



NATURAL CHANNELS 2018

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

- A. Collaborative Design
- B. Communications
- C. Economics
- D. Environmental Flows
- E. Innovation
- F. Monitoring and Lessons Learned
- G. Policy and Regulations
- H. Resilience
- I. Urban Hydro-modification

To assist in selecting the appropriate category, below are descriptions and examples of topics that may apply to each.

A. Collaborative Design

Session Lead(s): Shannon Baker

Description: The art and science of natural channel design requires a collaborative approach in order to create interconnected and resilient landscapes. This session will explore why collaboration is vital, examining natural channel design through the lens of the landscape architect. Landscape architects bring a unique skillset to the design process, drawing on an understanding of natural systems and social function as well as a deep appreciation of beauty. This session will explore critical factors to consider when engaging with design professionals, the knowledge and skill sets offered by landscape architects, as well as processes of collaborative work in natural channel design.

Example Topics: Effective planting design along natural channels for slope stability, erosion protection, habitat creation and aesthetics; Creating natural channels that provide ecological function as well as recreational amenity; Understanding how the construction process can affect the successful implementation of natural channel designs.



NATURAL CHANNELS 2018

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

B. Communications

Session Lead(s): Mariëtte Pushkar

Description: This session will explore the broad topic of communication. Effective communication is beneficial through all stages and phases of a project cycle; to facilitate the dissemination of information, to encourage community participation, to develop multi-stakeholder collaboration and vision building, to convey design intent, to expedite the agency review process, to promote effective design implementation, and to demonstrate monitoring results. This session will explore lessons learned and effective communication methods that are (or are not) beneficial with the public, review agencies, inter-agency and multi-stakeholder discussions, and practitioners.

Example Topics: Lessons learned; Project visualization methods; Challenges with fragmented ownership of watercourses; Landscape management; Content of design drawings and reports; Community involvement.

C. Economics

Session Lead(s): Brad Fairley

Description: This session will explore the economics of stream restoration. While many agencies want to carry out stream restoration, funding is limited. The session will consider existing and more innovative options for funding stream restoration projects. These include habitat banking, stormwater utilities, environmental goods and services, flood mitigation and insurance. The session will provide an opportunity to learn from other jurisdictions where funding opportunities are more diverse and well established. By recognizing the connectivity of streams, the session hopes to identify new and different ways to fund worthwhile restoration projects.

Example Topics: Diverse funding sources; Insurance; Habitat banking; Land purchase for floodplains; Cost benefit analysis; Environment goods and services; Disaster relief.



NATURAL CHANNELS 2018

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

D. Environmental Flows

Session Lead(s): Dr. Andrea Bradford, Cassie Schembri

Description: This session will explore the concept of environmental flow needs, that is the quality and quantity of water required in a river system for a specific duration and with a specific timing, frequency, magnitude and rate of change. Maintaining or restoring an environmental flow regime can be a significant challenge in light of competing human needs and influences, as well as threats posed by climate change. This may include techniques to quantify flow needs for geomorphic or water quality processes, or for specific groups of biota; efforts to integrate needs to develop overall restoration scenarios or flow regime targets for management; or restoration activities planned or implemented to achieve a flow restoration scenario.

Example Topics: Environmental flows policy; Environmental flows research; Practices implemented to maintain or restore environmental flows; Ecohydrology; Restoring flows; Ephemeral channels; Restoration to enhance water quality.

E. Innovation

Session Lead(s): Jeff Hirvonen

Description: This session will focus on innovative technological advances that contribute to the field of stream restoration. Custom-built hardware, integration of new technologies with old methods, miniaturization, software applications and new processes for solving old problems; these are all examples of innovative approaches that further the science and applied realms alike. We encourage technological advances that are open-source and presenters who are keen on sharing their advances with the stream restoration community at large. Priority will be given to presentations that show demonstrated successes (e.g. case studies).

Example Topics: New applications of established methods; stream restoration in different industries (e.g. mining); Case studies.



