# Kristin M. Eccles **Curriculum Vitae**


CONTACT INFORMATION

NIEHS
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HIGHLIGHTS

17 journal publications (9 as first author)
171 citations; h index = 7 and i10 index = 6
Research Interests: Spatial statistics, GIS, biomarkers, big data, mercury

CURRENT POSITION

**National Institute of Environmental Health Sciences** **Nov 2020 - Present**
Durham, North Carolina, USA

Postdoctoral Research Fellow
Advisor: Kyle Messier

EDUCATION

**University of Ottawa**, Ottawa, Canada **2019**
*Department of Biology*

Ph.D. Biology, Specialization in Chemical and Environmental Toxicology

Dissertation Topic: Applications of geographic information systems in landscape ecotoxicology
Advisor: Laurie Chan

**University of Calgary**, Calgary, Canada **2014**
*Department of Geography*

M.Sc., Geography
Thesis Topic: Environmental risk mapping for contamination of drinking water wells post-flood in southern Alberta
Advisors: Stefania Bertazzon and Sylvia Checkley

**McMaster University** , Hamilton, Canada **2012**
*Department of Health Studies*

H.B.A., Health Studies, Geography, and Earth Science

PROFESSIONAL APPOINTMENT/ EMPLOYMENT

**University of Toronto**, Toronto, Canada **Aug 2019 - Oct 2020**
*Department of Geography, Geomatics and Environment*
Postdoctoral Fellow
Advisors: Igor Lehnherr and Trevor Porter

**Geomatics Researcher** **June 2017 - March 2019**
Environment and Climate Change Canada, Ottawa, Canada

**Research Assistant** **Sept 2014- Dec 2019**
First Nation Food Nutrition and Environment Study, Ottawa, Canada

PUBLICATIONS

**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.

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.

**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

Galen, G., **Eccles, K.M**., MacMillian, 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.*

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.

**Eccles, K.M.**, Majeed, H., Lehnherr, 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.

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.

**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.

**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): 27972810.

**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.

**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), 23772384. 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.

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.

**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. dio: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).

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, 921.

## Manuscripts Under Review

Thomas, P. J., Eickmeyer, D. C., **Eccles, K.M.**, Kimpe, L. E., Felzel, E., Brouwer, A., Letcher, R. J., Maclean, B. D., Chan HM., Blais, J. (2021). Paleotoxicity of petrogenic and pyrogenic hydrocarbon mixtures in sediment cores from the Athabasca oil sands region, Alberta (Canada).

## Conference Proceedings

**Eccles K.M.**, Thomas P.J., Chan H.M. (2016). Evaluating mercury guidelines for furbearers using a predictive meta-model. Canadian Ecotoxicity Workshop. Edmonton, Canada.

Bertazzon, S., Barrett, O., Johnson, **M., Eccles,** K, Zhang, J. Y. (2014). Land use regression models (LUR) for reliable estimation of air quality in Calgary. Spatial Knowledge and Information. Banff, Canada.

## Sessions and Pre-conference Workshops Organized

**Society of Environmental Toxicology and Chemistry**, Fort Worth, USA **Nov 2020**
**On Demand Session:** Mercury emissions, transport, and transformation in a changing environment
**Live Discussion:** Pathways between Hg sources and exposures in a changing world
**Workshop:** Introduction to R

**International Conference on Mercury as a Global Pollutant**, Krakow, Poland **Sept 2019**
**Workshop:** Workshop: Latest Advances in Wildlife Biomonitoring

## Invited Talks

**Eccles K.M.** (2020). From biomakers to biomes: Relationships between contaminant sources, exposures, and health outcomes. University of Toronto Intersectional Seminar Series. Toronto, Ontario.

**Eccles K.M.** (2020). Humans, wildlife, and the environment: Assessing ecological health. 2nd Annual GeoHealth Network Conference. Toronto, Ontario. (Not presented due to COVID-19)

**Eccles K.M.**,Chan H.M. (2018). Mercury in wild foods and food security: Integrating data (Presentation). Environment and Climate Change Canada (ECCC) Wildlife Division Health Division Annual Meeting. Ottawa, Ontario.

**Eccles K.M.**, Chan H.M. (2018). Modelling the relationship between contaminant sources and exposures in wildlife (Presentation). Environment and Climate Change Canada (ECCC) National Pollution Release Inventory (NPRI) Data Users Workshop. Ottawa, Ontario.

## Selected Conference Presentations

**Eccles K.M.**, Clackett A., Ghotra, A., Majeed, I., Lehnherr, I., Porter, T. (2020). Developing a network of historical atmospheric mercury trends using tree-rings in northern Canada (Presentation). Society of Environmental Toxicology and Chemistry, Fort Worth, USA.

**Eccles K.M.**, Clackett A., Ghotra, A., Majeed, I., Lehnherr, I., Porter, T. (2020). Developing a

network of historical atmospheric mercury trends using tree-rings in northern Canada (Presentation). Canadian Chemistry Conference and Exibition. Winnipeg, Canada. (Not presented due to COVID-19).

