
*6th Conference on Natural
Channel Systems*



NATURAL CHANNELS

**Sustaining Connectivity:
Exploring the Importance
of Connectivity in Systems,
Knowledge, Practice and
Policy**

2018 Program

May 23rd - 25th, 2018

University of Guelph

Guelph, Ontario

Chairs' Message



We welcome you to the 6th Natural Channel Systems Conference, twenty four years after the first conference held in 1994. We invite you to explore with us Sustaining Connectivity – linking knowledge through generations, practice among disciplines, policy amidst practitioners, and science across the landscape.



After twenty-four years much has changed yet the goal has not. We aim to implement an approach by which natural channel systems are managed and designed to be naturally functional, dynamically stable, healthy, productive and sustainable.

After twenty-four years we find ourselves still challenged by some of the same issues. At the core of this conference it has and continues to be our objective to advocate for interdisciplinary solutions through supporting connections between disciplines. Central to this conference is supporting connections throughout the process from landowners, developers, municipalities, review agencies, designers, to end-users. Our individual knowledge and unique understanding make working as a team pivotal to finding sustainable solutions.

After twenty-four years our understanding of the complexity and interconnectedness of watercourses and their relation to geomorphological, biological, ecological, and chemical processes has advanced. While our understanding of the complexity of the interconnectedness of river systems has grown, our ability to manage these connections holistically has not kept pace. It has and continues to be our objective to break down siloes and to take a systems approach. It has and continues to be our objective to recognize that the way we manage these systems

requires implementation of a range of solutions and management activities that include the tablelands and their land uses.

After twenty-four years the tools we use, the methodologies we employ, and the technology we have has, and will continue to, change the way we manage, rehabilitate, and design channel systems. Science and knowledge continue to propel us forward. It has and continues to be our objective to introduce best practices and share experiences to allow us to implement and manage naturally functional, dynamically stable, healthy, productive and sustainable systems.

We call you on to commit to Sustaining Connectivity at this year's conference and following the conference, please:

1. Engage with professionals at different stages of their careers.
2. Engage with someone of a different discipline.
3. Engage in discussions of practice, policy, and science of the natural channel system.
4. Be engaged throughout the conference – ask questions, network, and have fun.

The planning of this conference began more than a year ago. Without the dedication of the conference committee, and the support of our respective employers, this conference would not have been possible. We are thankful for the committee's support, commitment, enthusiasm and guidance. The planning and execution of this conference has been helped considerably through the involvement of a dedicated group of volunteers and we would like to take this opportunity to extend our gratitude to you. Further, this conference would not be possible without the participation of the presenters, the keynote speakers, and our Master of Ceremonies and we thank you all for participating.

We hope that you will be engaged, inspired and challenged to explore with us Sustaining Connectivity during, and beyond, the conference.

Sincere regards,
Sally-Beth Betts and Cassie Schrembri

Program at a Glance

Wednesday, May 23, 2018	
8:30 AM – 4:30 PM	Training, Workshops, and Tours <ul style="list-style-type: none"> • Channel Design Principles • Class 2 Backpack Electrofishing Certification Course • Sediment Transport, Fish Passage and Open Channel Hydraulics
7:00 PM – 8:00 PM	Young Professionals Networking Event (Held at The Bullring)
8:00 PM – 10:00 PM	Ice Breaker Reception (Held at The Bullring) - Registration will be open
Thursday, May 24, 2018	
7:00 AM – 8:45 AM	Registration (Rozanski Hall)
8:45 AM – 9:45 AM	Welcome, Introductions, and Opening Remarks (Room 101 Rozanski Hall) Keynote Speaker Dr. Ellen Wohl
9:45 AM – 10:15 AM	Refreshment Break with Exhibitors (Rozanski Concourse)
10:15 AM – 11:30 AM	Concurrent Sessions (Rozanski Hall) - T1A / T1B / T1C / T1D
11:45 AM – 1:00 PM	Luncheon (Peter Clark Hall) Keynote Speaker Richard W. Hill Sr.
1:00 PM – 1:30 PM	Poster Presentations and Exhibitors (Rozanski Concourse) Living Lab (Room 105 Rozanski Hall)
1:30 PM – 2:45 PM	Concurrent Sessions (Rozanski Hall) - T2A / T2B / T2C / T2D
2:45 PM – 3:15 PM	Refreshment Break with Exhibitors (Rozanski Concourse)
3:15 PM – 4:55 PM	Concurrent Sessions (Rozanski Hall) - T3A / T3B / T3C / T3D
5:00 PM – 7:00 PM	Wine and Cheese Networking Reception (Rozanski Concourse)
Friday, May 25, 2018	
7:30 AM – 8:00 AM	Registration
8:00 AM – 9:00 AM	Keynote Address and Awards Presentation (Room 101 Rozanski Hall) Keynote Speaker Dr. Andrew Brookes Natural Channels Initiative: Award of Recognition
9:15 AM – 10:30 AM	Concurrent Sessions (Rozanski Hall) - F1A / F1B / F1C / F1D
10:30 AM – 11:00 AM	Refreshment Break with Exhibitors (Rozanski Concourse)
11:00 AM – 12:15 PM	Concurrent Sessions (Rozanski Hall) - F2A / F2B / F2C / F2D
12:15 PM – 1:15 PM	Luncheon (University Centre Food Court)
1:15 PM – 1:45 PM	Poster Presentations and Exhibitors (Rozanski Concourse) Living Lab (Room 105 Rozanski Hall)
1:45 PM – 3:25 PM	Concurrent Sessions (Rozanski Hall) - F3A / F3B / F3C / F3D
3:30 PM – 4:00 PM	Wrap-Up with Master of Ceremonies (Room 101 Rozanski Hall)

Sponsors and Exhibitors

River Level



Stream Level (Exhibitors)



Wine and Cheese Reception



Refreshment Breaks



Student Poster Event



Committee & Volunteer List

This conference would not have been possible without the time and commitment of the conference committee and volunteers. We would like to acknowledge the contributions made by these individuals.

