

MR 510: Marine Science Policy, Resource Management and Public Debate

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OVERVIEW:

Marine Science, Policy, and the Public explores how scientists could most effectively communicate with the public and policy makers, and how science can most effectively contribute to the shaping of public policy. Students will critically dissect the intersecting legislation and marine policies that apply to the Gulf of Maine, with a focus on Massachusetts Bay and Stellwagen Bank, examining both the role that science played in developing these policies and the way scientific facts and concepts were discussed with the public and policy makers. The combined literature and case study review will serve as the basis for a project to be presented by the end of the block-term. The course will be held during the third (October-November) block of the BU Marine semester, and it will consist of eighteen class days from 9am-5pm plus extensive work outside of class as is typical for a BUMP Marine Semester block course.

NARRATIVE SUMMARY:

There is a critical disconnect between marine policy and the reality of how people use our coastal and marine environments. Our coastal environment is a place where competition and conflict among users is great. Left unchecked, such competition promotes ever more aggressive exploitation of marine ecosystems, to the point where the resilience of the ecosystems is threatened. Unfortunately, politicians and policy makers have failed to develop effective programs that preserve our coastal resources while resolving conflict among users.

In alerting citizens and governments to the ecological vulnerability of marine resources, scientists perform a vital service; but if this is the extent of their role, then scientists can be perceived as merely one more competing interest group. Conservation, governance and decision-making about marine environments are social processes, not just scientific ones. Therefore, scientists who aspire to inform effective policy must incorporate social costs and benefits into their policy prescriptions, and they must convey their ideas and research in a context that is accessible to people outside the narrow scientific community. The goal of this class is to enable each student to develop a pairing of social and environmental concerns with the scientific foundation necessary to address them, and the ability to share this information clearly and effectively with the non-scientific community.

This multidisciplinary course will explore the linkages between biophysical and human systems in the marine realm, using our local waters as the focal case study. The course is organized into three parts.

Part 1: Constructing particulate and historical knowledge about marine policy

1. The history of marine policy
2. Jurisdictional conflicts through evaluation of governance structures in the coastal and marine environments
3. The nature of ecosystem services, trade-offs, and rational harmonization of multiple ocean uses.
4. Overarching legislation to resolve conflicts
5. A forward-looking analysis of US ocean policy, through comparison and contrast of the omnibus ocean legislation of Massachusetts, California, and the National Ocean Policy.

Part 2: The relationship between science and policy, and scientific analysis of policy options

In general people don't get why all stakeholders wouldn't have a more collaborative relationship. In looking at the relationship between science and policy we will discuss

1. Adaptive Management as it relates to policy and legislation and as it looks at the relationship with nature and the human response.
2. Approaching resource management from the perspective of resilience - considering risk and complexity.
3. Decision support tools; e.g., marine spatial planning, INVEST, MIMES, weight of evidence.

Part 3: Communication and engagement of the public and the role of the scientist at the nexus of communications

The junction of science, policy and communications. The goal of sustainability is challenged when we attempt to optimize one element in the complex system dynamics of humans and nature for any one specific goal.

1. How social-ecological systems change over time and how the key to sustainability lies in achieving overall system resilience.
2. Communication and engagement of the public and the role of the scientist.

Massachusetts case studies formulated by considering the following:

1. Background on the socioeconomic, political, or environmental problems that a legislative or regulatory act is supposed to fix
2. Background on the biophysical, social and economic (that is at a systems-level) processes that generated the perceived problem with the resource
3. Analysis of policy options to repair the problem and the costs and benefits of each (scenario casting for alternative policy options)
4. The process by which a preferred option is chosen for legislation and/or implementation
5. Challenges in communications, public outreach, and political reaction to policy implementation
6. Transition period during which the new policy is put into place
7. Adaptive management to tweak the policy and ensure it is successfully implemented, with good compliance

8. Accountability and adaptation for the policy

A typical class day will be structured with a lecture in the morning on a theoretical or policy issue and a management challenge later in the day. Students in groups of two or three will represent different stakeholders; the class will be divided between fishermen, environmentalists, policy makers, and stakeholders. The science versus the policy will be sifted out, and the groups will brief the class on 'their' perspective positions. Each class day will conclude with informed debate among the disparate interest groups. At the end of each week, students will attempt to achieve consensus. Halfway through the block, students will switch sides. There will be an emphasis on synthesizing information as a group and identifying points of common interest.

Academic Conduct:

Students in BI539 are expected to maintain high standards of academic honesty and integrity. It is each student's responsibility to be familiar with the BU Academic Conduct Code and to abide by its provisions. The web site for the Academic Conduct Code for undergraduates is: <http://www.bu.edu/cas/students/undergrad-resources/code/>. Graduate students should also see: <http://www.bu.edu/cas/students/grad-resources/forms/discipline>.

Course Structure:

This is an intellectually demanding class, based on lecture, readings and case studies. Upon completion of the class, students will be expected to understand key legislation, jurisdictional boundaries between key government agencies, and gain practical knowledge of conveying science to the general public in creative and concise ways.

Assignments:

Block long communications project
Environmental Writers Assignment
Elevator Speech
Reading, Reading, Reading

Grading:

Class Participation	20%
Preparation in class assignments and performance in class discussions	20%
Project Proposal	20%
Final project	25%
Oral presentation of final project	15%

Due Dates:

Project Proposal-	November	1
Refined Proposal-	November	6
Final Project -	November	18
Oral Presentation-	November	20

No late work

Project work should be undertaken in a highly cooperative, team-based, mutually supportive manner. However, all written assignments should be completed independently unless otherwise stated.

