammonia Project, NS – Phase 1, NS, 2023 – Junior Environmental Scientist:** Development of the groundwater monitoring plan for the hydrogen/ammonia industrial facility as required following the EA approval. Completed fieldwork to support surface water monitoring.

**Wetland Carbon Sequestration, NS, 2023 – Present – Junior Environmental Scientist:** Designing methods and procedures for fieldwork and subsequent analysis to quantify carbon stored in wetland soils.

## EDUCATION

- Bachelor of Science (Environmental Science), Saint Mary's University, Halifax, NS (2022)

## TRAINING

- Wetland Delineation and Classification Training (2023) – Fern Hill Institution of Plant Classification
- Wetland Ecosystem Services Protocol Atlantic Canada (WESP-AC) Training (2023) – Maritime College of Forestry Technology
- Backpack Electrofishing Training (2023) – Maritime College of Forestry Technology
- Standard First Aid Level C CPR & AED (2022) – St John's Ambulance
- ATV Training Course (2022) – Canadian Safety Council
- Pilot Certificate – Small Remotely Piloted Aircraft System (RPAS), Visual line-of-sight (VLOS) (2022) – Transports Canada

**Wetland Delineation and Permitting, NS, 2023 – Present – Junior Environmental Scientist:** Completed wetland delineations, functional assessments, and permitting applications for pre-construction wetland alterations.

**Groundwater Geothermal Heating and Cooling Systems Review and Permitting, NS, 2023 – Present – Junior Environmental Scientist:** Withdrawal flow monitoring, water level monitoring, equipment inspection, water quality sampling, data compilation, data analysis, and regulatory reporting.

**Nesting Bird Searches, NS, 2023 – Junior Environmental Scientist:** Surveyed areas pre-construction for the presence of nesting bird activity. Collected field data related to observations and flagged off buffer areas surrounding nesting bird species.

**Wind Power Environmental Assessments, NS, 2022 – Present – Junior Environmental Scientist:** Conducted watercourse, wetland, fish/fish habitat, wildlife and avian assessments, and environmental assessment reporting. Quantified greenhouse gas and climate change impacts of the projects on the environment.

**Level I/II Groundwater Assessments, NS, 2022—Present—Junior Environmental Scientist:** Completed desktop assessments to determine the viability of sustainable groundwater withdrawals. Conducted drilling and pump test supervision. Sampled water to compare with drinking water guidelines and analyzed aquifer test data to determine adequate safe yields for groundwater users.

**Radar and Avian Acoustic Assessments NS, 2022 – Present – Junior Environmental Scientist:** Built and ran remote radar and acoustic monitor assemblies to record the passage of avian migrant species. The radar and acoustic data were processed and analyzed to determine the patterns of avian migration. The acoustics were analyzed with machine-learning software and manually verified for accuracy.

**Various Management and Leadership Roles, NS, 2018- 2022 – Self-Employed:** Competed internationally for Canada in Sprint Kayaking. This required creating sponsorship proposals, developing relationships with sponsors and stakeholders, and managing travel and shipping logistics. Part of this role required public speaking engagements, client receptions, and providing mentorship.

## AREAS OF SPECIALIZATION

- Project Management
- Team Building
- Geographic Information Systems (GIS)
- LiDAR and Remote Sensing
- Natural Resource Management
- Marine Hydrographic Surveys
- Clearance Surveys
- Marine Benthic and Water Sampling
- Underwater Video

## COMPUTER EXPERIENCE

- Operating Systems: Windows, OSX, Linux
- Survey Software: HYPACK
- Seismic Software: SonarWiz, Coda
- GPS Software: Trimble Office, Waypoint GPS Processing, GravNav and GravNet
- GIS Software: ArcGIS, GRASS GIS, QGIS
- CAD Software: AutoCAD Civil 3D
- Image Processing: Surfer, CARIS HIPS and SIPS
- Misc. Software: Grapher, Microsoft Office, Global Mapper, SonarPro

