

BIO 288 – Introduction to Conservation Biology

Instructor

Dr. Tom Contreras

Contact Information

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Office Hours

M 14:00 – 15:00, W 09:00 – 10:00, R 10:00 – 12:00 (or by appointment); office hour schedule may be subject to change—you will be notified of changes in lecture/lab or through an announcement on the course Sakai site.

Course meeting times

Lecture: ***M W F 11:45 – 12:50*** (305 D-P)

Laboratory: ***T 14:30 – 17:30*** (305 D-P)

Lab Assistant

Mr. Brandon Sansom, sansombj@washjeff.edu

Course Text

Primack, R. B. 2006. Essentials of Conservation Biology (4th Edition). Sinauer Associates, Inc., Sunderland, MA. ISBN 978-0-87893-720-2

Important Supplemental readings and lab protocols will be required throughout the semester; those readings and protocols will be provided online as Adobe PDF's (available on the course's Sakai site) or as handouts in lecture/lab.

Suggested supplies: Notebook(s) to use as lab notebook (8" x 11" spiral notebooks are fine), pencils, ring binder/folder for articles/handouts, flash drive to store data.

Sakai Site

Please check the course Sakai site (<http://sakai.washjeff.edu>) on a regular basis for announcements, schedule changes, and additional course materials.

If you have any problems accessing the Sakai site for this course, please contact the 'Helpdesk' immediately (ext 6022).

Course Overview

This course will be an introduction to Conservation Biology and will examine 1) how this scientific discipline has evolved, 2) the basic theory and methodologies used by Conservation Biologists to assess biodiversity over multiple spatial and temporal scales, and 3) current social attitudes and governmental policies concerning the loss of biodiversity in the US and abroad. The laboratory portion of the course will incorporate case studies, current methodologies used in the field and laboratory (including GIS and GPS), and the design of an adaptive management plan for the Abernathy Field Station.

Course Objectives

- 1) You will be able to define 'biodiversity' and list current threats to biodiversity that may occur over multiple spatial and temporal scales.
- 2) You will learn the history behind the development of Conservation Biology and be able to explain why it is often referred to as a 'crisis discipline'.
- 3) You will be able to explain the importance of population ecology, population genetics, and spatial/landscape ecology in evaluating the risk of extinction for animal and plant populations/species.
- 4) You will be able to discuss and give specific examples of the effects of human culture and populations on biodiversity and extinction rates (at local, regional, and global scales) including the importance of recognizing the links between social and ecological systems.
- 5) You will be able to use a Global Positioning System (GPS) to collect position data in the field and relate that data to the geographical distribution of individuals/populations of animals and plants (e.g., positions of individuals, home ranges, dispersal, locations of populations, etc).
- 6) You will be able to use a Geographical Information System (GIS) to identify and evaluate potential habitat for plants and animals, layer positional data for individuals/populations over remotely sensed data (e.g., aerial photos, satellite imagery), and to help assess the potential effects of human activities on habitat and plant/animal populations.
- 7) You will read and learn to critically assess primary literature in Conservation Biology and related disciplines.
- 8) As part of a class project you will design an adaptive management plan for the Abernathy Field Station using current theory and methodologies in Conservation Biology. The management plan will incorporate research projects that are part of the HHMI funded Long-term Ecological Monitoring Project.

Student Responsibilities

1) **Attendance:** As per W&J policy, it is expected that you will attend all lectures/laboratories.

Lecture However, in this course you are allowed 3 excused lecture absences with no questions asked. After the 3rd absence, each subsequent absence will result in a 2% reduction in your overall grade for the course and it doesn't matter what the reason for the absence might be (e.g., varsity sports, illness, etc.). It is best to save your 3 excused absences and use them for 'important reasons' (e.g., varsity sports, illness, etc.). Because you are only allowed 3 absences without penalty I would recommend that you not squander them on sleeping in, recovering from 'hangovers', studying for other exams, etc. How you use the absences is up to you; just be aware that I will be very strict about this policy—there will be no discussion concerning penalties for more than 3 absences for any reason.

