



Micah G. Kraml Eckert, BSc

Arctic Ecohydrology and Remote Sensing

Team Shrub, Forest and Conservation Sciences, University of British Columbia

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I am an early career ecohydrologist interested in the drivers of physical and ecological change in the Arctic. I investigate rapid coastal change including flooding, permafrost thaw and erosion, saltwater inundation and ecosystem loss. I aspire to work in the North as an academic to inform proactive conservation and northern resilience. I am honoured to be a Weston Family Northern Scholar, a Royal Canadian Geographical Society Scholar, and an awardee of NSERC's Canadian Graduate Scholarship (Masters).

Education

MSc in Forestry , Forest and Conservation Sciences, University of British Columbia	2024-2026
- Supervised by Dr. Isla Myers-Smith	
- Field work and research conducted on Herschel Island – Qikiqtaruk Territorial Park in the Canadian Arctic	GPA 11
BSc in Integrated Science , School of Interdisciplinary Studies, McMaster University	2020-2024
- Graduated with honours, Dean's list, <i>summa cum laude</i>	
- Concentrated in Earth and Environmental Science	CGPA 90%
- Awarded a concurrent certificate in Geographic Information Systems (GIS)	
- Three independent thesis projects completed including BSc Thesis	

Research Experience

Determining the drivers of coastal change on Qikiqtaruk (Herschel Island)	2024-2026
- MSc Thesis, Supervised by Dr. Isla Myers-Smith	
- Determining the drivers of coastal inundation and erosion using in-situ flood monitoring and high spatial and temporal resolution 3D drone imagery	
Spatiotemporal changes in fuel load following peatland drainage	2023-2024
- BSc Thesis, Supervised by Dr. Mike Waddington	
- Investigated the rate of afforestation and accumulation of aboveground biomass and fuel load spatially and temporally using historical imagery, drone imagery and LiDAR data	
Delineating floating peat in boreal peatlands using remote sensing and machine learning techniques	2023
- Integrated Science Independent Project, supervised by Dr. Mike Waddington	
- Delineated floating peat mats from drone imagery and associated spectral and topographic indices	
The spatial expansion of <i>Ixodes scapularis</i> with implications to northern Indigenous communities	2022
- Integrated Science Enrichment Project, Supervised by Dr. Chad Harvey (collaboration with Carly Burow)	
- Determined the range of <i>Ixodes scapularis</i> (Lyme disease vector) using iNaturalist observations and determined their large-scale thermal niche over time	

Work Experience

Graduate Research Assistantship , Team Shrub (Myers-Smith), University of British Columbia	2024-2026
- 90 days of field work experience in the Canadian Arctic	
- Contributed to research on plant phenology and composition (ITEX), active layer detachments and wildlife monitoring	
- Collaborated with Yukon Parks Rangers, the Inuvialuit and visiting photographers and journalists	
Graduate Teaching Assistantship , Dr. Bett and Dr. Myers-Smith, University of British Columbia	2024, 2025
- Aided in teaching a weeklong field course (CONS 451) in Manning Park, British Columbia	
- Led students in a geospatial data workshop and taught skills in R for data analysis	

- Undergraduate Research Assistantship**, MAC Ecohydrology Lab (Waddington), McMaster University 2023
 - Investigated peatland wildfire and ecosystem functions in northern Alberta and in the Georgian Bay Biosphere using remote sensing and hydrological monitoring
- Undergraduate Research Assistantship**, McMaster Center for Climate Change (MCCC) 2022-2024
 - Managed media, outreach and assisted in event coordination
- Undergraduate Field Assistantship**, Avian Behavioural and Molecular Ecology, McMaster University 2021-2023
 - Population control techniques to limit competition between Cormorant, Gull, and Night-Heron populations