## EQUIPMENT EXPERIENCE

- GPS Equipment: Assorted Trimble and equipment for autonomous, differential, static, and RTK surveying (Pro XR, 4600, 4800, 5700/5800), Leica RTK, differential static and total stations
- Surveying Equipment: Knudsen BP320 echosounder, SSS Klein 595 and 3000, Teledyne Reson T20P multibeam, Teledyne Reson 7125 multibeam, Odom MB1 and MB2, Integrated Marine Acoustic Profiling System, Magnetometer, and various GPR equipment.
- Misc. Equipment: RBR XR620 CTD Probe and Tide Gauge, Eckman and Van Veen Grab Samplers, Underwater Camera, CNAV 0183 NMEA GPS receivers

## RELEVANT EXPERIENCE

Mr. Savelle is the Group Manager of our Geomatics and a GIS specialist with over 15 years' experience. Matt has extensive knowledge of digital modelling, visual renderings, and managing extensive data sets associated with large projects. Matt is skilled at producing graphical representations of this data for consumption by members of the public as well as regulatory reviewers. He has consulted regularly with provincial regulatory agencies and other stakeholder groups. Matt is a versatile, conservation-focused with over 15 years in adaptive project management in challenging environments. As Manager of the Geomatics Group, Matt oversees the efficient collection and organization of field data.

His area of speciality is in Marine Geomatics and conducting bathymetric and topographic surveys. He has extensive experience in surveying marine benthic surfaces and shorelines, obtaining overlapping hydrographic (multibeam, single beam and side scan sonar) data, data collection, positioning and navigation, data processing and compilation, plotting and reporting of results. Matt also has experience collecting conventional total station data, RTK and static GPS data, and has been responsible for project set up, establishing GPS control points, and boat mobilization.

## EDUCATION

- Centre of Geographic Sciences (COGS), Lawrencetown, Nova Scotia Advanced Diploma in Marine Geomatics (2010)
- Saint Mary's University, Halifax, Nova Scotia Bachelor of Science Degree (BSc) (2009), major in Biology and Minor in Geography

## TRAINING

- Marine Basic First Aid
- St. John Ambulance, Level A CPR
- St. John Ambulance, Canadian East Coast Offshore Fitness Certificate
- Med A1 Offshore Survival Systems,
- WHMIS



## REPRESENTATIVE PROJECTS AND ROLES

**EverWind Fuels Green Hydrogen Project, NS, 2022 - Present - Geomatics Specialist:** Project work includes geospatial analysis, supporting external inquiries, and integrating environmental and socioeconomic factors into the assessments.

**Wind Farm Projects, NS, 2022 - Present - Geomatics Specialist:** Project work includes streamlining field data collection, developing in house habitat modelling, tracking applications, and performing geospatial data analysis.

**Marine Survey for Offshore Oil & Gas Support Facilities, Sheet Harbour, NS, 2020 –** Detailed marine surveys were conducted as part of the planning and permitting process for a marine facility used to support the offshore oil and gas industry. Bathymetric and multibeam sonar surveys were completed to provide a detailed bottom profile and water depths in areas of Sheet Harbour that will be used for large vessel movements. This information will be used to determine proper clearances for vessels and to determine if additional dredging is required. In addition to collecting this survey information, digital video was captured to document the types of marine habitat in the area to support applications for federal approvals.

**Chedabucto Bay Marine Surveys for Aquaculture Facilities, NS, 2020 –** As part of the detailed siting of marine aquaculture facilities, bathymetric and single beam sonar surveys were completed to provide a detailed bottom profile and water depths in multiple areas of Chedabucto. In addition to collecting this survey information, digital video was captured along predetermined transects to document marine habitats, and benthic sediment samples were collected with a Van Veen grab for analysis. Marine survey data was processed to generate detailed digital bottom profiles.

**St. Marys Bay Marine Surveys for Aquaculture Facilities, NS, 2019-2020 –** As part of the detailed siting of marine aquaculture facilities, bathymetric and single beam sonar surveys were completed to provide a detailed bottom profile and water depths in multiple areas of St. Marys Bay. In addition to collecting this survey information, digital video was captured along predetermined transects to document marine habitats, and benthic sediment samples were collected with a Van Veen grab for analysis. Marine survey data was processed to generate detailed digital bottom profiles.