Laboratory/workshop Since lab participation is an important component of the course, absences from scheduled labs are **NOT ALLOWED** except in cases of incapacitating illness (hospitalization or physician-ordered 'bed rest') or death in the immediate family. Both sets of circumstances will require my notification by the Office of Student Life. Notes from W&J Health Services will not be accepted since they only attest to your visiting Health Services. Notification

of the Office of Student Life is your responsibility and you are responsible for all course material covered during your absence. Be aware that laboratory exercises may be scheduled over multiple lab periods—an unexcused absence from one lab period may result in a reduction of the total possible points for that lab exercise.

Severe emergencies e.g., hospitalization (including quarantine for the flu) or death in the immediate family will be dealt with on a case by case basis. Again, I must receive confirmation from the Office of Student Life concerning these emergencies. Again, notification of the Office of Student Life is your responsibility.

Very Important: In the event of any absence (excused or unexcused), there will be no 'make-up' laboratory exercises or exams/quizzes/assignments scheduled for any absence. Excused absences will be dealt with on an individual basis.

My attendance policy will be strictly enforced and there will be no debate concerning consequences and what constitutes an excused absence. If you believe the policy is too strict or unfair, then I would suggest dropping the course now and saving yourself a lot of stress.

2) Preparation: You must be prepared for 'class.' All assignments and readings assigned for a particular lecture/lab should be completed prior to the lecture/lab unless instructed otherwise.

3) Plagiarism and academic honesty: You are expected to follow W & J's policies/guidelines concerning 'plagiarism and academic honesty. You are responsible for reading and understanding the information and policies posted at http://www.washjeff.edu/content.aspx?section=2640&menu_id=608&crumb=343&id=3176 and <http://wiki.washjeff.edu/pages/viewpage.action?pageId=24642558>). Please see me if you have any questions or concerns.

Cases of 'plagiarism' are often the result of not knowing how to correctly cite, paraphrase, or describe someone else's work. If you are unsure how to correctly reference the work of others, don't hesitate to ask me! I will provide examples of how to cite and reference the intellectual property of others throughout the course. Whether intentional or unintentional, plagiarism and other acts of academic dishonesty will result in a failing grade for the assignment, project, quiz, exam or a failing grade for the course. You will be asked to read and sign an "Academic Honesty Agreement" for this course.

4) Official Method of Contact

Email sent to your "washjeff.edu" email account is the official method of communication for all courses and administrative purposes at W&J. All important communications related to this course will be sent via email to that email address. It is your responsibility to check your W&J email account on a regular basis for important announcements and other communications. Failure to regularly check your W&J account is not an excuse for failing to follow up on important communications or directives.

5) Electronic devices: All cell phones and PDA's must be turned off during both lecture and laboratory. Ringing cell phones will result in a warning and then a 2% reduction in your course grade for each subsequent occurrence during the semester. Answering a call during lecture/lab will result in your being asked to leave and you will receive a '0' for any work missed during your absence. Exceptions will be made for use of cell phones in the field—for emergency-related calls only.

Grading

Exam I	10%
Exam II	10%
Final Exam (comprehensive)	15%
Project—Management plan	30%
Laboratory exercises and case studies	25%
Quizzes and assignments (scheduled & unannounced)	<u>10%</u>
Total	100%

Final grades are based on the percentage of total points earned: A, 93-100%; A-, 90-92%; B+, 87-89%; B, 83-86%; B-, 80-82%; C+, 77-79%; C, 73-76%; C-, 70-72%; D+, 67-69%; D, 63-66%; D-, 60-62%; F, <60%. Your grade in the course is based on individual performance and not on the class 'average', i.e., **NO CURVE**.

