

Marine Conservation Biology & Policy

University of Massachusetts Amherst, Dept of Environmental Conservation

Fall 2020 | NRC 590D (4 Credits)

Instructor

Dr. Lisa Komoroske

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Teaching Assistant:

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Office hours: By appointment

Email: jstoll@umass.edu**Course Information**

Webpage: On Moodle

Time/place: MW 11:15am-12:30pm (Fully Remote)

Course Description: Marine Conservation Biology & Policy is the science and application behind the maintenance of our oceans' biodiversity and the management of marine resources. We will learn how key properties of marine species and ecosystems are unique or shared with terrestrial ecosystems, and how this shapes both major threats and innovative solutions. We will assess human threats to ocean biodiversity and mechanisms for dealing with these risks, with an emphasis on marine reserves and other management approaches for building ecological resilience.

Using active lectures, readings and case studies, discussions, group projects, writing, guest experts and field trips* we will evaluate the causes and consequences of diversity loss in the oceans, and what legal frameworks and grassroots conservation actions effectively combat marine environmental degradation. Readings will include those drawn from textbooks, peer-reviewed scientific literature, and a variety of other materials, including media coverage of current events. The culmination of the course is final research project to evaluate and communicate a marine conservation challenge & effective solutions.

**Unfortunately we will likely be forgoing planned field trips for this course during Fall 2020 due to COVID, however I am working on creative alternate solutions!*

Overall Learning Goals: *

- 1) Understand key terminology, core issues, and science of marine conservation biology
 - Via: readings, discussion, lectures and assignments
- 2) Gain abilities to apply content knowledge in real-world contexts
 - Via: active participation in group assignments, discussions, and final term project
- 3) Acquisition of skills for collaborative and creative problem solving
 - Via: activities and discussions throughout the course emphasizing critical thinking and teamwork with groups of varying sizes.
- 4) Science Communication & public speaking
 - Via: presentations, group work and final project

**Specific content and skill learning goals for each unit will be also introduced with each unit*

Communication: Email and Moodle will be used routinely for announcements, reminders, and resources. Please check these resources regularly.

Statement of Inclusion: Learning is strengthened with a diversity of perspectives and learning styles. We will foster an inclusive learning environment where people of all ethnicities, sexual orientation, genders and gender identities, religions, socio-economic status, and disabilities are encouraged to share their perspectives. Any behavior that is disrespectful toward others or violates the inclusivity of this shared learning environment will not be tolerated.

Disability Statement: Your success in this class is important to me. UMass Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services or the Center for Counseling and Psychological Health, you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements. For more information, consult the [UMass Disability Services website](#).

Pronoun Policy: Everyone has the right to be addressed and referred to by the name and pronouns that correspond to their gender identity, including the use of gender-inclusive pronouns. Pronouns are not indicated on SPIRE class rosters, so students will be asked to indicate the pronouns they use for themselves. As a community, the class will respect and work together to learn and use each student's preferred name and pronoun.

Course Materials:

- There is no required textbook. Readings will come from the primary literature, textbook sections, media coverage of relevant current events, policy briefings and other digital resources made available on Moodle.
- Some required readings will come from two textbooks (specific sections uploaded to moodle). However, since we don't have time to cover everything in this course, these textbooks are also recommended as supplemental readings for those interested in further learning on these topics:
 1. Conservation Biology: The Science of Maintaining the Sea's Biodiversity (Ed. Norse and Crowder), Island Press, 2005. (ebook put on reserves at library-see link on Moodle)
 2. Marine Conservation: Science, Policy & Management. Ray & McCormick-Ray, Wiley-Blackwell, 2014. (ebook put on reserves at library-see link on Moodle)

General Course Format:

Active Lectures & Discussions/Activities: Each week we will have active lectures followed by discussions/group activities on a core topic in marine conservation biology. These are designed to introduce the fundamental biological principles of different aspects of marine ecosystems and how these properties relate to conservation and policy issues. Lectures will augment assigned readings to prepare students for the topic discussions and ongoing research on the final projects. Students will sign up to lead one paper discussion/activity during the semester.