Advisory Committee:

- **Doug Forder**, Ontario Streams
- **Ed Gazendam**, Water's Edge Environmental Solutions Team Ltd.
- **Jaclyn Cockburn**, University of Guelph
- **Jeremy Blair**, City of Mississauga
- **Shannon Baker**, Waterfront Toronto

Committee Members:

Co-chairs:

- **Cassie Schembri**, Credit Valley Conservation
- **Sally-Beth Betts**, Credit Valley Conservation

Members:

- **Alexandra Veglio**, Credit Valley Conservation
- **Andrea Bradford**, University of Guelph
- **Bill Trenouth**, Credit Valley Conservation
- **Brad Fairley**, Stantec Consulting Ltd.
- **Jack Imhof**, Trout Unlimited Canada
- **Jacqui Epsom-Laporte**, Ontario Ministry of Agriculture, Food and Rural Affairs
- **Jeff Hirvonen**, GeoProcess Research Associates
- **Karen Anderson**, Allset Inc.
- **Mariette Pushkar**, Ecosystem Recovery Inc.
- **Rick Portiss**, Toronto and Region Conservation Authority

Student Volunteers & Moderators:

- **Alison Gingrich Regehr**, University of Guelph
- **Allison Milan**, York University
- **Amin Azarkhish**, University of Guelph
- **Brent Smolarz**, University of Guelph
- **Carlos Pena**, University of Guelph
- **Josie Mielhausen**, University of Guelph
- **Katharine McNair**, University of Guelph
- **Mistaya Langridge**, University of Guelph
- **Mostafa Elkurdy**, University of Guelph
- **Pritichhanda Nayak**, Wilfrid Laurier University
- **Sachet Siwakoti**, University of Guelph
- **Samantha Mehlretter**, University of Guelph
- **Stephen Stajkowski**, University of Guelph

Volunteers (Responsibilities):

- **Amy Mayes**, Conservation Halton (Program Development, Moderator)
- **Beth Anne Fisher**, Conservation Halton (Training & Tour)
- **Cailey McCutcheon**, Aquafor Beech Ltd. (Lead Organizer of Young Professional Event, Moderator)
- **Heather Amirault**, Stantec Consulting Ltd. (Moderator)
- **Jason Krompart**, Credit Valley Conservation (Living Lab)
- **Matthew Vetta**, Credit Valley Conservation (Lead Organizer of Poster Session, Logistics)
- **Michael Lawson**, GEO Morphix Ltd. (Logistics, Living Lab)
- **Patrick Padovan**, GEO Morphix Ltd. (Moderator)
- **Paul V. Villard**, GEO Morphix Ltd. (Training & Tour, Living Lab)
- **Tawnia Martel**, Conservation Halton (Logistics)

Living Lab & Hashtag

Living Lab (Room 105)

We are once again pleased to announce that the 2018 conference will include a Living Lab area where conference attendees can explore different technologies and teaching tools related to natural channel processes. This area will showcase displays such as demonstration flumes, field sampling equipment, and digital displays highlighting interesting and innovative tools. The objective will be to provide attendees with an opportunity to learn about some of the technology and research tools common to the study of river corridors. By providing an opportunity to see and touch, we hope that delegates will come away with a better understanding and appreciation of some of the methods used by researchers and practitioners.

Don't miss the opportunity to discuss these technologies and tools with Natural Channel volunteers during the following times:

Thursday:

- During morning registration from 7:00 AM to 8:30 AM
- Morning refreshment break from 9:45 AM to 10:15 AM
- Following the luncheon from 1:00 PM to 1:30 PM
- Afternoon Break from 2:45 PM to 3:15 PM
- During the Wine and Cheese Reception from 5:00 PM to 7:00 PM

Friday:

- Morning refreshment break from 10:30 AM to 11:00 AM
- Following the lunch break from 1:15 PM to 1:45 PM

#NaturalChannels

Although nothing compares to good old fashioned face-to-face conversations - hit the next best thing: **social media!**



This conference is meant to act as a place of education, so let's broaden our opportunities beyond the physical borders!

- Use the conference hashtag **#NaturalChannels** and engage with your peers worldwide!
- Do you have questions about natural channels? Post a question and see what answers your peers provide.
- Start a conversation about natural channels or join in an existing one!
- Have a natural channels project you are proud of? Post a link to information about it and inspire others!
- Tell others about what you are learning at the conference!

