1-2015

ENSC 594.02: Graduate Seminar - Biological Dimensions of Conservation

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Biological Dimensions of Conservation

ENSC 494.02/ENSC 594.02

Spring 2015

Instructor

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Purpose

The purpose of this course is to introduce students to the basics of conservation biology as applied to species conservation. Students will also learn to use some current tools used by conservation biologists to do conservation work including vital rate estimation using mark-recapture modeling, a population viability assessment model, basic geographic information system techniques, and home range analysis. Notwithstanding the importance of social and human dimensions of conservation the focus here will be on natural science based approaches to determining the status of populations of individual species and what management considerations follow from that natural science. Local species of conservation concern such as grizzly bear, wolverine, bison, bull trout and northern goshawk will be used to illustrate the principles covered in class.

Texts

- Hunter Jr., M, *Fundamentals of Conservation Biology*, 3rd edition
- Mills, LS 2012. *Conservation of Wildlife Populations*, 2nd edition
- Readings on course Moodle site

Tentative Schedule

- Jan 27 *Class Introduction*
- Jan 29 *Species diversity*- Hunter Chapter 3 Species Diversity and Chap 4 from Ecosystem Diversity and Species Diversity to end
- Feb 3 *Genetic diversity*- Hunter Chapter 5
- Feb 5 *Genetic diversity continued*- Mills Chapter 3
- Feb 10 *Estimating vital rates*- Mills Chapter 4

- Feb 12 *Mark and recapture methods*- Gentle Guide to Mark - Chapter 1
- Feb 17 *Using Program Mark*- Gentle Guide to Mark- Chapter 2 and 3- meet in EVST computer lab
- Feb 19 *Population growth rates*- Mills Chapter 5 and 6
- Feb 21 *Threats to species- Fragmentation* Hunter Chapter 8 from Fragmentation to end and Chapter 9- **Program Mark exercises due**
- Feb 24 *Threats to species-Overexploitation*- Hunter Chapter 9; Mills Chapter 14
- Feb 26 *Threats to species- Exotic Species*- Hunter Chapter 10
- Mar 3 *Population viability and extinction probability*- Mills Chapter 12; Hunter Chapter 7
- Mar 5 *PVA models*- Mills Chapter 12
- March 10 *Introduction to Vortex PVA model tool*- Vortex manual- meet in EVST computer lab
- March 12 *Vortex lab session*
- March 17 ***Exam 1***
- Mar 19 *Vortex work session*- EVST computer lab
- Mar 24 *Interactions between populations*- Mills Chapter 10- **Vortex project due**
- Mar 26 *Animal movement*
- Mar 31 & Apr 2 No class- Spring Break
- Apr 7 *Home range concepts and uses*
- Apr 9 *Ranges intro and exercises*- meet in EVST computer lab
- Apr 14 *Landscape connectivity and permeability*
- Apr 16 *GIS basics*- meet in EVST computer lab
- Apr 21 *Managing populations*- Hunter Chapter 12
- Apr 23 TBA
- Apr 28 *Climate change- management approaches*
- Apr 30 **Exam 2**
- May 5 *GIS project session*
- May 7 *GIS project session*
- Final Exam date- **GIS project due**

Grading

Grading in the course will be on a plus/minus system (A, A-, B+, B, B-, C+, etc). Assessment will occur in several ways: 1) performance on 2 in-class examinations, 2) performance on several projects, 3) performance on in-class/out-of-class exercises, and 4) class participation (attendance and attentiveness/participation in labs). The breakdown of the share of the grade attributable to each is as follows:

Exams: 50% (25% each)
Projects: 30%
Exercises: 10%

Participation: 10%

Learning Outcomes

Students will learn the following by the end of the course:

1. Basic principles of conservation biology applicable to conservation in North America including the following:
    a. Diversity estimation and evaluation approaches
    b. Population demography and population viability
    c. Connectivity and permeability for animal movement
    d. Approaches to conservation in the face of climate change
2. How to create a basic GIS map.
3. How to use Program Mark to determine survival rates of species.
4. How to use a program to evaluate home ranges of animals.
5. How to use Vortex, a population viability evaluation model, to estimate rates of extinction and probabilities of survival

Disability modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Student Conduct Code

Plagiarism or other misconduct as defined in the *Student Conduct Code* will result in sanctions possibly including receiving a failing grade for the course and referral to a formal misconduct process.