General Time Investment:

5 full long class days per week plus expected continuing project work on weekends. The course load is demanding and it will not be practical to expect to take weekends or evenings off during this course.

Required Text:

- 1) Cicin-Sain, B. and R. Knecht, 2000. The Future of US Ocean Policy: Choices for the New Century. Washington, DC: Island Press
- 2) Pielke, Roger Jr., 2007. The Honest Broker: Making Sense of Science in Policy and Politics. Cambridge University Press
- 3) Kai Lee, Adaptive Management article
<http://www.ecologyandsociety.org/vol3/iss2/art3/inline.html>
- 4) Dean, Cornelia, 2009. Am I making myself clear? A Scientists Guide to Talking to the Public. Harvard University Press
- 5) Video Pielke testifying in front of Congress on climate change (VERY LONG)
<http://www.senate.gov/isvp/?type=live&comm=epw&filename=epw071813>
- 6) Kolbert, Elizabeth, 2006. Field Notes from a Catastrophe. Bloombury **OR**
Thompson, Peter, 2009. Sacred Sea. Oxford Press

For Aquaculture class:

Policy/Regulations

I recommend that the students read/review Sections 57 through 67 of Chapter 130 of the MGL.

<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter130>

Existing Duxbury Aquaculture Regulations:

<http://duxburyharbormaster.org/shellfish/aquaculture.htm>

Duxbury Aquaculture Management Plan:

http://www.town.duxbury.ma.us/Public_Documents/DuxburyMA_DuxBayCommMin/plan/damp.pdf

Health Related Issues

Public Health: *Vibrio parahaemolyticus*

Yeung & Boor (2004) Epidemiology, pathogenesis, and prevention of foodborne *Vibrio parahaemolyticus* infections. (attached)

Cox and Gomez-Chiarri (2012, 2013) (attached)

Oyster Disease: MSX, SSO, Dermo, and others.

<http://spo.nmfs.noaa.gov/mfr411-2/mfr411-29.pdf>

<http://seagrant.uconn.edu/whatwedo/aquaculture/pdf/msx.pdf>

<http://seagrant.uconn.edu/whatwedo/aquaculture/pdf/dermo.pdf>

Feeding a Growing Population

Read Part 1 of this 2010 report (suggest reviewing the entire document).

<http://www.fao.org/docrep/013/i1820e/i1820e00.htm>

Recommended Readings:

Lee, Kai, 1993. Compass and Gyroscope: Integrating Science and Politics for the Environment. Island Press

Baron, Nancy, 2010. Escape from the Ivory Tower. Island Press

There will be additional assigned readings.

Class	Title	Assignments
28-Oct	Values and Beliefs	National Ocean Policy - http://www.whitehouse.gov/files/documents/2010stewardship-eo.pdf
29-Oct	Gloucester Maritime Workshop Lecture @NEAQ 7pm Ocean Frontiers 2: New England's Ocean Pioneers Karen Meyer, filmmaker, Green Fire Productions Q & A session to follow the film, program will last approximately two hours, from 7:00 p.m to 9:00 p.m.	CS/K (1) 1-49 Gloucester Maritime
30-Oct	Susan Faraday 11am Director, Marine Affairs Institute Director, RI Sea Grant Legal Program J.D., Vermont Law School B.A., University of Colorado Introduction - US and Global Ocean Policy - Rob Sloane 2-4, Law Tower, Room 920B	assigned reading packet, please come with questions National Ocean Policy Implementation Plan, p. i-p. 4, and p. 19-p. 23.
31-Oct	Jay Kaufman 2-4, State House	CS/K (1) 53-100
1-Nov	MASSPORT	
4-Nov	Science and Policy Priscilla Brooks, Conservation Law Foundation 9-11	Pielke/Lee
5-Nov	Science and Policy, (possible SAC mtg)	Pielke/Lee
6-Nov	Irit Altman, Ph.D. Research Scientist Boston University, MIMES Modelling Project	SBNMS Management Plan
7-Nov	Adaptive Management Stellwagen Bank National Marine Sanctuary - Scituate Lunch with Dave Haley, Lobsterman NEAQ - Movie, How to Save the Oceans and Feed the World Andrew Sharpless, CEO, Oceana and author, The Perfect Protein *Book signing to follow	Lee (51-86)
8-Nov	Adaptive Management	Pielke and Lee
11-Nov	Decordova (maybe)	Dean
12-Nov	Lecture - Peter Thomson 5pm Peter Thomson is the environment editor at the BBC/Public Radio International program "The World" and the author of Sacred Sea: A Journey to Lake Baikal. He was the founding producer and editor of NPR's groundbreaking environmental news program "Living on Earth" in 1991, and in a decade with the program also served as senior editor, western region bureau chief, senior correspondent and special projects editor. Science + Communication What Does Sustainability Really Mean - What does Resilience MEan?	Dean
13-Nov	Fablevision	10:00AM
14-Nov	JOHN BRAWLEY _ DUXBURY NEAQ- Movie Screening of Great White Shark 3D in IMAX 3D followed by The Return of White Sharks to California Dr. Christopher G. Lowe, Professor of Marine Biology and Director of California State University at Long Beach Shark Lab	Please see required reading: John Brawley - Duxbury
15-Nov	JOHN BRAWLEY - DUXBURY Science+ Communication Research 1-5pm	John Brawley - Duxbury
18-Nov	Michael Tlusty 1pm New England Aquarium	Mike Tlusty Lacey Act http://www.animallaw.info/articles/ovuslaceyact.htm
19-Nov	Dick Wheeler, 'In Search of the Great Auk'	Dick Wheeler
20-Nov	Presentations 9:30-12:30	
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