Syllabus – INDG 3901 – Fall 2013
Indigenous Perspectives in Ecology and Evolution

Tuesday & Thursday 1:05 – 2:25 pm Tory 340

Instructor: Root Gorelick

Contact Information and Office Hours
Phone – 613-520-2600 ext 1586
E-mail – Use CUL e-mail (your e-mails may get lost in my other e-mail accounts)
Office Hours – Monday and Wednesday from 10:00 -11:00 am (or by appointment)
Office – 4625 CTTC (just south of the gym and child care)

Prerequisites
Any combination of two half-courses in BIOL and INDG or permission of instructor.

Preamble
While there is no single Indigenous perspective in ecology and evolution, there are many commonalities amongst Indigenous North American (Turtle Island) peoples with respect to organismal biology, such as importance of local conditions, connectedness, animism, reasoning by analogy and metaphor, and focus on outliers and variation. We will explore how Indigenous epistemologies and ontologies might complement western (European) understandings of ecology and evolution, and vice versa.

Much of modern western science is reductionist and typological, including ecology and evolution, despite these two biological fields being about relationships amongst natural entities. Even when western studies of ecology and evolution take on population perspectives, there is still seemingly too much focus on averages (vice outliers), competition (vice cooperation), single species (vice communities), and single hierarchal levels. North American (Turtle Island) Indigenous peoples developed detailed and robust ecological and evolutionary systems, views that are often different from each other and from western views. Differences can be due to local conditions (e.g. northern tundra versus southern desert), with substantial emphasis on spatially local knowledge, especially compared with global perspectives of western colonial traditions. Differences may also be due to false dichotomies between natural and social science and between humans and other organisms. Western science may be too negative, relying on the floundering philosophical framework of falsification and on killing and imprisoning many animals and plants, whereas Indigenous sciences offer more positive and constructive approaches. We will explore many of these differences, their origins, and implications for ecology and evolution. For example, did different epistemologies and ontologies arise because of differences in spatial and temporal scales, differences in domestication of animals, or gynocratic world-views? In Indigenous versus western studies of evolution, why is there usually a very different emphasis on origin, as opposed to maintenance, of entities and traits? Has ethnobotany become too reductionist and commodified to provide a satisfactory introduction to Indigenous science? Are ecological black swans analogous to Turtle Island white buffalo? Do Indigenous ways of thinking parallel western notions about theory and natural history, which often seem detached from western scientific method? By comparing and contrasting multiple perspectives, can we improve each of the systems for understanding ecological and evolutionary patterns and processes, thereby better explaining and understanding the natural world, ourselves, and our communities, including ecological communities?

READINGS (copies in course-pack, except highlighted ones that you can download)

Alessa, Lillian Na'ia. 2009. What is truth? Where western science and traditional knowledge converge. In *The Alaska Native reader: history, culture, politics* (M.S.T. Williams, editor). Pages 246-251. Duke University Press, Durham. ISBN 978-0-8223-4480-3. Total in source 383.

Baker David. 1996. Does 'indigenous science' really exist? *Australian Science Teachers' Journal* 42: 18-20. ISSN 0045-0855.

Cajete, Greg. 2000. *Native science: natural laws of interdependence* (2000) [we will read both chapter 2, pages 57-83, titled "Philosophy of Native Science" and chapter 6, pages 177-213, titled "A Sense of Place".] ISBN 978-1-5741604-1-3. Total in source 339.

Cole, Peter. 2006. *Coyote and Raven go canoeing: coming home to the village*. McGill-Queen's University Press, Montréal & Kingston. [pages 111-120, only]. ISBN 0-7735-2819-9. Total in source 352.

Colorado, Pam. 1988. Bridging Native science and Western science. *Convergence* 21: 49-68. ISSN 0010-8146.

