APPENDIX J

GENERAL PHOTO LOG



Photo 1: Example of American Beech (*Fagus grandifolia* - S3S4) observed throughout the Project Site.



Photo 2: Example of anthropogenic disturbance within the Project Site.



Photo 3: Example of young, regenerating deciduous forest within the Project Site.



Photo 4: Example of young, regenerating coniferous forest within the Project Site.



Photo 5: Example of mature coniferous forest within the Project Site.



Photo 6: Example of riparian areas around WC2 - large snags present.



Photo 7: Representative photo of the road running through the Project Site.



Photo 8: Deployed TSI SoundPro DL-1 noise monitor.



Photo 9: Young mixedwood forest habitat surrounding the noise monitor deployment location.

APPENDIX K

COMPLETE HOURLY NOISE AND WEATHER DATA

Table K.1: Hourly LAeq (1hr) Values and Assessment Status

Hour Block (ADT)	Period	LAeq(1hr) dBA	Wind km/h (Dir.)	Assessment Status
May 18, 15:00	Day	**32.8**	15 (W)	Valid
May 18, 16:00	Day	**32.1**	13 (SW)	Valid
May 18, 17:00	Day	32.9	21 (W)	*Excl. – Wind >5 m/s*
May 18, 18:00	Day	34.3	22 (W)	*Excl. – Wind >5 m/s*
May 18, 19:00	Evening	**41.1**	18 (SW)	Valid
May 18, 20:00	Evening	**38.7**	11 (SW)	Valid
May 18, 21:00	Evening	33.8	21 (WSW)	*Excl. – Wind >5 m/s*
May 18, 22:00	Evening	**31.6**	17 (SW)	Valid
May 18, 23:00	Night	**30.7**	9 (WSW)	Valid
May 19, 00:00	Night	**29.9**	8 (WSW)	Valid
May 19, 01:00	Night	**30.0**	4 (SSE)	Valid
May 19, 02:00	Night	**30.7**	8 (SW)	Valid
May 19, 03:00	Night	**31.5**	5 (S)	Valid
May 19, 04:00	Night	**35.6**	5 (SE)	Valid
May 19, 05:00	Night	**36.6**	4 (NNE)	Valid
May 19, 06:00	Night	**36.8**	4 (SE)	Valid
May 19, 07:00	Day	**37.5**	4 (NNE)	Valid
May 19, 08:00	Day	**36.9**	11 (NNW)	Valid
May 19, 09:00	Day	**35.2**	4 (N)	Valid
May 19, 10:00	Day	**35.3**	9 (SSW)	Valid
May 19, 11:00	Day	**34.5**	8 (W)	Valid
May 19, 12:00	Day	**32.5**	8 (W)	Valid
May 19, 13:00	Day	**36.5**	8 (WNW)	Valid
May 19, 14:00	Day	**43.8**	15 (WNW)	Valid
May 19, 15:00	Day	**31.9**	17 (WSW)	Valid
May 19, 16:00	Day	**33.4**	8 (W)	Valid
May 19, 17:00	Day	**34.7**	15 (W)	Valid
May 19, 18:00	Day	32.4	9 (W)	*Excl. – Precipitation*
May 19, 19:00	Evening	**36.3**	13 (W)	Valid
May 19, 20:00	Evening	34.3	4 (WSW)	*Excl. – Precipitation*
May 19, 21:00	Evening	**39.9**	4 (W)	Valid

Hour Block (ADT)	Period	LAeq(1hr) dBA	Wind km/h (Dir.)	Assessment Status
May 19, 22:00	Evening	**35.0**	5 (S)	Valid
May 19, 23:00	Night	**31.4**	8 (ENE)	Valid
May 20, 00:00	Night	**30.4**	4 (E)	Valid
May 20, 01:00	Night	**30.7**	4 (S)	Valid
May 20, 02:00	Night	**30.1**	0 (Calm)	Valid
May 20, 03:00	Night	**30.7**	4 (E)	Valid
May 20, 04:00	Night	**33.4**	5 (ENE)	Valid
May 20, 05:00	Night	**35.9**	4 (WSW)	Valid
May 20, 06:00	Night	**34.7**	4 (SSE)	Valid
May 20, 07:00	Day	**36.0**	4 (NNW)	Valid
May 20, 08:00	Day	**35.7**	8 (WSW)	Valid
May 20, 09:00	Day	**36.4**	5 (SSW)	Valid
May 20, 10:00	Day	**39.1**	8 (WSW)	Valid
May 20, 11:00	Day	40.8	24 (SW)	*Excl. – Wind >5 m/s*
May 20, 12:00	Day	41.8	26 (WSW)	*Excl. – Wind >5 m/s*

Note: Wind speed and direction are from Greenwood A meteorological station (Climate ID 8202000). Exclusion threshold: wind speed >18 km/h (>5 m/s) or recorded precipitation, per NSECC (2023).

APPENDIX L

PROJECT TEAM CVs

fraxinus
ENVIRONMENTAL & GEOMATICS

Curriculum Vitae
Ian C. Bryson, M.Sc.

Key Areas of Specialty

- Wetland Science
- Botany, Lichenology & Plant Community Ecology
- Assessment and Analysis for Species at Risk (SAR) & Species of Conservation Interest (SOCI)
- Geographic Information Systems (GIS), Remote Sensing & Spatial Modelling
- Environmental Impact Assessment & Regulatory Permitting
- Biophysical Assessments for Major Projects
- Technical Writing and Editing
- Team Leadership and Resourcing
- Project Management

Professional Profile

Ian Bryson is a terrestrial ecologist and geomatics specialist with 22 years of professional experience, with specialist knowledge in Environmental Assessment, vegetation science (vascular flora and lichens), wetland science, GIS and Remote Sensing, Species at Risk, and regulatory permitting. In September 2023, he founded Fraxinus Environmental & Geomatics Limited as an independent environmental consulting practice.