Student and Professional Poster Display (Rozanski Concourse)

Student Posters

Riparian Zone Delineation Based on Geospatial Dataset Analysis on a Small Stream Near Havelock, New Brunswick

Joan Grau^[1], Fan Rui Meng^[1],
Bonnie J. Robertson^[2]

^[1]University of New Brunswick,
Faculty of Forestry and
Environment Management,
Fredericton, New Brunswick,
Canada

^[2]Agriculture and AgriFood
Canada, Science and
Technology Branch, Fredericton,
New Brunswick, Canada

Understanding the Dynamic Nature of Time to Peak in UK Streams

Mistaya Langridge^[1], Rachel
Walton^[1], Bahram Gharabaghi^[1]

^[1]University of Guelph, Guelph,
Ontario, Canada

Examining Fish Passage Through Restored Urban Channels

Josie Mielhausen^[1], Jaclyn
Cockburn^[1], Paul Villard^[1, 2]

^[1]University of Guelph, Geography
Department, Guelph, Ontario,
Canada

^[2]GEO Morphix Ltd., Milton,
Ontario, Canada

Spatial-Temporal Change and Factors Limiting Sand Dune Restoration for Skink Habitat in Northwest Beach of Point Pelee National Park

Pritichhanda Nayak^[1], Mary-
Louise Byrne^[1]

^[1]Department of Geography and
Environmental Studies, Wilfrid
Laurier University, Waterloo,
Ontario, Canada

Land Use and River Systems: Impacts of Suburban Residential Development on Channel Stability and Water Supply, Oak Ridges Moraine, Southern Ontario

Alison Milan^[1], André Robert^[1]

^[1]York University, Toronto,
Ontario, Canada

Environmental Flow Assessment of the Winnipeg River for Wild Rice Crop Growth in the Ochiichagwe' Babigo'Ining Ojibway Nation

Samantha Mehlretter^[1], Andrea
Bradford^[1], Brittany Luby^[2]

^[1]School of Engineering,
University of Guelph, Guelph,
Ontario, Canada

^[2]College of Arts (History),
University of Guelph, Guelph,
Ontario, Canada

Professional Posters

Upper Vernon Creek Flood Recovery: Incorporating a Geomembrane into Natural Channel Design

Leif Burge^[1], Matt Wood^[1], Joe Kennedy^[1], Shawn
Kilpatrick^[1]

^[1]Stantec, UBC Okanagan, Canadian Rivers Institute,
Kelowna, British Columbia, Canada

Incorporating Environmental Flows into Land Use Planning Decisions

Cassie Schembri^[1], Dr. Andrea Bradford^[2]

^[1]Credit Valley Conservation

^[2]University of Guelph

Upper Vernon Creek Flood Response and Recovery: from Concrete Flume to Naturalized Channel in 11 Months

Leif Burge^[1], Matt Wood^[1], Joe Kennedy^[1], Shawn
Kilpatrick^[1]

^[1]Stantec, UBC Okanagan, Canadian Rivers Institute,
Kelowna, British Columbia, Canada

Geomorphic Channel Terminology: A Refresher

Mariette T.H. Pushkar^[1], Peter E. Ashmore^[2]

^[1]Ecosystem Recovery Inc.

^[2]University of Western Ontario

2018 MC and Keynote Speakers

Master of Ceremonies



Deborah Martin-Downs

Deborah Martin-Downs, B.E.S., M.Sc., is the Chief Administrative Officer of the Credit Valley Conservation Authority (CVC), a position she began in August of 2013 after 8 years as Director of the Ecology Division of the Toronto and Region Conservation Authority (TRCA). Prior to joining TRCA, Deborah spent 16 years as an environmental consultant with Gartner Lee Limited (now AECOM). She has a Bachelor of Environmental Studies from the University of Waterloo (1979) and a Master of Science in Zoology and Environmental Studies from the University of Toronto (1985).

Deborah began her career as an aquatic ecologist specializing in urban systems and the factors that have contributed to their change over time. Over the course of her career she has held progressive roles managing multidisciplinary teams of technical specialists in the fields of geoenvironmental, watershed planning, terrestrial and aquatic ecology, flood risk and infrastructure, water resources engineering, source water protection, and environmental monitoring.

She has been around long enough to have been one of the first people trained in fluvial geomorphology by Dave Rosgen in 1991, before that term became a household word (well at least in some of our households). Deborah presented at the first natural channels conference in 1994, bravely admitting to many mistakes made in designing and building channels with her new found knowledge. Deborah is honoured to be the MC this year but this time will let the experts do the talking!

Thursday Morning Keynote Speaker



Dr. Ellen Wohl

Ellen Wohl received a BSc in geology from Arizona State University and a PhD in geosciences from the University of Arizona before joining the faculty at Colorado State University in 1989. Her research focuses on physical process and form in river corridors, including interactions with biotic and human communities. Her research is predominantly field-oriented and she has conducted field research on every continent but Antarctica.

She has written more than 200 scientific papers and book chapters, as well as 16 books, and is a Fellow of the American Geophysical Union and the Geological Society of America and a Colorado State University Distinguished Professor. Much of her current research examines how physical complexity associated with the presence of instream wood and beaver dams influences the form and function of river ecosystems.

Ellen is also speaking in session F2D Resilience: Exploring the Concept of Resilience in Natural Channel System.



Thursday Luncheon Keynote Speaker



Richard W. Hill Sr.

Member of the Beaver Clan of Tuscarora Nation. Currently Coordinator for the Joint Stewardship Board serving the City of Hamilton and Six Nations of the Grand River Territory. Previously served as Senior Project Coordinator, Deyohahage Indigenous Knowledge Centre at Six Nations Polytechnic; Assistant Director for Public Programs, National Museum of the American Indians, Smithsonian Institution; and former Assistant Professor, State University of New York at Buffalo.

Friday Morning Keynote Speaker



Dr. Andrew Brookes

Dr. Andrew Brookes has over 34 years of professional experience, is recognized internationally for contributing to river restoration, and is a nationally recognized as an expert in geomorphology. Dr. Brookes is also an expert in hydromorphology assessment working on a wide variety of projects from low flow projects to catastrophic floods, with a demonstrated expertise in linkages between geomorphology, hydrology and ecology having produced reports for the European Union.