**Fundy Isles Cable Route Survey, 2018 –** Completed multibeam, sidescan sonar acquisition, processing, and reporting for selecting a cable route from NB to Grand Manan. Reported on impacts to benthic habitat throughout the proposed cable route.

**Lake Erie Connector Cable Route Survey, 2014 -** Carried out multibeam, sidescan sonar, acquisition, processing, and reporting for selecting a cable route from Canada to USA. Reported on impacts to benthic habitat throughout the proposed cable route.

**Canso Causeway Marine Geophysical Survey, 2013 -** Carried out multibeam, sidescan sonar, acquisition, processing, and reporting for a stability of the causeway survey. Data was collected to ensure that no rock failures present in the causeway.

**Country Harbour SOEP Pipeline Survey, 2011 -** Carried out multibeam, sidescan sonar, magnetometer and singlebeam acquisition, processing, and reporting for a pipeline survey. Data was collected to ensure that no pipe was exposed.

**Beaufort and Chukchi Sea Ice Scour Mapping Program, 2010-2018 -** The primary objectives of the survey were to resurvey specific corridors across the Beaufort and Chukchi Shelf using high resolution geophysical instrumentation to identify and document new scour events. This included the collection of geophysical data such as side scan sonar, microprofiler, and sub-bottom data over various lines and survey sites

**St. Clair River Geophysical Survey, 2010 -** The objectives of the survey were to identify pipelines in the St. Clair River. Magnetometer and side scan sonar were deployed to search for buried pipe and to classify targets on the river floor. This survey was executed in order to establish safe drilling locations in the river. There were three sites that were surveyed in the St. Clair River. Two of the sites revealed pipelines beneath the river floor. The deliverables included a GIS database (ArcGIS) along with a final written report to the clients' specifications.

---

---

## AREAS OF SPECIALIZATION

- Remote Sensing
- Geographic Information Systems (GIS)
- LiDAR
- Photogrammetry
- Location, spatial, and data analytics
- Geoprocessing, Model Building, and automation
- Database management
- Geomorphology
- Hydrologic Modelling

## COMPUTER EXPERIENCE

- Operating Systems: Windows, macOS
- GPS Software: Garmin BaseCamp, Trimble Geospatial
- GIS Software: ArcGIS Suite, QGIS, Global Mapper
- Remote Sensing Data Processing: DJI Terra, ArcGIS Pro, Trimble Inpho, POSpac MMS, LAStools
- Other Software: CorelDRAW X7
- Scripting: Python 2 & 3, SQL

## EDUCATION

- Master of Science in Applied Geomatics, Acadia University, Wolfville, NS (2021)
- Advanced Diploma in Geographic Information Systems (GIS), Centre of Geographic Sciences (COGS), Lawrencetown, NS (2020)
- Bachelor of Science, Major in Geology Saint Mary's University, Halifax, NS (2019)

## TRAINING

- Standard First Aid and WHMIS (2022)
- RPAS Pilot Certification (2021)
- Over 200 hours ESRI Academy Training (2019 – Present)

## RELEVANT EXPERIENCE

Mr. Opra is a GIS Specialist with Strum working in our Environmental Assessments and Approvals group. Mr. Opra specializes in Geomatics analysis and automation. He has extensive experience in implementing workflows for data analysis and processing. This experience includes trajectory processing, processing single and dual channel LiDAR data, photogrammetry, and automation of geospatial data analysis with both vector and raster data. In addition, Mr. Opra is experienced in operating a RPAS for data collection.

During his graduate studies, Mr. Opra focused on the application of remote sensing technologies in exploration geology. He investigated LiDAR as an effective means to visualize topography and in further detail, geomorphological features such as folds and glacial structures. He explored the advantages of both RPAS and airplane-acquired LiDAR while reviewing various software for processing and analysis. Mr. Opra helped support the project's RPAS surveys in Tralfalgar, Nova Scotia and processed the data to produce high resolution terrain models.