Ian's career includes senior roles across consulting and government. Most recently at CBCL Limited (2022–2023), he provided senior technical expertise in terrestrial ecology and wetlands and oversaw technical consistency across Atlantic Canada and Ontario. Prior to that, he served as Program Lead for the Wetlands Program at the Nova Scotia Department of Environment and Climate Change (2020–2022), responsible for advancing the goals of the Nova Scotia Wetland Conservation Policy, particularly no-net-loss of wetland area and function. He spent the preceding 13 years as an environmental consultant at CBCL, managing multidisciplinary projects for federal, provincial, municipal, and private sector clients across Canada and internationally, with senior technical lead roles spanning botanical, wetland, aquatic, wildlife, and habitat classification programs.

Ian is an experienced surveyor of vascular flora and lichens in the Atlantic Region, with a focus on Species at Risk and Species of Conservation Interest in wetland habitats, including targeted surveys for federally and provincially listed taxa. He is an active contributor to the Atlantic Canada Conservation Data Centre (ACCDC). GIS and remote sensing are central to his practice, applied to ecological modelling, habitat suitability analysis, land classification, and terrain analysis. He is among the most experienced wetland practitioners in Atlantic Canada, having conducted hundreds of delineations and functional assessments across all Atlantic jurisdictions, alongside wetland monitoring, permitting, and compensation project advisory work.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms.

Education

2012 M.Sc. in Biology – St Francis Xavier University
2007 Advanced Diploma in GIS (Honours) – Centre of Geographic Sciences (COGS)
1997 B.Sc., Advanced Major in Biology – St. Francis Xavier University
1995 Diploma in Engineering – St. Francis Xavier University

Employment History

- **Sept 2023 – Present | Fraxinus Environmental & Geomatics**
  Role: President & Senior Scientist
  Key Responsibilities: Wetland delineation and functional assessment; Vegetation and lichen inventories for various major projects; Wetland carbon research and analysis for NGOs and land conservancies; Wetland compensation and restoration planning; Regulatory compliance assessments and environmental permitting; Environmental Assessment general coordination; Business administration, marketing and client relations.

- **Apr 2022 – Sept 2023 | CBCL Limited Consulting Engineers**
  Role: Senior Technical Specialist – Ecology and Wetlands
  Key Responsibilities: Providing senior level technical expertise to projects within the practice area of ecology and wetlands; Overseeing the quality and technical consistency of the ecology and wetland practice across CBCL's geographic areas (Atlantic Canada and Ontario); Developing an interdisciplinary practice for wetland restoration; Providing senior-level technical review and QA/QC for client deliverables; Mentoring of junior staff for professional and technical development in the environmental sector; Project management.

- **Jan 2020 – Apr 2022 | Nova Scotia Department of Environment and Climate Change**
  Role: Wetland Specialist
  Key Responsibilities: Overseeing various aspects of the implementation of the Nova Scotia *Wetland Conservation Policy*, chiefly pertaining to the goal of no-net-loss of wetland habitat within the Province. Typical duties include: Regulatory review of wetland alteration applications and Environmental Assessments; review and acceptance of wetland compensation proposals; review and acceptance of wetland monitoring data; providing subject matter expertise and field support for NS ECC Inspection, Compliance and Enforcement staff; communication and collaboration on matters of wetland science/policy with consultants, government departments, and the public. Special project work in this position has included ongoing implementation of the Wetland Ecosystem Services Protocol for Atlantic Canada (WESP-AC) as the sole functional assessment protocol within the Province, and investigation of additional means of designating Wetlands of Special Significance on the basis of biodiversity.

- Nov 2007 – Dec 2019 | CBCL Limited Consulting Engineers
  Role: Environmental Scientist & GIS Specialist
  Key Responsibilities: Applied terrestrial ecology and GIS expertise across a wide range of environmental assessment and development projects, with typical responsibilities spanning habitat assessment, ecological field program design, species at risk analysis, rare plant surveys, wetland delineation and functional assessment, environmental reporting, and project management. Progressively advanced to Group Leader in 2016, assuming responsibility for supervising environmental staff, overseeing project resourcing, providing senior-level technical review and QA/QC, and mentoring junior scientists and technicians for professional development in the environmental sector.

- May 2007 – Nov 2007 | Dalhousie University GIS Centre
  Role: GIS Analyst (Term)
  Key Responsibilities: Project design, cartography, data management, and analysis of geospatial data. Consulting with faculty, undergraduate and graduate students on research projects implementing GIS technology. Technical training in the use of ArcGIS software. Internet-based mapping using ArcGIS Server, Google Maps, and Microsoft Virtual Earth.

- 2005-2007 | Taylor-Mazier Associates
  Role: Field Ecologist & Consultant
  Key Responsibilities: Wetland monitoring, rare plant surveys, terrestrial habitat assessments, technical reporting and statistical analysis of ecological data.

- 2003-2005 | St Francis Xavier University – Biology Department
  Role: Research Assistant and Laboratory Supervisor
  Key Responsibilities: Collection and preparation of marine mollusc specimens for electron microscopy; Digital imaging and photography for scientific publications; Preparation for and delivery of undergraduate ecology laboratory sessions, including coordination of field trips; Grading of assignments, exams, and tabulation of results.

Selected Project Experience

- **Maritime Link – Emera Newfoundland & Labrador (2011–2015)** Provided comprehensive environmental baseline and constraints assessment services across western Newfoundland, Cape Breton, and the Cabot Strait over a multi-year program. Work encompassed large-scale ecological land and wetland classification (2,260 km^2), rare flora surveys, wetland delineation and functional assessment, peat depth profiling, multi-criteria constraints and risk modelling across approximately 310 km of transmission corridor, and biophysical constraints mapping for an ~180 km subsea cable route. Deliverables integrated field data collection, remote sensing (orthophoto, LiDAR, satellite imagery), and GIS-based mapping to support project planning, regulatory compliance, and construction management.

- **Wind Energy Development – Biophysical Assessments (Multiple Clients, 2007–2023)** Provided project management and senior technical leadership across numerous wind farm biophysical assessment programs in Nova Scotia, for clients including NSPI, RES Canada, and confidential developers. Scope consistently included wetland delineation and functional assessment, rare flora and lichen surveys, species at risk screening and habitat modelling, avifauna surveys, and environmental constraints mapping. Notable projects include Bear Lake, Nuttby Mountain, Point Tupper, Digby, and Terence Bay wind farms, as well as large proposed installations in the Cobequid Hills.

