

**EnSt 370 ~ Biological Conservation**  
**McDonnell 412**  
**M, W, F 2:00 – 3:00**

<b>Instructors:</b>	<b>E-mail</b>	<b>Phone</b>	<b>Office</b>	<b>Office hrs</b>
Dr. Jean Burns	<a href="mailto:burns@biology2.wustl.edu">burns@biology2.wustl.edu</a>	935-9445	McDonnell 433	M 12-2, or by appointment
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<b>TA</b>				
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**Course Description**

Conservation biology is a science born of the current extinction crisis. In this course, we will first examine the history of conservation biology and discuss the concept of biodiversity. Then we will discuss approaches to conservation biology from a hierarchical perspective, focusing first on genetics, then population level and species level approaches to conservation, followed by community and ecosystem approaches. Finally, we will discuss specific threats to biodiversity and ways to address those threats, including policy and sustainable practices. Specific topics will include the history of conservation biology and conservation philosophy, conservation genetics, habitat loss, endangered species management, reserve design, and treatments of specific threats to biological diversity.

**Goals of this course:**

1. Gain an understanding of the field of conservation biology by:
  - a. Acquiring an understanding of the biological theory behind conservation biology
  - b. Learning many of the tools and skills that are used by conservation biologists
  - c. Gaining additional experience with the primary literature, especially by critically evaluating, summarizing and presenting information from research articles
2. Understand the status of the planet's biological diversity and the human activities that threaten this diversity
3. Learn to apply biological principles in order to address these threats to biodiversity and mitigate their effects

**Course material:** This syllabus and additional resources (e.g., assigned papers) can be found at:

<http://www.nslc.wustl.edu/courses/enst370/enst370.html>

**Text:** *Principles of Conservation Biology* (2006) by Groom, Meffe, Carroll, and contributors (**required**)

Additional readings from the primary literature will be posted on the course webpage.

### Grading Breakdown

Grades are assigned on an A-F scale. Scale: 90-100% = A, 80-89% = B, etc.

We reserve the right to adjust grading scales upward, if appropriate.

In-class Discussions and Paper Summaries Discussion Participation: 60% Summary Papers: 40%	<b>25%</b>
Exam 1	<b>15%</b>
Exam 2	<b>15%</b>
Final Essay In-class presentation: 25% Written paper: 75%	<b>25%</b>
Final Exam	<b>20%</b>
<b>Total</b>	<b>100%</b>

### Course Syllabus

\*\*\*Subject to Alteration\*\*\*

Week	Date	Topic	Reading
1			
	Jan 17	Introduction—What is Conservation Biology?	
	Jan 19	Conservation Biology: History, background, biodiversity	Groom, Ch. 1 & 4
2	Jan 22	Biodiversity, continued	Groom, Ch. 2
	Jan 24	The Biodiversity Crisis	Groom pg. 63-89 (Ch. 3)
	Jan 26	Conservation Genetics I	Groom, Ch. 11
3	Jan 29	Conservation Genetics II	Groom, Ch. 11
	Jan 31	Effective Population Size <b>DISCUSSION</b>	Assigned paper
	Feb 2	Guest Lecture: Inbreeding (Nick Griffin, PhD Candidate)	Groom, Ch. 11
4	Feb 5	Conservation Genetics III	Groom, Ch. 11
	Feb 7	Guest Lecture: Hybridization in Red Wolves (Todd Steury)	Groom, Ch. 11
	Feb 9	Approaches to Conservation: Populations, species, ecosystems	Skim Groom Ch. 12 & 13
5	Feb 12	Approaches to Conservation <b>DISCUSSION</b>	Assigned paper
	Feb 14	Population Viability Analysis (PVA)	Groom, pg. 432 (PVA section), pg. 433-435 (Essay 12.2)
	Feb 16	Guest Lecture: PVA (Dr. Tiffany Knight)	
6	Feb 19		<b>EXAM #1</b>

