

ERS 342 Professional Conservation and Restoration Practice II - Spring 2018
Monday May 28 to Wednesday June 6 inclusive.

Restoration In Practice in the Long Point World Biosphere
Norfolk County, Ontario (Field Course 1.0 Credit)



Instructor: Brian Craig, Adjunct Professor, School of Environment, Resources, and Sustainability

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Telephone: (519) 420-1218

Prerequisites: A general level ecology course or consent of instructor

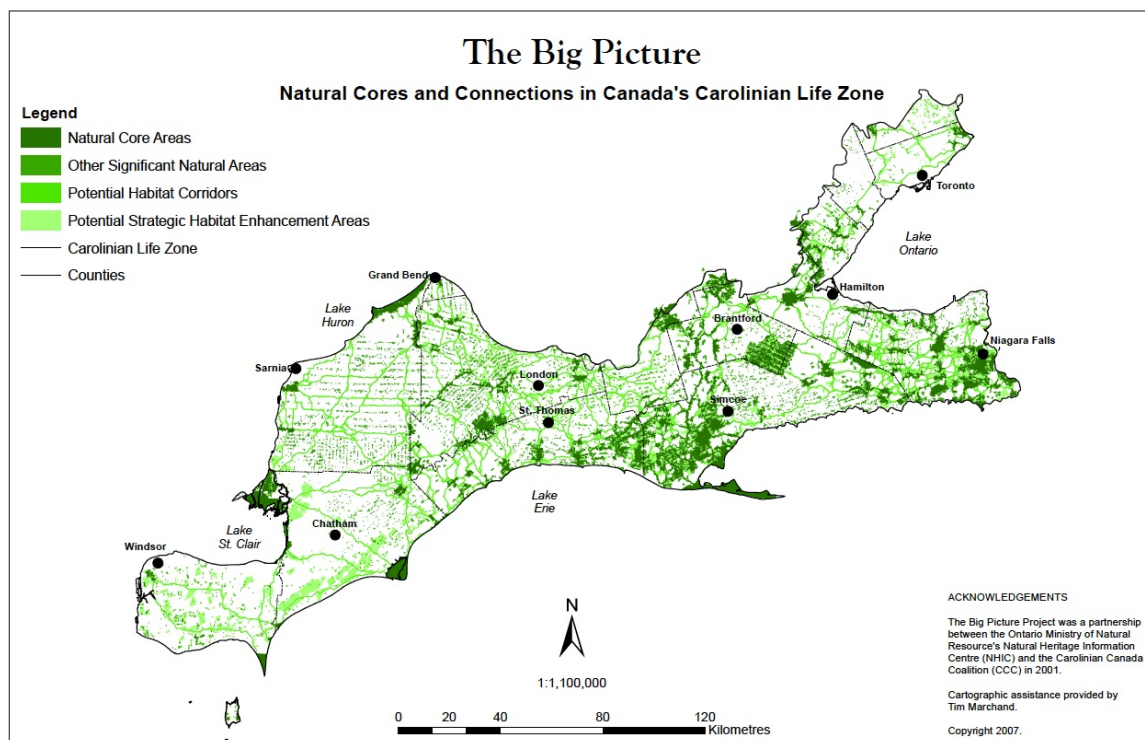
Course Location: Long Point Waterfowl Education and Research Centre, Turkey Point, Ontario