Awards and Recognitions – Totalling \$54,100 CAD

Northern Science Training Program	2025	[\$3,400 CAD]
Weston Family Scholarship in Northern Research. <i>Weston Family Foundation</i> .	2025	[\$20,000 CAD]
Canadian Graduate Scholarship – Masters. <i>NSERC</i> .	2025	[\$27,000 CAD]
Graduate Research Grant. <i>Royal Canadian Geographical Society</i> .	2025	[\$2,500 CAD]
Graduate Poster Award – 3 rd place. <i>ArcticNet 2024: Arctic Change</i> .	2024	[\$200 CAD]
Dean’s List. <i>McMaster University</i> .	2020-2024	
Honour Award. <i>McMaster University</i> .	2020	[\$1000 CAD]

Journal Publications – [h-index = 1]

Verkaik, G.J., **Eckert, M.G.K.**, Wilkinson, S.L., Moore, P.A. and Waddington, J.M., 2025. Fuel Loads and Peat Smoldering Carbon Loss Increase Following Drainage in a Forested Boreal Peatland. *Journal of Geophysical Research: Biogeosciences*, 130(7), p.e2024JG008674. doi:10.1029/2024JG008674.

Reports and Articles

Eckert, M., Ahmad, A., Dean, T., 2022-2023. McMaster Center for Climate Change Monthly Articles. [Multiple].

Eckert, M., Grew, A., Quinn, J., 2022. 2022 Hamilton Harbour Avian Colony Management Report.

Eckert, M., Gal, R., Quinn, J., 2021. 2021 Hamilton Harbour Avian Colony Management Report.

Conference Presentations

Eckert, M., Norton, C., Lantuit, H., Eckert, C.D., Gordon, R.R., Myers-Smith, I.H., 2024. Capturing flood dynamics to understand rapid coastal change in the Arctic. *Arctic Net 2024: Arctic Change*. Ottawa, Canada. <https://tinyurl.com/5dk48hap>. [Poster, **winner**].

Verkaik, G., Wilkinson, S., **Eckert, M.**, Waddington, J.M., 2024. Ecohydrological controls on peat combustion in a drained boreal peatland. *Canadian Geophysical Union Annual Meeting 2024*. Ottawa, Canada. [Presentation].

Verkaik, G., Wilkinson, S., **Eckert, M.**, Waddington, J.M., 2024. Ecohydrological controls on peat combustion in a drained boreal peatland. *Canadian Geophysical Union Student Conference 2024*. Hamilton, Canada. [Presentation].

Eckert, M., Verkaik, G., Wilkinson, S., Waddington, J.M., 2024. Spatiotemporal change in fuel load following peatland drainage: Remote sensing analysis of peat fire risk. *Canadian Geophysical Union Student Conference 2024*. Hamilton, Canada. [Presentation].

Waddington, J.M., Verkaik, G., **Eckert, M.**, Moore, P., Wilkinson, S., McCarter, C., 2024. The unforgettable peat fire: How to dismantle a degraded peatland carbon bomb through restoration. *International Geographical Congress 2024*. Dublin, Ireland. [Presentation].

Eckert, M., Verkaik, G., Wilkinson, S., Waddington, J.M., 2024. Spatiotemporal change in fuel load following peatland drainage: Remote sensing analysis of peat fire risk. *Synthesis Conference 2024*. Hamilton, Canada. [Presentation].

Eckert, M., Furukawa, A., Waddington, J.M., 2023. Delineating peatlands using GIS, remote sensing and machine learning techniques. *Synthesis Conference 2024*. Hamilton, Canada. [Poster].

Eckert, M., Burrow, C., Harvey, C., 2022. Spatiotemporal spread of ticks into northern Ontario: Implications to public health. *Synthesis Conference 2022*. Hamilton, Canada. [Presentation].

Media

- Cecco, L., 2025. 'Most at risk on the planet': Polar heritage sites are slipping into the sea but can one island live forever online? *The Guardian*. [online] 10 Feb. Available at: <<https://www.theguardian.com/environment/2025/feb/10/canada-arctic-yukon-herschel-island-qikiqtaruk-inuvialuit-culture-conservation-dilemma-climate-floods-historic-whaling>> [Accessed 10 February 2025].
- Cecco, L., 2025. 'It's a crime to let it disappear': race to stop Arctic island's heritage sliding into the sea. *The Guardian*, *The Observer* [printed]. 9 Feb.