<Schedules subject to change—announcements of any schedule (or other) changes will be made during lecture/lab and/or posted on the course Sakai site>

Lecture Schedule

M W F 11:45 – 12:50 (305 D-P unless noted)

<u>Date</u>	<u>Topic</u>	<u>Chapter in Text</u>	<u>Additional readings for discussion</u>
February			
W 03	Course orientation and introduction: What is Conservation Biology?	1	Deer readings for first case study—Latham et al. 2005
F 05	Global Positioning Systems		
M 08	Introduction to ArcGIS and GPS—meet in TEK 103A		
W 10	ArcGIS instruction and assignment—meet in TEK 103A		
F 12	ArcGIS instruction and assignment—meet in TEK 103A		
M 15	What is biodiversity?—meet in TEK 103A	2	
W 17	Biodiversity hotspots—meet in TEK 103A	3	TBA
F 19	The value of biodiversity—meet in TEK 103A	4, 5	
M 22	The value of biodiversity (cont)	4, 5	Costanza et al. 1997
W 24	The ethics of conservation	6	
F 26	The ethics of conservation (cont)	6	TBA ¹
March			
M 01	Exam I		
W 03	Applied Population Biology	12	
F 05	What is extinction?	7, 8, 12	
M 08	What is extinction? (cont)	7, 8, 12	TBA
W 10	Estimating extinction rates	7, 8, 12	TBA
F 12	Habitat destruction and fragmentation	9	
M 15	Habitat destruction and fragmentation (cont)	9	TBA
W 17	Landscape ecology		TBA
F 19	Overexploitation and disease	10	
M 22	Spring Break – no class		
W 24	Spring Break – no class		
F 26	Spring Break – no class		
M 29	Invasive species	10	
W 31	Invasive species (cont)	10	TBA
April			
F 02	Conservation threats and small populations	11	
M 05	Conservation threats and small populations (cont)	11	TBA
W 07	Exam II		
F 09	How can we protect biodiversity?		TBA
M 12	What are protected areas?	15	

W 14	Using Landscape Ecology to design protected areas	16	
F 16	Using Landscape Ecology to design protected areas (cont)	16	TBA
M 19	Managing protected areas—what do you need to know?	17	
W 21	Adaptive management	17	TBA
F 23	Restoration Ecology—what is worth restoring?	19	
M 26	Restoration Ecology—Is it possible to restore ecosystems?	19	
W 28	Resilience		TBA
F 30	Are humans a part of the natural world and what are our responsibilities towards natural systems?		TBA
May			
M 03	Sustainability and conservation--development	20, 21	
W 05	Sustainability and conservation—development (cont)	20, 21	
F 07	Sustainability and resilience		TBA
M 10	What have we learned?		

¹**To be announced**

Comprehensive Final Exam; Friday, 14 May, 14:00 – 17:00. The exam will cover new and old material

Laboratory/workshop Schedule Lab assignments are due at the *beginning of the next laboratory session*.

T 14:30 – 17:30 (305 D-P unless noted); **Schedule is subject to change.**

Date	Topic	Note
09 Feb	Case study 1—White-tailed deer and forest regeneration	Latham et al. 2005
16 Feb	Case study 1 (cont)—What should be done to reduce the problem? Implications for AFS? Discussion	
23 Feb	Discussion of AFS Management Project; Case study 2—SLOSS	
02 Mar	Visit to Abernathy Field Station—explanation of Long-term Ecological Modeling (LEM) project	Read LEM proposal prior to lab
09 Mar	Population Viability Analysis simulation	Location TBD
16 Mar	Landscape ecology, Case study 3—Edge effects	
23 Mar	<i>Spring Break – no lab</i>	
30 Mar	Assessing invasive species	At AFS
06 Apr	Work on AFS management plan	Group work at AFS if needed
13 Apr	Work on AFS management plan	Group work at AFS if needed
20 Apr	Work on AFS management plan	Group work at AFS if needed
27 Apr	Work on AFS management plan	Group work at AFS if needed
04 May	Work on AFS management plan	Group work at AFS if needed