

We will be gaining real life applied ecology experience, participating in data collection and analysis of a survey to examine the issue of cultural live of non-native organisms. This is a potential invasive species issue and we don't know much about it.

**APPLIED PLANT ECOLOGY (BIOL 4095.30)**

Fall (Sept-Dec 2005) MWF 1:30pm-2:30pm

Prof. Dawn R. Bazely

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Location: Calumet College 211

Office hours: TBD on first class

### **Welcome back to another year!**

There are increasing numbers of human-generated impacts on our environment. They happen at multiple scales - from local, to regional, to global. How do we make sense of them and evaluate them? In this course, I use the issue of non-indigenous plant species, some of which are invasive, to provide a general framework for critical analysis of issues in applied ecology. Relevant ecological theories are explained in this context. You will have seen the theory before, but I hope that you will gain new insight.

The course covers 11 basic topics that have large impacts on vegetation:

1. A general model for managing ecosystem stressors - and how long-term ecological research addresses the research needs of this model
2. Non-indigenous plants and invasive plants

Students will develop & teach lectures on the following topics

3. **Loss of biodiversity - the extinction crisis**
4. **Rare plant conservation (e.g. in Carolinian Canada)**
5. **Habitat fragmentation and loss (landscape ecology)**
6. **Sustainable forestry - what is it or could it be?**
7. **Overgrazing by herbivores (group A plant population effects**
8. **Overgrazing by herbivores group B ecosystem/community effects)**
9. **Acid deposition**
10. **Impacts of mining (heavy metal pollution) on vegetation**
11. **Impacts of ozone depletion on vegetation**
12. **Impacts of climate change on vegetation**

There is no set text book for the course, but I will be putting my book on reserve:

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Text: J. Myers and D. Bazely. 2003. Ecology and Control of Introduced Plants. Cambridge University Press.

### **The goals are:**

- A. To learn about current issues in applied (plant) ecology.
- B. To link science and society by generating new data that can be used to answer questions and evaluate policies relating to applied ecological issues (class project).
- C. To be able to explain the issues clearly and succinctly to non-scientists.
- D. To get everyone out in the field.
- E. To gain experience doing group work (developing your scheduling & communication skills), reading journal papers, making presentations and having input to course content.

I will give the second lecture on Topic 1, and then will be lecturing on Topic 2 (non-indigenous plants and invasive plants) in September and November. Classes in October will be structured sessions during which groups will prepare & practice your class presentations and carry out your research project/essay, which will involved some independent surveys and data collections. Regular attendance for group work is essential.

### **Covering the other topics & the class project: a Survey at York and U of T (Scarborough)**

The class will be divided into 10 groups. Each group will be assigned one of the bolded topics in 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). Starting in November 2005, each group will give a lecture on their topic and research to the class: 30 mins followed by 10 minutes of questions. Your powerpoint presentations will be posted on our website for other students to review and learn from - you are, in effect, giving the lecture on that subject!

By the 2<sup>nd</sup> week of September, each group must find 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 moodle website, too.

We have a class research/survey project that will generate data to be written up, both individually or as a group. This survey of the York and UT Scarborough student populations will be your main data gathering project. We will be exploring the solutions to the issue of cultural live release. You will have ALL of October on this.

Each of you will write a research paper exploring one aspect of the project.

The final exam at the end of the year will cover all papers, presentations and lectures. In the final, students are excluded from answering questions on their specialty topic that they presented on!

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### Lecture schedule for the week of:

WEEK	MONDAY	WEDNESDAY	FRIDAY
M Sept 8 W Sept 10 F Sept 12	Introduction to the course outline, student-led lectures & survey. Course commitments.	Team & lecture topic assignments. Management models for invasive plant species and landscape ecology	Lecture: Invasives - ecosystems and plant communities & Integrating the invasive issue into research, policy & communications
M Sept 15 W Sept 17 F Sept 19	Training session 1: Steacie Science Library. Choose your assigned class reading for your group lecture topic Location TBD	Training session 2: advanced research techniques Steacie Science Library Location TBD	Lecture: Invasives - ecosystems and plant communities & Integrating the invasive issue into recovery planning for rare species
M Sept 22 W Sept 24 F Sept 26	Invasives - life history characteristics of invasives	Invasives - life history characteristics of invasives	Invasives - population ecology
M Sept 29 W Oct 1 F Oct 3	- Invasives - population ecology	Invasives - introduced plant diseases	Invasives - models of invasive plant populations
M Oct 6 W Oct 8 F Oct 10	Invasives - habitat management and restoration	Invasive species Survey	Invasive species Survey
M Oct 13	<b>Thanksgiving - no class</b>	Invasive species Survey	Invasive species Survey
M Oct 15	Invasive species Survey	Invasive species Survey	Invasive species Survey
M Oct 17	Invasive species Survey	Invasive species Survey	Invasive species Survey
M Oct 20 W Oct 22 F Oct 24	Invasive species Survey	Invasive species Survey	Invasive species Survey
M Oct 27 W Oct 29 F Oct 31	Invasive species Survey	<b>Co-curricular day - no lectures</b>	<b>Co-curricular day - no lectures</b>
M Nov 3 W Nov 5 F Nov 7	Survey write up & essay planning	Student group presentation: Loss of plant biodiversity - the extinction crisis	Student presentation: rare plant conservation - COSEWIC and Rio (CBD)
M Nov 10 W Nov 12 F Nov 14	Student presentation: habitat fragmentation and loss (urban ecology - green roofs etc.)	Student presentation: sustainable forestry	Student presentation: Herbivores: plant population effects
M Nov 17 W Nov 19 F Nov 21	Student presentation: Herbivores: ecosystem and community effects	Student presentation: acid deposition	Student presentation: impacts of mining (heavy metal pollution)
M Nov 24	Student presentation:	Student presentation:	Dawn wrap: Bringing it

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W Nov 26 F Nov 28	ozone depletion	climate change	home to Carolinian Canada: are non-native species just a symptom of major abiotic disturbances?
M Dec 1 W Dec 3 F Dec 5	Guest lecture/Survey results and discussion	Guest lecture/Survey results and discussion	Guest lecture /Survey results and discussion
M Dec 8	Tweetchat about Applied Plant Ecology		

### Marking scheme

Give a Class Lecture

20% - group presentation (deliver the class lecture)  
(this will be broken down to a grading scheme that includes 5%  
assessment on your performance as a member of a team)

Research Project

20% - your part of the survey write up. This will be contributing to  
a group or class report.

25% - your individual extended research essay based on the survey  
(a list of topics will be provided)

Final Exam

25% - must be in the final exam period

Class participation

10% - Science Communication skills: communicating information  
about applied plant ecology topics (eg tweeting & contributing text  
to wikipedia page on your lecture topic). We will decide the mark  
breakdown, collectively.

I'm proposing:

5% Tweeting (see Twitter assignment: 70 tweets total for 3%)

2.5% Blog contributions to the class Wordpress site or make a  
Storify of some tweets and post it to the blog (see assignment on  
posting: 8 posts, 0.5% each, for 4%)

2.5% Make a Tackk.com board on your group's lecture topic (each  
person does this and must have a minimum of 6 slides for the 3%)

**Managing your Time** (not just for this class)

## **Dawn R. Bazely Applied Plant Ecology BIOL 4095 Fall 2014**

I was directing a university-wide research centre for 7 of the last 8 years, and during that time only taught 1 undergrad course with >3 students (I taught BIOL 4000 during the whole time). In 2014, I have already taught 2 undergrad courses and have observed that basic time-management skills, essential to the world beyond university, have, on the whole, deteriorated, resulting in students being, on the whole, more anxious. Also, students have become less adept at remembering and transferring information learned in earlier courses to their present courses: this was described by a BIOL 4090 student as the "memorize and forget" cycle of undergraduate years.

Also, one of the main soft skills that students should learn during their undergrad is how to receive and act upon feedback. This is how the real world works - people don't do assignments and hand them in to their boss for a grade ☺

An approach that I have adopted in response to this essential life skills gap, 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 a B in the course. If you work smarter & are more concentrated in your work during these hours, then you should produce B+ to A grade level work.

12 weeks of classes

3 hours per week

For each contact hour in class, you are expected to put in a minimum of 2 hours.

This means that you must timetable 9 hours per week for this course (3 hours class & 6 hours outside work time) which amounts to 3 hours per credit per week.