Prior to and following his research contribution, Mr. Opra worked in academia as an advisor, then in the industry as a Geospatial Data Analyst and as a Remote Sensing Analyst. In academia, he assisted with an Honours thesis in developing a geospatial model to automatically detect sinkholes based on LiDAR data. He also assisted in a Master's thesis by mapping legacy gold mine tailings, and developing a survey grid for sampling. As a geospatial data analyst, he helped create new data products using multispectral imagery for precision agriculture. Through working on various LiDAR and Photogrammetry projects based throughout the Caribbean, USA, and Canada, Mr. Opra was able to apply automation to photogrammetry procedures and LiDAR processing. His commitment to data quality assurance and control allowed him to develop a deeper understanding of how data is affected by environmental and human factors. His experience in both geology and environmental science allows him to have a strategic approach for geospatial analysis in environmental consulting.

Due to the multidisciplinary nature of Geomatics, Mr. Opra developed the ability to anticipate, identify, and solve diverse geospatial problems. Mr. Opra continues to research advancements in technology to build on and develop efficient procedures for data analysis and collection.

## REPRESENTATIVE PROJECTS AND ROLES

**Environmental Constraint Analysis, NB, NS, NL, 2023-Present – Remote Sensing Scientist:** Land cover, landform, and hydro analysis for projects throughout the Maritimes. Using remotely sensed baseline data to create geospatial data products.

**Hydrologic Modelling, NB, NS, NL, 2023-Present – Remote Sensing Scientist:** Identifying stream networks and creating geospatial data products to guide project designs. Geospatial products that are created but are not limited to, Depth to Water, potential wetlands, potential watercourses, and catchment areas for various scale projects. High resolution remotely sensed data (e.g., LiDAR and Multispectral Imagery) is used to gain insights about complex hydrology.

**EverWind Fuels Green Hydrogen Project, NS, 2022-Present – Geomatics Specialist:** Spearheaded geospatial analysis, supported external inquiries, and integrated environmental and socioeconomic factors in the assessments.

**Wind Farm Projects, NS, 2022-Present – Geomatics Specialist:** Streamlining field data collection, developed in house habitat modelling, tracking applications, and performing geospatial data analysis.

**Sinkhole Delineation Automation, NS, 2021-2022 – Advisor:** Assisted in the development of a model within ArcGIS Pro for automating detection and delineation of sinkholes in the Karst prone areas.

**LiDAR and Orthoimagery Data Production, Caribbean, USA, and Canada, 2021-2022 – Remote Sensing Analyst:** Trajectory processing, LiDAR processing, automation, and creation of data products from inception to delivery.

**Multispectral Vineyard Imagery Data Production, California, USA, 2020 – Geospatial Data Analyst:** Assisted with the development of new proprietary geospatial products for precision agriculture.

**Epiphytic Lichens as Spatial Biomonitors of Airbourne Mercury and Arsenic, 2019 – Research Intern:** Used GPS to map historical mining sites, and designed survey grids for Lichen collection.

**Provenance and Diagenesis of Sandstones in the Deep Wells Annapolis G-24, Balvenie B-79, Crimson F-81, Weymouth A-45, and Newburn H-23, Scotian Basin, offshore NS, 2017-2018 – Research Assistant:** Creation of graphic models and diagrams using data captured by a scanning electron microscope (SEM) to further research efforts in understanding the geology of the Scotian Basin.

**Petrography of Bedrock and Ice-rafted Granules, Flemish Cap, offshore Newfoundland and Labrador, 2017 – Research Assistant:** Determining petrographic information of the samples using a scanning electron microscope (SEM). Energy dispersive spectroscopy (EDS) was used to determine mineral composition and backscattered electron images (BSE) where used to identify textures. Graphic design software was used to aggregate the images captured from the SEM.

## AREAS OF SPECIALIZATION

- Geographic Information Systems (GIS)
- Field Studies
- Avian Radar Analysis
- Wind Turbine Risk Assessment (Shadow Flicker, Noise Modelling & Visual Simulations)

## RELEVANT EXPERIENCE

Mr. Johnson first joined Strum in 2021 as an Environmental Field Technician working in our Environmental Science Group. His area of speciality is in Geographic Information Systems and Remote Sensing. He has extensive experience in data collection in the field, installation of monitoring equipment such as groundwater wells, bird and bat monitoring systems, and working with avian radar datasets and wind turbine analysis software. He is responsible for producing concise and accurate mapping products and incorporating them into the environmental assessment.