Dr. Brookes' vast career has included working as a Research Fellow at the Royal Society and University of Wales for three years, an expert in Public Inquiries and Court Cases, and a founding member of the River Restoration Project (now the River Restoration Centre). He is the winner of the (UK) Royal Geographical Society for outstanding national and international contributions to river management.

Dr. Brookes is the author of a book on river channelization published in 1988 by John Wiley & Sons, an Author and editor of a book on River Channel Restoration, and the author and contributor to approximately 40 peer-reviewed publications as well as many hundreds of technical reports.

Dr. Brookes is also speaking in session T1C River Management: Gaining Perspective on Stream Restoration, Lessons Learned and Tools for Advancing Our Understanding.

2018 Sessions

Sessions - Thursday, May 24, 2018

10:15 AM - 11:30 AM

Room: 106

T1A Policy Panel Discussion: Finding Solutions to Emerging Land Use Changes

Solar farms are becoming increasingly common, and while the energy they produce may be "Green", such installations provide both unique challenges and opportunities when it comes to designing green infrastructure and natural channel systems capable of handling their runoff.

Adam and Jason will provide an overview of the site characteristics and design considerations for a large solar farm project in Ontario. The panel will explore the various professional roles and perspectives involved in the project, and the unique design implications of having an impermeable surface above shaded ground.

Jason Sharpe & Adam O'Connor
McIntosh Perry

Moderator

Jacqui Empson Laporte
Ontario Ministry of
Agriculture, Food and
Rural Affairs

Room: 103

T1B Monitoring and Lessons Learned: Examining Ways to Improve the Effectiveness and Reliability of Monitoring

Why the Difference?
Mari ette Pushkar & Julia
Howett
Ecosystem Recovery Inc.

**Following up on
Following up: Findings
and Recommendations
from NCI's 2017
Post-Construction
Monitoring Workshop**
Jeff Muirhead
Stantec Consulting Ltd.

**Setting Standards for
the Design of Stream
Rehabilitation Project
Evaluations: Updated
Guidance from 10 Years
of Monitoring in the
Greater Toronto Area**
Dean Young
Toronto and Region
Conservation

Room: 101

T1C River Management: Gaining Perspective on Stream Restoration, Lessons Learned and Tools for Advancing Our Understanding

**The Importance of
Understanding Channel
Adjustments: 36 Years
of River Channel
Restoration Examples
from the UK and
Denmark**
Andrew Brookes
Jacobs Engineering
Group UK

**What Does an Estimator
See When He Looks
at a Natural Channel
Construction Project?**
Jared Reinders
R&M Construction

**Watercourse Projects,
Lessons Learned**
Julie Mulligan
Stantec Consulting Ltd.

Room: 102

T1D Innovation: Improving our Approach with Innovative Tools

**A Software Platform for
Integrated Monitoring
and Modelling of Stream
Restoration Projects**
Doug Mulholland
University of Waterloo

**Delimiting Freedom
Space for Rivers Using
GIS and Remote
Sensing: Updating
Existing Tools to
Manage Functional and
Resilient River Systems**
Fabien Hugue
AECOM & Concordia
University
& Joanna Eyquem
AECOM

**An In-Flood Monitoring
System for Bedload
Sediment in a Restored
Riffle-Pool Morphology**
Chris Muirhead & Bruce
MacVicar
University of Waterloo



Sessions - Thursday, May 24, 2018

1:30 PM - 2:45 PM

Room: 106

T2A
Communication:
How Effective
Communication Can
Lead to Project Success

The Benefits of Regular Onsite Collaboration throughout the Permitting Process. Lessons Learned from the Framgard Channel Realignment.

Charles Priddle & Benjamin Davis
Conservation Halton

One Size Does Not Fit All (or Even Most) - Lessons Learned in Effective Communication

Laura Lawlor
GHD Limited

Rocky Ramp Case Study - Managing Socio-Political Expectations and Adverse Field Conditions

Stephen Braun
Matrix Solutions Inc.

Room: 103

T2B
Monitoring:
Application of New
Tools

Unmanned Aerial Vehicles as a Tool for Monitoring and Evaluating Natural Channel Designs

Bryce Molder
GEO Morphix Ltd.

Exploring the Use of Unmanned Aerial Systems (UAS) in River Research and Monitoring

Scott Finucan
Ontario Ministry of Natural Resources and Forestry

Field Based Correction of Environmental Flow Estimates Affected by Aquatic Vegetation Growth at Gauged Sites

Lorenzo Brignoli
Stantec Consulting Ltd.

Room: 102

T2C-1
Young Professional
Development

The Role of Young Professionals in River Restoration in Ontario

Cailey McCutcheon
Aquafor Beech Ltd & Jeffrey Muirhead
Stantec Consulting Ltd.

T2C-2
Environmental Flows:
State of the Science

State of the Science, at Home and Abroad

Peter Lind
GHD Aquatic Sciences Group

Environmental Flows - Underexplored Dimensions

Dr. Andrea Bradford
University of Guelph

Room: 101

T2D
Resilience: Exploring
Response Time and
Design Adaptation

Urbanization of Highland Creek: Morphological Response, Predictability, and Natural Channel Design

John McDonald
Matrix Solutions Inc. & Peter Ashmore
Western University

Resilience in the Design and Construction of Highland Creek Valley Segment 4a

Harry Reinders
R & M Construction & W J Snodgrass
City of Toronto

The Time-Limited Resilience of River Morphology to Alteration: Examples from across Canada

Robin McKillop
Palmer Environmental Consulting Group Inc.

