Zoology 524/Cons 501: Topics in Conservation Genetics
2008 Mon Wed 1:30 – 3 pm FSC 1617

Instructors
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Introduction

There is growing interest in the field of conservation genetics among life sciences
graduate students at UBC. Some of these students are focussing their programs and
research directly in this area, while others are pursuing research in the related fields of
conservation biology, ecology, evolutionary biology or plant breeding. Graduate-level
classes in evolutionary biology and population genetics cover much of the background
theory relating to conservation genetics, but do not focus on specific issues in
conservation genetics. This course is offered to 1) meet the need of students working
specifically in conservation genetics; and 2) to provide a genetic perspective to students
working in other areas of conservation biology.

Course Objectives

1. Review aspects of population genetics as they apply to conservation biology.
2. Discuss the relative importance of genetics, in terms of maintenance of evolutionary
   potential and avoidance of inbreeding, in biodiversity conservation.
3. Compare and contrast methodologies for characterizing genetic structure and
   diversity in species at risk of extinction.
4. Evaluate the role of genetic information in conservation strategies for threatened and
   endangered species.

Target Audience

Graduate students in the Faculties of Science, Forestry and Agriculture in the areas of
ecology, evolution, biodiversity, conservation biology and gene resources management.
There are no formal prerequisites for the course, but students will need at least an
introductory genetics class (preferably population genetics) at the undergraduate level to
participate fully in this course.

Course format

Most weeks a 1.5 hour lecture will be given introducing a topic during the first meeting of
the week. The second 1.5 hour meeting of the week will focus on a student-led
summary of one or more papers relating to the topic, and a directed discussion of the
issues at stake. Each student will be expected to lead at least one discussion and play
an active support role in a second discussion.

Grading

Oral presentation of assigned papers and discussion 30%
Term paper 70%
A term paper outline will need to be submitted and approved by both course instructors. A percentage grade will be assigned for the course.

**Topics**

Jan. 9    Scope of conservation genetics (Rick)

Jan. 14   The genetics of small and declining populations (Rick)

Jan. 21   Effective population size (Sally)

Jan. 28   Inbreeding depression, heterozygosity and fitness (Sally)

Feb. 4    Quantitative genetics and local adaptation (Sally)

Feb. 11   Climate change and rate of adaptation (Sally)

Feb. 18   READING BREAK

Feb. 25   Population structure and gene flow (Rick)

Mar. 3    Mutation and conservation (Rick)

Mar. 10   Phylogeography and units of conservation (Rick)

Mar. 17   Hybridization and introgression (Sally)

Mar. 24   EASTER MONDAY

Mar. 31   Statistical issues in conservation genetics (Rick)

April 7   Conservation strategies (Sally)
Reference materials

Books
There will be no course textbook. Selected readings from the following books will provide background information for the lecture portion of the course. We find the two texts in bold font particularly useful:


Papers
Paper relevant to topics covered in the lecture portion of the course will be drawn from peer-reviewed scientific journals, including but not limited to the following:

Conservation Biology
Conservation Genetics
Evolution
Trends in Ecology and Evolution
Molecular Ecology
Calendar Description

Cons 501/Zool 523 (3) Topics in conservation genetics. Lectures and directed discussions will address topics including the genetics of small populations, inbreeding, extinction risks due to genetic versus demography factors, adaptation and climate change, and methods for assessing genetic diversity for conservation planning.