Readings: Each week's topic will have an associated assigned reading from the peer reviewed literature, selected text, and/or policy briefings. At the beginning of the semester we will spend time learning how to read and digest these different types of documents to ensure that all students have the tools for success, regardless of previous experience in other classes, internships, etc. Readings are due by Monday each week to assist with preparation for group discussions and activities.

Guest Experts & Field trips: We will have several guest expert visits in class and field trips related to our studies throughout the semester. The trips may include visits to the UMass Gloucester Marine Station, Gloucester fishing ports and local field sites (e.g., rocky intertidal areas, sandy beach habitats, the Great Marsh), the New England Aquarium Rehabilitation Center and NOAA Northeast Fisheries Science Center and/or regional management office in Gloucester (**specific field trip and guest expert schedule will depend on scheduling and availability of hosts and students; Note: Fall 2020 field trips will likely be suspended but possibly replaced with independent excursions if allowed/feasible).

Environmental Documentary Assignment: Throughout the semester students will select and present on documentaries related to marine and coastal conservation issues. This assignment will be described in more detail in class and instructions posted to Moodle. This exercise will facilitate developing skills in science communication and understanding different perspectives of conservation and how issues are portrayed in different media.

Midterm Exam: We will have one exam midway through the semester to assess content and synthesis knowledge. **Fall 2020 remote course:** this will be administered through Moodle, open book with a limited time period. More details will be discussed in class.

Final Research Project: In lieu of a final exam, students will select a topic to evaluate and communicate a marine conservation challenge & effective solutions. A more thorough description will be posted in Moodle and discussed in class.

Political Engagement Extra Credit: Policies to promote equity and sustainable use of our oceans' resources and society at large come from the actions of individual citizens engaging in our government at local, regional, and national levels. **This Fall, one of, if not the most, consequential elections of our lifetime will take place, as well as many policy decisions that will strongly shape our future** (e.g., climate change international agreements, state and regional elections and policies regarding environmental sustainability, etc.). Students who actively engage in these processes can write ½ to 1 page summary of their activities and experience for extra credit (up to 5% of total grade). This might include, but is not limited to, volunteering to get out the vote, volunteering with community organizations such as [Citizen's Climate Lobby](#), phone banking or other work for a candidate the student personally supports, helping to organize community events (following state and CDC guidelines), etc.

*****N.B. To be absolutely clear, I am not instructing you to work for any particular political party, candidate or organization, but rather to engage in ways that you, as an individual support and feel comfortable. Also, this is an extra credit assignment, so it is NOT required for this course.*****

Tentative Class Schedule: (Detailed schedule with corresponding assignment deadlines will be posted and updated on Moodle) This schedule is subject to change based on weather and other external forces (i.e., guest expert schedules). Corresponding readings and/or assignments for each week will be posted on Moodle.

Dates:	Week:	Revised Topic	Revised Objectives
Part I: Fundamental Properties of Marine Ecosystems			
August 24th	1	1. Introduction: Why Marine Conservation Biology? 2. Oceanographic processes & effects on marine biodiversity and ecosystems	1. Introduction to key properties that drive need for specific focus on conservation in marine systems 2. Understand how physical properties and processes in the ocean drive patterns of ocean biodiversity
August 31st	2	Implications of marine population biology and ecology to conservation policy	Examine how general processes of population biology and ecology operate in marine environments, and how this differs from terrestrial systems
Part II: Major Threats to Marine Biodiversity			
Sept 7th	3	Eutrophication and Bioinvasions	Recognize how human activities on land (e.g., agriculture) impact coastal marine environments; Identify vectors of bioinvasions and how they impact local and global biodiversity
Sept 14th	4	Harvest impacts on targeted marine species, bycatch and ecological degradation	Examine the consequences of extraction and understanding the roles of life history and evolution in determining severity of impacts