Course Maximum: 10 students

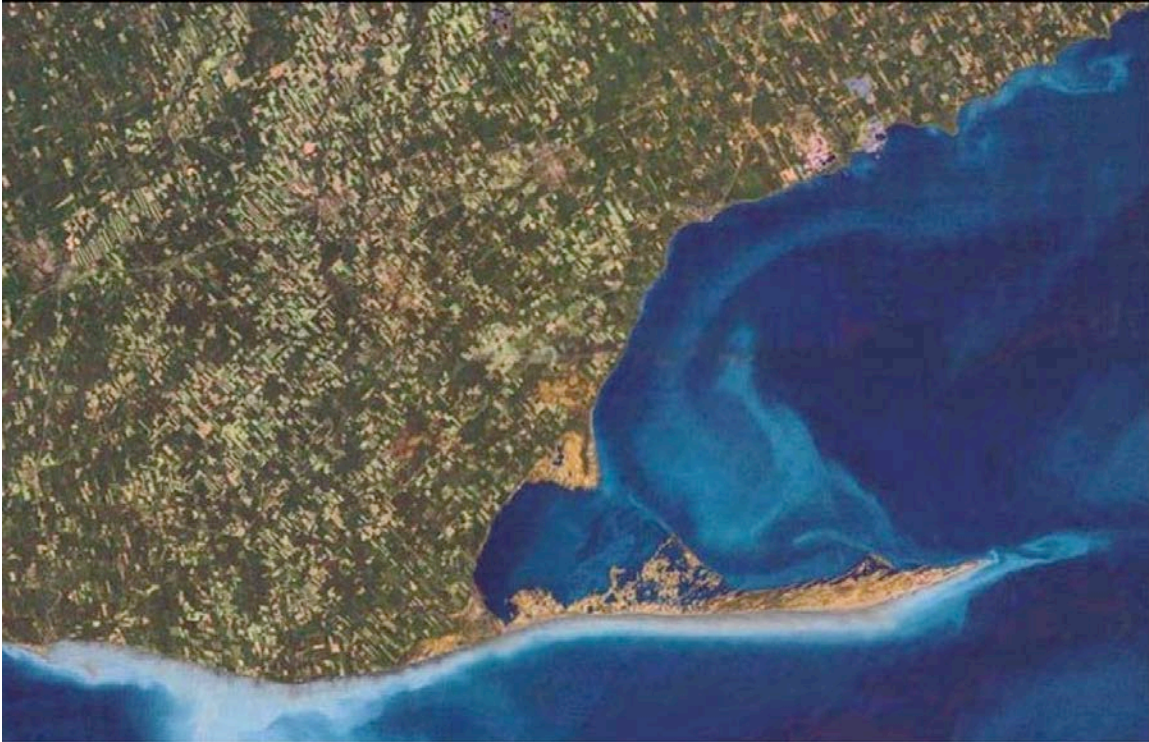
1. Field Course Overview

Readings and presentation and in the field critical examinations, combined with engaging on site discussions of the successes and challenges of a restoration project with professional restoration practitioners responsible for the planning, implementation and monitoring of a project, will provide a platform for learning, and the subsequent application of, the principles of ecological and ecosystem service restoration.

The Long Point World Biosphere is located in the heart of the Carolinian Life Zone in Norfolk County, Ontario. The landscape has over 25 percent forest cover, greater than any other County in the Carolinian Life Zone. The landscape also purportedly hosts more species at risk than any other area in Canada.



Home to some of the most fertile land in Ontario, Norfolk County is a top producing area for farm fresh produce in Ontario and the most diversified agricultural region in Canada. Norfolk County is Canada's leading growing region of asparagus, sweet corn, cucumbers, peppers, cabbage, strawberries, sour cherries, ginseng and pumpkin. The agricultural industry is the leading economic activity in Norfolk County contributing over \$415 million to the local economy.



Long Point, the southern reaches of Norfolk County, is renowned as a staging area for waterfowl during migration. The wetlands along Big Creek and the marshes adjoining Long Point Inner and Outer Bay provide waterfowl nesting habitat. Long Point Inner and Outer Bay are also renowned for some of the best small and largemouth bass fishing in North America. Hence, there has been strong support from government agencies, non-government organizations, private foundations, and private landowners for restoration to enhance the ecological integrity of the landscape; improve ecosystem services that support agricultural production; and to improve habitat for hunting and fishing.

Ecological goals vary: the recovery of a functionally integrated landscape; the preparation of suitable habitat for a particular species; the enhancement of ecosystem services vital to economic sustainability. Achievement of these goals contributes to the health of ecosystems, landscapes, and the entire planet. (SER 2004) The goals of restoration projects in the Long Point World Biosphere are as diverse as the organizations, agencies, funders, and individuals implementing and supporting the restoration, but all are contributing to improving the health of the landscape.

