SER ONTARIO
SOCIETY FOR ECOLOGICAL RESTORATION

2015 Annual General Meeting & Workshop:

Novel Ecosystems

November 14, 2015
8:30am – 4:45pm

University of Waterloo
EV 2 Room 2002

SERO

Society for Ecological Restoration Ontario (SERO) is part of an international organization committed to the ecologically sensitive repair and management of ecosystems. While the focus of our efforts is the Ontario region, we strive to share ideas and initiatives across borders and around the globe. Our mission is to promote the practice of ecological restoration and provide educational opportunities and materials for members and for the community at large.

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Workshop Program

Time	Topic
8:30 – 9:00	**Registration – EV2 2002, University of Waterloo, Waterloo, Ontario**
9:00 – 9:15	Intro and Welcome – Sal Spitale, Chair
9:15 – 9:45	Keynote Speaker: Dr. Stephen Murphy, University of Waterloo
9:45 – 10:15	Speakers: Cristobal Pizzaro and Dr. Brendon Larson, University of Waterloo
10:15 – 10:45	Speakers: Katie Kish and Dr. Stephen Quilley, University of Waterloo
10:45 – 11:15	**Break**
11:15 – 11:30	Speaker: Michael McTavish, University of Waterloo
11:30 – 11:45	Speaker: Dianne Watkins, University of Waterloo
11:45 – 12:00	Speaker: Heather Cray, University of Waterloo
12:00 – 12:15	Speaker: Josh Shea, University of Waterloo, City of Kitchener
12:15 – 12:30	Graduate student question period
12:30 – 1:30	**Lunch and Networking**
1:30 – 2:00	Speaker: Perin Ruttonsha, University of Waterloo
2:00– 2:45	Speakers: Kate Hayes and Scott Sampson, Credit Valley Conservation
2:45 – 3:00	**Break**
3:00 – 3:30	SERO Board Updates
3:30 – 4:00	Speaker: Dr. Peter Beckett, Laurentian University
4:00 – 4:30	Speaker: Dr. Daniel Campbell, Laurentian University
4:30 – 4:45	Acknowledgements: Sal Spitale
5:00 Onwards	**Molly Blooms – Eat, drink and network**

Speakers & Presentation Summaries

Keynote Speaker: Dr. Stephen Murphy, University of Waterloo

Topic: What novel ecosystems mean for restoration ecology

Presentation summary:

There are methods available to determine when an ecosystem has crossed a threshold into hysteresis where the new – often novel – ecosystem is not desirable for ecological and/or anthropocentric reasons. While the topic is controversial, much of that emanates from a misunderstanding of research as opposed to advocacy of a topic. The talk will address the basic theory behind novel ecosystems and focus on examples of how to measure ecological thresholds regarding when an ecosystem becomes novel, what that means for restoration ecology, and what that means for the notion of restoring an ecosystem to a state of desirable resilience.

Biography:

Stephen D. Murphy B.Sc., Ph.D. is a Professor and Chair of the Department of Environment and Resource Studies, University of Waterloo, Waterloo ON Canada. He is also Director of the University's Centre for Ecosystem Resilience & Adaptation and Research Chair and Chair of the Provincial Centre for Applied Science in Ontario Protected Areas. Steve's work currently focuses on the theoretical basis for and measurement of ecological restoration and resilience in socio-ecological systems. To this end, there is an overarching theme of Big History/Big Future (long timeframes) matched with smaller-scale studies on how one actually studies and measures resilience locally. The vexing question of what makes a study transdisciplinary and rigorous is pursued in Steve's research group on both a philosophical and applied basis.

Cristobal Pizzaro, University of Waterloo

Topic: Feathered roots and migratory routes: immigrants and birds in novel socio-ecosystems

Biography:

Cristóbal Pizarro is a Chilean PhD Candidate in Social and Environmental sustainability at the University of Waterloo. He has a

broad interdisciplinary training in veterinarian sciences, ecology, conservation and environmental philosophy. He is also passionate about birds, in their full biological extent and social expressions, including bird interactions with humans in culture and everyday life. In his research in Canada, Cristóbal study immigrants-bird relationships as proxies of social dimensions of the Anthropocene, including the link between human mobility, biodiversity and place.