**Eccles K.M.**, Clackett A., Ghotra, A., Majeed, I., Lehnherr, I., Porter, T. (2019). Assessing variability of atmospheric mercury ($Hg^0$) trends using tree-rings in northern Canada (Presentation). Society of Environmental Toxicology and Chemistry. Toronto, Canada.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2019). Wildlife as a surrogate indicator for impacts of mercury on ecosystem health (Presentation). International Conference on Mercury as a Global Pollutant. Krakow, Poland.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2018). Wildlife as a surrogate indicator for impacts of mercury on ecosystem health (Presentation). Society of Environmental Toxicology and Chemistry. Sacramento, USA.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2018). Evaluating the co-dispersion of mercury sources and wildlife exposures in the Athabasca Oil Sands region (Presentation). Society of Environmental Toxicology and Chemistry. Sacramento, USA.

**Eccles, K.M,** Hebert C.E., Schock, D., Akhter F., Mundy L., Thomas P.J., Pauli, B.D. (2018). Evaluating the co-dispersion of mercury sources and wildlife exposures in the Athabasca Oil Sands region (Presentation). Society of Environmental Toxicology and Chemistry. Sacramento, USA.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2018). Using geospatial methods to quantify the co-dispersion of mercury sources and exposures in river otter (*Lontra canadensis*) for risk prediction (Presentation). International Society of Exposure Science and International Society of Environmental Epidemiology Joint Meeting. Ottawa, Canada.

**Eccles K.M.**, Pauli, B., Chan H.M. (2017). Using Geographical Information Systems (GIS) for spatial risk assessment and landscape ecotoxicology (Presentation). Canadian Ecotoxicity Workshop. Guelph, Canada.

**Eccles K.M.**, Thomas P.J., Pauli, B., Chan H.M. (2017). Assessing chemical mixture exposures using spatial Principle Components Analysis (sPCA) and Geospatial Methods (Presentation). SETAC Special Meeting: Mixtures. Denver, USA.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2017). Modelling fur as a non-invasive biomarker for environmental mercury exposure (Presentation). International Conference on Mercury as a Global Pollutant. Providence, USA.

**Eccles K.M.**, Thomas P.J., Chan H.M. (2016). Evaluating mercury guidelines for furbearers using a predictive meta-model (Presentation). Canadian Ecotoxicity Workshop. Edmonton, Canada.

## Teaching Experience

**Primary Instructor**

Introduction to R in Open-Source Methods in Physical Geography — **Winter and Fall 2020**
2 Sessions for Graduate Level
Department of Geography, University of Toronto

Geographic Information Systems — **Spring 2020**
Department of Geography, University of Toronto

Introduction to Quantitative Methods **Winter 2018**
Department of Geography and Environmental Studies, Carleton University

Mapping and Modelling the Real World: Introduction to GIS **May 2017**
Enrichment Mini-Course, University of Ottawa

Introduction to Geomatics **Fall 2016**
Department of Geography, Environment and Geomatics, University of Ottawa

**Teaching Assistant**
University of Ottawa, Ottawa, ON **2014-2017**
Spatial Ecology, Biostatistics, Environmental Science

University of Calgary, Calgary, AB **2012-2014**
Geographic Information Systems II, Analytical Methods in Geography I

McMaster University, Hamilton, ON **2011-2012**
Women and Children in Canada, Mental Health

## Competitive Awards

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| University of Toronto Postdoctoral Award (2019-2020) | **$45,000** |
| NSERC CREATE-REACT (2016-2018) | **$20,000** |
| NSERC CREATE-REACT Travel Award (2018) | **$5,000** |
| University of Ottawa Excellence Scholarship (2016-2017) | **$8,200** |
| Queen Elizabeth II Graduate Scholarship in Science and Technology (2016-2017) | **$15,000** |
| University of Ottawa Entrance Scholarship (2014-2018) | **$38,000** |
| University of Calgary Conference Travel Award (2014) | **$3,000** |
| Queen Elizabeth II Masters Scholarship (2013-2014) | **$7,200** |

## Research Experience

**Laboratory Technologist I** **Nov 2013 Nov 2014**
Alberta Health Services, Calgary, Canada

**Research Assistant** **May 2012 Aug 2014**
University of Calgary, Department of Geography and Geology, Calgary, Canada

## Service to profession

Arctic Monitoring Assessment Program (AMAP) **June 2019- Sept 2020**
Mercury Expert Working Group

Oil Sands Monitoring Integration Workshop Series **Jan 2019**
External Expert- Geospatial Analysis and Mercury

## Extra Training

Teaching Fundamentals Certificate, University of Toronto **Winter 2020**
Machine Learning, University of Toronto **Fall 2019**

## Community Involvement

Canadian Association of Disabled Skiers (CADS) **2015-2019**
Canada Wide Science Fair Judge **2018**

## Languages

English - Native Language, French - Good
R - Advanced, Python - Intermediate, LaTeX- Intermediate

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| Professional Members | Society of Environmental Chemistry and Toxicology (SETAC)<br>Data Visualization Society<br>Toronto Machine Learning Society |
| Citizenship | Canadian |