Kristin M. Eccles **Curriculum Vitae**

Contact Information

NIEHS
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Highlights

16 journal publications (9 as first author)
172 citations; h index = 7 and i10 index = 6
Research interests: Spatial statistics, GIS, biomarkers, big data, metals, Tox21

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

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

M.Sc., Geography
Thesis title: 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

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

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

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

Peer-reviewed 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

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

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