

Course Number: MAR 530
Course Title: Ecosystem-Based Fisheries Management
Instructor: Gavin Fay, Assistant Professor
Contacts: School for Marine Science and Technology, SMAST-East 228
(508) 910-6363
gfay@umassd.edu
Class Location: SMAST-East, New Bedford. Room 101
Class Time: Wednesdays/Fridays 10:30-11:45,
(Wed: literature discussion, Fri:lecture/lab)
Office Hours: by appointment
Website: UMD myCourses

Course Description: Discussion, lectures, and lab exercises exploring the theory, challenges, and approaches for implementing Ecosystem-Based Fisheries Management (EBFM). The course will examine the history and background of fisheries management, leading to why more holistic approaches are being considered. A series of operational methods being used to implement EBFM, emphasizing technical efforts and models, will be reviewed. The role of institutional structures and societal considerations in decision-making will be explored to identify situations where EBFM can be successful. The course emphasizes current literature and case studies as main learning elements.

Course Objectives:

1. Understanding of major issues facing global fisheries, fisheries science, and fisheries management
2. Familiarity with the theory, history, background, and socio-economic issues driving EBFM
3. Develop knowledge of major modeling and technical approaches for implementing EBFM.
4. Develop skills for critically evaluating current literature and contextualizing it and associated theory with real world case studies.

IMS Core Course: This course satisfies the UMass Intercampus Marine Science Program core policy course requirement.

Prerequisites: Introduction to Fisheries Science (e.g. MAR 540) **OR** General Ecology (e.g. BIO 314) and permission of instructor.

IMS graduate students taking this for the core course requirement who have not taken Introduction to Fisheries Science should prepare for the course by reading:

Smith, T.D., 1994. Scaling fisheries: the science of measuring the effects of fishing, 1855-1955. Cambridge University Press.

Evaluation procedures:

1. Weekly assignments (25%) – nine brief (one page maximum) writing assignments that provide a response to and/or synthesize current literature relevant to the week's discussion topic. Assignments are due prior to class on Wednesdays.
2. Class project (25%) – a written report (20%) on either a case study where EBFM is being implemented, or an analysis/review of an EBFM topic. The paper should conclude with a

section describing how the lessons from the case study or topic could be implemented in regional EBFM approaches by the New England Fishery Management Council. Descriptions of project topics are due in week 4, and a 2-3 page project outline (5% of course grade), with key references, is due by the end of week 7. Projects may be carried out individually or in small groups (2-3 students). The scope of group projects should reflect the number of participants. Gavin Fay has a list of possible project topics.

3. Final Exam (10%) – A verbal presentation of the class project.
4. Participation, attendance, ethics (35%) – In addition to attending lecture and participating in discussions, students are required to lead at least two of the class discussions of the literature.
5. Peer evaluation (5%) – students will be asked to give feedback on their peers' project descriptions and outlines.
6. Late submissions will be penalized 10 points (out of a 100) for each day that an assignment is late – assignments submitted later than three days after the deadline will not be graded.
7. Failure to complete any of these requirements for evaluation will result in a score of zero for missing components. A final grade of 'incomplete' may be recorded at the request of the student and the discretion of the professor.
8. If you have read this far, please use google images to find a picture of a kakapo, and send it to me attached to an email with the subject line "Here is a kakapo"
9. No academic dishonesty, including plagiarism, will be tolerated and the University Academic Integrity policy applies:
<http://www.umassd.edu/studentaffairs/studenthandbook/academicregulationsandprocedures/>

Principal text:

Link, J. 2010. Ecosystem-based fisheries management: confronting tradeoffs. Cambridge Univ. Press, Cambridge.

To be supplemented by articles from the peer-reviewed literature.

Recommended reading list:

Ecosystem Principles Advisory Panel (EPAP). 1999. A report to Congress by the Ecosystem Principles Advisory Panel. NMFS Silver Spring, MD.

FAO. 2003. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 2. Rome, FAO. 112p.

Garcia, S.M, Zerbi, A., Aliaume, C., Do Chi, T. & Lasserre, G. 2003. The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation, and outlook. FAO Fisheries Technical Paper, No. 443, Rome, FAO. 71p.

McLeod, K., & Leslie, H. (Eds.). 2009. Ecosystem-based management for the oceans. Washington, DC, USA: Island Press.

National Marine Fisheries Service 2009. Report to Congress: The State of Science to Support an Ecosystem Approach to Regional Fishery Management. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-96, 24 p.