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Sept 21st	5	Pollution & disease in marine ecosystems	Understand the impacts of plastics, biotoxins, legacy and emerging pollutants, and disease on marine biodiversity
Sept 28th	6	Climate Change & multiple stressors impacts on marine ecosystems	Explore the climate drivers that impact marine biodiversity and appreciate how this differs among taxa and ecosystems
Oct 5th	7	Midterm Exam & Final Project Scoping	
Part III: Management Frameworks & Ocean Conservation Solutions			
Oct 12th	8	1. Marine conservation mechanisms: policy foundations, concepts and frameworks 2. Marine spatial planning, marine protected areas, mixed use and managing for resilience	1. Understand the major legislation and regulatory agencies involved in ocean conservation; compare US policies, other nations, and global strategies 2. Compare and contrast key US management strategies that aim promote biodiversity conservation and sustainable resource use
Oct 19th	9	Ecosystem-based management & dynamic ocean management	Evaluate two recently emerged strategies that capitalize on technological advancements
Oct 26th	10	Roles of non-governmental organizations, grassroots efforts and community cooperatives in ocean conservation	Appreciate the critical roles of 'bottom-up' initiatives in ocean conservation, particularly in developing nations
Nov 2nd	11	Traditional ecological knowledge and citizen science	Understand the importance of historical, multi-cultural and alternative forms of knowledge and perspectives in effective conservation
Nov 9th	12	Ocean Optimism: celebrating the successes and promoting creative, integrative solutions	Realize the importance of social capital, diverse perspectives and optimism in shaping our future oceans
Nov 16th	13	Final Project Presentations (Final Associated Materials Due the following week)	

Course Assessment: Grades will be based on individual and group work throughout the semester. Specifically, emphasis is based on augmenting individual learning with group discussions and applied projects.

Assignments & Grading:

Class discussions- 10%

- Leading Discussion 5%
- Preparation & Participation 5%

Class Activities/Assignments-10%

Environmental Documentary Assignment-15%

- Presentation 10%
- Reflection 5%

Midterm Exam-20%

Final grade percentages will be converted to course letter grades as follows:

93.0-100%=A, 90.0-92.99%=A-, 87.0-89.99%=B+, 83.0-86.99%=B, 80.0-82.99%=B-, 77.0-79.99%=C+, 73.0-76.99%=C, 70.0-72.99%=C-, 67.0-69.99%=D+, 60.0-66.99%=D, 0-59.99%=F

Graded assignments will be described in more detail in class and through handouts posted on Moodle.

Course Policies

Academic Honesty: Students are expected to conduct their own work in an honest and ethical manner. Dishonest activity will not be tolerated (see the [UMass Honesty Policy](#)).

Synchronous/Asynchronous Learning: Attendance will not be taken, however I strongly encourage students to attend the live class period to actively engage in lectures, discussions and activities to promote reaching learning goals. Lectures will be recorded and links posted to moodle in the event that one is missed. I will try to do this for discussions as well, but it is challenging to do effectively especially when we have breakout groups. If you are having difficulty consistently attending the synchronous class period please contact me so we can discuss possible alternate solutions.

Email Inquiries: I strongly encourage students to take advantage of office hours for questions on material and activities. **These hours are dedicated to helping you, and I look forward to getting to know students personally.** Attending office hours may also be more efficient than emailing me with questions. I may answer emails during office hours, but I will prioritize meeting with students who are attending the office hours 'in person' (via zoom for Fall 2020). If you do send an email, please include "NRC590M: XX" in the email subject line to ensure it does not slip by me (if you initiate through Moodle, it should do this automatically). I will do my best to respond to emails within 48 hours, but the sheer volume of email I receive can sometimes make it difficult to respond promptly. Please plan ahead and do not email questions the night before an assignment deadline, it is extremely likely you will not get a response in time. I am always happy to answer questions but if you email me a question that is answered by the syllabus or information provided on Moodle, I will likely direct you there, so please check those resources and with your classmates first.

Technology: We are fortunate to have many tools to facilitate our learning. Please use laptops respectfully for taking notes or viewing course content. Otherwise, please do not use laptops or cell phones in a distracting manner. Please be considerate of your colleagues! **Note for Fall 2020 with remote learning: while we will obviously all be on our computers, please apply these general principles and close other applications and be engaged during class time. This will not only facilitate your learning, but also help cultivate a connection with your classmates by allowing you to be 'present' with one another and focus on the course content.*