

**BIO 312 Conservation Biology**

Time: Mondays Wednesdays, Fridays, 1:00-1:50

Location: CAS 123

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Office Hours: Mondays 10-11am, 2-3pm; Tuesdays 3:30-4pm; Fridays 10-11am; or by appt.

**Quotes that summarize Dr. Byrne's teaching and learning philosophy:***"The mind is not a vessel to be filled but a fire to be kindled."* ~ Plutarch*"Teachers open the door. You must enter by yourself."* ~ Chinese proverb*"(Intelligence) is 1% inspiration and 99% perspiration."* ~ Thomas Alva Edison*"Today a reader, tomorrow a leader."* ~ W. Fusselman*"When we try to pick out anything by itself, we find it is tied to everything else in the universe."* ~ John Muir*"High-quality learning is absolutely essential for high-quality living."* ~ L. Dee Fink**Course introduction:**

Humans are now recognized as a dominant ecological force on Earth. The field of conservation biology emerged in the 1980's in response to the growing recognition that humans have initiated the 6<sup>th</sup> mass extinction of life on Earth. At a fundamental level, conservation biology includes the study of the multivariate *causes* of declines in biodiversity (across all levels of biological organization), the *problems* of biodiversity loss, and the scientific and sociocultural *responses* needed to prevent species from going extinct and conserve their populations and habitats. These 3 issues give rise to "CPR", an acronym that gives conservation biology its "breath."

By necessity, conservation biology is an interdisciplinary field of study because understanding the complex relationships among humans, other species and the environment requires knowledge gained from—among other fields—ecology, genetics, political science, sociology, economics and philosophy. This course will provide a broad overview of contemporary conservation biology with emphasis on 1) applying ecological theories to the practice of protecting and restoring populations and ecosystems, 2) discussing the relevance of biodiversity conservation to the well-being of humanity and 3) examining the complex sociocultural dimensions and variables of working toward successful biodiversity conservation.

**Be forewarned:** this course is reading and discussion intensive! (This is a good thing for your education—see quotes 3 and 4 above.) Lectures will usually be a minor part of class time and will mostly be used to illustrate topics covered in the texts with case studies, diagrams, images, etc. Thus, you will maximize your learning during this course if you read assigned texts carefully and critically before class and then *engage with your classmates in civil discourse* about the material during class.

**General course objectives/outcomes:**

After this course, students should be able to:

- Use an interdisciplinary vocabulary and perspective to successfully describe and discuss key issues in conservation biology, especially causes and consequences of and responses to biodiversity loss;
- Apply ecological theories to real world conservation and environmental problems;
- Identify interactions among ecological and sociocultural variables in the context of conservation issues;
- Describe the importance of biodiversity and ecosystem services for sustaining human well-being;
- More successfully engage in critical scientific reading, writing and thinking;  
*and perhaps most importantly*
- Appreciate and enjoy the pursuit of interdisciplinary, scientific knowledge and understanding!

**Required texts**Primack, R. 2004. A Primer of Conservation Biology, 4<sup>th</sup> ed. Sinauer Associates.

Wilson, E.O. 2002. The Future of Life. Vintage Books.

Other readings to be provided digitally or as hard-copies

**Important dates****September 20** - Last day to drop course without receiving W grade**October 21** - Last day to drop course and receive W grade**Attendance policy:**

Because we form a learning *community* in this course, the presence and participation of each student in each class benefits us all. Thus, attendance is expected (*read: required*) for all class meetings. Excused absences will be granted only for legitimate reasons (severe illness or other extenuating circumstances such as family emergencies) and only when the student informs the professor (by email is OK) in advance of the expected absence (ASAP or at least 12 hours notice for emergencies or illness).

- If you will miss class for legitimate religious observances, you must inform the professor ASAP.
- You will not receive credit for missed in-class work or exams due to unexcused absences.

- NO MAKE-UP or extra credit opportunities will be given in place of missed in-class work (including exams).
- Students are responsible for turning assignments in on time even if they miss the class period when the assignment is due. Points will be deducted from all assignments turned in late and dates will be established after which assignments will not be accepted and a score of zero will be assigned.

### Academic integrity and classroom civility (including cell phone policy)

By becoming an RWU student, you have agreed to abide by the Academic Integrity pledge (“...to pursue the highest ideals of academic life... to be honest...”) which means that you will not cheat, fabricate information, plagiarize, be fraudulent or interfere with others’ work. The University Statement on Plagiarism in the Undergraduate Catalog reads: “A first offense may result in failure of the course involved, plus an entry on the student’s permanent record. A second offense is punishable by expulsion from the University.” **So don’t plagiarize!** The professor of this course is skilled in identifying plagiarism and will document this or any other instances of academic dishonesty in any student’s permanent file and/or will allow a student to fail the course.

