Kristin M. Eccles — Curriculum Vitae

Contact Information

Division of Translational Toxicology
National Institute of Environmental Health Sciences
530 Davis Dr.
Keystone Building
Durham, NC 27713

Voice: (919) 998-9954
E-mail: kristin.eccles@nih.gov
Website: https://kristineccles.wordpress.com
GitHub: https://github.com/kristineccles
ORCID: 0000-0002-6629-430X

Highlights

21 journal publications (10 as first author)
270 citations; h index = 9 and i10 index = 9
Research interests: Exposome, biomarkers, NAMs, geospatial modeling, spatial epidemiology

Current Position

Postdoctoral Research Fellow **Nov 2020 - Present**
National Institute of Environmental Health Science, Division of Translational Toxicology, Durham, North Carolina, USA
Postdoctoral Advisors: Cynthia Rider, Ph.D and 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 Lehnherr, 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

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. (In Press). The skin is no barrier to mixtures: Air pollutant mixtures and reported psoriasis or eczema in the Personalized Environment and Genes Study (PEGS). *Journal of exposure science & environmental epidemiology.*

Eccles K.M., Karmaus, A. L., Kleinstreuer, N. C., Parham, F., Rider, C. V., Wambaugh, J. F., Messier, K. P. (2023). A geospatial modeling approach to quantifying the risk of exposure to environmental chemical mixtures via a common molecular target. *Science of The Total Environment*, 158905. https://doi.org/10.1016/j.scitotenv.2022.158905

Boutet, V., Dominique, M., **Eccles, K.M.**, Branigan, M., Dyck, M., van Coeverden de Groot, P., Lougheed, S.C., Rutter A., Langlois V.S. An exploratory spatial contaminant assessment for polar bear (*Ursus maritimus*) liver, fat, and muscle from Northern Canada. *Environmental Pollution*, 120663.

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/toxics1007040

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**., 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*.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., 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. 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): 27972810. 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), 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. 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, 921. https://doi.org/10.1016/j.sste.2015.06.002

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.

Invited Talks

Eccles K.M. (2020). From biomarkers 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 (12/22)

Eccles K.M., Rider, C. V., Messier, K. P. (2022). Geospatial Risk Assessment Using High-Throughput Screening Assays To Quantify Potential Adverse Effects From Exposure To Chemical Mixtures (Presentation). Society of Environmental Toxicology and Chemistry, Pittsburgh, USA.

Eccles K.M., Karmaus, A. L., Kleinstreuer, N. C., Parham, F., Rider, C. V., Wambaugh, J. F., Messier, K. P. (2022). A geospatial modeling approach to quantifying the risk of exposure to environmental chemical mixtures via a common molecular target (Poster). North Carolina Society of Toxicology, Durham, USA.*

*1st place winner of best postdoctoral poster and presentation

Eccles K.M., Messier, K.P, (2021). Geospatial Risk Characterization Mapping of Chemical Mixtures Through Connections to Toxicological Adverse Outcome Pathways (Presentation). American Geophysical Union, New Orlean, USA.

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.

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. (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., 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.

Teaching Experience

Primary Instructor

Graduate Level Short Course: Introduction to R in Open-Source Methods — **Fall 2020**
Department of Geography, Geomatics and Enviornment, University of Toronto — **Winter 2020**

Geographic Information Systems — **Spring 2020**
Department of Geography, Geomatics and Enviornment, 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

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

Training in the Responsible Conduct of Research, National Institutes of Health	**Fall 2021**
Teaching Fundamentals Certificate, University of Toronto	**Winter 2020**
Machine Learning, University of Toronto	**Fall 2019**

Languages	English - Native Language, French - Good R - Advanced, Python - Intermediate, LaTeX- Intermediate
Professional Memberships	Society of Toxicology (SOT) Society of Environmental Chemistry and Toxicology (SETAC) Data Visualization Society