Northeast Ocean Plan

http://neoplan.org/wp-content/uploads/2016/10/Northeast-Ocean-Plan_Full.pdf

NOAA Fisheries EBFM Roadmap

https://www.st.nmfs.noaa.gov/Assets/ecosystems/ebfm/EBFM_Road_Map_final.pdf

NOAA Fisheries EBFM policy

<http://www.nmfs.noaa.gov/op/pds/documents/01/01-120.pdf>

Course outline and schedule of lectures and assignment (subject to change)

<i>Date</i>	<i>Session</i>	<i>Topic</i>	<i>Reading</i>
23-Jan	D	Introductory material; Instructor led discussion of literature	Larkin 1996, Botsford et al. 1997, Pikitch et al. 2004
25-Jan	L	What is EBFM?	Chap 1
30-Jan	D	Student led discussion of literature	Guerry 2005, Browman & Stergiou 2004, Yaffee 1999
1-Feb	L	Challenges facing fisheries, origins & history of EBFM	Chap 2
6-Feb	D	Student led discussion of literature	Christensen et al. 1996, Arkema et al. 2006, Tallis et al. 2010
8-Feb	L	When to consider doing EBFM, EBFM in the USA	Chap 5
13-Feb	D	Student led discussion of literature	Francis et al. 2007, Tear et al. 2005, Garcia & Cochrane 2005
15-Feb	L	Types of advice, decision theories, goal setting Project topics due	Chap 4
20-Feb	D	Student led discussion of literature	Holsman et al. 2017, Hare et al. 2016
22-Feb	L	Risk assessment	Chap 9
27-Feb	D	Student led discussion of literature, Marine Protected Areas	Hilborn et al. 2004, Lester et al. 2009, McCay & Jones 2011
1-Mar	L	Guest lecture: Dynamic Ocean Management	Maxwell et al. (2015)
6-Mar	L	Bycatch, Spatial planning	Bellido et al. (2011), Ball et al. (2009), White et al. (2012)
8-Mar	Lab	Spatial planning modeling exercise Project outlines due	Marxan tutorial
		No Class – Spring Break	
20-Mar	D	Student led discussion of literature	Jennings 2005, Halpern et al. 2012, Samhouri et al. 2010, (Shepard et al. 2015)
22-Mar	L	Ecosystem Indicators	Chap 6, Link 2005
27-Mar	L	Single- and multispecies assessment models	Chap 7
29-Mar	D	Student led discussion of literature	Hollowed et al 2000, Schnute & Richards 2001, Plagányi et al. 2014
3-Apr	D	Student led discussion of literature (R. Wildermuth & A. Hart guest instructors)	Fulton 2010, Steele et al. 2013, Collie et al. 2014
5-Apr	L	Aggregate and whole-of-system models, Multispecies policy testing	Chap 8
10-Apr	D	Student led discussion of literature	Endter-Wada et al. 1998, Fulton et al. 2011, Branch et al. 2006
12-Apr	L	Societal and economic considerations	Chap 10
17-Apr		No Class – Monday schedule	
19-Apr	L	Guest lecture: Governance and management institutions	Chap 11, Costanza et al. 1998, Sainsbury et al. 2000, Sissenwine & Mace 2003, Garcia & Cochrane 2005
24-Apr	D	Student led discussion of literature	Sainsbury & Sumaila 2003, de la Mare 2005, Fulton et al. 2014
26-Apr	L	Evaluating tradeoffs	Chap 12
01-May	L	Guest lecture: Ecosystem Services for EBFM (R. Griffin)	TBD
08-May	E	Final exam: <i>Student verbal presentations of class projects</i> Project reports due	

Title IX statement: The purpose of a university is to disseminate information, as well as to explore a universe of ideas, to encourage diverse perspectives and robust expression, and to foster the development of critical and analytical thinking skills. In many classes, including this one, students and faculty examine and analyze challenging and controversial topics.

If a topic covered in this class triggers post-traumatic stress or other emotional distress, please discuss the matter with the professor or seek out confidential resources available from the Counseling Center, <http://www.umassd.edu/counselling/>, 508-999-8648 or -8650, or the Victim Advocate in the Center for Women, Gender and Sexuality, <http://www.umassd.edu/sexualviolence/>, 508-910-4584. In an emergency contact the Department of Public Safety at 508-999-9191 24 hrs./day.

UMass Dartmouth, following national guidance from the Office of Civil Rights, requires that faculty follow UMass Dartmouth policy as a “mandated reporter” of any disclosure of sexual harassment, abuse, and/or violence shared with the faculty member in person and/or via email. These disclosures include but are not limited to reports of sexual assault, relational abuse, relational/domestic violence, and stalking. While faculty are often able to help students locate appropriate channels of assistance on campus, disclosure by the student to the faculty member requires that the faculty member inform the University’s Title IX Coordinator in the Office of Diversity, Equity and Inclusion at 508-999-8008 to help ensure that the student’s safety and welfare is being addressed, even if the student requests that the disclosure not be shared.

For confidential counseling support and assistance, please go to <http://www.umassd.edu/sexualviolence/>