Following morning readings, lectures and discussions there will be field trips to restoration sites to examine restoration progress and meet professional restoration practitioners who are responsible for planning, implementing, and monitoring the restoration project. The draft site visit schedule includes:

1. Establishment of drainage control structures in a swamp / wetland to enhance surface water storage, wetland habitat and ground water recharge. Project leads: Private landowners, Ontario Ministry of Natural Resources, Norfolk County Drainage Department.
2. Dredging ponds and natural wetland habitats in the Long Point Crown Marsh to enhance wildlife populations. Project Leads: Long Point Waterfowlers' Association and Ontario Ministry of Natural Resources
3. Port Rowan Sewage Lagoon Naturalization. Project Lead: Norfolk County
4. Forest Connectivity, Wildlife Habitat and Carbon Sequestration in the Long Point World Biosphere. Projects Leads: Ontario Power Generation, Long Point Region Conservation Authority and Long Point World Biosphere Foundation
5. Restoring the hydrological connection between the Big Creek National Wildlife Area and Long Point Inner Bay and the installation of ecopassages to mitigate road kill. Project Lead: Long Point Causeway Improvement Project Steering Committee
6. Big Creek National Wildlife Area marsh impoundments for increasing wildlife diversity and controlling the growth and spread of invasive plant species. Project Lead: Canadian Wildlife Service
7. Restoration of agricultural lands to wetland, forest, prairie and sand barrens. Project Lead: Nature Conservancy of Canada
8. Enhancing Ecosystem Services on farmland. Project Lead: Norfolk County Alternative Land Use Services (ALUS) Steering Committee.
9. Riparian wetland enhancement along Big Creek. Project Leads: Murray Marsh Club and Bayou Club
10. Reintroduction of Wild Turkeys in Ontario. Project Leads: Ontario Ministry of Natural Resources and Ontario Federation of Anglers and Hunters
11. St. Williams Nursery and Ecology Centre: operates over 400 acres of field production and 10 acres of greenhouse space in Southern Ontario making it the largest source-identified native plant nursery in the province.
12. Redhill Expressway Restoration Project – Vegetation compensation / replacement ecological restoration. Project Lead: Allan Arthur, Project Restoration Ecologist and President, St. Williams Nursery and Ecology Centre.



We may also spend a half day planting trees for the Ontario Power Generation /

Long Point Region Conservation Authority/ Long Point World Biosphere Reserve Forest Corridor and Carbon Sequestration Project. The Long Point Region Conservation Authority Lands and Water Manager will provide proper tree planting instruction.



Please note that Site visits #2 and #10 will be conducted in single kayaks or canoes depending upon water levels. Paddling safety instruction will be provided as well as kayaks and canoes, paddles, and PFD's (life jackets).

2. Important Course Dates

Pre-Field Trip Meeting – Tuesday May 15, 2018 at 5:30 p.m. in foyer outside of Dr. Stephen Murphy's office. Readings for assignment 1 will be distributed.

Introductory Course Meeting – Monday May 28, 2018 at 10:00 a.m. EV2 2006

Depart from University of Waterloo - Monday, May 28, 2018 at 11:00 a.m. for the Long Point Waterfowl Research and Education Centre, Turkey Point, Ontario

Return to University of Waterloo on Wednesday, June 6, 2018

Assignment 1 is due on Sunday, May 27, 2018 by email before 11:59 p.m.

Assignment 2 and 3 are due Wednesday, June 13, 2018 by email before 11:59 p.m.

Assignment 4 is due Sunday July 17, 2018 by email before 11:59 p.m.

3. Field Course Primary Learning Objectives

Successful completion of this field course will include the ability to:

- Describe the motivations for ecological restoration
- Describe the ecological consequences of impairment
- Describe the ecological attributes that demonstrate the recovery of an impaired ecosystem.
- Identify and describe reference models for restoration
- Critically evaluate the success of restoration projects
- Acquire and improve field identification skills of plants used for the purposes of restoration
- Synthesize lessons from site visits in terms of general practice of ecological restoration
- Apply the Guidelines for Developing and Managing Ecological Restoration Projects (SER 2004)
- Use all the above skills in a consultant style report (professional communication) and in creative design for an ecological restoration project.

Please note that several of the objectives are similar to Dr. Stephen Murphys' ERS 211 Environmental Analysis & Solutions IV: Restoration Ecology as this course provides an opportunity to apply knowledge gained from ERS 211 and to examine and critique actual examples of restoration projects in Norfolk County.

