

Conservation Biology
BIOL 443

Instructor

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Welcome to Conservation Biology and to Wallops Island Virginia! Class will run from July 1st through 19th. Class will start at 8:30 am every morning with lectures and exercises until noon (15 minute break at 10 am if needed). The afternoon field and/or lab session will begin at 1 pm (15 minute break at 2:30 pm if needed) and will end at 5 pm. We will be going through class material quickly so stay focused on class tasks and use your personal time wisely. Avoid becoming a beach bum.

Credit: 3 hours

Prerequisites: C- or higher in a Biology or Ecology Course

Class requirements

- 1) Problem-Solving in Conservation Biology and Wildlife Management 2nd Edition by Gibbs et al. 2008.
- 2) Minimum 1 GB USB Flashdrive
- 3) Personal Laptop & Ethernet cable
- 4) Snorkeling mask

Optional resources

- 1) Essentials of Conservation Biology 5th Edition by Primack 2010.
- 2) Conservation Biology For All. Sodhi & Ehrlich 2011. This is a free online conservation biology textbook. http://s3.amazonaws.com/mongabay/conservation-biology-for-all/Conservation_Biology_for_All.pdf or http://news.mongabay.com/2011/0120-free_conservation_book.html

Class website on D2L

Refer to this website for class materials and for updates to your class grade.

Course Objectives

- 1) Students will understand the importance of biological diversity.
- 2) Students will understand the threats to biological diversity.
- 3) Students will identify and discuss ways to mitigate threats to biological diversity.
- 4) Students will understand issues in regards to conservation planning and management.

Course Description

Population ecology and genetics applied to the conservation of rare, threatened and endangered species. Emphasis on the regulation of abundance, theoretical models of population dynamics, experimental design, sampling approaches and case studies.

Educational Outcomes

At the end of this course, it is expected that you 1) understand what is biological diversity and why it is important, 2) understand the threats to biological diversity, 3) understand conservation ethics, 4) conservation policy issues, 5) understand landscape dynamics in conservation management, 6) understand the issues with conservation genetics and 7) have fun learning. *Finally, it is expected that you will be able to apply your knowledge of conservation biology towards a service learning project that will help a local conservation management entity (e.g., United States Fish & Wildlife Service, Virginia Department of Game and Inland Fisheries, National Park Service) develop solutions to address conservation management issues.*

Student Assessment

Your knowledge of conservation biology will be evaluated by your performance in this course. Attendance is required and you are responsible for all material covered in lecture and lab, whether or not you attend. Obviously, there will be no opportunities to make up work.

Grading: Final grades will be assigned based on points accumulated. These points will come from the following:

2 Exams 35%
Conservation Management Project Paper 20%
Conservation Management Project Presentation 20%
Class Exercises 25%

These assignment weights are tentative and can change at the discretion of the professor.

Grades will be assigned as follows:

>93%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
63-66%	D
60-62%	D-
<60%	F

Course Practices and Academic Integrity

You are expected to attend class and to actively participate in class discussions and presentations. I will do my best to foster an environment in which you will feel comfortable contributing to discussions; however, the ultimate responsibility to participate in class falls on your shoulders. Please let me know if you have any disabilities or special needs that might affect your performance in this course. I will do my best to accommodate you.

The *Qwizdom* remote clicker system will be used in the class to help facilitate active learning, class discussion, peer learning, group work, recording of attendance and recording of quiz scores. All information from class discussions, lectures, and readings are fair game for exams. As with any activity you pursue, it is expected that you do your best and that you are honest about your efforts.

The term “cheating” means the use of unauthorized books, notes or other sources in the giving or securing of help in an examination or other course assignments. “Plagiarism” means the presentation of another’s published or unpublished work as one’s own. Because cheating and plagiarism are an affront to the University community as a whole and a denial of the offender’s own integrity, they will not be tolerated. Anyone caught cheating or plagiarizing will receive a minimum of a zero on the assignment. Thus, make life easy for everyone and don’t do it. Or this ☺ turns into this ☹, and an ‘F’.

Academic integrity is one of the basic principles of a university community. I encourage and expect the highest standards of academic honesty from all students. Each student is expected to adhere to the Academic Honesty Standards of the PA State System of Higher Education. As an example, below are links to Millersville University’s academic integrity policies:

- 1) <http://www.millersville.edu/about/administration/policies/pdf/academics/Academic%20Policy%20-%20Academic%20Honesty%20and%20Dishonesty.pdf>
- 2) http://www.millersville.edu/provost/files/academic_honesty_violation_form.pdf

Cell phones are not allowed during lecture, quizzes or test taking. If caught using a cell phone during these times this will lead to 10 points off any mid-term or final exam. However, you can use certain cell phone apps for certain labs when I give the word.