Skills

Field Work	1850+ hours of fieldwork experience across four field seasons. Experience working in remote areas of the Canadian Arctic, as well as northern Alberta and Ontario. Experience hiking far to field sites and camping in the field.
Coding and Programming	1800+ hours of experience in R. Skilled in data organization, statistical workflows, and GIS. Proficient in packages: Tidyverse, Forecast, Terra, LidR and more. Additional experience in python, java script, and MATLAB. Contributions to GitHub repositories and collaborative coding projects.
GIS and Remote Sensing	1800+ hours of experience in ArcGIS Pro through McMaster's certificate in GIS. Experience modelling spatial trends, creating maps and building geodatabases. Proficient in classifications, machine learning techniques, and decision-based analysis. Experience with LiDAR, multispectral, hyperspectral, topographic and vector data. Experience in ArcGIS Pro, QGIS, Google Earth Engine, ENVI, Cloudcompare, and R.
Drones	90+ flights working with drones including: DJI Matrice series, DJI Phantom 2, DJI Mavic Mini series, and DJI Mavic series drones. Experience with programming flights from DJI flight planner and DroneLink.
Vegetation Assessments	Experience working with percent cover assessments and point-framing, including International Tundra Experiment standards. Familiar ecosystems: Western Arctic tundra, boreal peatlands, boreal forests. Groups of interest: Western Arctic vegetation, bryophytes.
Hydrological Monitoring	Experience with Leveloggers in the context of groundwater monitoring in peatlands and Arctic ecosystems, including building and installing groundwater wells.
Climatological Monitoring	Experience working with and modelling climate data as well as installing and maintaining meteorological stations.
Field Safety	Experience with first aid, and wildlife encounters. I am certified in Certified in Standard First Aid & CPR/AED level C, Bear Awareness (Energy Safety Canada), and Silvercore's Bear and Wildlife Defence Course.
Firearms	I am trained in shooting and handling a variety of 12-gauge shotguns. I have completed the Canadian Firearm Safety Training Course (RCMP) and Silvercore's Industry Level Bear and Wildlife Defence Firearm Training.

Extracurricular Activity

Diversity, Equity and Inclusivity in Polar Research Project Group – APECS	2024 -
- A group dedicated to facilitating discussion around EDI in polar research	
- Website: https://tinyurl.com/29n8hvu5	
MacDonates Blood Donation Club Secretary	2023 - 2024
Synthesis 2024 Abstract Reviewer	2023
MacDonates Blood Donation Club Events Executive	2023
Relay for Life Member – Kingston Collegiate and Vocational Institute and McMaster University	2017 - 2021

Academic Memberships

Association of Polar Early Career Researchers – APECS Canada	2024 -
Canadian Remote Sensing Society	2023 -
Geological Society of America	2023 -
Esri Young Professional Network	2023 -
Professional Geoscientists of Ontario	2022 -

Collaboration

Alfred Wegener Institute

- Collaborates on shared research on coastal dynamics
- Shares field sites on Qikiqtaruk (Herschel Island)

Yukon Parks

- Collaborates on shared interest of coastal flooding to inform the conservation of the historical sites on Qikiqtaruk (Herschel Island)
- Contributions to annual flood reports

The Inuvialuit [Aklavik Hunters and Trappers Committee, Wildlife Management Advisory Council]

- Collaborates with Richard Gordon and tailors research goals to fit the needs of the Inuvialuit and northern communities, including Inuvik and Aklavik
- Communicates results with communities through meetings, such as the Wildlife Management Advisory Council (North Slope) annual meeting in Whitehorse

Environment and Climate Change Canada

- Contributes to the Coastal Flooding Alerting and Prediction Program
- Ground-truths flood warning for predictions improvement
- Contacts: Jesse Wagar and Justin Patten