SC/BIOL 4250   **Fall 2014**

Birds and the Environment

Instructor: Dr. Bridget Stutchbury, 203F Lumbers
                    ext 66637 (bstutch@yorku.ca)
                    Office hours: 11:30-12:30 MW or by appointment

T.A.   :

Lectures: (Mon, Wed 10:30, LSB 105)   Labs: (M, T, W, F 2:30) LUM 131

Learning Objectives:

(1) Be able to understand and describe, using case studies and evidence, current and historical causes of bird population declines
(2) Be able to understand and describe the methods and experimental design used by scientists to study bird population declines
(3) Learn through first-hand experience how population trend data are collected in North America and learn how to use these data bases to test predictions for causes of population declines
(4) Be able to understand and describe, using case studies and evidence, the diverse and often specialized adaptations of birds
(5) Be able to understand and describe the methods and experimental design used by scientists to study form and function in birds
(6) Apply your knowledge by explaining and critiquing a recently published scientific paper using effective and interesting scientific writing

Grade Distribution:

15% **Lecture Exam 1** (6 Oct; covers all lecture material to 1 Oct; short answer format)
15% **Lecture Exam 2** (10 Nov; covers all lecture material from 8 Oct to 5 Nov; short answer format)
40% **Final Exam** (December Exam Period; short & long answer format cumulative)
30% **Lab Assignments** (10% Songbird Decline Poster due 17 October, 10% Form & Function Assignment due 28 November, 10% Quizzes)

Textbook:

We will not use a traditional, thick, and expensive Ornithology textbook. There are sufficient on-line resources and in-class resources for all aspects of this course.

Suggested Reading: Silence of the Songbirds (2007, Harper Collins) by your prof… Bridget Stutchbury. My book explains in a non-technical manner the various causes of songbird declines, and includes descriptions of my own research, other studies on bird declines, and scientific references.

For case studies used in lecture, you will be provided with the scientific reference or web site link so you can look up the article yourself if you need to (e.g. for clarification, or for use in other courses). Unless told otherwise, you are not required to read the original articles upon which the case studies are based.

Other Resources:

National Audubon Society Bird Identification App (only $5 for photos, sounds, maps of all North American species):
http://www.audubonguides.com/field-guides/bird-identification-app.html

Cornell Lab of Ornithology "All About Birds' web site
http://www.allaboutbirds.org/Page.aspx?pid=1189

Birds of North America (through York U library)

Lectures:

Lectures during the first half of the course will focus on avian biodiversity and global patterns and causes of bird declines. The second half of the course will focus on avian adaptations in morphology, physiology and behaviour.

Labs: (**No** late assignments accepted without medical note; if you face extenuating circumstance make an appointment to see Dr. Stutchbury. Your t.a. does not have the authority to grant extensions or late penalties)

The goals of the labs are to:

(1) Conduct ornithological field research to learn how bird identification and surveys are done and to learn how to write-up and present the results of bird surveys using similar tools as professional scientists.
(2) Learn bird taxonomy and anatomy to better understand biodiversity and avian adaptations to the environment

Several labs will require field trips to locations on campus, weather permitting. Dress with appropriate jackets, jeans, boots etc. If wet weather prohibits a field trip then an indoor lab exercise will be done instead.

Bird Decline Poster (10%): We will learn about several amazing long-term and online data bases that ornithologists have collected over the past 20+ years that generate scientifically-based estimated of population trends for dozens of species of North American birds. For this assignment, you will work in along or in groups of up to 3 students to test a hypothesis for bird declines by using the on-line data. Poster due Oct 17; the poster must be submitted electronically via Moodle prior to your lab that day.

Form & Function Assignment (10%): The labs in the second half of the course focus on form & function, in other words, how bird's bodies work and why. The "why" is answered at the evolutionary scale, i.e. how natural selection shapes anatomy, physiology, and

behaviour.   We will examine feather structure, adaptations for flight, basic anatomy, and song production. For this assignment (5 pages, double spaced), you will summarize the methods, results and conclusions of a scientific article (published in 2013; no exceptions) that presents original data/results/experiments exploring the adaptive significance of some aspect of bird anatomy, physiology, or song structure. Due on Nov 28th and the paper must be submitted electronically via Moodle. Students may work alone or in groups of up to 3 on this assignment.

Quizzes (total of 10%): For 6 labs, there will be a short quiz to test your knowledge of key concepts and facts covered during the previous lab (including required reading). Each quiz will be worth 5 points and there are 6 quizzes. If you are late for lab and miss the quiz, or miss the lab altogether (with no medical note or advance permission), you will get 0 points on the quiz.

Plagiarism: We have a **zero tolerance policy** for plagiarism, so you should not copy & paste material into lab assignments. Co-authors on an assignment must assume equal responsibility for the content. Students who submit 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.