Course Outline (Dates Below are Tentative)

Topics	Date
Check into the Marine Science Consortium	6/30
What is Conservation Biology & Biodiversity? <i>Exercise #1 & #2</i> . Go over Service Learning Project Topics and Expectations. Set out artificial nests (<i>Exercise #18</i>)	7/1
Surveying for aquatic biodiversity. <i>Exercise #15</i> . Seining, frog/toad call surveys (spotlighting) and snorkeling.	7/2
Surveying for terrestrial biodiversity. <i>Exercise #12</i> . Plant transects, remote camera trapping and scent stations.	7/3
Why is Biodiversity Important? & Genetic Diversity. <i>Exercise #3 & #4</i> . Class debate <i>Exercise #31</i> .	7/4
Exam 1. Visits to Wildlife Refuge, National Park and Nature Preserve. Check artificial nests and record results (<i>Exercise #18</i>).	7/5
Threats to Biodiversity. <i>Exercise #11 & Exercise #26</i> . Identify threats on biodiversity for students to present.	7/8
Student presentations on threats to biodiversity. <i>Exercise #10</i> . Check artificial nests and complete <i>Exercise #18</i> .	7/9
Protected Areas for Biodiversity & Designing Protected Areas. <i>Exercise #23 & #22</i> . Give out journal articles for students to review and discuss.	7/10
Class discussions on the effectiveness of protected areas. Journal articles and class debates. Guest speaker on managing natural resources on protected lands.	7/11
Exam 2. Design a Protected Area and Present it to the class. <i>Exercise #20</i> . <u>Work on Service Learning Project</u>	7/12
Management of Protected Areas. <i>Exercise #7 & #17</i> . <u>Work on Service Learning Project</u>	7/15
Population Viability Analysis. <i>Exercise 8</i> . Endangered Species Population and Habitat Viability Analysis. <u>Work on Service Learning Project</u>	7/16
The Endangered Species Act & Conservation Reliant Species. <u>Work on Service Learning Project.</u>	7/17
The Future of Conservation. <i>Exercise #29</i> . <u>Work on Service Learning Project.</u>	7/18
Report and Class Presentations Due. <i>Exercise #30 & Mock Public Policy Presentation.</i>	7/19

ALL EXERCISES ARE FROM THE TEXT GIBBS ET AL. 2008.

FOR EACH EXERCISE BRING REQUIRED SOFT DOCUMENTS TO CLASS USING YOUR THUMB DRIVE

ALL LECTURE OUTLINES & ACTIVITIES ARE TENTATIVE. ALL CHANGES WILL BE ANNOUNCED IN CLASS.

Service Learning Conservation Management Project: Term Paper & Class Presentation

A course paper and presentation in this class should outline your participation on a service learning project with a local conservation management entity (e.g., United States Fish & Wildlife Service, Virginia Department of Game and Inland Fisheries, National Park Service) that helps develop solutions to address conservation management issues. During the first day of class I will give an outline of specific projects that conservation management entities need help with.

The requirements for these assignments are as follows:

- 1) Final copies of your paper and your presentation will be due at the beginning of the last day of class.
- 2) The paper should be > 6 pages of text (double-spaced) with 1" margins and 12 point Times New Roman font. You may have additional pages of figures, tables etc. (this is recommended), but these do not count towards the final page count. The paper should include page numbers.
- 3) The paper should include a minimum of 3 relevant peer-referred journal articles or government reports approved by me.
- 4) Class presentations can be done using PowerPoint, a webpage, a video, globster, Prezzi or another media outlet. Please discuss with me your media outlet option for approval.
- 5) Presentations will be 10-15 minutes long (including questions) and will cover the material detailed in your term paper. This material should include background information, your objectives, your project details, what you did to help a conservation management entity and how your project will help our natural resources. ***The key to doing well on these assignments is to incorporate Conservation Biology principles we discussed in class into your service learning project.***
- 6) Rubrics as to how your paper and presentation will be provided in class.

Field Preparation

It is always best that you come to Wallops Island as prepared for anything as possible. You will find that a week of non-stop lectures and labs, particularly with fieldwork in the hot sun can be exhausting. Pace yourself and remember that each day of this course is equivalent to one week of a regular semester. Finally, bear in mind that our schedule is subject to numerous variables and can change at any time. Weather, van availability, or other unpredictable events may result in shuffling our schedule. Therefore, we will all have to be flexible.

1. Bugs. It is great to give back to the environment. However, doing this in the way of giving blood or being a carrier of a virus, bacteria or protist is probably not the best. You will get bit by mosquitos and flies. As you know, mosquitos are not only annoying, their bites can be painful to some, and they carry diseases such as West Nile Virus. Protect yourself. Use bug spray or other protection such as long sleeve shirts and pants. Ticks are prevalent in wooded areas. Chiggers can be found in areas of long grass. Protect yourself when walking in wooded or grassy areas by wearing long sleeved shirts and pants. It also helps to tuck pant legs into your socks if you plan to walk for long periods of time in areas where these hungry arthropods are known to be abundant. Examine yourself carefully and have a friend check your back for ticks. Spray your long clothing with a DEET concentration of 15% or greater.
2. Sun. Summer weather is great, but the heat can be intense. Many of you will be outside quite a bit, often for considerable amounts of time. Use sunscreen (SPF 30 or better) and wear a hat. If you are especially sensitive to the sun you may also need to wear protective clothing. Even on cloudy or cool days you can get sunburned. Also remember if you are working on or near the water that water is highly reflective and intensifies the sun's rays. Be aware that the 'spray mist' bug repellent/sunscreens actually leave a shiny film on your skin that can enhance sunburn. You will be sweating, so always have water with you. Sometimes having small Gatorade packets to mix in your water can replenish lost. Water and Gatorade can help reduce things we like to avoid such as dizzy spells, headaches and death through dehydration *.(
3. Personal Safety. When working in the field be aware of your surroundings and try to have a buddy system in place. Make smart decisions that increase your success in the course and your conservation management project.