- **Highway 104 Environmental Assessment & NS Highway Twinning Studies – NSTIR (2015–2019)** Provided senior biological and environmental assessment services across feasibility-level studies for approximately 200 km of potential twinning corridors and a full Environmental Assessment for the 38 km Sutherlands River to Antigonish corridor (Highway 104), for which Ministerial approval was granted in February 2019. Scope included wetland delineation and functional assessment, vascular plant and lichen inventories with emphasis on species of conservation concern, environmental constraints mapping for multiple route alternatives, and overall technical coordination of the EA submission.

- **Wetland Carbon & LiDAR-Based Wetland Modelling Research (2020–2023)** Led multiple applied research initiatives at the intersection of wetland science and geomatics. Developed a provincial-scale LiDAR-based Wet Areas Mapping tool for NS ECC, subsequently adopted as the foundation for the Province's WAM2 project. Conducted a novel forested wetland carbon study for the Mersey Tobeatic Research Institute, achieving 94.63% wetland detection accuracy and calculating soil organic carbon stores of 367.8 Mg/ha across the Pleasant River watershed. Also contributed to wetland carbon analysis on the Kingsburg Peninsula in partnership with Dalhousie University and the Kingsburg Coastal Conservancy.

- **WESP-AC Implementation for Regulatory Approvals – NS ECC (2019–2021)** As Program Lead for the NS Wetlands Program, developed and implemented criteria for incorporating WESP-AC functional assessment results into Nova Scotia's wetland regulatory approvals process, including a new scoring framework for identifying Functionally Significant Wetlands. This work directly advanced the goals of the Nova Scotia Wetland Conservation Policy with respect to no-net-loss of wetland area and function.

- **Wetland Monitoring Programs – HRM & Oak Island Tours (2015–2023)** Designed and executed multi-year wetland monitoring protocols for two long-term projects: a 5-year program assessing wetland alteration impacts and compensation success for the Dartmouth 4-Pad Arena (HRM), and an 8-year monitoring program evaluating the effects

of temporary wetland dewatering on Oak Island, NS. Both programs involved inter-annual vegetation tracking, functional assessment, and regulatory reporting.

- **National Defence Sites – DCC/DND (2011–2017)** Delivered natural resources inventories, rare flora surveys, wetland delineations, and functional assessments across multiple DND sites in Nova Scotia and Newfoundland, including Bedford, Sydney, Debert, and Cambrai rifle ranges, Parkers Pond and Emerald Vale training areas, Mill Cove Antenna Site, Baccaro Point, and Hartlen Point. Also designed and executed an avian mortality monitoring program at Hartlen Point to assess radar antenna array impacts on migratory birds.

- **GIS-Based Spatial Modelling & Land Use Planning (2008–2015)** Applied advanced GIS and remote sensing techniques to a range of planning and impact assessment contexts. Projects included multi-criteria suitability analyses for regional land-use plans in Newfoundland, LiDAR-based flood risk mapping for the Fortress of Louisbourg, viewshed and visual impact modelling, solid waste transfer station optimization in Trinidad, and business park suitability modelling for municipal clients in Nova Scotia.

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ENVIRONMENTAL & GEOMATICS

Curriculum Vitae
Scott Dickey, MREM

Key Areas of Specialty

- Wildlife and species-at-risk assessments
- Avifauna assessments
- Environmental Impact Assessments
- Environmental Permitting
- Industrial Approvals
- Technical Writing
- Team Leadership and Resourcing
- Project Management

Professional Profile

Scott Dickey joins Fraxinus with over 15 years of diverse experience in the environmental consulting sector, having held leadership and technical roles at leading organizations across Atlantic Canada. His expertise spans environmental assessment and permitting, renewable energy development, wetland science and restoration, wildlife ecology, and environmental research.

Throughout his career, Scott has managed multidisciplinary teams and led large-scale environmental assessment projects, delivering innovative and practical solutions for clients in industries such as wind energy, tidal energy, and hydroelectric systems. His project experience includes navigating complex regulatory frameworks to obtain approvals, developing compensation projects for habitat alteration, designing and implementing environmental monitoring programs, and providing technical guidance on sensitive ecosystems and species at risk. He has also played an active role in mentoring environmental professionals and building high-performing technical teams.

Scott holds a Master of Resource and Environmental Management from Dalhousie University and a Bachelor of Science in Biology, Chemistry, and Environmental Science from Mount Saint Vincent University. This combination of advanced academic training and extensive field and project experience positions him well to support Fraxinus clients across a broad range of environmental disciplines. His leadership, technical depth, and commitment to sustainable and responsible development make him a valuable member of the Fraxinus team.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Renewable Energy Developers; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms.

Education

2012 Master of Resource and Environmental Management – Dalhousie University
2009 Bachelor of Science with Honours in Biology – Mount Saint Vincent University

Employment History

- **Jan 2025 - Present | Fraxinus Environmental & Geomatics, Halifax, NS**
  Role: Senior Environmental Scientist, Associate
  Key Responsibilities: Provide senior environmental permitting and assessment support for transmission line and other linear infrastructure projects in Nova Scotia, with a focus on regulatory strategy, approvals planning, environmental studies, and technical reporting. Support clients through provincial permitting processes, including wetlands, watercourses, and associated environmental approval requirements. Also lead project management, regulatory consultation, business development, wetland restoration and compensation initiatives, and avian radar/acoustics program development, analysis, and reporting.

- **2012 – 2024 | Strum Consulting, Halifax, NS**
  Role: Senior Environmental Scientist
  Key Responsibilities: Managing a multidisciplinary team of environmental professionals in completing environmental assessments, environmental component studies, and environmental permitting programs.

- **2013 – 2014 | Government of Nova Scotia, Halifax, NS**
  Role: Environmental Assessment Review Panel Member
  Key Responsibilities: Reviewed environmental assessments for major projects, considering regulatory, public, NGO, and First Nations inputs. Provided recommendations for sustainable development in line with environmental impact considerations.

- **May – Dec 2011 | Nova Scotia Power Inc. , Halifax, NS**
  Role: Ecological Management Consulting
  Key Responsibilities: Developed sustainable ecological management strategies for hydroelectric operations, integrating biodiversity conservation measures into operational practices.