	Feb 21	Community & Ecosystem Ecology	Groom, pg.435-438 (Essay 12.3), pg. 305-306 (Box 9.1)
	Feb 23	Community & Ecosystem II	Groom, Ch. 13
7	Feb 26	Community& Ecosystem Management	Groom, Ch. 13
	Feb 28	Restoration	Groom, Ch. 15
	Mar 2	Community & Ecosystem <b>DISCUSSION</b>	Assigned paper
8	Mar 5	Landscape I	Groom, Ch. 12
	Mar 7	Landscape II	
	Mar 9	Reserves <b>Final essay/presentation topics due</b>	Groom, pg. 509-531
9	Mar 12	<b>Spring Break</b>	
	Mar 14	<b>Spring Break</b>	
	Mar 16	<b>Spring Break</b>	
10	Mar 19	Reserves— <b>DISCUSSION</b>	Assigned paper
	Mar 21	Adaptive Management	Groom, pg. 481-484 (re-read)
	Mar 23	<b>EXAM #2</b>	
11	Mar 26	Threats: Habitat loss & modification	Groom, Ch. 6 & 7
	Mar 28	Threats: Habitat continued	
	Mar 30	Threats: Invasive Species	Groom, Ch. 9
12	Apr 2	Threats: Invasive species continued	
	Apr 4	Threats: <b>PAPER SUMMARIES</b>	Chosen papers
	Apr 6	Threats: Climate change	Groom, Ch. 10
13	Apr 9	Guest Lecture: Climate Change (Niki Miller, PhD Candidate)	
	Apr 11	Threats: Exploitation	Groom, Ch. 8
	Apr 13	Threats: Disease	Assigned paper
14	Apr 16	Conservation Policy	Groom, Ch. 17
	Apr 18	Sustainable Development & The Future	Groom, Ch. 16
	Apr 20	Work on papers/meet with instructors	
15	Apr 23	Presentations	
	Apr 25	Presentations	
	Apr 27	Presentations	
16	Apr 30	Review— <b>Final essays due</b>	
	<b>May 7</b>	<b>FINAL EXAM 6:00-8:00PM McD 412</b>	

Syllabus adjustments may occur throughout the semester as needed. We will let you know if the lecture schedule changes.

### **Discussion and Summary Papers**

For each class meeting noted with “**DISCUSSION**” in the syllabus you will be responsible for reading an assigned paper from the primary literature (i.e., a journal article) prior to the class meeting. On these days class will consist of discussion of the assigned paper, focusing on how the paper pertains to the relevant course topics and to conservation biology in general. Each student’s participation in the discussion will be noted by the instructors and will contribute to a portion of the final grade, as detailed above.

Prior to discussion classes each student will also be responsible for writing a short (1-2 page) summary of the paper and writing two discussion-oriented questions relating to topics addressed in the paper. At the end of the discussion session the summaries will be collected and graded by the instructors.

Additionally, on April 4 each student will be asked to use library resources to find and read a paper from the primary literature that addresses one of the “Threats to Biological Diversity” that is listed in the syllabus (March 26 – April 13). During the class meeting each student will be asked to provide a *short* (< 5 minute) oral summary of the paper and its relevance to course topics. Each student will also turn in a short summary paper for grading. These summary papers should also list the full citation information for the chosen paper.

### **In-class Presentations and Final Essay**

Beginning on April 23, each student will give one 10 minute presentation on a topic of their choice related to conservation biology. Examples of potential topics are included below and are provided to give you an idea of the kind of topics that are appropriate and the depth of investigation that we are looking for. By March 9 students must e-mail the instructor with their tentative presentation topics. No two individuals will be permitted to give presentations on the same topic. In the event that multiple individuals choose an identical topic the first group to e-mail their information will be given priority. The instructors will provide feedback on the chosen topic as to its suitability. At any time you can request to meet with either of the instructors to discuss potential topics or the topic you have chosen.

Student presentations must be done using PowerPoint and be e-mailed to the instructors by noon of the day prior to presenting. All presentations must contain a minimum of five references from the primary literature. Grades will be assigned based on evaluations made by the instructors, the TA, and your peers (i.e., other students in the class). Additional details on guidelines for presentations and peer evaluations will be provided in the future.