More recently, Mr. Johnson has been responsible for the predictive modelling of multiple wind farm projects around the province. This includes the shadow flicker and noise assessment impact on receptors in nearby communities, and photo-simulations visualizing turbines in each study area.

## REPRESENTATIVE PROJECTS AND ROLES

**Wind Farm Projects, NS, 2021-Present – Geomatics Technician:** Responsible for the collection of field data, analysis, and production of accurate GIS mapping products to be used in the reporting process. Avian radar systems were installed and used in various locations of the study area for the purpose of tracking bird activity. Detailed wind turbine risk assessment was conducted for the study area, including noise level and shadow flicker assessments, and photo-simulations visualizing turbines in each potential location.

**Transmission Line Moose Tracking Surveys, NS, 2022 – Geomatics Technician:** Participated in field assessments for winter wildlife, with a focus on mainland moose and other species at risk. This involved walking predetermined transects through various habitats to identify and document evidence of wildlife such as tracks, scat, and browsing. Additionally, responsible for the post-processing of field data and production of accurate GIS mapping products to be used in the reporting process.

**Various Wetland and Watercourse Delineation Projects, NS, 2021 – Present - Geomatics Technician:** Responsible for the post-processing of field data and production of accurate GIS mapping products to be used in the reporting process.

## EDUCATION

- Centre of Geographic Sciences (COGS), Lawrencetown, Nova Scotia Advanced Diploma in Geographic Information Systems (2020)
- Saint Mary's University, Halifax, Nova Scotia Bachelor of Science Degree (BSc) (2017), major in Geography

## TRAINING

- Canadian Drone Pilot Certificate (Basic)
- WHMIS
- ATV Training Course



## AREAS OF SPECIALIZATION

- Geographic Information Systems (GIS)
- Spatial data analytics
- Database management
- Data processing and quality control

## COMPUTER EXPERIENCE

- GIS software: ESRI Suite, QGIS, PCI Geomatica/Catalyst, GPS-H, TRX, PPP Direct
- Programming: Arcade, SQL, PL/SQL, Python, JavaScript, HTML, CSS
- Database management: PostgreSQL, Microsoft Office Suite, Power Automate

## EDUCATION

- Advanced Diploma in Geographic Information Systems (GIS), Centre of Geographic Sciences (COGS), Lawrencetown, NS (2022)
- Bachelor of Environmental Studies, Saint Mary's University, Halifax, NS (2015)

## TRAINING

- Over 75 hours ESRI Academy Training (2021 – Present)
- Emergency First Aid CPR Level "C" & AED (2023)
- WHMIS (2023)

## RELEVANT EXPERIENCE

Ms. Partridge has been working as a GIS Specialist with Strum Consulting since early 2023. As a part of the Environmental Assessment & Approvals team, she has assisted with various projects concerning wind farm development, wetland and watercourse management, and telecommunications analysis.

Ms. Partridge received a Bachelor of Environmental Studies from Saint Mary's University in 2015 and went on to receive an Advanced Diploma in Geographic Information Systems (GIS) with Honours from the Centre of Geographic Sciences in 2022. During her post graduate studies, Ms. Partridge conducted an analysis of GPS data in relation to the protection of an endangered aquatic species. This involved the restoration of missing or faulty GPS data by processing and analyzing environmental, topographical, and behavioural data to determine the accurate locations. She provided clarity on data errors, outlying species behaviours, and key habitat areas to directly aid in the protection of the species.

Since joining the team at Strum, Ms. Partridge has been involved in a wide range of environmental and industrial assessment projects. This has provided her experience working within both provincial and federal regulations across various governmental bodies and allowed her to gain in-depth knowledge of specialized environmental considerations.

Ms. Partridge has also utilized the ESRI suite of programs to implement and maintain numerous public-facing web mapping applications to facilitate client updates and external communication, as well as continuously develop and improve internal field data collection and management procedures. This has provided the opportunity to become familiar with a wide range of spatial and environmental data management processes and software capabilities.