- **May – Dec 2008 | Environment and Climate Change Canada, Halifax, NS**
  Role: Environmental Researcher
  Key Responsibilities: Conducted research on watershed management and sustainable pesticide use, contributing to environmental policy recommendations for Atlantic Canada.

Representative Projects

- Weavers Mountain Wind Project - SWEB Developments: Managed the full environmental assessment process, including biophysical studies, regulatory consultation, and public engagement, while overseeing ongoing environmental compliance.
- NS- NB Provincial Intertie Transmission Line Project - Nova Scotia Power Inc.: Managed all biophysical studies, including avifauna and wildlife assessments, wetland and vegetation assessments and species at risk component studies, for this major capital transmission project, and managed permit application data collection programs.
- Everwind Fuels Green Hydrogen Project - Everwind Fuels: Contributed to environmental assessments, regulatory compliance, and public engagement for Everwind's proposed green hydrogen facility and associated wind-power projects located throughout Nova Scotia.

Key Areas of Specialty

- Data Collection & Analysis
- Environmental Management and Monitoring
- Environmental Assessment (EA) & Regulatory Permitting
- Environmental Noise Monitoring
- Technical Writing and Editing
- Geographic Information Systems (GIS) & Spatial Analysis
- Ecological Surveys
- Project Coordination

Professional Profile

Cuun Niesink is an EA & Permitting Specialist with approximately five years of combined academic and professional experience in environmental research, fieldwork, and consulting. She supports clients across Atlantic Canada in the renewable energy and aggregate sectors, with a focus on regulatory applications, environmental assessments, and technical reporting.

Her work includes drafting and coordinating permitting documents, conducting baseline studies, and interpreting environmental regulations. Cuun has contributed to a range of field programs, including wetland delineations, watercourse assessments, old-growth forest evaluations, and noise monitoring, and collaborates closely with multidisciplinary teams to ensure compliance with regulatory requirements.

Cuun holds a Master's in Resource and Environmental Management from Dalhousie University and a Bachelor of Science in Biology from UPEI. As part of her graduate studies, she completed an internship with Halifax Regional Municipality's Urban Forestry division, where she developed operational guidelines for arboricultural practices during the bird breeding season. She built on this work for her final MREM research project, which focused on identifying knowledge gaps and improving urban forest management practices to support biodiversity. Cuun also worked as a Teaching Assistant in GIS and scientific writing, supporting students with spatial analysis and communication skills.

With strong analytical, writing, and coordination abilities, Cuun delivers practical, science-based solutions tailored to the permitting and environmental needs of her clients.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms

Education

2023 Master of Resource and Environmental Management – Dalhousie University

2021 Bachelor of Science, Major in Biology – University of Prince Edward Island

Employment History

- Apr 2025 – Present
  Fraxinus Environmental & Geomatics
  EA & Permitting Specialist
  Key Responsibilities: Coordinate and prepare EAs, permits, wetland compensation proposals, and monitoring reports; Support field programs for wetland, vegetation, and wildlife assessments; Contribute to environmental research and regulatory documentation; Assist with spatial data management and map preparation using GIS tools; Plan and resource environmental fieldwork.

- Jan – Apr 2025
  Independent Contractor
  Environmental Scientist
  Key Responsibilities: Conducted baseline environmental research and authored EA sections for various projects; Analyzed datasets and spatial data using QGIS, Google Earth, and Excel; Reviewed and synthesized scientific literature to inform environmental assessments and regulatory strategies.

- Apr 2023 – Dec 2024
  Strum Consulting
  Environmental Scientist
  Key Responsibilities: Conducted data collection, analysis, and reporting for EAs; Authored regulatory reports, including post-approval management and monitoring plans; Led baseline and post-construction noise monitoring (data collection, analysis, reporting); Conducted GIS habitat modeling research for species (e.g., bats, lichens, turtles) to inform EA planning; Completed wetland, watercourse, fish habitat, old-growth forest, and winter tracking assessments.

- Jan – May 2023
  Dalhousie University

Teaching Assistant - Exploring Geographic Information Systems
Key Responsibilities: Assisted graduate students with weekly ArcGIS workshops on map-making, spatial analyses, and database/GPS integration; Graded weekly workshop assignments.

- Jan – May 2023
  Dalhousie University
  Teaching Assistant - Integrated Science Program (DISP) Writing in Science
  Key Responsibilities: Supported first-year undergraduate students with writing and research projects; Guided the preparation of team posters and presentations; Provided feedback on research reports and oral presentations.

- May – Sep 2022
  Halifax Regional Municipality (HRM) Urban Forestry
  Urban Forest Research Assistant
  Key Responsibilities: Conducted field research and data management for HRMs urban forest research program; Developed guidelines for arboricultural practices during the songbird breeding season in HRM.

- Jun – Aug 2021
  PEI Department of Environment, Energy, and Climate Action
  Surface Water Monitoring Technician
  Key Responsibilities: Conducted water quality sampling across rivers and estuaries in PEI using various monitoring equipment and software; Gained marine navigation skills and experience operating boats and trailers.

- Jun – Sep 2020
  Stratford Area Watershed Improvement Group
  Summer Field Crew Worker
  Key Responsibilities: Contributed to stream enhancement, tree planting, water quality monitoring, invasive species management, and benthic macroinvertebrate surveys; Co-authored the 2020 Field Report and created social media content.

