2017 Winter Term ERS 375-001: ReWilding & Ecological Restoration

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ReWilding is the macro-scale approach to conserving and restoring the socioecological resilience of ecosystems. It can be spatially explicit and quite dependent on large scale modeling and landscape ecology but it can also take a more integrative approach that is more geared towards ecological planning, management, and monitoring of the whole socioecological system. Consistent with the mission of the School of Environment, Resources & Sustainability, this course will explore the full range of facets that ReWilding involves. Specifically, the course will focus on restoration and conservation at landscape scale, including an emphasis on connectivity, reintroduction of keystone species, novel ecosystems, and re-introduction of apex predators, herbivores, and omnivores. Because ReWilding can be infused with various political agenda and ideologies, technocratic issues, policy ambitions, and governance issues, students can expect to experience a course focused on ecology and technical skills but contextualized and connected to the larger concepts of socioecological change and resilience. There will be at least one applied project that partners with a multi-sectoral group focused on ReWilding the Lake Simcoe ecosystem; in this manner, students will have an experiential application of the principles in the course. This is a 3rd year course: Expect a lot of reading, thinking, synthesis, and action. This is the first offering of this course; it is slated to become a permanent course in winter 2018, labeled as ERS 337.

Class Schedule (Classes are held M & W 1300-1420 in EV1-350)

Class	Learning Objectives/Inquiries	Required Reading(s)
W Jan 4 ReWilding Scope & Theory	How has the theoretical framework for rewilding developed; what does it say?	Donlan et al. (2005; 2006) Oliveira-Santos et al. (2010) Ogden et al. (2013) Corlett (2016) Johns (2016) Nogués-Bravo et al. (2016)
M Jan 9 Evolutionary Ecology in Rewilding	Evolution underpins all in ecology; how has rewilding explored this?	Ashley et al. (2003) Vaughn et al. (2003)
W Jan 11 ReWilding Using Landscape Ecology	Being a 'big data/big scale' approach, how have spatially explicit approaches informed rewilding?	Leidner & Haddad (2011) Lausch et al. (2015) Olds et al. (2016) Ziółkowska et al. (2016)
M Jan 16 ReWilding's Focus on Keystone & Umbrella Species	Rewilding – like much of conservation – is species focused; how do keystone and umbrella species fit?	Thorn et al. (2006) Sergio et al. (2009) Seddon et al. (2014)
W Jan 18 Socioecological Systems Analysis for ReWilding	Given rewilding is a process as much as an outcome and involves big decisions, how can this work for governance/ecological systems?	Bhattacharyya & Murphy (2014) Mathevet et al. (2016) Sharma et al. (2016)
M Jan 23 Socioecological Resilience as a ReWilding Objective	Is resilience of complex socioecological systems a useful metric or goal?	Walker et al. (2004) Botsford et al. (2009) Standish et al. (2014)

W Jan 25 ReWilding in Biosphere Reserves	Biosphere Reserves are focused on socioecological systems; where do they fit in the rewilding strategic framework?	Porter-Bolland et al. (2012) Du et al. (2015) Coetzer-Hanack et al. (2016)	
M Jan 30 ReWilding & Y2Y + A2A	The initiatives Yukon to Yellowstone (Y2Y) & Algonquin to Adirondacks (A2A) predate rewilding as a formal concept but may be a best practice for it – or not	MacMynowski (2006) Pearce et al. (2008) Locke (2011/2012) Chester et al. (2015)	Brown & Harris (2005) Vásárhelyi & Thomas (2005) Koen et al. (2014)
W Feb 1 ReWilding the North American Prairies	Are the prairies ripe for rewilding or is this atavistic, naïve & too idealistic?	Fuhlendorf et al. (2008) Sanderson et al. (2008)	
M Feb 6 In class test I	**Covers all class lessons through (and including) Feb 1**	**Read your notes before; read the questions carefully during; read the back of wine bottles afterward.**	
W Feb 8 ReWilding in Practice I: Downscaling	Determine how downscaling & cross-scalar rewilding operates in principle and practice	These are mainly going to be discussion based or experiential classes; as such, the "readings" will likely be resources that we – as a class – determine organically as our discussion and experiences ensue; we can draw upon earlier class lessons and readings to assist us as well	
M Feb 13 ReWilding in Practice II: Walkabout	Find the stressors in the university environment. How has the environment been re- or de-constructed and do these spaces serve their purpose?		
W Feb 15 ReWilding in Practice III: How Socioecological Systems are used in ReWilding	Conduct a socioecological systems analysis based on the walkabout to determine personal, institutional, cross-linked stressors		
Feb 20-24 Winter Study Week (NO CLASSES)			
M Feb 27 ReWilding in Practice IV: Overview of the Lake Simcoe Case Study (socioecological systems at Lake Simcoe)	Link our previously-learned techniques to the Lake Simcoe case	Material from the Lake Simcoe ReWilding Project	

