APPLIED PLANT ECOLOGY BIOL 4095.30
Winter Term: January-April 2022
MWF 9:30am-10:20am
Location: Online and later, possibly on campus in person

We will be gaining some practical applied plant ecology experience and honing our teamwork skills by planning a film festival of Applied Plant Ecology documentaries for the public
check out: https://dawnbazely.lab.yorku.ca/2017/05/how-doing-public-science-led-to-a-credit-in-the-flora-movie/

Course director: Prof. Dawn R. Bazely
dbazely@yorku.ca
Ever wondered about the qualifications of your course director?
You should always ask: Who, What, Where, When, Why and How — these questions form the framework for honing your critical thinking skills
http://dawnbazely.lab.yorku.ca/second-page/

Dawn Bazely's drop by online (and later, in person) hours:
All Wednesdays, Thursdays and Fridays 12-1 pm this winter semester EXCEPT READING WEEK

Welcome back to a new year and the Winter Term at YorkU!
I began teaching about the novel virus identified in Wuhan in January 2020. And here we are.. but science has brought us vaccines and amazing research that many politicians, policy makers and members of the public haven't grasped. This has led to hundreds of thousands of deaths... We will discuss how science to policy has both prevailed and failed.

The number of human-generated impacts on our environment is ever increasing. Anthropogenic climate change, which scientists like me, have long been teaching about and researching is being felt by millions. These impacts are happening at multiple scales, from local, to regional, to global. How do we make sense of them, evaluate and mitigate them?

In the first two to three weeks of this course, I will describe some general management approaches to applied plant ecology and ecosystem management. I will use the issue of non-indigenous plant species, some of which are invasive, to introduce you to a general framework that will help you to critically analyze many different issues in applied plant ecology.

I will also review fundamental ecological theories. You **will** have seen all of this theory before, but now we will look at it through the lens of applied plant ecology. I hope that you will gain new insights and understanding into the intersection of ecology with the wider society.

I will introduce aspects of the science-policy-politics space which is where ecologists aim to infuse policy with evidence-based research. We can discuss how effective this has been...

We will also look at the United Nations Sustainable Development Goals, the United Nations Framework Convention on Climate Change and the Inter-governmental Panel on Climate Change, as well the Ecological Footprint Approach.

The course will then cover 11 topics in Applied Plant Ecology examining impacts on vegetation and plant communities. A general model for managing ecosystem stressors – and how long-term ecological research addresses the research needs of this model – will help you to orient your thinking.

And this is where you all come in. In the real world, scientists work in groups and teams. So, I will be organizing the class into 11 groups to cover the following topics in a group lecture.

1. **Managing non-indigenous and invasive plants and organisms covered in Plant Biology, BIOL 2010 — this includes the SARS-CoV-2 virus.**
2. **Loss of biodiversity - the extinction crisis – for plants AND the One Health Framework**
3. **Rare plant conservation (e.g. in Carolinian Canada)**
4. **Habitat fragmentation and loss (landscape ecology)**
5. **Sustainable forestry – what is it or could it be?**
6. **Impacts of high herbivore populations on ecosystems & plants**
7. **Biofuels are more than just gasohol – can they help combat climate change?**
8. **Acid deposition (acid rain)**
9. **Impacts of mining (heavy metal pollution) on vegetation**
10. **Impacts of ozone depletion on vegetation**
11. **Impacts of climate change on vegetation**

There is no set text book for the course, but I will put my book on reserve and make a digital copy available in e-class:
Text: J. Myers and D. Bazely. 2003. Ecology and Control of Introduced Plants. Cambridge University Press.

You will get lots of practice in reading of primary literature & reading AND you will improve your reading comprehension in general!

The course learning goals are:

1. To learn about current issues in applied (plant) ecology.
2. To link science and society by getting some practical experience in teaching your peers and me about the applied ecology issues listed above
3. To improve your capacity to explain the issues clearly and succinctly to non-scientists from a science perspective.
4. To create and have a meaningful group project experience in science communication about applied ecology – this year it will to create and organize an Applied Ecology Documentary Film Festival.
5. To have a good experience doing group work. This will include developing your scheduling & science communication skills, making presentations and having input to course content, and might include writing blogs, using social media, making posters, reading journal papers, and doing research..

Student teams will get a chance to give a lecture, assign a reading, and to teach your fellow students about topics 1-11 in the list above.

After I introduce the basics in January, classes in February will be practical seminar sessions, during which groups will prepare & practice your group presentations and develop the Film Festival Schedule. Regular attendance for group work is essential.

In March, we will **FLIP the classroom** and you will all become the course director and teacher for one lecture period.