Continuing Education & Certifications

2024 Wetland Ecosystem Services Protocol - Atlantic Canada (WESP-AC)
2023 UTV Certification, Canada Safety Council
2023 Bear Awareness, Worksite Safety
2023 Emergency First Aid & CPR/AED Level C, St. John Ambulance NS/PEI
2023 Workplace Hazardous Materials Information System (WHMIS) Training, Health Canada
2021 Pleasure Craft Operator License, Transport Canada

Publications

2023 Niesink, C. *A Review of Best Management Practices for Urban Birds in the Tree Care Industry: Is More Research Needed?* MREM Final Project Report. Halifax Tree Project, 34 pp. Available at https://static1.squarespace.com/static/5b3babac70e802454aede034/t/643ddc93b194f85277968d25/1681775766398/Niesink_Final_MREM_Report_2023.pdf

2022 Niesink, C., & Duinker, P. *Protecting Migratory Birds in the Urban Core of Halifax Regional Municipality: Best Management Practices for Tree Work.* Unpublished report to Halifax Regional Municipality. School for Resource and Environmental Studies, Dalhousie University, Halifax, NS

2021 Westwood, A. R., Baillie, J., Ceci, S., Collison, B., Machat, H., McLean, S., MacNeill, B., Niesink, C., Shaw, J., Sodeinde, O., Suppanz, S., Sutton, P., & Vail, C. ENVI5050: Special Topids - Forest Ecology & Management class submission to the Government of Nova Scotia regarding the *Revised Old Growth Forest Policy.* Westwood Lab, Dalhousie University, 11 pp. Available at https://westwoodlab.ca/2021/12/08/dalhousies-forest-ecology-management-graduate-class-submits-comment-on-nova-scotias-revised-old-forest-policy/

2020 VanIderstine, E., Fisher, M., Niesink, C., & Triantafillou, J. *2020 Field Report.* Stratford Area Watershed Improvement Group, 23 pp. Available at https://drive.google.com/file/d/1yMOKkvXFU9jhz12BTZVOtgxkf1enJYu2/view

Conferences Attended

2022 Canadian Urban Forest Conference, Charlottetown, PE

Selected Project Experience

- Morden Road Sandpit Expansion Project – Kenneth Lutz Trucks Ltd. | EA & Permitting Specialist
  Drafted the EA for a proposed sandpit expansion in Nova Scotia. Tasks included analyzing desktop and field data, drafting baseline conditions, and preparing the environmental effects assessment for regulatory submission.
- Wind Power Environmental Assessments – Various Clients | Environmental Scientist
  Conducted field surveys for multiple 100 MW+ proposed wind farms across Nova Scotia, including wetland, watercourse, old-growth, flora, and wildlife assessments. Supported the preparation of EA documentation, including baseline summaries, desktop reviews, and effects assessments.
- Post-Approval Work – Various Clients | Environmental Scientist

Compiled data and co-authored reports to fulfill post-approval conditions for various wind farm projects, including the Goose Harbour Lake Wind Farm, Mersey River Wind Farm, and Weavers Wind Farm. Prepared Wildlife Management Plans and Baseline Noise Monitoring Plans in alignment with regulatory expectations.

- Post-Approval Work – EverWind | Environmental Scientist
  Prepared post-approval deliverables for the Kmtnuk Wind Power Project and the Bear Lake Wind Power Project, including Bird and Bat Mortality Monitoring Plans, Mainland Moose Monitoring Plans, and Wildlife Management Plans to satisfy regulatory conditions.

- Environmental Noise Monitoring – EverWind, NSPI | Environmental Scientist
  Aided in the development of Strum's noise monitoring program through the familiarization of NSECCs Guidelines for Environmental Noise Measurement and Assessment. Created a standard operating procedure for deployment purposes, data analysis, and report compilation. Analyzed baseline and post-construction noise data via NoiseTools and Microsoft Excel for various projects, including the Mersey River Wind Farm, the EverWind Point Tupper Green Hydrogen/Ammonia Project, and the South Canoe Wind Power Project and led the writing of noise monitoring plans for these projects.

Curriculum Vitae
Zacharye Simai, B.Sc

Key Areas of Specialty

- Wetland Science
- Assessment and Analysis for Species at Risk (SAR) & Species of Conservation Interest (SOCI)
- Botany
- Avian species identification by sight and sound
- Aquatic habitat assessment and electrofishing
- Geographic Information Systems (GIS)
- Environmental Impact Assessment & Regulatory Permitting
- Biophysical Assessments
- Construction Monitoring
- Technical Writing
- Project Management

Professional Profile

Zach holds a Bachelor of Science with Honours in Biology from Dalhousie University and brings a diverse and growing range of expertise to the Fraxinus team. With six years of professional experience in the environmental consulting sector, he has executed a broad array of biophysical field programs across Atlantic Canada, Ontario, and Nunavut, demonstrating both adaptability and technical competence across varied ecosystems and project contexts.

Zach's field experience spans a wide range of disciplines, including wetland delineation and functional assessment, migratory bird surveys, electrofishing and fish habitat characterization, Species at Risk surveys, bat acoustic monitoring, and construction environmental monitoring, among others. This breadth of hands-on experience has equipped him with a strong practical foundation across the core disciplines of applied ecology and environmental science.

Alongside his field skills, Zach has developed meaningful experience in project management and technical report writing, and has played an integral role in supporting the preparation of submissions that have contributed to securing approvals under both provincial and federal EA and EIA processes. He understands the importance of producing clear, defensible, and well-organized technical documentation and is building a strong track record in this area.

Zach is genuinely committed to his continued professional growth and to evolving into a well-rounded and respected ecologist. He approaches his work with curiosity and dedication, and is motivated by finding innovative, practical solutions to complex environmental challenges - values that align closely with the mission and culture of Fraxinus.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Renewable Energy Developers; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms.

Education

2019 Bachelor of Science with Honours in Biology – Dalhousie University
First Class Honours, 3.8/4.0 GPA

Employment History

- **March 2025 – Present | Fraxinus Environmental & Geomatics**
  Environmental Scientist
  Key Responsibilities: Fieldwork, technical writing, and project management for a range of environmental services such as wetland assessment and restoration, environmental permitting, and ecological monitoring.

- **Apr 2022 – Mar 2025 | Dillon Consulting Ltd. – Halifax, NS**
  Biologist / Project Manager
  Key Responsibilities: Project management, biological fieldwork, and technical reporting for infrastructure projects across Atlantic Canada and Nunavut. Duties included client and public engagement, team leadership, and efficient project delivery in remote and diverse environments. Work required balancing biological expertise with logistical challenges, stakeholder communication, and overseeing multidisciplinary teams.

