

Special Topics in Behavioural Ecology: Acoustic Communication in Birds

A graduate course for fall semester 2011

Graduate Course Code: 55-603

Professor: Daniel Mennill (dmennill AT uwindsor DOT ca)

Course outline finalized September 7, 2011

Course description

Bird song is a model system for understanding the behaviour and ecology of animals. Research on bird song has yielded critically important insights into natural selection, sexual selection, animal culture, learning, cognition, neurobiology and behaviour, and patterns of variation in space and time. In this reading-and-discussion-based course, we will explore both the historical study of avian vocal communication as well as the most current research in this field. We will learn some general principles of behavioural ecology with a focus on animal communication, as well as specific details of behavioural ecology as they relate to acoustic communication in birds. Classes will involve lectures, student seminar presentations, and discussions of assigned readings. In the latter part of the course students will lead seminars and discussions, and write term papers on topics of their choice.

Philosophy and expectations

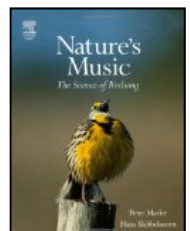
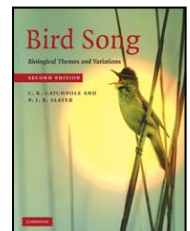
My goal is to encourage development in your understanding of behavioural ecology and animal communication in general and in bird song in particular. To succeed, I expect everyone in the class to read all assigned readings ahead of class. I expect everyone to come to class on time, ready to discuss all assigned readings. I expect everyone to contribute something meaningful to every class. Each student will take a turn as a presenter and discussion leader during the second half of the semester. By the end of the course, you should have a comprehensive understanding of the science of avian acoustic communication and you should be familiar with many general principles of animal communication and behavioural ecology. You should be able to speak competently about bird song and how this model system can enhance our understanding of animal biology.

Textbooks

Textbooks that we will refer to:

- (1) **“Bird Song: Biological Themes and Variations” *SECOND EDITION*** By Clive Catchpole & Peter Slater (Cambridge University Press). THERE IS ONE COPY AVAILABLE IN THE MENNILL LAB. Advertised at \$52.89 from amazon.ca.
- (2) **“Nature’s Music: The Science of Bird Song”** edited by Peter Marler & Hans Slabbekoorn (Elsevier). The book includes 14 chapters on 14 of the fundamental topics, each chapter written by the expert in their sub-field of bird song research. The book comes with a CD that contains audio examples of all songs discussed in the book. THERE IS ONE COPY AVAILABLE IN THE MENNILL LAB. Advertised at \$87.82 from amazon.ca.

These books will be valuable resources during the course, and are an excellent addition to the library of anyone interested in the behavioural ecology and vocal communication in birds.



Assignments

1) Seminar. You will choose a topic that interests you, in consultation with Dr. Mennill, and prepare a seminar on this topic for the rest of the class. You will choose a paper from the primary literature to assign to the rest of the class as background reading one week prior to your seminar. You will deliver a seminar on this topic, lasting approximately 45 minutes. You should then lead a discussion on your topic. For the discussion, you should prepare a list of 10 or 20 questions that follow from the assigned reading or from your seminar; if the class is quiet, be ready to incite discussion with your questions. Length: Seminars should last approximately 45 minutes; certainly no more than 60 minutes but no less than 40 minutes; discussions should last for approximately 30 minutes. This assignment is worth 30% of your final grade. You will be evaluated for depth of content, breadth of content, command of material, and style of presentation. Seminar dates will be assigned by lottery.

2) Critique. You will write a brief critique of the seminar and discussion of one of your colleagues’ seminars. Your critique will be given, anonymously, to the presenter, as would a peer review be given to a colleague. Length: 1-2 pages. This assignment is worth 5% of your final grade. Due date: Seven days after the seminar is delivered.

3) Term paper. You will write a review paper on a topic of your choice (presumably the topic that you chose for your seminar or a sub-topic of your seminar). I encourage you to choose a topic that has not been reviewed (or perhaps not recently reviewed) in the literature so that you may submit your review to a scientific journal for publication. Length guideline: 4000-5000 words. You can write a longer or shorter paper to match the style of a targeted journal if necessary. You will be evaluated for depth of content, breadth of content, command of material, and scientific writing style. If you do not have a target journal in mind, the format of your paper should follow the review paper format of the journal "Trends in Ecology and Evolution" (see the following paper as an example: Beecher & Brenowitz, 2005, Functional aspects of song learning in songbirds, TREE 20: 143-149). Due date: Thursday December 8 or any time sooner.

Marking scheme

- 20% Participation and contribution to group learning** (To excel: Read all assigned readings ahead of class time, come to all classes, participate actively and cooperatively in all discussions. Saying something in every class will get you a mark in the B range. Saying something insightful/cooperative/productive/connected-to-the-seminar-and-the-readings will get you a mark in the A range.)
- 30% Seminar presentation and discussion** (detailed marking scheme will be given out in class)
- 45% Term paper** (detailed marking scheme will be given out in class)
- 5% Seminar critique**

Timeline

September and October: Dr. Mennill will deliver lectures on fundamental topics in bird song. Specific reading assignments will be given each week.

Friday October 14: Dr. Scott MacDougall-Shackleton will deliver a Departmental Seminar including some themes about bird song; all students are required to attend.

November and December: Students will lead seminars and discussions. Each class will consist of two student seminars, and two student-lead discussion.

Class hours and location

Class will last for 3 hours once per week on Thursdays from 4:00-7:00 in Biology Building Room 122.

Calendar

Date	Topic (C&S readings must be completed before the start of each class for full participation; M&S readings are recommended, but not required)
Sept. 8	Lecture/Discussion 1: Introduction (C&S Chapter 1; M&S Chapter 1)
Sept. 15	Lecture/Discussion 2: The function of bird song (C&S Chapters 6 & 7; M&S Chapters 2, assigned reading)
Sept. 22	Lecture/Discussion 3: The syrinx and the brain (C&S Chapter 2; M&S Chapters 8,9)
Sept. 29	Lecture/Discussion 4: Learning to sing (C&S Chapter 3; M&S Chapters 3,4)
Oct. 6	Lecture/Discussion 5: The dawn chorus (C&S Chapter 5; assigned reading)
Oct. 13	Lecture/Discussion 6: Sound transmission (C&S Chapter 4; assigned reading)
Oct. 20	Lecture/Discussion 7: Population level variation in bird song (C&S Chapters 8,9; assigned reading)
Oct. 27	Lecture/Discussion 8: Communication networks; theory and practice (assigned reading)
Nov. 3	Student seminars and discussion 1
Nov. 10	Student seminars and discussion 2
Nov. 17	Student seminars and discussion 3
Nov. 24.	Student seminars and discussion 4
Dec. 1	Student seminars and discussion 5
Dec. 8	Last day to submit term paper (but it can be submitted any time earlier!)