2018 Sessions

Sessions - Thursday, May 24, 2018

3:15 PM - 4:55 PM

Room: 103

T3A Collaborative Design: Complex Projects That Took a Multidisciplinary Team to Innovate Solutions

Planning for Change through the Use of Successional Vegetation Communities
Tim McCormick & Daniella Giovanatto
Stantec Consulting Ltd.

A Little Fish and the Landscape Architect: Collaborative Design to Create a Better Place for Redside Dace
Paul DiProffio
NAK Design Strategies

Design and Construction of Side-Channel Fish Habitat on the Bow River as Offset for Serious Harm
Matt Wood & James Bigelow
Stantec Consulting Ltd.

Restoring the Connection between Creek and Lake: Fresh Water Estuarine Creation in Mississauga
Jeffrey Doucette
GHD Limited & Kenneth Dion
Toronto and Region Conservation

Room: 106

T3B Monitoring and Lessons Learned: Investigating Ways to Improve Our Approach

Modelling Specific Stream Power and Associated Channel Morphologies Using Differential Scaling of Slope Generalisation Techniques
Pamela Tetford
University of Toronto

Determining Erosive and Depositional Patterns in the North Saskatchewan River to Target Sediment Sample Locations Most Likely Impacted by an Oil Spill
Shaun Toner & Jocelyn Fetter
Matrix Solutions Inc.

Secrets toward Success in Live Staking
Sheldon Smith & Daniella Giovanatto
Stantec Consulting Ltd.

Monitoring Extreme Events: The Trials and Tribulations
Patricia Huynh
University of Waterloo

Room: 102

T3C Environmental Flows: Application of Techniques to Determine Environmental Flow Targets

Bioenergetic Models as a Means to Evaluate Habitat Availability
John Tweedie & Jaclyn Cockburn
University of Guelph

Ecological Response to an Experimental High Flow Release in the Upper Yarra River, Victoria, Australia
Peter Lind
GHD Aquatic Sciences Group

Understanding Connectivity - Animal Behaviour, Istream Flow Needs, Channel Morphology and Watershed/Ecosystem Context and Potential Risk
Jon Bisset
Canadian Columbia River Inter-tribal Fisheries Commission

Environmental Flow Negotiations for Proposed Waterpower Sites in Northeastern Ontario 2005-2015
Rich Pyrcie
Ontario Ministry of Natural Resources and Forestry

Room: 101

T3D Resilience: Examining Sediment Dynamics

Linking Urban Hydromodification to Bedload Sediment Transport
Elli Papangelakis
University of Waterloo

An Order of Magnitude Increase in Stream Power and Sediment Transport Potential Due to Urbanization of the Highland Creek Watershed Toronto, ON
Dr. Roger Phillips
University of Toronto

Did It Move? Lessons Learned with Sediment Tracking
Julia Howett & Wolfgang Wolter
Ecosystem Recovery Inc.

The Viability of Natural Channel Designs in Highly Active Fluvial Systems
Scott Cowan & Jeff Muirhead
Stantec Consulting Ltd.

Friday Morning Award of Recognition

Natural Channels Initiative: Award of Recognition

The Award of Recognition is to be presented to a candidate(s) for their exemplary contribution to the field of natural channel systems.

Through their efforts they have demonstrated a commitment to advancing the field of natural channel systems through research, knowledge transfer, collaboration, implementation and/or innovation. Recipients have shown exemplary

leadership, dedication and personal commitment, and have made a significant contribution to the field of natural channel systems.

In this inaugural year, we are delighted to present two awards to the following worthy individuals: Craig MacRae and John Parish.



Craig MacRae

Dr. Craig MacRae is an internationally known fluvial geomorphologist and stormwater management specialist who began his career in 1977 with James F. MacLaren Ltd. as a computer modeller for stormwater management studies. In 1985, Craig went back to school to complete Ph.D. in Civil Engineering at the University of Ottawa; his thesis was on designing stormwater ponds to minimize the increase in erosion potential associated with hydromodification. Following completion of his Ph.D, Craig worked at the Royal Military College from 1989 to 1991 before joining the consulting world. Craig worked as a consultant at Gore and Storrie and Aquafor Beech. Craig has worked in a wide range of climatic and physiographic environments having completed work in every province west of New Brunswick as well as projects in the USA, Germany, Saudi Arabia, Brunei on the Islands of Boreno and Trinidad. He was a participant in development of the 1999 Natural Channel Design Manual, the 2003 MOE Stormwater Management Planning and Design Manual, and participated in development of the geomorphic component of several Subwatershed Strategies. Craig developed the Rapid Geomorphic Assessment (RGA) which continues to be used today and shared his 11-step stream corridor assessment process that was embraced and became the 9-step process outlined in the 2001 (MNR) Adaptive Management of Stream Corridors document.



John Parish

Mr. John Parish was a pioneer in the field of fluvial geomorphology, recognized internationally as an expert in this field. John graduated from the University of Waterloo in 1985 with a Bachelors of Environmental Studies, focusing on Physical Geography, and from Wilfrid Laurier University in 1990 with a Masters in Geography. John worked as a fluvial geomorphologist for over 30 years, proudly starting PARISH Geomorphic Ltd. in 1997. In 2015, PARISH Geomorphic merged with Matrix Solutions Inc. and John continued as a Principal Geomorphologist in the PARISH Aquatic Services division. John was a full practicing member of the Association of Professional Geoscientists of Ontario.

John was instrumental in the development of policies and implementation guidelines for managing watersheds in Southern Ontario, and a champion for natural river restoration across Canada. John was active in providing training in geomorphology and channel design, and lectured at a number of universities and colleges. John contributed to the assessment and restoration of hundreds of streams, ranging from large rivers to smaller creek channels. His insight and contribution to understanding rivers and rivers processes, and how they influence the lands around them, will not be forgotten.