Katie Kish, University of Waterloo
Topic: Novel Psycho-Social Systems for the Anthropocene: Restoration Ecology in an Era of Limits

Presentation summary:
In this paper we discuss that given thermodynamic and metabolic limits to the complexity of global civilization, the long term functioning of a 'biosphere pastoral' implies hard choices about where and how to allocate resources across global society. We argue that however local and bounded their primary object domain, practicing ecologists cannot avoid the intersection between ecosystem health and the growth trajectory of human society. Any 'Gaian civilization' would involve new forms of political economy, and new technologies, but also new forms of culture, social organization and psychology or a 'land ethic'. Ecology has little to contribute to developments political economy or technology. But there is great potential for overlap between strategies for the restoration of local/regional ecosystem function and interventions in the culture of place with a view to fostering ecological conscience formation and a land ethic. The paper concludes by speculating as to a possible convergence between place-based ecological science and environmental-political strategies rooted in the anthropology of ritual, group dynamics, identity formation and psycho-analytical approaches to motivation and behaviour.

Biography:
Katie is a PhD student in the Department of Environment and Resource Studies at the University of Waterloo and Research Fellow at the Waterloo Institute for Social Innovation and Resilience. Her broad areas of research include radical environmental politics, complexity and energy costs of social organization, and Big History.

Michael McTavish, University of Waterloo
Topic: No Looking Back: Learning to Live with Earthworm Invasion and Novel Restoration Trajectories

Presentation summary:
Biological invasions are a major driver of ecological novelty. Oftentimes, however, prevention or reversal of these invasions is effectively impossible. When these invasions occur in a restoration context, adjustment of restoration targets and trajectories to incorporate novel ecological characteristics is required. The invasion of exotic earthworms into North America serves as an excellent case study of a widespread and ecologically-influential group of organisms for which we have no effective prevention or removal strategies. By examining how these irremovable invaders interact with existing restoration techniques (e.g. seeding, planting, soil amendment, etc.), it may be possible to design more effective and realistic restoration techniques and objectives for these invaded ecosystems.

Biography:
Michael McTavish is a PhD student working with Dr. Stephen Murphy at the University of Waterloo with the Conservation and Restoration Ecology (CARE) group. Leading areas of research interest include invasion science, behavioural ecology, and restoration.

Dianne Watkins, University of Waterloo
Topic: Towards improved social and ecological urban resilience, via terrestrial plant community nutrient assessment in Kitchener, Ontario's protected areas

Presentation summary:
Novel ecosystems in urban protected areas offer unique management challenges. Using the concept of the urban 'forest garden', the present study assesses the social ecological potential in two urban protected areas of higher and lower ecological value. The results of this study will be used to propose a novel restoration approach including sustainable harvest of edible native plants for an urban protected area of low ecological quality located in Kitchener Ontario.

Biography:
Dianne Watkins is a second year Master's student in the Department of Environment and Resource Studies at the University of Waterloo. As part of her work on restoration in novel ecosystems she has conducted

a first local assessment of the nutritional potential of urban natural areas. She is also exploring barriers and opportunities associated with potential application of ecological restoration principles to human health care.

Heather Cray, University of Waterloo
Topic: Restoring Ecosystems in a Novel World: Challenges and Opportunities

Presentation summary:
This talk will focus on restoring tallgrass prairie as a case study of the issues ecologists need to consider when restoring a historical ecosystem in the modern world.

Biography:
Heather Cray is a PhD candidate from the University of Waterloo supervised by Dr. Steve Murphy. Her dissertation focuses on 'bringing science to practice' in the field of restoration ecology.

Josh Shea, University of Waterloo, City of Kitchener
Topic: From Theory to Practice –Understanding and Managing Novel Urban Ecosystems in the City of Kitchener

Presentation summary:
Josh is the Natural Areas Coordinator for the City of Kitchener where works on environmental engagement, stewardship and ecological restoration projects. As a current part-time Master's student at the University of Waterloo, he is also studying urban ecology and the management of urban novel ecosystems. When not at school or work, he is the current President of Waterloo Region Nature and Vice President of the Waterloo Stewardship Council. When free time is available, he enjoys hiking, fishing, birding and playing sports.

Biography:
The management and restoration of urban ecosystems is not without its myriad of challenges as well as opportunities. This presentation will focus on how the application of the novel ecosystem framework provides practical and adaptive solutions to managing Kitchener's natural heritage. Discussion will focus on the emerging topic of novel ecosystems as well as challenges and opportunities surrounding urban ecosystem management, human impacts, invasive species and urban ecology.

