

Kristin M. Eccles

Curriculum Vitae

CONTACT INFORMATION

National Institute of Environmental Health Sciences
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HIGHLIGHTS

16 journal publications (9 as first author)
189 citations; h index = 7 and i10 index = 6
Research interests: Spatial statistics, GIS, biomarkers, big data, metals, TOX21

CURRENT POSITION

Postdoctoral Research Fellow **Nov 2020 - Present**
National Institute of Environmental Health Sciences, Durham, North Carolina, USA
Postdoctoral Advisor: Kyle Messier, Ph.D.

EDUCATION

Ph.D., Biology with Specialization in Chemical and Environmental Toxicology **2019**
Department of Biology, University of Ottawa, Ottawa, Canada
Dissertation Advisor: Laurie Chan, Ph.D.

M.Sc., Geography **2014**
Department of Geography, University of Calgary, Calgary, Canada
Advisors: Stefania Bertazzon, Ph.D. and Sylvia Checkley, Ph.D.

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

PROFESSIONAL APPOINTMENT/ EMPLOYMENT

Postdoctoral Fellowship **Aug 2019 - Oct 2020**
Department of Geography, Geomatics and Environment, University of Toronto, Mississauga, Canada
Postdoctoral Advisors: Igor Lehnher, Ph.D. and Trevor Porter, Ph.D.

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., 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.
- 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](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).
- 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	<p>Thomas, P. J., Eickmeyer, D. C., Eccles, K.M., Kimpe, L. E., Felzel, E., Brouwer, A., Letcher, R. J., Maclean, B. D., Chan H.M., Blais, J. (2021). Paleotoxicity of petrogenic and pyrogenic hydrocarbon mixtures in sediment cores from the Athabasca oil sands region, Alberta (Canada).</p> <p>Johnston, A., Ashton, A., Etowa, J., Eccles, K.M.(2021). An Exploratory and Geospatial Analysis of Participation in the Mothercraft Postpartum Drop-in Support Program in Ottawa, Ontario, Canada.</p>
MANUSCRIPTS IN PREPARATION	<p>Eccles K.M., Kleinstreuer, N.C., Wambaugh, J.F., Messier, K.P, (2021). A geospatial modeling approach to quantifying risk of exposure to environmental chemical mixtures via a common molecular initiating event.</p>
CONFERENCE PROCEEDINGS	<p>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.</p> <p>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.</p>
INVITED TALKS	<p>Eccles K.M. (2020). From biomarkers to biomes: Relationships between contaminant sources, exposures, and health outcomes. University of Toronto Intersectional Seminar Series. Toronto, Ontario.</p> <p>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)</p> <p>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.</p> <p>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.</p>
SELECTED CONFERENCE PRESENTATIONS	<p>Eccles K.M., Kleinstreuer, N.C., Wambaugh, J.F., Messier, K.P, (2021). A geospatial modeling approach to quantifying risk of exposure to environmental chemical mixtures via a common molecular initiating event (Poster). International Society of Environmental Epidemiology, New York, USA.</p> <p>Eccles K.M., Clackett A., Ghotra, A., Majeed, I., Lehnher, 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.</p> <p>Eccles K.M., Clackett A., Ghotra, A., Majeed, I., Lehnher, 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.</p> <p>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.</p>

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
2 Sessions for Graduate Level
Department of Geography, University of Toronto

Winter and Fall 2020

Geographic Information Systems
Department of Geography, University of Toronto

Spring 2020

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

Winter 2018

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

May 2017

Introduction to Geomatics
Department of Geography, Environment and Geomatics, University of Ottawa

Fall 2016

Teaching Assistant

University of Ottawa, Ottawa, ON

2014 - 2017

Spatial Ecology, Biostatistics, Environmental Science

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
LEADERSHIP AND SERVICE	Conference Sessions and Workshops Delivered	
	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: Latest Advances in Wildlife Biomonitoring	
	Expert Working Group Member	
	Arctic Monitoring Assessment Program (AMAP)	June 2019- Sept 2020
	Mercury Expert Working Group	
	Oil Sands Monitoring Integration Workshop Series	Jan 2019
	External Expert for Geospatial Analysis and Mercury	
ADDITIONAL 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	
CITIZENSHIP	Canadian	