2018 Sessions

Sessions - Friday, May 25, 2018

9:15 AM - 10:30 AM

Room: 102

F1A **Policy: Establishing Sustainable Funding Mechanisms**

Restoration of a Confined Urban System - Funding and Design

Linda McDougall
City of London
& Heather Amirault
Stantec Consulting Ltd.

Bridging the Gap: TRCA's Restoration Opportunities Database as a Potential Compensation Bank

Joel Smith & Andrew Ramsebottom
Toronto and Region Conservation

The Evolution of DFO Habitat Banking: What We Have Learned So Far in the City of Kitchener

Leah Walter
City of Kitchener
& Brad Fairley
Stantec Consulting Ltd.

Room: 101

F1B **Innovation: Employing Models to Improve the Robustness of Natural Channel Design**

Making the Bend: Demonstration of HEC-RAS2D to Support Hydraulic Design of Turning Vanes

Robert Chlumsky
Ecosystem Recovery Inc.

Vortex Rock Weirs: Assessing Fish Passage at Design and after Construction through Modelling and Measurement

Paul Villard
GEO Morphix Ltd.

Lessons Learned from Using a 3D Numerical Model and Suitability Analysis to Assess a Lake Sturgeon Restoration Project in the Ouareau River (Quebec)

Andre-Marcel Baril
GEO Morphix Ltd.

Room: 106

F1C **Panel Discussion: Advancing Professional Regulation**

Join us to discuss how the disciplines that input to natural channel design are regulated

1. **Introductory Presentations**
2. **Planned Questions**
3. **Questions from the Audience - please come prepared with your own questions to ask the panelists**

Moderator

Dr. Mary-Louise Byrne
Wilfred Laurier University

Panelists

Dr. Roger Phillips
Association of Professional Geoscientists Ontario

Dr. Richard Zytner & Mark Hartley
Professional Engineers Ontario

Mark Schollen
Association of Landscape Architects Ontario

Room: 103

F1D **Resilience: Examining Sediment Dynamics**

Laboratory Modeling of Sediment Dynamics to Promote Resilient Streams

Ryan Good
University of Guelph

Experimental Study on the Impact of Keystones on Gravel Bed Morphology

Chris McKie
University of Waterloo

Sediment Dynamics in Semi-Alluvial Urban Streams

Peter Ashmore
Western University
& Matilde Welber
University of Trento



Sessions - Friday, May 25, 2018

11:00 AM - 12:15 PM

Room: 106

F2A
Policy: Innovative Application, Using Pre-Existing Legislative Tools to Manage Connected Systems

Influencing the next Generation of Rural Drainage Design
Tim Brook & Sid Vander Veen
Ontario Ministry of Agriculture, Food and Rural Affairs

Policy Innovation: Using Existing Drainage Legislation to Create Healthier, Holistically-Functional Drainage Channels
Sarah Fleischhauer
Maitland Valley Conservation Authority

The Drainage Act - in Mississauga? How a Rural Regulatory Tool Was Used to Address Urban Flooding
Bill Trenouth
Credit Valley Conservation

Room: 101

F2B
Innovation: Improving Natural Channel Design Procedures

Meander Belt Width Procedures: Developing Predictive Model for Southern Ontario
Julia Howett
Western University

Improvements in Fluvial Modelling to Support the Assessment and Restoration of River Reaches with Eroded Banks
Yannick Rousseau
Concordia University

Examining Slope Instability Dynamics along a Small Bank Slope Using Tree Ring Growth Anomalies in Central New York State, USA
Matthew Vetta
Credit Valley Conservation

Room: 102

F2C
Hydromodification: Understanding the Morphological Impacts of Urbanization and Examining Solutions

A Review of the Impacts of Urbanization on River Morphology: Current Knowledge, Industry Practices, Challenges and Future Opportunities
Ben Plumb & Jeff Hirvonen
GeoProcess Research Associates Inc.

Experience from the Chesapeake Bay - Regenerative Stormwater Conveyance Principles and Adaptations in Urban Stormwater Retrofitting and Stream Restoration
Glenn Muckley
Stantec Consulting Services Inc.

Pocket Wetlands as Additions to Stormwater Treatment Train Systems: A Case Study from a Restored Stream in Brampton, ON, Canada
Jason Krompart
Credit Valley Conservation

Room: 103

F2D
Resilience: Exploring the Concept of Resilience in Natural Channel System

River Beads as a Conceptual Framework for Building Resilience into River Management
Dr. Ellen Wohl
Colorado State University

Geomorphic Resilience: An Argument for a Modified Definition
Kayla Goguen
Western University

Resiliency to Resiliency: A Sociogeomorphic Approach to Rivers
Danielle Barr
Western University

2018 Sessions

Sessions - Friday, May 25, 2018

1:45 PM - 3:25 PM

Room: 102

F3A **Policy: Tools and Approaches to Protect and Restore Natural Channel Systems**

Restoring Degraded Urban Rivers in the Quebec Policy Context, Proposing Non-Structural Solutions and Convincing Decision Makers

Geneviève Marquis & Hugues Lachance
J.-F. Sabourin and Associates

Development of a Rehabilitation Strategy over Multiple Subwatersheds to Support the Implementation of Large-Scale Development Projects in Regulated Redside Dace Habitat

Imran Khan
Beacon Environmental & Emily Funnell
Ontario Ministry of Agriculture, Food and Rural Affairs

Mitigation Approaches to Fund Stream Restoration Projects

J George Athanasakes
Stantec Consulting Ltd.