Cruikshank, Julie. 2004. Uses and abuses of 'traditional knowledge': Perspectives from the Yukon Territory. In *Cultivating Arctic landscapes: knowing and managing animals and the environment in the circumpolar North.* (D. Anderson, M. Nuttall, eds) Pages 17-32. Berghahn, Oxford. ISBN 978-1-57181-574-3. Total in source 256.

Endler, John A. 2012. Bowerbirds, art and aesthetics: Are bowerbirds artists and do they have an aesthetic sense? *Communicative and Integrative Biology* 5: 281-283. ISSN 1942-0889.

Fleischner, Thomas L. 2001. Natural history and the spiral of offering. *Wild Earth* 11: 10-13. ISSN 1055-1166.

Gagliano, Monica; Mancuso, Stefano; and Robert, Daniel. 2012. Towards understanding plant bioacoustics. *Trends in Plant Science* 17: 323-325. ISSN 1360-1385.

Gorz, André. 1980. The scientist as worker. In *Science and liberation* (R. Arditti, P, Brennan, S. Cavrak, editors). Pages 267-279. South End Press, Boston. [originally published in *Liberation*, May/June 1974]. [although Gorz was a Marxist political ecologist, this paper seems to apply to Indigenous science]. ISBN 978-0-8960802-2-5. Total in source 398.

Idrobo, Carlos Julián and Berkes, Fikret. 2012. Pangnirtung Inuit and the Greenland shark: co-producing knowledge of a little discussed species. *Human Ecology* 40: 405-414. ISSN 0300-7839 (print), 1572-9915 (online).

Kimmerer, Robin Wall. 2002. Weaving traditional ecological knowledge into biological education: a call to action. *BioScience* 52: 432-438. ISSN 0006-3568.

Law, John. 2004. *After method: mess in social science research*. Routledge: London. [we will read chapter 7, pages 122-139, titled "Imagination and narrative"]. ISBN 978-0-415-34175-2. Total in source 188.

Leahy, Stephen. 2012. Wisdom of Elders better than science or the internet: "They still know how to cook mammoth". *National Geographic*. [http://newswatch.nationalgeographic.com/2012/03/29/wisdom-of-elders-better-than-science-or-the-internet-they-still-know-how-to-cook-mammoth/]

Michell, Herman; Vizina, Yvonne; Augustus, Camie; and Sawyer, Jason. 2008. *Learning Indigenous science from Place*: *research study examining Indigenous-based science perspectives in Saskatchewan First Nations and Métis community contexts*. Aboriginal Education Research Centre, University of Saskatchewan. [we will read §2.3 on pages 26-29 titled "The concept of Indigenous science: Place as an aspect of learning Indigenous science"]. ISBN 978-0-9810855-0-0.

Pierotti, Ray. 2011. *Indigenous knowledge, ecology, and evolutionary biology*. Routledge: New York [we will read chapter 1, pages 7-25, titled "Defining traditional ecological knowledge"]. ISBN 978‑0‑415‑87924‑8. Total in source 264.

Rice, Brian. Undated/unpublished. Balancing academia and Indigenous environmental peacebuilding: Is it too late?

Shibetz, Danilea. 2005. Weaving traditional ecological knowledge into the restoration of basketry plants. *Journal of Ecological Anthropology* 9: 51-68. ISSN 1528-6509.

Snively, Gloria and Corsiglia, John. 2001. Discovering Indigenous science: implications for science education. *Science Education* 85: 6-34. ISSN 0036-8326 (print) 1098-237X (online).

TallBear, Kim. 2007. Narratives of race and indigeneity in the genographic project. *Journal of Law, Medicine & Ethics* 35: 412-424. ISSN 1748-720X.

Structure of Course:
This will be a discussion course. Each class, we will all be required to participate, although I take a broad view of what constitutes participation (for which I value your input). During the first class, we will discuss how best to organize our classroom time, such as how to make sure everyone feels comfortable participating and ways to make sure that nobody's ideas and thoughts are stifled. We will periodically revisit this during the term. Daily structure of the course will vary depending on the wishes of any guests we have. There will be weekly assignments, which will be written, in a liberal sense, insofar as sketches and cartoons may sometimes suffice in lieu of written words. Every student will be required to do a final assignment that either synthesizes the material we have discussed all term or takes that material in new directions. The final assignment could be written, oral, a set of interviews, or even a performance or artwork.