- **Apr 2021 – Apr 2022 | McCallum Environmental Ltd. – Halifax, NS**
  Junior Environmental Scientist
  Key Responsibilities: Fieldwork, environmental construction monitoring, and reporting for a variety of development projects, including wind farms, gold mines, highways, and residential developments across Nova Scotia. Responsibilities included independent work in remote areas, effective teamwork, equipment maintenance, and direct communication with regulatory agencies and construction personnel to ensure environmental compliance.

- **Dec 2020 – Apr 2021 | McCallum Environmental Ltd. – Northern Ontario**
  Environmental Construction Monitor
  Key Responsibilities: Environmental monitoring and wildlife surveying during the Wataynikaneyap Transmission Line Project. Mentored local workers, ensured environmental compliance during construction, managed hazardous waste, and performed detailed reporting. Work involved remote camp living, operation of snowmobiles, and navigation through challenging northern terrain.

- **Apr 2020 – Nov 2020 | McCallum Environmental Ltd. – Northern Ontario**
  Field Biologist
  Key Responsibilities: Biological surveys on the Ontario East-West Tie Transmission Line Project, in collaboration with Indigenous organizations. Duties included terrestrial field surveys (on foot and ATV), communication with

construction teams regarding environmental best practices, navigation of remote landscapes, and preparation of detailed biological reports.

- **Sept 2018 – Dec 2018 | Dalhousie University – Halifax, NS**
  Field Course Demonstrator
  Key Responsibilities: Supported third-year field ecology courses by demonstrating field methods (e.g., quadrat sampling, tree coring) in remote locations such as Kejimkujik National Park. Guided students in remote fieldwork, promoted safety, and enhanced engagement and understanding of ecological field techniques.

- **Jun 2018 – Sept 2018 | Dalhousie University – Halifax, NS**
  Species at Risk Technician
  Key Responsibilities: Conducted field research for an honours thesis focusing on the breeding habitats of three bird species at risk in Nova Scotia. Utilized methods such as point counts, playback surveys, and vegetation transects. Developed skills in bird and plant identification, GPS navigation, study design, statistical analysis, and scientific writing.

Continuing Education

2024 Internal Project Management Training, Dillon Consulting Ltd.
2023 Remote First Aid and CPR/ AED Level C (Recert), Canadian Red Cross
2022 Wetland Ecosystem Services Protocol for Atlantic Canada (WESP-AC), MCFT
2021 Wetland Assessment Program, NRTG
2021 Electrofishing Certification – Crew Supervisor, NRTG
2020 ATV Safe Operation Training, TBTE
2020 Helicopter Hover Exit/ Entry Training, Valard Construction

Publications and poster presentations

2019 Simai, Z. *The Forested Wetland Breeding Habitat Characteristics of Three Landbird Species at Risk in Nova Scotia*. B.Sc. Thesis, Dalhousie University.
2019 Simai, Z. and Staicer, C. Characteristics of forested wetland habitat for three land bird species at risk in Nova Scotia. Forested Wetlands in Atlantic Canada Concluding Project Workshop
2019 Simai, Z. and Staicer, C. Characteristics of forested wetland habitat for three land bird species at risk in Nova Scotia. 33rd Annual Cameron Conference.
2018 Simai, Z., Baker, T., Setchell, A. and Staicer, C. Study of Forested Wetlands in Nova Scotia: Landbird SAR and Habitat Structure and Composition. Kespukwitk Two-Eyed Seeing Gathering.

Conferences & Meetings Attended

2019 Dalhousie's 33rd Annual Cameron Conference, Halifax, NS
2019 Forested Wetlands in Atlantic Canada Project Conclusion, Halifax, NS
2018 Kespukwitk Two-Eyed Seeing Gathering, Bear River First Nation, NS

Volunteer Activities

2023 Troop Island Cleanup, St. Margaret's Bay Stewardship Association
2018 Chair of the Dalhousie Association of Biology Students, Dalhousie University

Selected Project Experience

- **Windy Ridge Wind Project Construction Environmental monitoring - Everwind:** Biologist - Environmental monitoring and reporting in support of construction activities related to the Windy Ridge Wind Power Project in Nova Scotia (2025-2026)

- **Morden Road Sandpit Expansion EA - Kenneth Lutz Trucks Ltd.** - Environmental Scientist - Report writing, SAR bird habitat field assessments, and acoustic monitoring in support of an Environmental Assessment for a sandpit expansion in Nova Scotia (2025).

- **Highway 107 Wetland Monitoring - Nova Scotia Department of Public Works:** Biologist - Responsible for the planning and execution of wetland monitoring for wetlands impacted by Highway 107 construction in Dartmouth, NS. Tasks included detailed vegetation quadrats, functional assessments, and yearly reporting (2022-2025).

- **Great Village Site Species at Risk (SAR) Assessment Defence Construction Canada/Department of National Defence:** Biologist - Responsible for the planning and execution of comprehensive Species at Risk (SAR) and Species of Conservation Concern (SOCC) presence/absence and habitat surveys, including breeding bird point counts, wetland delineation and functional assessment, electrofishing sampling, botany and lichen surveys, etc. Data collected were used to update the Natural Resource Management Plan. Great Village, NS (2023-2024).

- **Benjamins Mill Wind Project - Natural Forces Construction LP:** Biologist - Responsible for the planning and execution of comprehensive aquatics, wetland and vegetation field studies for an approved wind farm site at Benjamins Mill, NS (2022-2023).

- **Westchester Wind Project - Natural Forces Construction LP:** Biologist - Responsible for the planning and execution of comprehensive aquatic, wetland and vegetation field studies for a proposed wind farm site at Westchester Mountain, NS (2022-2023).

- **Highway 104 Construction Project - DNA (Dexter-Nova Alliance):** Environmental Scientist - Performed Fish rescues, Electrofishing sampling, Wood Turtle surveys and bird nest searches for highway construction activities along the Highway 104 expansion project between New Glasgow and Antigonish, NS (2021-2022).

- **Wataynikaneyap Transmission Line Project - Valard Construction:** Environmental Monitor - Responsible for spill response and reporting, bat hibernacula monitoring, avian stick nest surveys, wildlife reporting, environmental materials inventory management, etc. Remote northwestern Ontario (2020-2021).