Monetizing Fish Habitat Credits

Brad Fairley
Stantec Consulting Ltd.

Room: 106

F3B **Innovation: Forward Thinking, New Approaches for a New Day**

Planting Design Considerations for a Changing Climate as It Relates to Natural Channel Design

Amy Bennewies
Into the Woods

Refining Policies Regarding Setbacks for Surface Water Features in the City of Ottawa

Jennifer Boyer
City of Ottawa & Cynthia Levesque
Kilgour & Associates Ltd.

Connecting the Dots: Natural Channel Restoration Based on Communal Approaches to Urban Drainage

Shannon Malloy & Karen Chisholme
Credit Valley Conservation

Emergency Response Leads to Bank Stabilization Needs in Prince Albert, SK - Introducing Natural Channel Techniques to a New Region

Amber Garrett & Heather Amirault
Stantec Consulting Ltd.

Room: 101

F3C **Stream Restoration Projects: Finding Harmony Where Infrastructure Meets the Streams**

Culvert Controlled Morphology in a Constrained Urban River: A Case Study in Geomorphic Analysis for Asset Management Decisions

Jeff Hirvonen & Ben Plumb
GeoProcess Research Associates

Collaborating to Protect Municipal Infrastructure and Restore Redside Dace Habitat

Matt Johnston
Toronto and Region Conservation

Channel Design at Road Crossings: Design Constraints and the Consideration of Fluvial Geomorphic Processes

Mark Wojda
Matrix Solutions Inc.

Barefoot Box Culvert

Christopher Pfohl
R.J. Burnside & Associates Limited

Room: 103

F3D **Stream Restoration Projects: Systems over Silos, Taking in the Whole Picture Approach**

Critical Relationships between Streams and Their Floodplains: Implications for Stream Restoration Project Design

Fred Dobbs
Nottawasaga Conservation Authority & Paul Villard
GEO Morphix Ltd.

Erosion and Runoff Mitigation for Water Quality Enhancement for a Rural, Northern Ontario Community

Ed Gazendam
Water's Edge & John McDonald
Matrix Solutions Inc.

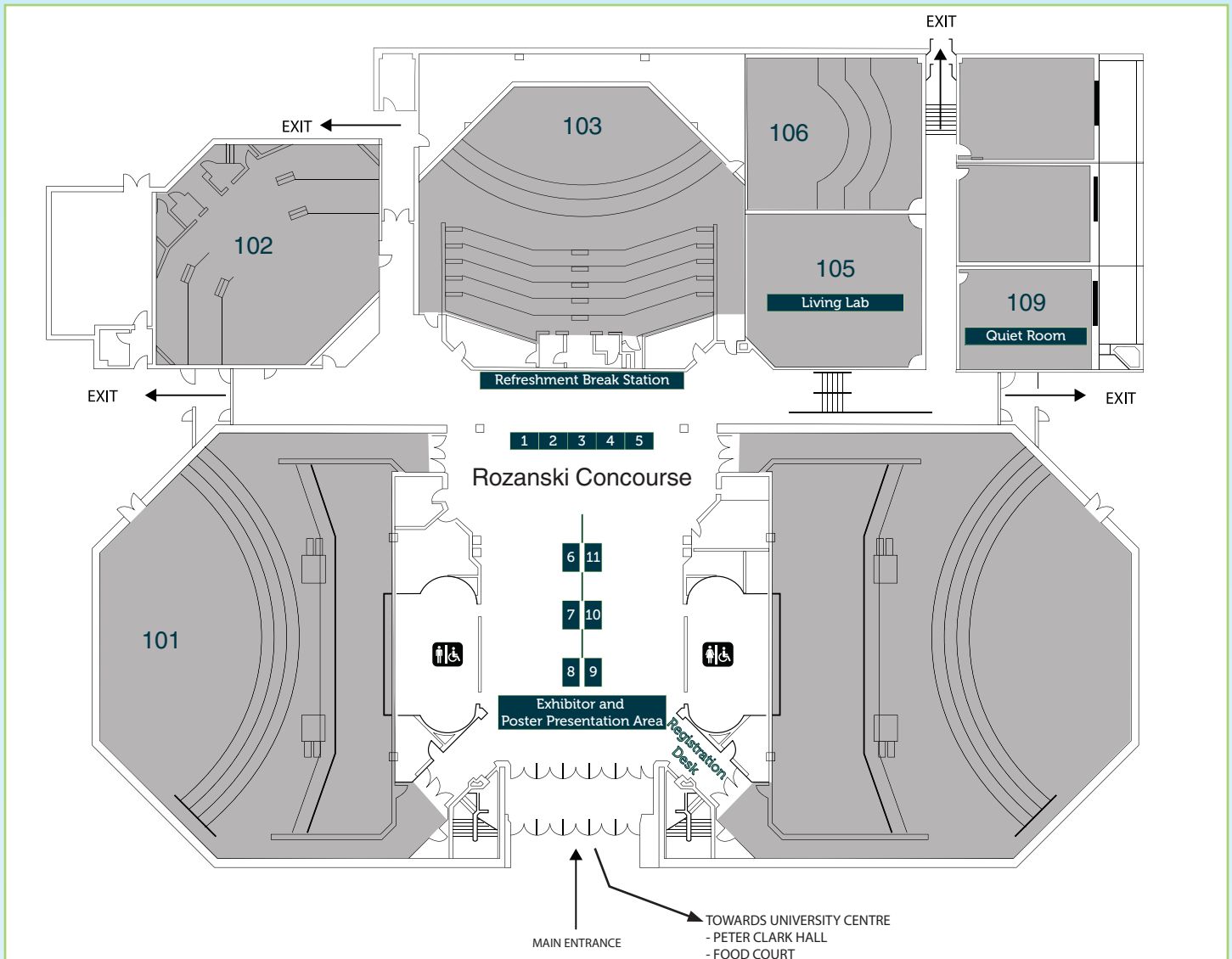
In the Wake of the Ash Borer: Collaborative Ecological Restoration and Erosion Mitigation in Oakville's Taplow Creek

Anna Howes & Ash Baron
Aquafor Beech Ltd.