Students will be sorted into 11 groups. Each group will be assigned **one** of the bolded topics on the list, and will research the current issues as well as the ecological background (using your textbook from BIOL 2050 and the course text, plus the scientific literature), and prepare a lecture – *gulp!*

Beginning in March 2020, each group will give a lecture on their topic and research to the class. This will be 30 minutes followed by 10 minutes of questions. This takes the stress off speaking alone, but groups will need to organize the flow – everyone will get about 5 minutes to teach the class, including me.

Your powerpoint presentations will be posted on our website for other students to review and learn from – you will be the experts on that subject! I will be here to coach, facilitate and advise you!

You will be setting the course readings for your fellow students and must choose wisely. Do you select a primary or a secondary journal article? Why?

By the 3rd week of classes, each group will identify **one** relevant, and interesting research paper (either secondary literature (review) or primary literature) for the ENTIRE class to read. We will post these on the e-class website. There is no essay this time around, because I found that during 2020, when we switched to online learning, that students really struggled with writing. Therefore, the writing practice and work in this course have much lower bars, being blogs, social media posts etc.

The final exam at the end of the year will cover the 11 journal articles assigned by each group for reading, presentations and lectures. In the final, students will be excluded from answering questions on their specialty topic!
The final exam will also cover my 9 or so introductory lectures.

Marking scheme

Give a Class Lecture	**25**% - **group presentation**: deliver the class lecture as a team. This 25% will be broken down to a rubric and grading scheme that includes assessment of your individual performance as a team member (via CATME team software if I can make it work), the paper that you recommend to the class, your overall lecture script (with your clearly identified contributions) and your own component of the lecture. See dates in the calendar below and the e-class google calendar for March 2022
Documentary Film Festival	**15**% - your contribution to the entire class group project that Professor Bazely will lead, manage and co-ordinate. I am jealous of the film studies courses in AMPD so we will do our own version. YOUR FILM NOMINATION (via GOOGLE FORM) DUE DATE: last day of January 2022
Science communication	**35**% total - Will be about class and public science writing and participation. You will develop your Science Communication skills: by creating content and information about applied plant ecology topics: eg tweeting & contributing text to wikipedia page on your lecture topic. We will discuss the mark breakdown, collectively.

I'm proposing:
10% Tweeting, Tik Tok, Instagram (see Twitter assignment: minimum of 50 **content-rich** tweets that you make into a Twitter Moments – that's like an Insta story.
DUE DATE: the last day of semester: April 10, 2022

10% Blog contributions to the class Wordpress site – 5 short posts (250 words) x 2% each on a variety of topics that you get to choose including reflecting on your science journey during the pandemic.
DUE DATE: last day of February 2022

15% Wikipedia editing – because we ALL use Wikipedia. I suggest using what you learn in developing your lecture topic and editing the relevant pages. You will all train through the Wikipedia University modules, and learn about how to identify and use open access licensed content.
DUE DATE: the last day of March 2022

Final Exam — **25**% - written in the final exam period – it will be a **take-home exam released during the term**

WE WILL DISCUSS & SET COLLECTIVELY, THE DEADLINES FOR THE SCIENCE COMMUNICATION ASSIGNMENTS, (THE TWEETS, TIK TOKs etc, THE BLOGS & WIKIPEDIA EDITING)… which must be set by January 23, 2022 — We will discuss this a lot and students will be required to reflect and consider what is best for the class as a whole

Lecture schedule for the week of:

WEEK	MONDAY	WEDNESDAY	FRIDAY
M Jan 10 W Jan 12 F Jan 14	Lecture 1 (intro) 25m Review course outline, student-led lectures & survey. Ethics, course commitments. Getting to grips with media literacy, science literacy, math literacy — why? covid19	Lecture 2 (intro) Team & lecture topic assignments. Review the detailed course assignment handouts. E-Trip to the Sound and Moving Image Library - Watch Flora	What is habitat restoration and how do we measure it? The case of Carolinian Canada and Prof. Bazely's long-term research
M Jan 17 W Jan 19 F Jan 21	Management models for invasive plant species and landscape ecology (revisit Friday's lecture) Possibly Green Fire Documentary about Aldo Leopold (30 mins part 1)	Green Fire Documentary about Aldo Leopold (30 mins part 2) United Nations Sustainable Development Goals	United Nations Framework Convention on Climate Change and the Inter-governmental Panel on Climate Change
M Jan 24 W Jan 26 F Jan 28	Library training 1: advanced research techniques for your group lecture and selecting the class reading that your group will assign the course based. PLEASE BRING A LAPTOP to class	Library training 2: Science communication for applied plant ecology using social media: twitter and blogging. Tweeting from @yorkuscientists PLEASE BRING A LAPTOP to class	Library training 3: introduction to open access, metadata, editing wikipedia and why you can't cite wikipedia in an essay or a lab. Primary vs. secondary vs. tertiary literature. Peer-reviewed vs. grey literature PLEASE BRING A LAPTOP to class
M Jan 31 W Feb 2 F Feb 4	The Ecological Footprint Analysis Framework	Guest lecture 1: Nyssa Trip	Guest lecture 2: Dr. Peter Ewins