Perin Ruttonsha, University of Waterloo
Topic: Entrenching Culture in Nature

Biography:
Perin is a design researcher and strategist, who specializes in leading collaborative, multi-stakeholder engagement processes. In this, she applies concepts from complex adaptive systems, social-ecological resilience, social innovation, and biomimicry discourses to examine opportunities for the transformation of human settlements along sustainability pathways, over the long term. www.perinruttonsha.com

Kate Hayes and Scott Sampson, Credit Valley Conservation
Topic: Restoration in the 21st century: Reference to novel and everything in-between

Presentation summary:
Within the Credit River watershed, the impacts and effects of various stressors are changing the composition, structure and function of our ecosystems; thereby, producing hybrid and novel ecosystems. Our presentation will share CVC's experience and concerns in managing for reference, hybrid, and novel ecosystems and how we are currently working towards addressing these changes. This presentation will make recommendations and suggest potential considerations for management under a range of ecosystem scenarios.

Biography:
Scott Sampson is the Manager of CVC's Natural Heritage Management Program. For almost 20 years, Scott has worked on the inventory, planning and management of Credit River's Natural Heritage System. He has been involved with the ELC Technical Advisory Committee, and is currently working with others to better understand the relation between various plant and wildlife communities, their hydrologic requirements, and developing methods to maintain or restore their ecological functions.

Kate Hayes is currently Manager, Aquatic (and Wetland) Ecosystem Restoration with CVC. Her previous work experience as a consultant focused on private/public sector partnerships to advance species at risk recovery efforts, and she continues to have a strong interest in engaging the private sector in restoration projects. She also worked

with the Canadian Wildlife Service on species at risk recovery efforts, and with the Toronto and Region Conservation Authority.

Dr. Peter Beckett, Laurentian University
Topic: Creating a novel ecosystem – a lifetime of healing the Sudbury landscape

Presentation summary:
The industrial history of Sudbury, including the effects of Ni-Cu smelters, through 100 years before 1970 resulted in an acid metal-contaminated landscape with damage exceeding more than 81 000 ha. Initial research in the 1970's led to the development of the 'Sudbury Recipe' with two stages in use from 1978: 1) liming fertilizer addition and sowing of a grass – legume nurse crop, and 2) planting of native trees and shrubs. Approximately 3425 ha received stage 1 treatment and nearly 10 million trees have been planted since 1979. Following an ecological risk assessment of Sudbury from 2002-2009, a risk management plan was developed as part of the Sudbury Biodiversity Action Plan. As a result of the plan about 45 native tree and shrub species are now utilized along with changes in the seed-fertilizer regimes as the 'Modified Sudbury Recipe' together with deliberate transplanting of forest floor sods. Recent Investigations have shown that although there are still differences compared to reference sites outside Sudbury there is increasing biodiversity and increase genetic diversity of the tree populations, and bioavailability of anthropogenic metals is very low. The recent program changes are providing a more through restoration effect on the Sudbury landscape and providing further refinement to the novel Sudbury ecosystem.

Biography:
Peter Beckett has a Ph.D in wetland ecology from King's College, London. For 39 years he has been a restoration/reclamation ecologist of mining-impacted watersheds in Laurentian University's Biology Department and the Vale Living with Lakes Restoration Centre. Peter chairs VETAC, an Advisory Panel to The City of Greater Sudbury that oversees the local landscape restoration projects. Peter has been a Director of the Canadian Land Reclamation Association and holds a Noranda Award for "outstanding achievements in reclamation".

Dr. Daniel Campbell, Laurentian University
Topic: Restoration Towards Novel Ecosystems: A Case Study from a Mine in the Hudson Bay Lowland

Presentation summary:
Mines and other industrial lands produce novel landforms and abiotic conditions. Regulatory pressures currently exist to reclaim these lands toward regionally representative ecosystems supporting native species of flora and fauna. Broadly speaking, they are actually pushing towards the ecological restoration of these sites. How do you restore regional representative ecosystems, if reference ecosystems are absent? I present a case study at a diamond mine in the Hudson Bay Lowland, which is creating upland landforms where only peatlands (muskeg) existed previously. Drained uplands are exceedingly rare in the landscape, occupying less than 2% of the landscape. My students and I surveyed available uplands for to obtain reference targets for abiotic and biotic conditions. We propose that the restoration targets for this novel ecosystem simply fall within the range of abiotic and biotic conditions, but that more detailed targets be avoided because the difficulty in setting and meeting more exact targets. Our intention is to restore this novel environment toward a functional ecosystem, performing valuable ecosystem services. The resulting environment will be a hybrid between historic and novel ecosystems.