## REPRESENTATIVE PROJECTS AND ROLES

**Environmental Assessments and Approvals (2023 – Present) – GIS Specialist:** Developed field data collection procedures, data processing and analysis, and provided map products to support projects across numerous departments.

**Telecommunications Interference Analysis of Wind Projects within Nova Scotia (2023 - Present) – GIS Specialist:** Compiled and processed provincial telecommunications data to analyze the spatial relationships of wind farms in Nova Scotia and surrounding telecommunication towers to identify potential electromagnetic interference (EMI).

**Wetland Research Compensation Project (2023 – 2024) – GIS Specialist:** Facilitated data collection and compilation related to wet area prediction and protection. Assisted with data analysis to provide summaries of findings to be used in various applications.

## AREAS OF SPECIALIZATION

- Geographic Information Systems (GIS)
- Location, Spatial, and Data Analytics
- Database Management
- Geoprocessing, Model Building
- Civic Addressing

## COMPUTER EXPERIENCE

- GIS Software: ArcGIS Suite, QGIS
- Other Software: CorelDRAW X7
- Scripting: SQL, Python 2 & 3

## RELEVANT EXPERIENCE

Ms. Wallace is a GIS Technician working in the Environmental Assessments and Approvals group. She joined the team in early 2023 and has been helping the GIS team with data analysis and creating mapping products for environmental assessments and other projects.

Ms. Wallace received her Bachelor of Science with Honours in Geology at Saint Mary's University in 2019. While studying at Saint Mary's, Ms. Wallace was a research assistant, and was able to use a variety of tools to aid in the analysis of minerals and in their identification process. Ms. Wallace then went on to receive an Advanced Diploma in Geographic Information Systems at the Centre of Geographic Sciences in 2020.

Before joining Strum, Ms. Wallace worked for the Province of Nova Scotia as part of the Civic Addressing team, where she was able to continue to use GIS and was involved in the emergency management operations during Hurricane Fiona where she analysed data and created a dashboard to help the team with their planning going forward.

## REPRESENTATIVE PROJECTS AND ROLES

**Wind Farm Projects, NS, 2023 - Present - Geomatics Technician:** Compiled and checked collected field data, performed geospatial data analysis, and completed numerous drawings as a visual aid in environmental assessments and other reports.

**Detrital Mineral Provenance Analyses from the Cretaceous McMurray Formation, Alberta and the Holocene Portneuf River Delta, North Shore of Quebec (2021) – Research Assistant:** Used a scanning electron microscope to determine mineral composition and to identify mineral assemblages in different offshore wells in the Scotian Basin. Supplementary graphs were created to aid in demonstrating mineral assemblages and chemical composition.

**Sedimentary Petrology of the Upper Cree Member in the Cohasset A-52 Well, Scotian Basin, Offshore Nova Scotia (2020) – Research Assistant:** Used a scanning electron microscope to determine mineral composition and to identify mineral assemblages in different offshore wells in the Scotian Basin. Supplementary graphs were created to aid in demonstrating mineral assemblages and chemical composition.

**Electron Microprobe and Scanning Electron Microscope Mineral Analyses of Diagenetic Minerals from Lower Cretaceous Reservoir Sandstone, Scotian Basin, Offshore Nova Scotia (2019) – Research Assistant:** Computer software was used to combine all backscattered electron images captured from a scanning electron microscope.

## EDUCATION

- Advanced Diploma in Geographic Information Systems (GIS), Centre of Geographic Sciences (COGS), Lawrencetown, NS (2020) ‘
- Bachelor of Science with Honours, Major in Geology, Saint Mary's University, Halifax, NS (2019)

## TRAINING

- Emergency First Aid CPR Level "C" & AED (2021)
- WHMIS (2023)
- Over 100 hours ESRI Academy Training (2019 – Present)

**Detrital Petrology and Provenance of the Logan Canyon Formation Sandstones, Scotian Basin (2019) –**

**Research Assistant:** Analyzed petrographic information from samples using a scanning electron microscope, where mineral composition was determined using Energy dispersive spectroscopy and identification was helped with backscattered electron images using texture and brightness as a guide. Heavy mineral separation and identification was used to determine mineral assemblages and understand origins.