Managing the Relationships between Watercourses and Riparian Wetlands

Cara Hutton
GEO Morphix Ltd. & Nyssa Hardie
Natural Resource Solutions Inc.

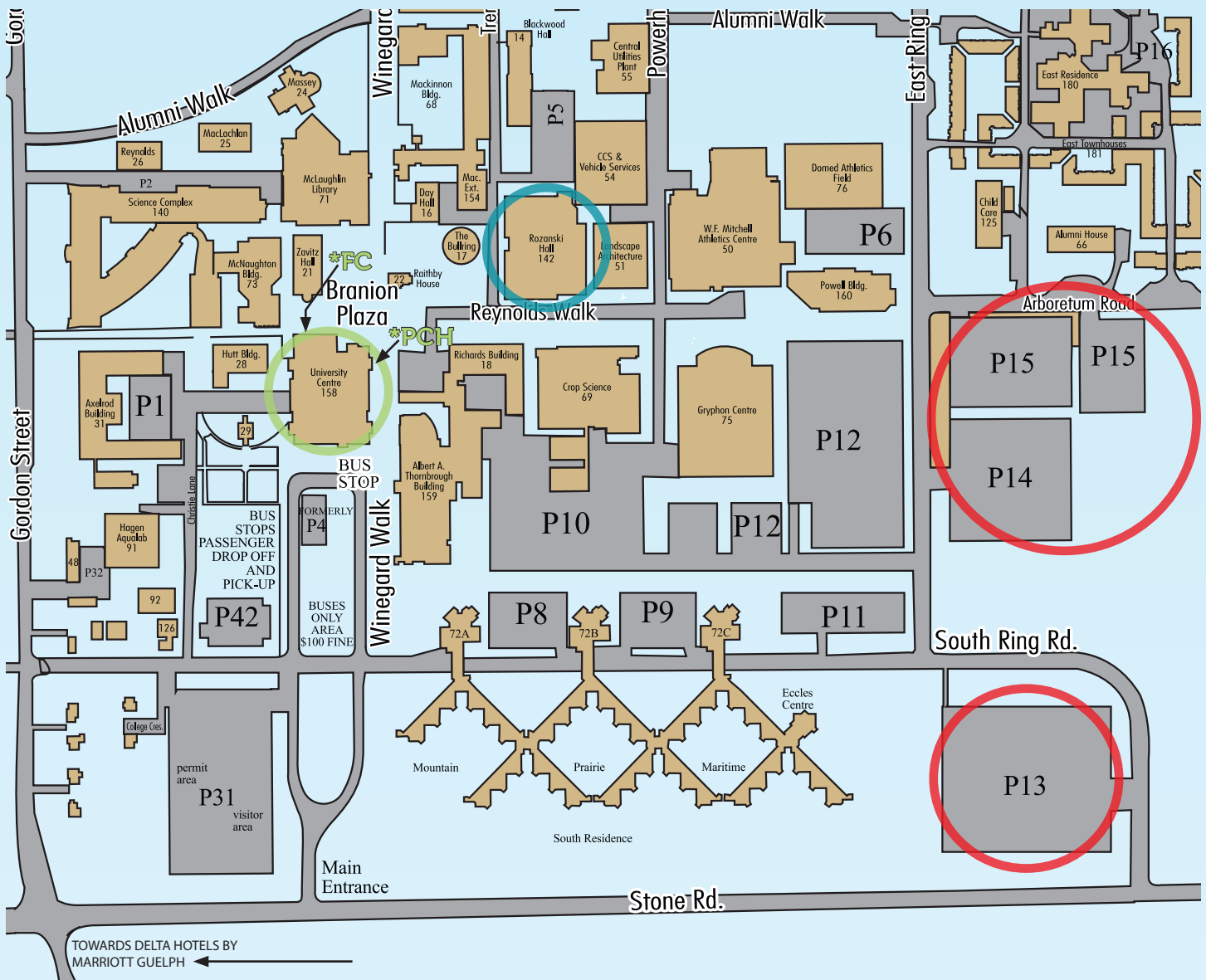
Rozanski Hall



Exhibitor List

1. Ecosystem Recovery Inc.
2. Water's Edge Environmental Solutions Team Ltd.
3. Matrix Solutions Inc.
4. R&M Construction
5. GEO Morphix Ltd.
6. Aquafor Beech Limited
7. AHYDTECH Geomorphic Ltd.
8. Natural Resource Solutions Inc.
9. GeoProcess Research Associates Inc.
10. Sustainable Technologies Evaluation Program (STEP)
11. Beacon Environmental

Campus Map



Locations of Interests

Rozanski Hall - Keynote Plenaries, Refreshment Breaks with Exhibitors, Concurrent Sessions, Poster Presentations, Living Lab, and Wine and Cheese Networking Reception take place in Rozanski Hall.

University Centre - Peter Clark Hall located on lower level. For easy access, use East side entrance (see *PCH). Food Court is located on main level. For easy access, use North side entrance (see *FC)

Parking - Parking lots P13, P14, and P15 are available for delegates with purchased parking pass.



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