NATURAL CHANNELS 2018

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

F. Monitoring and Lessons Learned

Session Lead(s): Rick Portiss

Description: Monitoring plays a critical role in the implementation of natural channels projects tied to verification, performance, and regulation. Monitoring tells the story of restoration failures or successes. In this session we seek presentations that speak to natural channel project monitoring initiatives and results with a focus on lessons learned in both monitoring practices and in the implementation of natural channel design. This session seeks to present results of long-term evaluation and measurement of projects associated with adaptive management both good and bad, mistakes made, successful implementation, and innovation of natural channel techniques.

Example Topics: Standardization of monitoring techniques- appropriate indicators of success; Long term vs short term; Regulatory requirements vs value added indicators; Roles and responsibilities; Municipal maintenance programs; Results and how they impact future management decisions; Tracking adaptive management decisions and how they deviate from the proposed design; Measuring biological and physical form and function.

G. Policy and Regulations

Session Lead(s): Jacqui Empson-Laporte, Rick Portiss, Bill Trenouth

Description: This session is interested in presentations which speak to the in-channel/policy nexus. The role that policy and program delivery plays in driving the implementation of successful natural channel projects cannot be ignored. Many examples exist where policy has been used to support innovation and success. Conversely, a lack of adequate supporting policies and programs has, in some cases, hindered project implementation.

Example Topics: Successful application of policies and programs that promote the protection and restoration of natural channel systems, including in trans-provincial cases; Unique policies and legislation used to implement natural channel projects at varying scales; Innovative uses of existing legislation, policies and programs to promote and implement natural channel designs, including the Drainage Act; Outstanding policy and guidance needs, and room to improve supporting implementation frameworks.



NATURAL CHANNELS 2018

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

H. Resilience

Session Lead(s): Dr. Jaclyn Cockburn, Sally-Beth Betts and Patrick Padovan

Description: This session explores the concept of resilience in natural and modified systems. Resiliency goes hand in hand with connectivity. A resilient system is a connected system - watercourses are connected with their floodplains, creeks are connected in the upstream to downstream direction, surface water and groundwater connectivity is maintained. A resilient design must be multidisciplinary - pulling on knowledge and experience from a range of specialists, working with fluvial processes and not attempting to control them, considering cause and effect on a system wide scale. This is a particularly important topic in the context of climate change and recent flood events experienced in Ontario and beyond.

Example Topics: Stream restoration for resilience – especially in urban settings; Sediment connectivity; Habitat suitability with respect to resilience; 2017 flooding; Public perspective; Political priorities; How to influence decision makers; Social implications; Managing outdated infrastructure; Erosion, water quality and natural heritage.

I. Urban Hydro-modification

Session Lead(s): Dr. Andrea Bradford, Cassie Schembri, Sally-Beth Betts

Description: It is increasingly important to consider the limits to hydrologic alteration a watercourse can sustain before its form and function are irreparably impacted. This session aims to consider the impacts of urbanization of tablelands on the hydrologic function of our rivers, and specifically what solutions exist to maintain or restore the hydrologic function of our river systems. Traditional approaches that focus on high flow events or simple thresholds has are often insufficient for preserving stream health and have led to broad scale degradation of some river environments. The session will explore the design, simulation and performance of green infrastructure systems to restore flow, thermal and nutrient regimes of urban streams.

Example Topics: Low Impact Development techniques used with the goal of improving stream health; Green infrastructure projects with the goal of improving stream health; Stormwater management practices designed to meet stream needs; Natural infrastructure projects aimed to protect built infrastructure; Green Infrastructure Retrofits.



NATURAL CHANNELS 2018

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

J. Other

Description: Presentations and posters on topics that are in line with the 6th Natural Channel Conference theme *Sustaining Connectivity* but do not fit within one of the identified category should be submitted under this session. The conference aims to fully explore Connectivity in all aspects of natural channel systems.

Example Topics: Groundwater and surface water interactions; stream and wetland interactions; watershed and subwatershed planning.