The course will be broken down into the following three parts, realizing that arguments regarding ecology will probably be much more straightforward than about evolution, because western ecology is about relationships and focuses on small geographic scales (except for macroecology). Guest speakers may induce us to temporarily deviate from this three-part structure.

> Part 1. What is Indigenous science? What is western science?
> What are the similarities and differences?
>
> Part 2. Indigenous biology in western ecology and evolution.
> Western biology in Indigenous ecology and evolution.
>
> Part 3. Where do we want to go with our commonalities and differences?

Readings

Part 1. What is Indigenous science? What is western science? Similarities and differences?

10 Sept Cajete (2000) [chapters 2 and 5] [by far the most you will have to read in a week]
17 Sept Alessa (2009); Baker (1986); Michell et al. (2008)
24 Sept Colorado (1988); Leahy (2012)

Part 2a. Western biology in Indigenous ecology and evolution.

01 Oct Pierotti (2010)
08 Oct Kimmerer (2002); Idrobo & Berkes (2012)
15 Oct Shebitz (2005); TallBear (2007)
22 Oct Cruikshank (2004); Fleischner (2001)

Part 2b. Indigenous biology in western ecology and evolution.

05 Nov Endler (2012); Gagliano et al. (2012)
12 Nov Gorz (1980)

Part 3. Where do we want to go with our commonalities and differences?

19 Nov Cole (2006); Law (2004)
26 Nov Snively & Corsiglia (2001)
03 Dec Rice (n.d.)

Grades

30% Participation
40% Weekly Written Assignments
25% Final Project/Outline (project = 20%; outline = 5%)
5% Pair of One-on-One meetings (2.5% each)

You will be marked on your participation each day, except for 5 September. See my notes on the next page for my attenuated and negotiable notion of what constitutes participation. Your 4 lowest of 24 participation marks (which could be zero, in case of absence) will be dropped and the 20 highest participation marks retained. Each day's maximum participation mark will be 1.5 points. (20 x 1.5% = 30%)

During all but the first and last week, you will either have a written assignment to hand in. There will be no make-up assignments. All assignments must be handed in no later than the start of the class on which it is due. Half credit will be deducted if the paper is between 1 and 24 hours late. No credit will be given after that first day. Your two lowest scores will be dropped and the eight highest scores retained. Each week's maximum assignment mark will be 5 points. (8 x 5% = 40%)

On or before 3 December 2013, you are required to hand or present your final project. On or before 22 October 2013, you are required to hand me a title and abstract/outline of your planned project. I will provide you approval and/or feedback as soon as possible, including whether the topic is reasonable and feasible. Start thinking about this now. At no penalty, you are welcome to hand in unmarked versions early for further feedback. The title/abstract/outline will be worth a maximum of 5 points, while the final project will be worth a maximum of 20 points. (5% + 20% = 25%)

Participation

I am amenable to alternative notions of how to gauge your participation. I want to see that you are engaged and thinking critically about the readings and about what is being said in class because I will be grading you on this. But there are many ways for you to demonstrate engagement and thinking, including in ways that reflect your cultural background. At some juncture early on, please tell me how you think I should gauge your participation. Be imaginative and think outside the box! I may not totally agree with your suggestions, but will try hard to work with you. This could be a fun exploration of pedagogical ideas, especially since we are tailoring this to your background, preferences, and maybe even whims.

I have no idea what ideas you will come up with (there will be many more ideas than there are people), but allow me to suggest some ideas:

- Draw cartoons of what we have discussed
- Create a blog of our class discussions
- Invite interesting, relevant guest speakers
- Find highly relevant links from the internet

Of course, you are welcome to invoke the default option of letting me decide what constitutes constructive participation. We can discuss what that means. I will also try to post participation marks on CUL as soon as possible, so that you can calibrate my views.