4. Field Course Ancillary Learning Objectives

- To provide students with the opportunity to meet professionals engaged in ecological and environmental management and administration, scientific research, environmental monitoring, and protection of the natural environment.
- To provide students with an understanding the United Nations Education, Cultural, and Scientific Organization's (UNESCO) biosphere reserves program.
- To establish a learning community that nurtures both individual creativity and mutual assistance, and operates successfully at both the pedagogical and social levels.
- To provide opportunities for students to experience the gifts of nature linking our mental, physical, and spiritual health.

5. Course Evaluation

1. Write a 500-word review of *How Much Habitat is Enough*, Third Edition. A personal copy will be provided to each student. (10%)
2. Site Visit Journal. (30%) You will be required to keep a journal for each site visit and capture who, what, where, when, why, how, and the success and challenges of each restoration project. Journal entries should be no longer than 300 words for each project. The journal will be submitted one week after course completion using MS Word and be under 10 megs in size. Incorporating up to 3 pictures for each site visit would be an asset to your journal.
3. Participation and learning (40% of mark). You will be assessed on your general experience in our learning community, your cooperative performance in the field, your conscientious participation as a member of the team, your contribution to maintaining the camp and necessary activities, and any special creative touches or contributions. You will submit 2 short statements. One, no more than one page long, should list your contributions to the course. The second, up to two pages, should reflect on your learning outcomes. Learning outcomes can be varied, from the methods and techniques you have learned, experiences in the field, coming to appreciate nature, learning to observe, etc.
4. Individual consultant style report of about 2000 words on a proposed restoration project of your choice. (20%) Your report should demonstrate your understanding and ability to apply all the components necessary to undertake an effective and efficient restoration project. The report will be submitted 6 weeks after course completion using MS Word and be under 10 megs in size

6. Course Readings

Clewell, Andre F. and James Aronson. 2013. *Ecological Restoration: principles, values, and the structure of an emerging profession*. Washington D.C. Island Press [Will be available at the bookstore for ~\$30.00]

Society for Ecological Restoration International Science & Policy Working Group. 2004. *The SER International Primer on Ecological Restoration*. www.ser.org & Tucson: Society for Ecological Restoration International. [free download available on line]

Selected journal articles on ecological and ecosystem service restoration and management will be provided 2 weeks prior to the beginning of the field course to review and discuss prior to field trips.

7. Course Fee

The cost is \$675.00 to defray accommodation fees, most your food costs, and

transportation. Cheques payable to the University of Waterloo with your student number on the back and completed course fee form must be submitted to Patti Bester prior to the pre-field trip meeting.

8. Refund Schedule

REFUND SCHEDULE for BLOCK COURSES

	A	B	C	D	E	F	G	H	I	J
1										
2	Length of Course (days)	Course disappears and end of 100% refund (days)	50% refund period (days)	WD period (days)	WF period (days)					
3	5	1	2	2-4	5					
4	10	2	3-4	3-8	9-10					
5	15	3	4-7	4-13	14-15					
6	20	4	5-9	5-17	18-20					
7	25	5	6-11	6-21	22-25					
8	30	6	7-13	7-25	26-30					
9										
10										
11	A typical term lasts from 78 to 85 days depending upon holidays and taking reading week into account.									
12										
13	If we use 80 days for calculation purposes, the following transition points occur:									
14	A course disappears from the record at 18.75% of the term.									
15	The 100% refund ends at 18.75% of the term.									
16	The 50% refund ends at 43.75% of the term.									
17	The WD period ends at 83.3 of the term. WD = Late Withdrawal – no grade value and no academic penalty									
18	The WF period ends at 100% of the term. WF = Withdraw – Failed = 32%									
19										

9. Permissions and Forms

If the field trip conflicts with another course of yours, you must obtain a signature from the other instructor on a “resolution of conflict form” to participate on the field trip.