In addition, maintaining academic integrity (e.g., civility) includes respecting others and learning how to disagree with ideas while not being disagreeable. All students should respect their classmates and the learning environment of a classroom; this includes not being disruptive by talking out of turn, texting on mobile devices or using computers for non-class purposes! **Such disruptions are distracting and disrespectful to the professor and other students and will not be tolerated.** Any student who violates these classroom policies will bear the consequences following the definitions, policies and procedures described in the University Catalog. In addition students engaging in such behaviors may be identified by name to the class, or be asked to leave the classroom if they do not conduct themselves civilly or cannot refrain from texting in class. In such instances, the student will receive an unexcused absence with loss of credit for in-class activities.

### Academic support services

If you are a student with a disability and you wish to receive academic accommodations for any aspect of this course, you must first register with Student Accessibility Services on the second floor of the University Library in the Center for Academic Development. All students wishing to receive accommodations must inform the professor and submit required forms **7 days** ( $\pm$  1 day) in advance of every date for which an accommodation is sought.

### Assignment submission & communications:

The course website Bridges will be used for submission of assignments and to provide course materials. Email (.rwu accounts only) will also be used often to provide course information and communicate important reminders. Students are responsible for using these resources and should communicate any concerns to the professor ASAP.

### Required assignments & grading:

Students’ grades will be based on the following:	% Value of final grade
➤ Home and in-class work (including half-sheets, quizzes, group work)	30
➤ Learning journal or blog entries (based on readings and prompts)	25
➤ Semester-long paper or project (with proposal and draft)	25
➤ Final synthesis essay	15
➤ Final discussion (during final exam period based on synthesis essays)	5

### Grading scale and the meaning of grades:

A= $\geq$ 93% Excellent	A- = 90-92.9% Great	B+ = 87-89.9% Very Good	B= 83-86.9% Good	B- = 80-82.9% Good
C+= 77-79.9% Average	C= 73-76.9% Average	C- = 70-72.9% Average	D= 60-69.9% Poor	F= $\leq$ 59.9% Failure

### Suggestions for improving your success in this (and all) classes:

- Actually do the readings! This will help increase your success as a student, citizen and biologist.
- Spend  $\geq$ 2 hours per class period outside of class ( $\geq$ 6 hours per week) reading, studying and working on projects.
- Maintain a list of vocabulary words and their definitions; learning words and how to use them correctly is essential to becoming a successful and respected person/scientist/student!
- Write down questions and muddy-points in your notes and ASK about them discuss in class.
- After each class, write down several questions from the reading and info covered in class that you think would make good exam questions. (These could be given to Dr. Byrne to actually use!)
- Work with classmates to improve your learning! Study together, edit each others’ papers, etc. (But make sure you DO YOUR OWN WORK!)
- **Remember: Ultimately you are responsible for your own learning! No one else but you can rewire the neurons in your brain to generate personal understanding and knowledge.**

**BIOL 312 Conservation Biology: Semester outline**

Week	Topic	Readings (to be completed before that day's class)
1	8/31: No class – <i>Darn you, Irene!</i> 9/2: Introductions and expectations	
2	9/5: <i>No class- Labor Day</i> <b>Part I: Biodiversity(BD) science; Causes of BD loss</b> 9/7: What is conservation biology? 9/9: What are ecology & biodiversity?	9/7: Primack pp 1-15; Wilson prologue 9/9: Primack pp 19-40
3	9/12: What affects global biodiversity patterns? 9/14: Ecology of the global human population 9/16: Earth in the Anthropocene	9/12: Wilson ch. 1; Gaston 2000 9/14: Wilson ch. 2; Cohen 2005 9/16: Crutzen '02, Vitousek et al. '97, Sanderson et al. '00
4	9/19: Is life undergoing a 6 <sup>th</sup> mass extinction? 9/21: HIPPO & habitat loss 9/23: Habitat fragmentation & degradation	9/19: Primack pp. 125-132; Others TBD 9/21: Wilson pp. 42-57; Primack pp. 73-86 9/23: Primack pp. 86-98; Wilson pp. 58-66
5	9/26: Global climate change 9/28: Overexploitation, invasions, diseases 9/30: Extinction vulnerability & status	9/26: Primack pp. 98-103; Wilson pp. 67-78 9/28: Primack pp. 104-119; Others TBA 9/30: Handout Ch. 8; Wilson ch. 4
6	<b>Part II: BD importance; Problems with its decline</b> 10/3: What are ecosystem services? 10/5: The ecology of ecosystem services 10/7: The (techno-)arrogance of humanity?	10/3: Primack pp. 43-63 10/5: Wilson ch. 5, Kremen and Ostfeld 2005 10/7: Wilson ch. 6
7	10/10: No class – Columbus Day 10/11: Tuesday: TBD 10/12: TBD <b>Part III: Responses needed: science &amp; practice</b> 10/14: Synthesis: ecosystems & human well-being	10/14: MEA Synthesis Report or trade-offs art.
8	10/17: Conserving populations 10/19: What's wrong with small populations? 10/21: Metapopulations & landscapes	10/17: Hughes et al. '97, Balmford et al. '03, Luck et al. '03 10/19: Primack pp. 140-154 10/21: Primack pp. 165-168, Wiens 2009, Karieva 1987
9	10/24: Pops & Island Biogeography Theory 10/26: Captive breeding & reintroductions 10/28: Conserving communities & ecosystems	10/24: Primack pp. 133-135 10/26: Primack pp. 172-191, Others TBA 10/28: Primack pp. 201-214
10	10/31: How should nature reserves be designed? 11/2: Challenges of ecosystem management 11/4: What role for restoration?	10/31: Primack pp. 214-226, Others TBA 11/2: Primack pp. 226-253 11/4: Primack pp. 253-264, Others TBA
11	<b>Part IV: Responses needed: The human element</b> 11/7: Ethics, attitudes & worldviews 11/9: Who cares about nature lately anyway? 11/11: Do organisms deserve legal standing?	11/7: Wilson pp. 149-164, Primack pp. 64-68 11/9: Miller 2005 11/11: Primack pp. 191-198, pp. 269-274
12	11/14: What role do politics & policies play? 11/16: What role do NGO's play? 11/18: International agreements and issues	11/14: Johns 2007, others TBA 11/16: Wilson pp 165-189 11/18: Primack pp. 275-287, Balmford et al. 2005
13	11/21: Community-based conservation 11/23 & 25: <i>No class- Thanksgiving break</i>	11/21: Primack pp. 241-251, Berkes '04, Chan et al. '07
14	11/28: What to let go? Anything? 11/30: Conservation success stories 12/2: Student-chosen topics	11/28: what to let go article 11/30: WWF website 11/2: Student-chosen papers
15	12/5: Student-chosen topics 12/7: Review: What do and don't we know? 12/9: Synthesis: Coupled socio-ecological systems	12/5: Student-chosen papers 12/7: Primack ( <i>from 3<sup>rd</sup> ed</i> ) pp. 265-273 12/9: Liu et al. 2003, others TBA
16	12/12: Epilogue: What does the future hold?	12/12: TBD (Sala et al. 2000?)

