Marine Conservation Biology & Policy

University of Massachusetts Amherst, Dept of Environmental Conservation

Fall 2022 | NRC 590D (4 Credits)

Instructor
Dr. Lisa Komoroske
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Office hours: Wed 12:30pm-1:30pm and by appointment *(Masks are **strongly encouraged and appreciated for in person meetings**. Alternatively, zoom appts are always an option-please reach out and we will set something up).*

Teaching Assistant:
Jamie Adkins
Office hours: By appointment
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Course Information
Webpage: On Moodle
Time/place: MW 11:15am-12:30pm, Holdsworth Hall 105 *(N.B. We will follow University COVID policies, which may change depending on evolving conditions. While masks are not currently required by the university as of the start of the semester, they are **strongly encouraged and appreciated** in our course to help keep everyone safe and facilitate continuation of in-person learning).*

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, and guest experts 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.

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 can be optionally entered for SPIRE class rosters, and/or otherwise shared in class. As a community, the class will respect and work together to learn and use each student's preferred name and pronoun.

Course Materials:

- 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). These textbooks are not required to be purchased for the course, however, since we don't have time to cover everything in this course, these textbooks are 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: Most weeks 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.

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: We will have several guest expert visits in class related to our studies throughout the semester. *(**specific guest expert schedule will depend on scheduling availability)*. These visits/lectures are meant not only to learn more about the topics of their expertise, but to get to know different career paths in Marine Conservation. I highly encourage all students to make sure they attend and engage with these experts during and after class to make the most of these special opportunities.

Environmental Documentary Assignment: Throughout the semester small groups of 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.

Policy Research Short Paper: Students will research the current policy at the state or federal level for a marine policy of interest and write a 2 page paper summary for it. More details will be provided in class/on Moodle.

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.

Extra Credit Opportunities: Typically throughout the semester, opportunities arise for extra credit such as attending a relevant seminar, engaging in policy activities, etc. The latter might include, but is not limited to, volunteering to get out the vote, volunteering with community organizations such as Citizen's Climate Lobby, helping to organize community events, etc. We will have an opportunities forum on Moodle where people can share events as they hear about them, and I am always happy to discuss ideas. 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). ****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:	Topic	Broad Objectives
Part I: Introduction to Course Topics & Fundamental Properties of Marine Ecosystems			
Sept 12th	1	Why Marine Conservation Biology?	Introduction to key properties that drive need for specific focus on conservation in marine systems
Sept 19th	2	What is Marine Policy?	Overview of the scope of marine policy & legislation
Sept 26th	3	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			
Oct 3rd	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
Oct 10th	5	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

Oct 17th	6	Pollution & disease in marine ecosystems	Understand the impacts of plastics, biotoxins, legacy and emerging pollutants, and disease on marine biodiversity
Oct 24th	7	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
Part III: Management Frameworks & Ocean Conservation Solutions			
Oct 31st	8	Marine conservation mechanisms: policy foundations, concepts and frameworks	Understand the major legislation and regulatory agencies involved in ocean conservation; compare US policies, other nations, and global strategies
Nov 7th	9	1. Marine spatial planning, marine protected areas, mixed use and managing for resilience 2. Ecosystem-based management & dynamic ocean management	Compare and contrast key marine management strategies that aim promote biodiversity conservation and sustainable resource use
Nov 14th	10	1. Roles of non-governmental organizations, grassroots efforts and community cooperatives in ocean conservation 2. Traditional ecological knowledge and citizen science	1. Appreciate the critical roles of 'bottom-up' initiatives in ocean conservation, particularly in developing nations 2. Understand the importance of historical, multi-cultural and alternative forms of knowledge and perspectives in effective
Nov 21st	11	Final Project Work Time (Week of Thanksgiving)	
Nov 28th	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
Dec 5th	13	Final Project Presentations	
Dec 12th	14	Final Project Associated Materials Due	

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- 20%

Class Activities/Assignments-10%

Environmental Documentary Assignment-10%

Policy Short Paper-20%

Ocean Solutions Final Project-40%

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: This is a synchronous course, as per UMass policies Fall 2022 for in-person instruction (as of the start of the semester, subject to change if university policies change due to evolving COVID conditions). Attendance will not be taken, but students are **strongly encouraged** to attend class to actively engage in lectures, discussions and activities to promote reaching learning goals. However, I also recognize that illness and unforeseen circumstances may arise; if you have symptoms, known COVID exposures or other concerns or extenuating circumstances, please contact me and we can discuss alternative options. 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 note that 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 or virtually). If you do send an email, please include "NRC590D: 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/activity related materials only during class-multitasking is not a thing! Study after study shows this is paramount to student learning, i.e., being fully present and getting the most out of your courses. Please also be considerate of your colleagues and do not use laptops or cell phones in a distracting manner; if this occurs I will first issue a warning, and if the violations are repeated it will be necessary to have the student leave to protect the learning of the rest of the class.