

Pathway to Increase Standards and Competency of eDNA Surveys (PISCeS) A National Workshop on Environmental DNA

University of Guelph Arboretum
October 11th and 12th, 2018

Welcome

Distinguished participants, I am pleased to welcome you to the PISCeS workshop. The objective of this congress is to bring personnel and scientists from industry, government, and academia together with students and other HQP to discuss the complexities of eDNA with respect to scientific study and regulatory application. I am pleased to welcome this diverse group of well-informed participants. We have set aside several opportunities for discussion and we anticipate a welcoming environment leading to engaging conversations and valuable insights. The goal of this workshop is to increase the breadth of our knowledge regarding eDNA applications, to build relationships with fellow scientists, and to discuss our shared vision of a Canadian National eDNA Network. Again, welcome and I look forward to speaking with all of you.

Sincerely,

Robert Hanner on behalf of the PISCeS Scientific Steering and Local Organizing Committee's

Thursday October 11, 2018

Registration Desk Opens at 7:00 AM Networking Breakfast served from 7-7:45 am (Arboretum)

Morning Session – eDNA Applications and Factors Influencing Detection Probability

- 8:05 *Welcome and opening remarks*
- Robert Hanner (University of Guelph)
- John Fryxell, Executive Director, Biodiversity Institute of Ontario (University of Guelph)
- 8:15 *Introduction to eDNA methods and applications*
- Robert Hanner (University of Guelph)
- 8:30 *What if... How else... Integrating environmental DNA into applied ecology*
- Jennifer Petruniak (Dillon Consulting)
- 8:45 *Multiple repositories of environmental DNA: Triple source detection of the endangered Jefferson salamander *Ambystoma jeffersonianum**
- Steve Crookes (University of Guelph)
- 9:00 *eDNA, a successful tool for biomonitoring species-at-risk and aquatic invasive species in highly acidic aquatic environments within a Canadian national park*
- Tzitziki Loeza-Quintana (University of Guelph)

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- 9:15 *Utilizing eDNA to detect SAR when others have failed: Redside Dace in Irvine Creek*
- Jay Cashubec (AECOM)
- 9:30 *Regulatory considerations for eDNA: the good, the bad and the ugly*
- Marc Skinner (Stantec)
- 9:45 *Recent progress in the development and application of robust targeted eDNA detection methods: the BC experience*
- Jared Hobbs (Hemmera Envirochem)

Break (10:00) Refreshments and Networking

Keynote Presentations

- 10:30 *Maximizing detection, minimizing contamination, and interpreting uncertainty in eDNA applications*
- Caren Goldberg (Washington State University)
- 11:15 *Standardization and thoughtful archiving: A next step towards the future of eDNA*
- Taylor Wilcox (National Genomics Center for Fish and Wildlife Conservation)

Lunch (12:00) Buffet catered by Hospitality Services (University of Guelph)

Afternoon Session – Community Assessment, Standards and Regulatory Perspectives

- 1:00 *Mapping native and invasive invertebrates in two great lakes tributaries using environmental DNA (eDNA) metabarcoding*
- Justin Mychek-Lander (University of Windsor)
- 1:15 *Evaluation of freshwater fish communities with eDNA metabarcoding: A quantitative perspective*
- Louis Bernatchez (Laval University)
- 1:30 *Primer validation for metabarcoding*
- Vasco Elbrecht (University of Guelph)
- 1:45 *A system for rapid eDNA detection of aquatic invasive species*
- Austen Thomas (Smith Root, Inc.)
- 2:00 *Environmental DNA education and support for the electric power industry*
- Doug Bradley (Limnotech)
- 2:15 *The role of standards in supporting eDNA innovation*
- Ana Maria Tomlinson (Canadian Standards Association)

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- 2:30 *Harnessing eDNA for resource management*
- Chris Wilson (Ontario Ministry of Natural Resources)
- 2:45 *One federal researcher's perspective on how to move towards harmonizing approaches in support of implementing eDNA surveys for decision-making*
- Cathryn Abbott (Department of Fisheries and Oceans)

Break (3:00) Refreshments and Networking

Synthesis – A National eDNA Network for Canada?

- 3:30 Panel discussion including: Louis Bernatchez (Laval University), Caren Goldberg (Washington State University), Dan Heath (University of Windsor), Caren Helbing (University of Victoria), Taylor Wilcox (RMRS), Chris Wilson (OMNR), Sherry Walker (DFO); moderated by Robert Hanner (University of Guelph)
- 4:15 Community response – summary of outcomes and discussion on next actions;
Environmental DNA - A new open access journal dedicated to the study and use of environmental DNA for basic and applied sciences
- announcement from Louis Bernatchez (Laval University), Editor-in-Chief
- 5:00 Adjourn

Reception and Poster Session - Refreshments and Networking

6:00 – 9:00 Summerlee Science Complex Atrium, cash bar and catering by Hospitality Services, event sponsored by the College of Biological Sciences

Friday October 12, 2018

Point-of-Need eDNA Tools and Training Session

9:00 – 12:00 University of Guelph Arboretum

This training session, especially designed for PISCeS participants, will provide hands-on training and instruction for those who wish to adopt eDNA monitoring protocols. In the first part of this session, we will provide an overview of the tools, their utility and how to apply them to the practice of eDNA detection in field applications. The second part of the session will provide in field training and covers an introduction to sampling strategy, eDNA filtration, sample prep, onsite qPCR analysis and data reporting capabilities. Representatives from Precision Biomonitoring, Smith-Root, and Biomeme will provide session instruction.