

705-748-1011 ext. 7360 enls@trentu.ca
 Fax: 705-748-1026 www.trentu.ca/els

The Environmental & Life Sciences Graduate Program is an interdisciplinary program leading to either a MSc or a PhD degree in the natural sciences. It is served by faculty principally from the departments of Biology, Chemistry, Forensic Science, and School of the Environment, as well as adjunct faculty from non-governmental organizations, industry, provincial and federal government agencies. Four Canada Research Chairs and one NSERC Senior Industrial Research Chair are appointed to the program. The program serves as a broad umbrella for these disciplines to interconnect. Three Canada Research Chairs and one NSERC Senior Industrial Research Chair are appointed to the program. Students conduct research in applied and basic science and many students develop their research projects in partnership with other universities, organizations, industry and governmental agencies. The centrepiece of student training is the thesis – an original investigation in the natural sciences – augmented by seminars, a mandatory core course (for MSc students), elective courses, and the candidacy examination (for PhD students).

The program offers instruction in six areas of emphasis:

- Cell Biology and Genetics
- Stress Physiology
- Physical Geography
- Trace Contaminant Toxicology and Chemistry
- Ecosystem Biogeochemistry
- Ecology and Conservation Biology

The aim of the program is to provide students with a background in the theory and practice of environmental and biological science that will enable them to function and thrive in a variety of work environments.

Graduate Program Director

M. Dorken, BSc (Guelph), MSc (Queen's), PhD (Toronto)

FACULTY AND RESEARCH AREAS

Anthropology

J. Conolly, BA (Toronto), MA, PhD (London), *spatial ecology & conservation biology, palaeoecology*

P. Szpak, BA (McMaster), PhD (Western), *stable isotopes, palaeoecology, historical ecology, archaeological science, environmental archaeology, bone chemistry, palaeodiet, domestication and animal husbandry; North American Arctic, Peru and Chile, British Columbia, California*

Biology

D. V. Beresford, BEd (Queen's), BSc, PhD (Trent), *Role of dispersal in insect and mite populations, stable flies as pests, insects that colonize corpses*

C. Brunetti, BSc, PhD (McMaster), *molecular biology of human poxviruses*

G. Burness, BSc (Memorial), MSc (Brock), PhD (British Columbia), *animal energetics, avian physiological ecology*

M. Dorken, BSc (Guelph), MSc (Queen's), PhD (Toronto), *plant evolution and reproductive strategies*

N. Emery, BSc (Queen's), PhD (Calgary), *physiological ecology of plants*

M. Fox, BA (Pennsylvania), MEdS. (Calgary), PhD (Queen's), *fish ecology, pond culture*

J. R. Freeland, BSc (Saskatchewan), MSc, PhD (Queen's), *molecular ecology, population and conservation genetics*

P. Frost, BSc (Rochester), MSc (Ohio State), PhD (Arizona State), *biological stoichiometry in aquatic ecosystems (David Schindler Professor in Aquatic Science)*

R. Huber, BSc, PhD (Toronto), *social amoeba Dictyostelium discoideum as a model system for studying the functions of proteins linked to human disease and the structure and function of the extracellular matrix (ECM)*

C. Kapron, BSc (Waterloo), MSc, PhD (McGill), *cellular and molecular mechanisms of embryonic toxicity and teratogenicity*

L. Kerr, BSc, MSc (Carleton), PhD (British Columbia), *behavioural neuroscience, cellular mechanisms, cancer growth and chemotherapeutic efficiency*

D. Murray, BSc (McGill), MSc (Alberta), PhD (Wisconsin), *mammal and amphibian ecology, population dynamics, behavioural ecology, predation, parasitism (Canada Research Chair in Integrative Wildlife Conservation)*

E. Nol, BSc (Michigan), MSc (Guelph), PhD (Toronto), *conservation ecology of birds*

J. A. Schaefer, BSc (McGill), MSc (Manitoba), PhD (Saskatchewan), *behaviour and population dynamics of terrestrial mammals*

B. White (Emeritus), BSc (Nottingham), PhD (McMaster)

P. Wilson, BSc, MSc, PhD (McMaster), *evolutionary genetics, DNA profiling (Canada Research Chair in DNA Profiling, Forensics, and Functional Genomics)*

M. A. Xenopoulos, BSc, MSc (Québec), PhD (Alberta), *global change and its effects on aquatic communities in lakes and rivers*

