

# Kristin M. Eccles, Ph.D.

## Resume

### CONTACT INFORMATION

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### SKILLS AND COMPETENCIES

- 8 years of research experiences conceptualizing and designing studies, identifying testable hypotheses, collecting data, performing statistical analysis, and communicating results through written peer-reviewed publications and oral presentations at conferences
- Developing, managing, and statistically analyzing large multi-dimensional health datasets
- Quantifying data and analysis precision and accuracy using quality assurance/ quality control and validation methods
- Good laboratory practice and good clinical practice certified
- Experience generating and using biomarkers of chemical exposure and biological effect using thermal decomposition, ICP-MS, LC-MS, and high throughput screening assays
- Languages: English - Native Language, French - Good, R - Advanced, Python - Intermediate, LaTeX- Intermediate

### EMPLOYMENT

#### **Postdoctoral Research Fellow**

**Nov 2020 - Present**

National Institute of Environmental Health Science, Division of the National Toxicology Program, Durham, North Carolina, USA

- Conceptualized and carried out computational research to determine the population-based risk of exposure to chemical mixtures by integrated environmental chemical exposure data with chemical hazard data to quantify how local exposure to chemical mixtures can perturb common biological pathways leading to adverse health outcomes.

#### **Postdoctoral Research Fellowship**

**Aug 2019 - Oct 2020**

University of Toronto, Mississauga, Canada

- Designed and carried out research on historical concentrations of environmental contaminants by generating mercury data in natural archives (e.g., tree rings, sediment cores) and using statistical approaches such as time series analysis to identify patterns of environmental contaminants over time.

#### **Geomatics Researcher**

**June 2017 - March 2019**

Environment and Climate Change Canada, Ottawa, Canada

- Synthesizes all geospatial contaminants and biomarker data in wildlife from the Canadian Oil Sands.
- Conducted geospatial and statistical analysis to quantify overarching spatial patterns of contaminants in the Oils Sands.
- Use evidence-based decision-making from research results to collaboratively design future biomonitoring programs.

#### **Course Instructor**

**Sept 2016 - June 2020**

Geographic Information Systems (University of Toronto, Canada), Class Size: 50

Introduction to Quantitative Methods (Carleton University, Canada), Class size: 150

Introduction to Geomatics (University of Ottawa, Canada), Class size: 40

- Provided theoretical and practical training for students on data collection, geospatial and statistical analysis methods.

- Designed the courses, prepared the lecture slides, delivered the lectures (3 hours of lecturing per week), designed practical labs and oversaw implementation, designed course evaluations and exams to determine if learning objective had been met.

## EDUCATION

**Ph.D., Biology with Specialization in Chemical and Environmental Toxicology**      **2019**  
University of Ottawa, Ottawa, Canada

**M.Sc., Geography**      **2014**  
University of Calgary, Calgary, Canada

**Honours B.A., Major: Health Studies, Minors: Geography and Earth Science**      **2012**  
McMaster University, Hamilton, Canada

## PEER-REVIEWED PUBLICATIONS

**Summary: 18 journal publications (9 as first author), 248 citations; h index = 9 and i10 index = 9**

Cui, Y., **Eccles K.M.**, Kwok, R.K., Joubert, B., Messier, K.P., Balshaw, D. (2022). Integrating Multiscale Geospatial Environmental Data into Large Population Health Studies: Challenges and Opportunities. *Toxics*. 10(403). <https://doi.org/10.3390/toxics10070403>

Thomas, P. J., Eickmeyer, D. C., **Eccles, K.M.**, Kimpe, L. E., Felzel, E., Brouwer, A., Blais, J. M. (2022). Paleotoxicity of petrogenic and pyrogenic hydrocarbon mixtures in sediment cores from the Athabasca oil sands region, Alberta (Canada). *Environmental Pollution*, 118271. <https://doi.org/10.1016/j.envpol.2021.118271>

**Eccles, K.M.**, Thomas, P. J., Chan, H. M. (2021). Spatial patterns of the exposure-response relationship between mercury and cortisol in the fur of river otter (*Lontra canadensis*). *Chemosphere*, 263, 127992. <https://doi.org/10.1016/j.chemosphere.2020.127992>

Thomas, P. J., Newell, E. E., **Eccles, K.M.**, Holloway, A. C., Idowu, I., Xia, Z., Quenneville, C. (2021). Co-exposures to trace elements and polycyclic aromatic compounds (PACs) impacts North American river otter (*Lontra canadensis*) baculum. *Chemosphere*, 265, 128920. <https://doi.org/10.1016/j.chemosphere.2020.128920>

**Eccles, K.M.**, Pauli, B.D., Chan, H.M. (2020). Geospatial analysis of complex metal exposures to biota in the Athabasca Oil Sands. *PLoS one*, 15(9), e0239086. <https://doi.org/10.1371/journal.pone.0239086>

Galen, G., **Eccles, K.M.**, MacMillan, M., Thomas, P. J., Chan, H.M., Poulain, A.J. (2020). The gut microbial community structure of the North American river otter (*Lontra canadensis*) in the Alberta Oil Sands Region in Canada: relationship with local environmental variables and metal body burden. *Environmental toxicology and chemistry*. 39(12), 2516-2526. <https://doi.org/10.1002/etc.4876>

Etowa, J., Johnston, A., Jama, Z., **Eccles, K.M.**, Ashton, A. (2020). Mixed-method evaluation of a community-based postpartum support program: a study protocol. *BMJ open*, 10(10), e036749. <https://doi.org/10.1136/bmjopen-2019-036749>