FINAL EXAM PERIOD: Fri. Dec 16, 4-6pm: Required discussion about synthesis essay topic

**\*\*The professor reserves the right to modify this schedule as needed during the semester\*\***

## Assignment details:

- In-class quizzes and reflection writings will assess students' recall and understanding of vocabulary and principles as well as develop higher-level critical thinking skills including application of concepts to problems and meta-cognition. Activities (e.g., in groups) will be used to improve communication skills and provide different methods of developing and assessing deeper understanding. Assessment and point values for individual assignments will vary; in general, points will be awarded for correct answers (quizzes, homework) and completeness (projects, reflections). No points will be given for assignments missed due to unexcused absences.
- Learning journal or blog: Students will be able to choose one of these methods for engaging with readings:
  - A. Journal construction and entries: If you would like to write by hand, more informally in a journal, you can make your own learning journal in which to take notes about and respond to readings. Journal construction will be assessed with a rubric based the following rules:
    - **Rules for journal construction** (*Discussion question: How are these rules related to the course content?*)
      1. **Use only non-virgin materials:** A non-virgin material is one that is not being used for the first time (i.e., it had a prior purpose). Examples of material that can be used are: cardboard from used boxes, string from existing packaging, sheets of paper printed on 1-side. *Your journal should have a cover that you create, not one bought from a store.*
      2. **Design the journal to be durable and portable:** Make sure that: 1) the pages are securely fastened together, 2) that the professor can easily carry it and 3) it will last all semester long.
      3. **Be creative and have the journal reflect your personality and interests.**
      4. **Required first entry:** On the first page of your journal, write a paragraph or two describing how you feel about the journal-making process and your finished journal. Is it what you envisioned? Were materials easy to find? How does it reflect you as a creative, cultural person? Etc....
    - **Journal entries:** Your created journal is a place for you to record your thoughts as you read assigned texts. Note-taking should help you digest and respond to the content and provide a starting point for in-class discussions. You will want to record key vocabulary words and concepts as well as questions about confusing/unknown points. Also, try to summarize what you're reading by addressing the following question: What is the main "take-home message" being conveyed?
      - One journal entry equals at least 2 full 8 ½ X 11" pages (or the equivalent)
      - Entries will be assessed based on evidence of critical engagement with the readings. *Your main goal is to communicate to the professor that you are learning something from and are engaging with the readings!* There is no one right way to do this but full credit cannot be earned by writing only an outline of the reading. You should also include text that reflects critical thinking about the material including such information as:
        - why the information is important to science and society
        - your personal reaction to it (it's cool, it's boring, I never thought about that...)
        - personal stories inspired by the reading
        - how content relates to that discussed in other classes or current news
        - other insight to exhibit that you understand the main point of the reading
      - **The first 2 entries are due 9/12 based on pp. 1-34 of Primack, Wilson Ch. 1 & Gaston 2000.**
      - The total number of entries and due dates will be decided soon with student input.
  - B. Blog entries will be more formally written (well-organized, typed) to communicate course content to a more general audience. They should also be based on readings and exhibit student learning. Specific prompts may be assigned. More details about how to complete blog entries will be provided soon to those choosing this option.
- Details about the semester-long paper or project and synthesis essays will be provided soon.