Population Ecology

Instructor: Dr. Bridget Stutchbury, 203F Lumbers
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Office hours: 1:30-2:30 MW
for other times please make an appointment

T.A.: Natalie Kim (natkim@yorku.ca)

Grade Distribution:

25% midterm exam (22 October)
45% final exam (December Exam Period)
30% lab assignments

Lecture notes and Lab Instructions are on the course CD; you must purchase this CD for
$10 (cash, exact change) from the main Biology office (247 Farquharson) during the first
week of classes.

All exams on lecture material will be short answer/essay format. The final exam covers all
the lecture material, including material discussed in class that is not on the CD.

There will be 3 lab assignments (each worth 10%) that include a poster presentation, a group
seminar, and one scientific paper based on the research projects done during labs.

Textbook:

There is no formal text for the course. Most of the examples used in class come from
articles published in scientific journals like Ecology, Journal of Animal Ecology and other
journals.

Instead you must rely on lecture notes. Illustrations used in class are available on the course
web site. Examples given in lecture come from articles available from electronic journal
resources (York Library) or paper journals in Steacie Library, and references will be given in
the lecture notes. You are not required to read the original articles.

Lectures:

The basic format of lectures is to look in detail at recently published research articles in
population ecology to understand both how ecological research is done and the theories
being developed and tested.
The lectures do rely heavily on graphs and illustrations; you will find the lectures much easier
to follow if you print out, and bring with you, the lecture notes for that day.

We will cover the following topics:

- Population Regulation
- Dispersal
- Metapopulations
- Competition
- Territoriality
- Predator/Prey Interactions
- Parasites
- Population Viability
- Invasive Species

Labs: 30% of final grade

Most labs will require field trips to locations on campus, rain or shine! Dress with
appropriate jackets, jeans, boots etc. If extreme weather prohibits a field trip, then an indoor
lab exercise will be done instead.

The goals of the labs are to actually conduct ecological field research to learn hands-on how
animal ecology is done by real biologists and to learn how to write-up and present the results
of your study.

For the labs we will focus on three different projects during the term (2-3 weeks field work,
and followed by a lab devoted to analysis and writing). Detailed instructions on what to
include for each lab assignment are available on the course CD.

Attendance will be taken at labs, and students should be prepared to provide legitimate
doctor’s notes to explain absences.

Students who do not attend the data analysis/writing labs should not expect the t.a. to
provide this information in his/her own time.

Students are allowed to work in groups on lab projects for data collection, analysis and write-
up. Co-authors on papers receive an identical grade. It is up to students to share the
workload and check the quality of each other’s work.

Plagiarism: Unfortunately, it is not uncommon for us to discover obvious and blatant
plagiarism in lab assignments. Students are required to read the “How to Avoid Plagiarism”
document on the course CD and students are encouraged to read read the University’s
policy on plagiarism. We have a zero tolerance policy, and all co-authors on a report will
receive identical penalties. So check your co-authors work! Students who nevertheless
submit lab assignments that contain sentences or paragraphs that are plagiarized will
automatically receive a grade of zero for that assignment and the incident will be referred to
the Dean’s Office for further investigation.
Lab Projects:

Population Ecology and Dispersal of the European Land Snail:
-we will mark and recapture land snails to determine population size, density, and dispersal distance. Results will be presented in poster format during lab.
Due Date: Sept 29 (10%)

Winter Social System of Chickadees and Nuthatches
-we will catch and band these birds in woodlots on campus, and observations flock organization and territorial behaviour. Results will be presented in seminar format during lab.
Due Date: Nov 3 (10%)

Canada Thistle: Population Ecology of an Invasive Species
-we examine the density and distribution of an invasive plant species, the Canada Thistle, and determine its impact on native biodiversity. Results will be presented in a scientific paper format.
Due Date: Dec 1 (10%)
Population Ecology – Remediation

Grade Distribution:

25% midterm exam (22 October)
45% final exam (Final Exam Period)
30% lab assignments

Course Schedule:

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Lab</th>
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<tbody>
<tr>
<td>Feb 2 Parasites &amp; Conservation</td>
<td>Review of Early Lecture Material</td>
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<tr>
<td>Feb 4 No Lecture</td>
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<tr>
<td>Feb 9 Parasitoids</td>
<td>Scientific Paper Tutorial</td>
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<tr>
<td>Feb 11 Invasive Species</td>
<td></td>
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<tr>
<td>Feb 16 Family Day – no lecture</td>
<td>No Lab</td>
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<tr>
<td>18 Conservation Biology</td>
<td></td>
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Final Exam: 45% of final grade

The final exam will be held during the Final Exam Period and be 3 hours in length.

It will cover all material presented in class during lectures as well as topics covered during the first two labs.

You will have choice in both the short answer (5 of 6 questions) and essay answer (2 of 3 questions) sections of the final exam.

Open-book final exam – only printed materials will be allowed in the examination room (i.e. no computers permitted). This is not a substitute for studying (!!) and you should note that essay questions (worth almost half the exam) cannot be answered well by simply copying from class notes. The purpose of allowing notes in the exam is to assist you with remembering details that will make your answers more complete and that will be near-impossible to re-learn in the short time remaining in the term.
**Labs:** 30% of final grade

It is no longer possible to carry out the Canada Thistle lab (habitat measurements in the snow???).

Students can elect one of the two following options to fulfill their lab grade:

1) Increase the Snail and Chickadee lab grade to 15% each

**OR**

2) The Snail and Chickadee grades remain at 10% each, and for your final lab assignment (10%) you or your group can elect to write up your chickadee results in the form of a scientific paper. The paper should be 8-10 pages long, double spaced (Abstract, Introduction, Methods, Results – with Tables/Graphs, Discussion, Literature Cited).

Evaluation of Scientific Papers:

Read the document on the course CD “How to Write a Scientific Paper”, and “How to Avoid Plagiarism” and look at examples of published papers.

The t.a. will mark the papers, evaluating:

- content (ecological background, accurate methods and results, good interpretation of data)
- appearance and accuracy of the graphs
- organization of the content (e.g. information is given under the correct heading, text used well in the results section, interpretation of results is given in the discussion, conclusions make sense given the results shown)
- writing style (well organized paragraphs, good grammar and spelling, logical presentation of ideas)
- proper referencing of scientific papers; you must cite published papers to back up facts and statements of findings from other studies, and have a professional references section at the end of your paper.

**Due Date:** the last day of class of the Fall Term, 19 February 2009.