**Eccles, K.M.**, Majeed, H., Lehnher, I., Porter, T. (2020). A continental and marine-influenced tree-ring mercury record in the Old Crow Flats, Yukon, Canada. *ACS Earth and Space Chemistry*, 4(8), 1281-1290. <https://doi.org/10.1021/acsearthspacechem.0c00081.s001>

Cheney, C.L., **Eccles, K.M.**, Kimpe, L.E., Blais, J.M. (2020). Determining the effects of past gold

mining using a sediment palaeotoxicity model. *Science of The Total Environment*, 718, 137308. <https://doi.org/10.1016/j.scitotenv.2020.137308>

**Eccles, K.M.**, Thomas, P. J., Chan, H. M. (2020). Relationships between mercury concentrations in fur and stomach contents of river otter (*Lontra canadensis*) and mink (*Neovison vison*) in northern Alberta Canada and their applications as proxies for environmental factors determining mercury bioavailability. *Environmental Research*, 181, 108961. <https://doi.org/10.1016/j.envres.2019.108961>

**Eccles, K. M.**, Pauli, B. D., Chan, H. M. (2019). The use of Geographic Information Systems (GIS) for spatial ecological risk assessments: An example from the Athabasca oil sands area in Canada. *Environmental toxicology and chemistry*, 38(12): 2797–2810. <https://doi.org/10.1002/etc.4577>

**Eccles, K. M.**, Littlewood, E. S., Thomas, P. J., Chan, H. M. (2019). Distribution of organic and inorganic mercury across the pelts of Canadian river otter (*Lontra canadensis*). *Scientific reports*, 9(1), 3237. <https://doi.org/10.1038/s41598-019-39893-w>

**Eccles, K. M.**, Thomas, P. J., Chan, H. M. (2017). Predictive meta-regressions relating mercury-tissue concentrations of freshwater piscivorous mammals. *Environmental Toxicology and Chemistry*, 36(6), 2377–2384. <http://doi.org/10.1002/etc.3775>

Thomas, P. J., **Eccles, K. M.**, Mundy, L. J. (2017). Spatial modelling of non-target exposure to anticoagulant rodenticides can inform mitigation options in two boreal predators inhabiting areas with intensive oil and gas development. *Biological Conservation*, 212, 111-119. <https://doi.org/10.1002/etc.3775>

Hu, X. F., **Eccles, K. M.**, Chan, H. M. (2017). High selenium exposure lowers the odds ratios for hypertension, stroke, and myocardial infarction associated with mercury exposure among Inuit in Canada. *Environment International*, 102, 200-206. <https://doi.org/10.1016/j.envint.2017.03.002>

**Eccles, K. M.**, Checkley, S., Sjogren, D., Barkema, H. W., Bertazzon, S. (2017). Lessons learned from the 2013 Calgary flood: Assessing risk of drinking water well contamination. *Applied Geography*, 80, 78-85. <https://doi.org/10.1016/j.apgeog.2017.02.005>

**Eccles, K.M.**, Bertazzon, S. (2015). Applications of geographic information systems in public health: A geospatial approach to analyzing MMR immunization uptake in Alberta. *Canadian Journal of Public Health*, 106(6). <https://doi.org/10.17269/cjph.106.4981>

Bertazzon, S., Johnson, M., **Eccles, K.**, Kaplan, G. G. (2015). Accounting for spatial effects in land use regression for urban air pollution modelling. *Spatial and Spatio-temporal Epidemiology*. 14-15, 9–21. <https://doi.org/10.1016/j.sste.2015.06.002>

MANUSCRIPTS IN  
PROGRESS

**Eccles K.M.**, Karmaus A.L., Parham, F., Rider, C.V., Kleinstreuer, N.C., Wambaugh, J.F., Messier, K.P. A geospatial modeling approach to quantifying risk of exposure to environmental chemical mixtures via a common molecular target. (In Peer Review)

Lowe, M.E., Akhtari, F., Potter, P.A., Fargo, D.C., Schmitt, C.P., Schurman, S.H., **Eccles, K.M.**, Motsinger-Reif, A., Hall, J.E., Messier, K.P. The skin is no barrier to mixtures: Air pollutant mixtures and reported psoriasis or eczema in the Personalized Environment and Genes Study (PEGS). (In Peer Review)

Boutet, V., Dominique, M., **Eccles, K.M.**, Branigan, M., Dyck, M., van Coeverden de Groot, P., Loughheed, S.C., Rutter A., Langlois V.S. A spatial contaminant assessment for polar bear (*Ursus maritimus*) liver, fat, and muscle from Northern Canada. (In Revisions)

Schock, D.M., Akhter, F., Mundy, L., **Eccles K.M.**, Soos, C., Papp, Z., Pauli., B. Spatial and temporal variation of metal concentrations in wetlands and wood frogs from the Athabasca oil sands region in northern Alberta, Canada. (In Peer Review)

Tommasi, F., Pagano, G., Oral, R., Thomas, P.J., **Eccles K.M.**, Tez, S., Toscanesi, M., Giarra., A., Siciliano, A., Dipierro, N., Gjata, I., Guida, M., Libralato, G., Lyons,D.M., Burić, P., Ines Kovačić, I., Trifuoggi, M. Topsoil pollution and multi-endpoint toxicity in the petrochemical area of Augusta-Priolo (eastern Sicily, Italy). (In Peer Review)