J. Yee, BSc, MSc, PhD (British Columbia), *molecular & biochemical parasitology*

Chemistry

- D. A. Ellis**, BSc (Glasgow), MSc (Aberdeen), MSc, PhD (Toronto), *fluorine impacts on organic compounds and their effects on dissemination in the environment*
- H. Hintelmann**, BSc, MSc, PhD (Hamburg), *fate of metals in environment, bioavailability/ speciation of metals and organometals, stable isotope methods and hyphenated ICP-MS techniques*
- S. Narine**, BSc, MSc (Trent), PhD (York), *biomaterials precursor synthesis, formulation and materials characterization (NSERC Industrial Chair in Biomaterials)*
- M. Parnis**, BSc., PhD (Toronto), *estimation and application of partition coefficients in environmental fate modelling*
- S. Rafferty**, BSc (Waterloo), PhD (British Columbia), *environmental biochemistry*
- A. Vreugdenhil**, BSc, PhD (McGill), *trace contaminants, transformation of organic & non-organic contaminants*

Computing & Information Systems

- S. McConnell**, BSc, MSc, PhD (Queen's), *high performance computing, Big Data, data mining and analytics, astronomical data analysis*

Forensic Science

- C. Kyle**, BSc (Bishop's), MSc (Guelph), PhD (Alberta), *conservation and population genetics, molecular ecology*
- S. Martic**, BSc (Bishop's), MSc (McMaster), PhD (Queen's), *biological biomarker identification, detection and toxicology screening using a variety of bioanalytical and biochemical tools*
- B. J. Saville**, BSc (Guelph), MSc PhD (Toronto), *fungus genomics*
- A. B. A. Shafer**, BSc (McMaster), MSc (Acadia), PhD (Alberta), *applying genomic methods to conservation, wildlife management, and legal issues. understanding the drivers of important processes like migration and adaptation in nature*

School of the Environment

- J. Aherne**, BA (Trinity College, Dublin), MAppSc, PhD (University College Dublin), *impacts and disturbance on aquatic and terrestrial ecosystems.*
- J. M. Buttle**, BA (Toronto), PhD (Southampton), *hydrology, fluvial geomorphology*
- P. J. Dillon**, BSc, MSc, PhD (Toronto), *nutrient cycling, trace metals, acid precipitation studies*
- C. Eimers**, BSc (Toronto), MSc (Trent), PhD (Waterloo), *soil processes, water quality, hydrology and climate change*
- R. D. Evans** (Emeritus), BSc (Toronto), PhD (McGill)
- C. Furgal**, BSc (Western), MSc, PhD (Waterloo), *environmental health, planning and resource development, risk management and communication, and Arctic Indigenous issues.*
- S. E. Franklin**, BES, MA, PhD (Waterloo), *GIS*
- B. E. Hickie**, BSc (Guelph), MSc (Waterloo), PhD (Waterloo), *environmental toxicology, pharmacokinetic modelling*

P. M. Lafleur, BSc (Brandon), MSc (Trent), PhD (McMaster), *forest-atmosphere energy interactions, impacts of climatic change*

C. L. McKenna Neuman, BSc (Queen's), MSc (Guelph), PhD (Queen's), *process geomorphology, mechanics of sediment transport, periglacial/coastal aeolian geomorphology*

C. D. Metcalfe, BSc (Manitoba), MSc (New Brunswick), PhD (McMaster), *aquatic organic contaminants*

R. Ponce-Hernandez, BEng (Universidad, Chapingo), MSc (Colegio de Postgraduados), DPhil (Oxford), *geographical information systems applied to suitability and impact assessments in agricultural and forest ecosystems*

I. Power, BSc and PhD (Western), *carbon sequestration and tailings management, natural analogues for carbon mineralization, and geobiological approaches to carbon management*

K. Thompson, BSc (Western), PhD (Guelph), *microbial communities in ecosystem functioning, including SOM stability and GHG fluxes, microbial measures as biological indicators of soil health, agricultural management, industrial disturbance, climate change and land use change*

D. Wallschläger, MSc (Bochum), PhD (Bremen), *speciation of anion-forming trace meta(loid)s, particularly arsenic, selenium and chromium, in natural and industrial environments*

S. Watmough, BSc (Liverpool Polytechnic), PhD (Liverpool John Moores), *impacts of acid rain, climate change, nutrient depletion, forestry and metals on forest and lake ecosystems*

T. H. Whillans, BA (Guelph), MSc, PhD (Toronto), *fisheries, wetland ecology, renewable resource management*

Other

- J. Bowman**, BSc (Queen's), MSc (Laurentian), PhD (New Brunswick), *spatial population ecology, landscape ecology, ecology of mammal and bird populations (Ontario Ministry of Natural Resources)*
- N. Jones**, BSc (Guelph), PhD (Alberta), *fish habitat and the productive capacity of aquatic ecosystems (Ontario Ministry of Natural Resources)*
- J. Nocera**, BSc (Connecticut), MSc (Acadia), PhD (New Brunswick) *species-at-risk, conservation biology, behavioural ecology (Ontario Ministry of Natural Resources)*
- B. Patterson**, BSc (New Brunswick), MSc (Acadia), PhD (Saskatchewan), *dynamics of vertebrate predator-prey systems (Ontario Ministry of Natural Resources)*