Field Work Risk Management Form must be filled out, signed and submitted to the Instructor prior to the first day of the course. This is available at https://uwaterloo.ca/safetyoffice/sites/ca.safety-office/files/uploads/files/fieldworkriskmanagementform_6.pdf

University of Waterloo Policies and Procedures

- a) Intellectual Property: Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as: Lecture content, spoken and written (and any audio/video recording thereof); Lecture

handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides); Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner). Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository). Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights. Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

- b) Academic Integrity: Each student will be asked to read and sign the Academic Integrity form below. 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. Students 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 Undergraduate Associate Dean. Students may also complete the following tutorial: <https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academicintegrity-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> Plagiarism: You should not plagiarize the work of others. Policy 71 defines plagiarism as: "The act of presenting ideas, words or other

intellectual property of another as one's own. The use of other people's work must be properly acknowledged in all written material such as...essays, laboratory reports, design projects, statistical data, computer programs and research results. The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under this policy.” Students are expected to keep a copy of all materials used to prepare assignments in case of disputed work and should be able to provide working notes and original data for any assignment within 4 hours of this being requested. In the context of this course, plagiarism includes (among other activities) submitting without appropriate acknowledgement any report (or part thereof, including software, designs, photos, computer images, models, drawings, maps, statistics, samples, results of lab or field work etc.) which has been submitted previously to any course anywhere by any person, submitting a report in which the production has been shared by more than one student and each has submitted it as their own without acknowledgement of the other's contributions, submitting any work created in whole or in part by another without the usual acknowledgement. Policy 71 states that one should not submit “an essay, report or assignment when a major portion has been previously submitted or is being submitted for another course with the express permission of all the instructors involved”. If in doubt, ask the course instructors or the teaching assistant if your intended assignment submission is acceptable. All suspected academic misconduct are investigated and formally reported to the Associate Dean, Undergraduate of Faculty of Environment.

- c) Students with disabilities: Access Ability 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 Access Ability Services at the beginning of each academic term.
- d) Mental Health: The University of Waterloo, the Faculty of Environment and our Departments/Schools 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 <https://uwaterloo.ca/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.
- e) 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.

- f) 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. See 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.
- g) 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
- h) Unclaimed Assignments: Unclaimed assignments will be retained for until one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW’s confidential shredding procedures.
- i) Communications with Instructor and Teaching Assistants: All communication with students must be through either the student’s University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.

10. Preparing for the Course

Accommodation has been booked at the Long Point Waterfowl Education and Research Centre, which provides comfortable dorm style rooms, a conference room, library, and complete kitchen and dining hall.

<https://deltawaterfowl.org/hhcc/>

You will need to bring your own bedding and items for your personal needs. Several changes of warm clothing, hiking boots - waterproof, good ankle support - sandals, shoes, rainwear - preferably hat, coat, and pants - bug repellent, sunscreen, and a flashlight are very important. Bring a small backpack and water bottle for our field excursions and Tupperware/reusable containers to pack your field lunch. There will be opportunities for swimming, so include swimwear. The weather in Turkey Point in May is usually warm, but it can be unpredictable and you should be prepared for cooler and rainy conditions. Please be economical with your baggage because space is limited in the vans.

We will rent vans. The minimum age for drivers is 21. There will be three vans and we will need a roster of four volunteer drivers. Our daily return travel distance will be about 60 km on quiet roads. Please let the course instructor know if you will be available to drive one of the vans.

You are encouraged to bring extras to enhance the course: Frisbees and other toys

or games, musical instruments and songbooks.

Your course fee will provide for about 90% of your food. We will have breakfast in camp and make our own individual lunches from camp provisions, and prepare 8 of our evening meals as a group. There will also be ample food for snacking. You are welcome to bring anything special for yourself. The one evening meal eaten out will be at your own expense – we will keep costs reasonable. We will maintain a tasty menu and attempt to keep you happy and well fed.

Please make sure that you have all your needed prescriptions or medical support with you. We will carry a basic first aid kit. Please inform the course instructor of any special health or medical conditions that he should know about (e.g., chronic fatigue, migraines, acute phobias, anaphylactic reactions, dangerous allergies etc). All such information will be kept strictly confidential.

12. Assignment Checklist – To be submitted with assignment

Assignment Checklist

Please read the checklist below following the completion of your assignment. Once you have verified these points, hand in this signed checklist with your assignment.

1. I have referenced and footnoted all ideas, words or other intellectual property from other sources used in the completion of this assignment.
2. I have included a proper bibliography, which includes acknowledgement of all sources used to complete this assignment.
3. This assignment was completed by my own efforts and I did not collaborate with any other person for ideas.
4. This is the first time I have submitted this assignment or essay (either partially or entirely) for academic evaluation.

Signed: _____ Date: _____

Print Name: _____ UW-ID# _____