W March 1 ReWilding in Practice V: Using the Lake Simcoe FLOW approach Responding to socioecological stressors at Lake Simcoe	Link our previously-learned techniques to the Lake Simcoe case; critically examine how their FLOW approach works	Material from the Lake Simcoe ReWilding Project
M March 6 ReWilding in Practice VI: Reflecting on the early progress at Lake Simcoe	Discuss how to position and use early monitoring for future efforts	Material on Phase I case studies and outcomes of Lake Simcoe efforts
W March 8 ReWilding Europe	Learn how rewilding operates in one of the longest-developed areas of the world	Lorimer & Dreissen (2014) Jepson (2016)
M March 13 ReWilding Central & South America	Learn how rewilding operates in rapidly developing areas	Crespin & Garcia-Vellilata (2014) Pires et al. (2014) Root-Bernstein & Svenning (2016)
W March 15 Rewilding Australia	Learn how rewilding is useful even in a continent/country with asymmetrical human habitation	Newsome et al. (2015) Hunter et al. (2015; 2016) Baker et al. (2016) Fancourt & Mooney (2016) http://www.gondwanalink.org/links/default.aspx
M March 20 ReWilding Africa	Learn how rewilding is useful in a continent where people probably assume it is not needed	Laurance et al. (2006) Sinclair et al. (2014) Reisland & Lambert (2016)
W March 22 Rewilding Asia	Learn how rewilding is being approached in a politically volatile and vast continent	Louys et al. (2014) Stone (2015; on the Zimovs' work in Siberia)

M March 29 The Politics of ReWilding	Learn how rewilding has been used a political cudgel in governance & science	Hintz (2005) Lorimer & Dreissen (2013) Lorimer et al. (2015) Pellis et al. (2015)
W March 31 Bring Back the Pleistocene?	Learn the current state of the scientific and management debates; discuss the future prospects for rewilding *(On-line Course Evaluations)*	Rubenstein et al. (2006) Caro (2007) Caro et al. (2009) Keulartz (2016) Svenning et al. (2016)
M April 3 In Class Test II	**Covers all class lessons from March 8 through to (and including) March 31**	

Assessment of students (grading/weighting)

- In class test I: 35% of final grade
- In class test II: 25% of final grade
- ReWilding Project Report: 40% of final grade

ReWilding Project Report. We will spend several classes on a ReWilding project based around Lake Simcoe Ontario. We'll be engaged with the leaders and stakeholders of this project and doing some local brainstorming (a local walkabout) to contextualize our ideas. The project goal will be for students to provide context and theoretical framework based on the wider literature (a lot of which we cover in class), assess the existing project and suggest strategies for further ReWilding efforts. Each student will devise their own strategy and write it as a consultant-style report; as such, there will be emphasis on excellent science and management while maintaining 'economy in storytelling'. The total length is anticipated around 17-23 single spaced pages (there is no minimum or maximum - but I'd hazard a guess that less than 15 or more than 25 pages is probably not going to be an effective or successful report). This project is in lieu of a final exam; the project will be **due Monday April 17 at 1159 AM**; late penalty is a 10% reduction past deadline and this deduction repeats after each 24 hour period. The detailed grading and instructional rubric follows:

- Provide a summary highlighting main assessment findings and strategies in reasonable detail (1 page): 5% of report grade.
- Provide a concise introduction to the project as you understand it and compare this to relevant peer or otherwise valid literature or resources (4-6 pages): 25% of report grade.
- Provide an assessment of the existing project, using metrics and relevant literature (6-8 pages): 35% of report grade.
- Provide a strategy either for the next phases of ReWilding or a better path; use relevant literature (6-8 pages): 35% of report grade.
- Note that style, grammar, proper citation style (use APA), proper use of a literature cited section at the end, details like proper naming of your submission file (e.g. "surname_firstname Lake Simcoe rewilding report"), and other related ability to write well are part of the grade in each section – they are not marked separately and your grade is influenced (positively or otherwise) by your ability to deliver an interesting and grammatical/stylistically correct report
- Reference to "pages" above should be interpreted as meaning that the pages are single spaced and (effectively) 1-sided – not that you'll print the report (it will be uploaded to LEARN dropbox).

The University of Waterloo has a series of specific *academic policies, procedures and guidelines* that students must be aware of and follow; all course syllabi in the Faculty of Environment are required to include the following information:

Communication
University policy requires that official email correspondence be addressed to UW userids. Please make sure that you use an active UW email account in correspondence with the instructor and teaching assistants.

Religious Observances
Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Note for Students with Disabilities
AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Mental Health
The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges – physical and / or emotional. Please note that help is available. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

Academic Integrity
In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: http://uwaterloo.ca/academicintegrity/. ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: http://uwaterloo.ca/academicintegrity/Students/index.html. Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Student who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Associate Dean for Undergraduate Studies. Students may also visit this webpage: https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71. Students who believe that they have been

wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance: https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70

Grievance
A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

Appeals
A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Learn
Users can login to LEARN via: http://learn.uwaterloo.ca/. Use your WatIAM/Quest username and password.

In addition, please note the following advisories:

Attendance
Students are expected to attend all lectures, field exercises, and complete all assignments and the final exam. Allowances will be made under exceptional circumstances, with the provision of appropriate documentation. Students should contact the instructor prior to an absence, barring it being a sudden emergency.

Workload
Full-time university enrollment constitutes five courses per term, and assumes that the student will spend nine hours a week on each course. The assigned course workload is assessed at that amount including class time, readings and assignments. The first two assignments are laddered so that you can complete the final assignment – worth much more – with more experience and confidence.

Turnitin® is not being used in this course. That is because of my own principle of mutual trust. Willful violation of that principle carries serious consequences, as per University policies cited above.