CUL – Electronic Communication

INDG 3901 will be managed with Carleton University's Learning system ("CUL", which is probably short for either "CULL" or "Cul de Sac"): https://www.carleton.ca/culearn/.
You must have a computing account to access the course CUL webpage.
At a minimum, we will be using the following CUL options:

Notices – I will post updates and information about the course on the CUL course home page, so be sure to check it regularly.

Course e-mail – CUL has an e-mail account specific to each course that is accessible only to students registered in the course. Access this by clicking on the mailbox icon. I will send individual messages and course notices using the CUL e-mail, so check your account frequently. Use this method for course-related e-mails and not my other e-mail accounts.

Grades –
I will post grades on CUL. For your grades to be posted and for you to access the course CUL webpage, you must be registered for this course and have a computing account. You will then have access to your grades and not to anyone else's.

Assignment grades will be posted on CUL

Final assignment grades will NOT be posted on CUL because approval of final course grades by the department chair and dean are required per university rules. Once the registrar releases final course grades, you are free to ask me about final assignment grades.

Requests for Academic Accommodations

You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please review the course outline promptly and write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. See the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation.

For Students with Disabilities:
Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website.

For Religious Obligations:
Students requesting academic accommodation on the basis of religious obligation should make a formal, written request to me for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory event. Accommodation is to be worked out directly and on an individual basis. I will make accommodations in a way that avoids academic disadvantage to the student. For more details, see Carleton Equity Services "Student Guide".

Students who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance.

For Pregnancy:
Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete a *letter of accommodation*. During the first two weeks of class or as soon as possible after the need for accommodation is known to exist, the student must write to me with any requests for academic accommodation.

Meetings

Twice during this course – during the first two weeks (4-13 Sept) and during the middle of the term (7-18 Oct) – you will meet one-on-one with me to discuss your expectations and ideas for where this course could go. These will nominally be ten-minute meetings in my office, although I will schedule 15 minutes for each of you, unless you want to request more time. You will get 2.0 points for each meeting for simply showing up and talking and 2.5 points for substantive ideas. You are welcome to bring someone to these meetings as an observer. Of course, you are always welcome to schedule other one-one meetings with me, with or without an observer, but only the two aforementioned meetings will be graded. Timeslots will be allocated on a 'first-come first-served' basis.

Course Pack

The **Course Pack** is on sale at the Carleton University Bookstore (ground floor University Centre). It should cost on the order of $50.

Academic Integrity Policy:

The University is committed to ensuring fairness and consistency in the completion of examinations, including quizzes. As part of this commitment, students are required to follow proper examinations procedures. A student who commits a violation of this policy on an examination, test, or take-home examination, or obtains or produces an answer or unfair advantage by deceit, fraud, or trickery, or by an act contrary to the rules of the examination are subject to the sanction under this Policy.

Any written work that you turn in must be your own work in your own words. If two or more people have effectively the same answers, I reserve the right to give each person a score of half what they ordinarily would have received. If the same people have effectively identical answers in subsequent assignments, I will assign grades of zero to each of these people.

Transcription of somebody else's written or spoken words without quotation marks or without citation to the original source constitutes plagiarism. Failure to include quotation marks (or other distinguishing marks) and a full citation constitutes a *prima facie* violation of the university's academic integrity policy, which will be immediately referred to the dean for adjudication. Copying of someone else's words but then substituting half of the words therein also constitutes a *prima facie* case of plagiarism.

Caveat

I reserve the right to alter this syllabus at any time, but promise to only do so for good cause, such as severe swine flu pandemic. Guest speakers might flummox the schedule, but should not affect the grading or other course expectations. In the past, the only time I have altered a syllabus during middle of the term was due to a labour strike and consequent loss of a few weeks of labs.