- **Ontario East-West Tie Transmission Line Project - Valard Construction:** Field Biologist - Responsible for the execution of a number of environmental surveys, including migratory bird nest searches, wetland delineation, amphibian breeding habitat identification, and other wildlife surveys, between Wawa and Thunder Bay, Ontario (2020).

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ENVIRONMENTAL & GEOMATICS

Curriculum Vitae
Jason Astels, Dipl.

Key Areas of Specialty

- Wetland and Watercourse Delineation
- Old-Growth Forest Assessment
- Wildlife and Habitat Monitoring
- Environmental Assessment (EA) Support
- Technical Writing and Reporting
- Field Logistics and Remote Operations

Professional Profile

Jason Astels is an Environmental Technician with field and consulting experience in wetland and watercourse delineations, habitat assessments, and old-growth forest evaluations across Nova Scotia. He supports clients in infrastructure and renewable energy development projects through technical reporting, species inventories, and ecological field programs.

His work includes leading wetland and watercourse surveys, botanical inventories, and specialized studies on wildlife such as birds, turtles, and fish. He has also contributed to environmental assessments and technical documentation, applying strong ecological knowledge and field expertise to ensure regulatory compliance. In addition to conducting fieldwork, Jason mentors junior staff, coordinates logistics, and ensures safe and efficient operations in remote and challenging environments.

Jason holds a diploma in Natural Resources and Environmental Technology from the Nova Scotia Community College, where he graduated with a 4.0 GPA and co-chaired the Sustainability Committee. He is currently pursuing a Bachelor of Science in Environmental Practice at Royal Roads University part-time. His field background also includes experience in forestry and trail system management, where he gained practical skills in species identification, ecosystem maintenance, and remote field safety.

With certifications in wetland delineation, old-growth forest assessment, electrofishing, and chainsaw and ATV/UTV operations, Jason brings a comprehensive set of technical and practical skills to his projects. His combination of field expertise, technical writing ability, and collaborative approach enables him to deliver reliable, science-based solutions for clients and multidisciplinary teams.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms

Education

2022 Diploma, Natural Resources & Environmental Technology – Nova Scotia Community College

Employment History

- **Sep 2025 – Present | Fraxinus Environmental & Geomatics, Halifax, NS**
  Role: Environmental Technician
  Key Responsibilities: Conduct field programs for wetland, watercourse, vegetation, and wildlife assessments; Contribute to environmental research and regulatory documentation; Assist with spatial data management and map preparation using GIS tools; Capture aerial imagery using drone.

- **Apr 2025 – Sep 2025 | Antigonish, NS**
  Role: Independent Environmental Consultant

- **May 2023 – Apr 2025 | Strum Consulting, Halifax, NS**
  Role: Environmental Scientist
  Key Responsibilities: Led wetland and watercourse delineations, botanical inventories, and old-growth forest assessments; Supported wildlife and habitat studies (birds, turtles, fish, electrofishing, trail cameras, winter tracking); Authored technical reports and contributed to environmental assessments; Coordinated field logistics and safety; mentored junior staff.

- **Summer 2022 | Keppoch Mountain, Antigonish, NS**
  Role: Trail Crew
  Key Responsibilities: Maintained and improved trail systems through old-growth forest; Conducted field identification of local flora and fauna; Recorded and organized field notes; Worked safely and independently in remote environments.

- **Summer 2020-2021 | Scott & Stewart Forestry, Antigonish, NS**
  Role: Tree Planter
  Key Responsibilities: Planted ~2,000 trees per day in challenging terrain while meeting survival rate standards; Safely transported crews in remote areas; Maintained high productivity under variable field conditions.

Continuing Education & Certifications

2023 Wetland Ecosystem Services Protocol - Atlantic Canada (WESP-AC)
2023 UTV Certification, Canada Safety Council
2023 Bear Awareness, Worksite Safety
2023 Emergency First Aid & CPR/AED Level C, St. John Ambulance NS/PEI
2022 Workplace Hazardous Materials Information System (WHMIS) Training, Health Canada
2020 Chainsaw Safety

Selected Project Experience

- Wind Power Environmental Assessments – Various Clients | Environmental Scientist
  Conducted field surveys for multiple 100 MW+ proposed wind farms across Nova Scotia, including wetland, watercourse, old-growth, flora, and wildlife assessments. Supported the preparation of EA documentation and assisted in facilitating Mi'kmaq Ecological Knowledge Studies. (MEKS).

- Post-Approval Work – Various Clients | Environmental Scientist
  Compiled data and co-authored reports to fulfill post-approval conditions for various projects, including the Rhodena Wind Farm and Everwind Strait Crossing Transmission line. Prepared Wildlife Management Plans and Baseline Noise Monitoring Plans in alignment with regulatory expectations.

- Old Growth Inventory – NRR | Environmental Scientist
  Contributed to old-growth assessments with Strum Consulting as contracted by Nova Scotia Natural Resources and Renewables. Conducted field assessments, sample preparation, and data analysis to determine age, health and classification of forest stands on crown land.

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ENVIRONMENTAL & GEOMATICS

Curriculum Vitae
Darcy Kavanagh, MREM

Key Areas of Specialty

- Environmental Assessment & Permitting Strategy
- Regulatory Engagement & Multi-Agency Permitting
- Project & Consultant Management
- Stakeholder & Indigenous Community Engagement
- Technical Review & Environmental Analysis
- Technical Writing & Documentation

Professional Profile

Darcy Kavanagh is an Environmental and Regulatory Specialist with extensive experience leading environmental assessments, permitting strategies, consultant management, and regulatory engagement for large-scale renewable energy and infrastructure projects across Canada. His background spans both consulting and proponent-side project development, giving him a well-rounded understanding of the regulatory landscape from multiple perspectives and a practical appreciation for moving complex projects through approval processes efficiently.

Darcy has a proven track record coordinating EA processes under federal and provincial frameworks, managing multidisciplinary consultant teams, preparing regulatory submissions, and navigating multi-agency permitting pathways across the full project lifecycle, from early-stage scoping and baseline program design through to approval and construction support. A strong and versatile communicator, he brings experience engaging federal and provincial regulators, Indigenous communities, technical consultants, and internal project teams, translating complex regulatory requirements into clear, actionable direction. His combination of technical knowledge, regulatory fluency, and stakeholder engagement skills makes him a valuable resource for clients navigating Canada's complex environmental approvals landscape.