M Feb 7 W Feb 9 F Feb 11	Guest lecture 3: Jenna LeBlanc	Guest lecture 4: Aman Basu. Guest lecture 5: Professor Shibani Chaudhury	Guest lecture 6: Dr. Jeremy Kerr
M Feb 14 W Feb 16 F Feb 18	Guest lecture 7: surprise guest	Tips to prepare for and excel at Group Work	**Fill in CATME or other survey**
M Feb 19	Reading week	Reading week	Reading week
M Feb 28 W Mar 2 F Mar 4	**Work on your lecture as a group**	**Work on your lecture as a group**	**Work on your lecture as a group**
M Mar 7 W Mar 9 F Mar 11	**Work on your lecture as a group**	**Work on your lecture as a group**	**Work on your lecture as a group**
M Mar 14 W Mar 16 F Mar 18	**Work on your lecture as a group**	**Work on your lecture as a group**	**Work on your lecture as a group**
M Mar 21 W Mar 23 F Mar 25	**Work on your lecture as a group**	25 mins Student presentation: Managing non-indigenous and invasive plants	Student group presentation: Loss of plant biodiversity - the extinction crisis Student presentation: rare plant conservation – COSEWIC and Rio (CBD)
M Mar 28 W Mar 30 F Apr 1	Student presentation: habitat fragmentation and loss (urban ecology – green roofs etc.) Student presentation: sustainable forestry	Student presentation: Impacts of high herbivore populations on ecosystems & plants Student presentation: Biofuels are more than just gasohol	Student presentation: acid deposition Student presentation: impacts of mining (heavy metal pollution) Soft research essay deadline?
M Apr 4 W Apr 6 F Apr 8	Student presentation: ozone depletion Student presentation: climate change	Discuss take home final exam	Dawn to wrap: Bringing it home to Carolinian Canada: can we reverse biodiversity loss in our region, beat back invasives & increase local food security? And when will this pandemic be over..?

Managing your Time (not just for this class)

I directed a university-wide research centre for 7 years, until 2014. During that time, I only taught one undergrad course with more than three students, though I supervised BIOL 4000 the entire period. Before that, I taught my last Biology undergrad course in 2006.

But, since 2014, I've taught many undergrad courses, and I have observed that many more students than before seem to be struggling with the successful time-management that is essential to both your stint at university and the world beyond. Social Media is an established technology, but I don't think that there has been enough education from Kindergarten on being delivered since the early 1990s, to help people to manage the interruptions and distorting impacts on time and focus that social media and the internet have brought. This is why there are now bars and restaurants where people check in their cell phones!

Both this, and many other factors, seem to be making students more anxious, and less adept at remembering and transferring information learned in earlier courses, to their present courses. In 2014, a BIOL 4090 student described this as the "memorize and forget" cycle of the undergraduate years. In this course, we will develop strategies and some practical skills aimed at helping you to tackle time-management and distraction-based anxiety, along with your short-term memory issues.

An important soft skill that students should learn during undergrad is how to receive and act upon feedback (ie don't take it personally). This is how the real world works – people don't do assignments, and hand them in to their boss for a grade, they take feedback and constantly improve their writing and work.

An approach that I have adopted in response to the gaps in essential life skills and social media literacy, is to coach students in improved time-tabling and time management and also to provide experience in improving communications skills, through group work and professional use of social media.

Here are the basic timetable and work expectations for the course. If you put in these kinds of hours and you should get at least a B to B+ in the course. If you work more efficiently and manage to concentrate more effectively, then you should be able to produce a B+ to A grade level work. Yup!

12 weeks of classes (that's tons of time)
3 hours per week
For each contact hour in class, you should expect to put in a **minimum** 1.5-2 hours of work out of the class.

This means that you should timetable 7.5-9 hours per week for this course (3 hours of classes & 4.5-6 hours outside work time) which amounts to 2-3 hours per course credit per week. You should always take time to review class notes at the end of the day. If you don't do this, then the information doesn't move from your short-term memory to your long-term memory and when you next review your lecture notes, it's as if it's completely new information.