A 5 page essay on the same topic will be due the last day of class, April 30. Essays should be double-spaced, 12 point, Times New Roman Font, at least 5 pages, not including references or figures and tables (if figures or tables are included). Students must cite at least 5 primary literature articles (describing original research—NOT review articles or books). The reference section should be annotated with a 1-paragraph summary of each article.

### **Example Presentation Topics**

Some students tend to choose topics that are too broad for such a short essay. Please see your instructors for help choosing a topic. Below we give a few examples of suitable topics; however, you should choose your own topic.

1. "Predicted effects of climate change on the global distribution of malaria."
2. "History of Atlantic Cod harvest and strategies for sustainable harvest."
3. "Causes and consequences of inbreeding depression in the endangered Florida panther."
4. "Biological control agent selection for invasive knapweeds (*Centaurea* sp.)."

### **Tests**

There will be three tests (exam 1, exam 2, and the final). Test 1 will cover the first 5 weeks of material. Test 2 will focus on weeks 6-10 but may require some retention of information from the first exam. The final exam will be comprehensive, but will emphasize the material covered in weeks 11-15. Test questions will primarily be short answer and short essay. Some mathematical problems will be given (e.g. conservation genetics); however, the emphasis will be on set-up and interpretation, not intensive computation. Tests will include materials from the guest lectures and discussion papers.

### **Field Trips:**

Two optional Saturday field trips will be offered during the semester. Each field trip can substitute for a single 1-2-page discussion paper assignment. Attendance and participation in the discussion is still required.

Zoo: A field trip to the St. Louis Zoo will be offered. Details TBA.

Garden: A field trip to the Missouri Botanical Garden will be offered. Details TBA.

### **Course Policies**

#### *Attendance*

Attendance will not be taken on a regular basis, but lack of attendance and participation will almost certainly adversely affect your grade. Missed discussion classes will result in a grade of zero for the discussion and summary paper (see grading details). We expect students to regularly attend and participate in class and we anticipate that students who do not regularly attend class will not perform well on their exams and assignments.

#### *Contact and Office Hours*

Our office hours (above) are reserved for you to come speak with us about course content or related issues. Additionally, we're happy to meet with students outside of class and office hours, although preferably by appointment. We can be contacted by office phone or e-mail, but cannot guarantee a response time. Assume that it may take us 24 hours to respond to an e-mail during the week. Please do not hesitate to contact us with questions or problems, but please do not expect immediate responses.

### *In-class Electronics*

Please remember to turn off or silence your cell phones and please conduct your text messaging and web surfing outside of class time. All non-written forms of reproduction of the class (e.g., audio, video, or photographic recordings of lectures) are prohibited without explicit permission from the instructors.

### *Late Assignments and Missed Exams*

Discussion paper summaries will not be accepted if they are late. If you anticipate the need to miss an exam for a valid reason, please let us know no less than one week in advance of the exam date. If handed in late, your grade on the final paper will be reduced by 5% for each day of lateness.

*Academic Honor Code:* Students are expected to uphold the Academic Integrity Policy published in The Washington University in St. Louis online handbook. The first paragraph says: "In all academic work, it is important that the ideas and contributions of others be appropriately acknowledged, and that work that is presented as original is in fact original." <http://www.wustl.edu/policies/undergraduate-academic-integrity.html>

You are expected to be familiar with and adhere to these policies. Putting something in your own words, but not citing the originator of the ideas, is still plagiarism. If you have any questions about what constitutes plagiarism, please see one of your instructors.

*Students with disabilities:* Students with disabilities needing academic accommodations should: (1) Register with and provide documentation to Disability Resources (DR) (314) 935-4062. (2) Bring us a letter from the DR indicating you need academic accommodations. This should be done within the first week of classes. For more information on this see the DR web site (<http://cornerstone2.wustl.edu/disabilityResources/>)