Representative Clients

Private Landowners; Non-Government Organizations; Municipalities; Utilities; Provincial and Federal Government; Environmental Consulting Firms; Surveying and Engineering Firms

Education

2021 - Master of Resource & Environmental Management – Dalhousie University, Halifax, NS
2018 - Bachelor of Science, Environmental Science (Honours) – Saint Mary's University, Halifax, NS
2016 - Diploma of Engineering – Saint Mary's University, Halifax, NS

Employment History

- Mar 2026 – Present | Fraxinus Environmental & Geomatics – Halifax, NS
  Environmental & Regulatory Specialist

  Key Responsibilities: Leading environmental permitting and regulatory strategy for a range of projects across Atlantic Canada; developing execution-ready permitting plans for wetlands, watercourses, and fisheries interactions; advising on early works programs including access development, temporary crossings, and geotechnical investigations; coordinating regulatory engagement with provincial and federal regulators; preparing permit applications including wetland and watercourse alteration application submissions; developing regulatory risk screening tools and identifying constraints; supporting contractors with practical implementation of environmental requirements during construction; managing environmental constraints across large project corridors; supporting Fisheries Act compliance strategies including avoidance, mitigation, and fish salvage planning where required.

- Feb 2025 – Feb 2026 | ABO Energy Canada Ltd. – Halifax, NS
  Environment & Regulatory Coordinator

  Key Responsibilities: Leading EA coordination and regulatory strategy for large-scale renewable energy projects, including the multi-gigawatt Toqlukuti'k Wind and Hydrogen Project in Newfoundland and Labrador; developing permitting roadmaps covering environmental approvals, Crown land access, geotechnical investigations, MET/LiDAR installations, and early works; acting as primary liaison with provincial and federal regulators; managing multidisciplinary consultants across environmental, hydrology, geotechnical, atmospheric, and communications scopes; supporting field programs in logistically challenging terrain; preparing technical summaries and engagement materials for Indigenous groups, municipalities, and community stakeholders; contributing to ABO Energy's internal regulatory working group across Nova Scotia, New Brunswick, Ontario, and Alberta.

- Feb 2022 – Feb 2025 | Strum Consulting – Halifax, NS
  Environmental Scientist

  Key Responsibilities: Serving as key author and contributor to 12 approved environmental assessment documents for wind energy projects in Nova Scotia, representing approximately 1.8 GW of approved generation capacity (including Goose Harbour Lake Wind, Higgins Mountain Wind, and Mersey River Wind); supporting EA and permitting processes for renewable energy, transmission, aggregate, and infrastructure projects across Atlantic Canada; coordinating and executing environmental baseline studies including wetland and watercourse assessments, rare flora and lichen surveys, wildlife tracking, and fish habitat assessments; conducting field surveys using avian point counts, acoustic monitoring, trail cameras, vegetation plots, old growth surveys, and species-at-risk surveys; preparing wetland and watercourse alteration applications; managing baseline and post-construction monitoring programs; participating in community and Indigenous engagement sessions.

- **May 2021 – Sept 2021 | Wood PLC – Dartmouth, NS**
  Environmental Scientist
  Key Responsibilities: Conducting field sampling programs for soil, groundwater, surface water, and stream flow to support industrial and remediation projects; completing avian and bat monitoring programs, passerine surveys, and wildlife habitat assessments; supporting ecological risk assessments, environmental monitoring plans, and regulatory permitting documentation.

Continuing Education & Certifications

2025 Reconciliation Education, First Nations University of Canada
2024 Emergency First Aid & CPR/AED Level C, St. John Ambulance
2023 Bear Awareness, Worksite Safety
2023 Nova Scotia Watercourse Alteration for Installers, Maritime College of Forest Technology)
2023 Nova Scotia Watercourse Alteration for Sizers, Maritime College of Forest Technology
2022 Wetland Ecosystem Services Protocol - Atlantic Canada (WESP-AC), Maritime College of Forest Technology
2022 Wetland Delineation Training, Maritime College of Forest Technology
2022 Backpack Electrofishing, Canadian Rivers Institute
2022 Pleasure Craft Operator, National Boating Safety School
2022 Drone Pilot – Basic Operations, Transport Canada
2022 ATV Training, Canada Safety Council

Selected Project Experience

- Wind Power Environmental Assessments – Various Clients | Environmental Scientist
  Conducted field surveys for multiple 100 MW+ proposed wind farms across Nova Scotia, including wetlands, watercourses, vegetation, wildlife, species at risk, and fish and fish habitat assessments. Supported the preparation of Environmental Assessment Registration Documents and assisted in developing mitigation, monitoring, and environmental protection measures.

- Post-Approval & Compliance Monitoring – Various Clients | Environmental Scientist
  Compiled data and co-authored reports to fulfill Environmental Assessment approval conditions and post-construction regulatory requirements. Assisted in preparing Wildlife Management Plans, Erosion and Sediment Control Plans, and Environmental Protection Plans. Conducted site inspections and monitoring to ensure compliance with approval conditions and environmental permits.

- Wetland & Watercourse Permitting – Various Clients | Environmental Scientist
  Completed wetland delineations, functional assessments, and permitting submissions for infrastructure and development projects throughout Nova Scotia. Prepared wetland and watercourse alteration applications, compensation plans,

contingency plans, and erosion and sediment control plans. Coordinated with Nova Scotia Environment to support approvals.

- Fish & Fish Habitat Assessments – Various Clients | Environmental Scientist
  Completed fish habitat assessments and electrofishing programs to support watercourse alteration permitting and construction projects. Experience includes fish capture and handling, habitat classification, and development of fish salvage plans and mitigation measures in accordance with Fisheries Act and Species at Risk Act requirements.

- Indigenous & Stakeholder Engagement – Various Clients | Environmental Scientist
  Prepared materials and participated in public open houses, stakeholder meetings, and Indigenous engagement sessions, presenting project information, environmental findings, mitigation measures, and regulatory processes to landowners, municipalities, and community members.