Biography:
Daniel Campbell is an assistant professor in the School of the Environment and a researcher at the Vale Living with Lakes Centre. He has an undergraduate degree from the University of Guelph, a MSc from the University of Waterloo, a doctoral degree from Université Laval and postdoctoral experience at Southeastern Louisiana University. He has worked in boreal, subtropical and subarctic ecosystems and has expertise in plant ecology, wetland ecosystems, restoration ecology, especially in mined landscape

Directions

Main campus (Waterloo)

- The University of Waterloo's street address is 200 University Ave. West, Waterloo, Ontario.

By car – from highway 401

- Take exit 278 (from Toronto) or exit 278B (from London) to highway 8 WEST Kitchener/Waterloo
- Follow 8 WEST to 7 EAST (called the Conestoga Parkway). Be sure to take the exit for 7 EAST (not 7 WEST)
- Keep left; do not exit on 7 EAST (Victoria Street and Guelph). Expressway becomes 85 NORTH).
- Exit at University Avenue West (which is the second University Ave exit when coming from the 401). Drive about 3 km.
- Follow University Avenue to Seagram Drive – the main entrance to the University of Waterloo.
    - **Visitor parking** is in Lot C. Please refer to our parking map to see where the lot is. The cost for the day is $5.
    - **EV2** is located at the south-west corner of campus, follow the signs that will direct you to room 2002.
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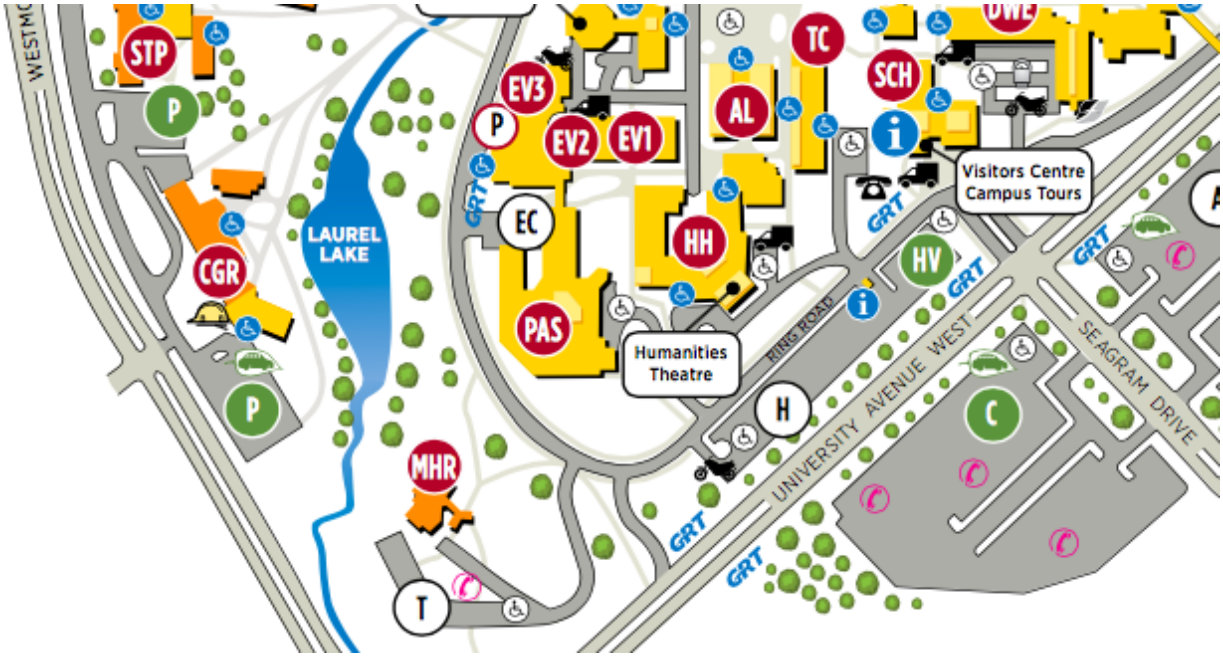

If you require assistance please contact: Sal Spitale at 519-749-5970

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