UNIVERSITY OF MIAMI
MARINE CONSERVATION BIOLOGY: AN ECOSYSTEM-BASED PARADIGM
SYLLABUS

FALL 2013 - CREDITS: 3
TIME: TUESDAY AND THURSDAY (12:00 PM - 1:15 PM)
CLASS ROOM: MSC 343

INSTRUCTOR:

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Office Hours: Tuesday 10:00 – 11:30; 1:30-4:30 pm

COURSE DESCRIPTION AND GOALS:

Until now, marine management has used a species-specific approach to conservation, focusing attention on economically important species that people use or consume. To this day, marine biologists are concerned mainly with assessing populations of commercially harvested species to maintain biomass production, rather than maintaining and restoring ecosystem integrity: ecosystem structure and function. It is only in the past few years that a new biodiversity-focused, ecosystem-based, multidisciplinary scientific approach to marine conservation has emerged. This new paradigm is known as Marine Conservation Biology.

So, how does Marine Conservation Biology and the proposed course differ from Fisheries and traditional fisheries courses?

The answer is addressed by Dr. Elliott Norse, President of the Marine Conservation Institute. He writes:

“Fisheries are about fishing, and we are fishing less and less. Hence, by its nature, it’s a declining field, like studies of board games, amateur sport car racing or demonology. Any university worth its salt (water) must get with the rising stars, and conservation is the rising star because we humans are fast wrecking our oceans, and no amount of fisheries science can stop that (using an old tool to solve a problem it wasn’t configured to solve, and plagued by a mindset that sees the oceans as producers of
commodities rather than of essential services worth far, far more to us). The only thing that can stop that is understanding how to conserve the oceans, which is Marine Conservation Biology.

When the only tool you have is a hammer, you tend to treat everything as if it were a nail (Abraham Maslow). Fisheries are a hammer in a glass shop. If we want to solve our problems, we need ideas, facts, examples, theory and people from a field that can solve the problem, and it’s not fisheries biology.”

Within a semester, students will learn about the science behind the emerging field of marine conservation biology. Students will also develop the skills to understand, analyze, and critique the tools utilized in marine conservation biology. The course will be composed of a series of lecture, guest speakers and student debates and student presentations covering various topics including: (1) threats to marine ecosystem diversity and function; (2) ecosystem-based marine conservation management; (3) science behind emerging place-based marine ecosystem management; (5) restoring marine ecosystem function; (6) evolutionary impacts of biodiversity removal on marine ecosystem structure and function and (7) an ecosystem based approach to Sea Ethics.

Class Text Book:
Marine Conservation Biology: The Science of Maintaining the Sea’s Biodiversity Norse, E.A. & L.B. Crowder, eds. (2005), Island ($44.95 on Amazon as of 20 August 2013).

Additional Readings: Specific articles from the primary scientific literature as well as other sources (Time, New York Times, Guardian Weekly, etc) will be assigned during the course. These are available online through blackboard or the library.

Students will be evaluated on class participation, a workshop assignment, class debates and a conference presentation and corresponding abstract.
ASSESSMENT AND GRADING:

- Debates (40%)
- MPAtlis workshop and assignment (15%)
- Conference Presentation (30%)
- Class Participation (15%)

ASSIGNMENTS:

Class Participations

- Class participation grades will be based on:
  - Attendance (see below)
  - Class engagement – questions, answers, discussions
  - Daily News Story (News Media or Science Paper)
    - For each class, a person will be assigned to share with the class a ‘latest news in marine conservation’ – it can be an event, a news story, or a scientific paper
      - Just briefly summarize the “news” – not more than ~5 minutes needed

Debates:

- During the semester, we will have 8 debates on timely and controversial issues in marine conservation science.
- Debate periods and preparation:
  - On ‘Debate’ weeks, half the class will debate on Tuesday and half the class will debate on Thursday. Each group will be divided into ‘Pro’ and ‘Con”
    - The class of ~24 students will be split into 12 debaters per period (6 Pro vs 6 Con)
  - Students will be split and assigned randomly into pro and con debate teams
  - Students are expected to come already prepared to debate which means groups need to meet and prepare outside of class.
- The debate structure and logistics
  - For the debates, a person from each team will give a short background of the primary issue and overall summary of their respective team’s position (either pro or con). This summary should not exceed 4 minutes and can include PowerPoint slides.
    - The teams should coordinate prior such that background info on the issue is not repetitive
  - Each team member from a given side should then provide a statement/argument in support of their side. This can include different aspect of the issue (e.g. economic, social, data). This should not last more than 15 minutes total
  - There will then be 6 minute preparation for a rebuttal
  - There will be a rebuttal one from each side (5 minutes)
There will be rebuttal two from each site (5 minutes)

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<th>Time Duration (Minutes)</th>
<th>Activity</th>
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<tr>
<td>4</td>
<td>Team 1 Summary</td>
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<td>4</td>
<td>Team 2 Summary</td>
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<tr>
<td>15</td>
<td>Team 1 Statement</td>
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<td>Team 2 Statement</td>
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<td>6</td>
<td>Rebuttal Prep</td>
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<td>Rebuttal Team 1</td>
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<td>Rebuttal Team 2</td>
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<td>Rebuttal Team 1</td>
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<td>5</td>
<td>Rebuttal Team 2</td>
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- Note - Each statement must be supported by a publication, article or data set referred to by the speaker.

Debate topics will include:

- Is trying to eradicate lionfish an effective solution to stopping this invasive species? (Debate 1 - Sept 16)
- Should chemical dispersants be used on oil spills? (Debate 2 - Sept 18)
- Is fishing down the food web real? (Debate 3 - Oct 7)
- Are commercial fisheries going to be collapsed by 2048 as predicted by Worm et al. 2006 (Science 314: 787-790)? (Debate 4 - Oct 9)
- Have large predatory fish declined by 90% in the oceans as suggested by Myers & Worm 2003 (Nature 423: 280-283)? (Debate 5 - Oct 28)
- Is ocean warming affecting corals and reef fishes now and can they adapt to climate change? (Debate 6 – Oct 30)
- Is listing threatened corals and fishes on the Endangered Species Act worthwhile or effective? (Debate 7 – Nov 6)
- Are Marine Protected Areas effective for highly migratory species? (Debate 8 – Nov 11)

Debates will be evaluated on the following:

- Appropriate knowledge and use of information in the opening summaries
- Equal participation among debate team
- Poise and elocution
- Content/knowledge of the subject
- References used to support comments
- Adherence to time constraints
Conference Presentation:

- Each student will need to provide a conference style presentation on a timely topic in marine conservation. The presentation should include the following sections:
  - Brief background information on the general topic / issue
  - Significance of issue and topic
  - Review and Synthesis
  - Conclusions & Future Directions
  - Literature Cited
- The presentation should integrate and be supported by the latest scientific research on the subject.
- As part of the “Review and Synthesis” section, students should give their personal opinion or thoughts on the subject and should summarize and synthesize the science within the context of the larger issue. In doing so, the students need to incorporate and cite additional sources (scientific publication and popular or news articles).
- The presentation should be in PowerPoint and must be a maximum of 15 minutes
- Grading will depend on (1) strict adherence to timing, i.e., not speaking over 15 minutes; (2) effective use of audio-visuals; (3) in-depth analysis of content; (4) poise and clarity of speech; (5) demonstration of keen knowledge and incorporation of both recent scientific and popular articles on the topic area; and (6) integration of topic into broad concepts discussed in class. See Specific “Conference Presentation Rubric” below for more grading details

Tips for finding papers:

- Google Scholar (<http://scholar.google.com/>),
- SeaWeb’s “Ocean Citations” (<http://www.seaweb.org/resources/citations/index.php>),
- Web of Science (Accessed online via RSMAS library)
- E-Journals (Accessed online via RSMAS Library http://www.library.miami.edu/rsmaslib/)
- Use template papers and high impact review papers from the literature as jumping off points. Take advantage of the cited reference search function on Web of Science to find papers which have cited these articles.
- Use a wide variety of search terms. For example, don’t just search “coral reefs + recovery,” search for “coral reefs” and a specific threat or management strategy. Keep a record of your past searches to stay efficient.
- Web of science/Web of knowledge is your friend. There will be a lot of information out there and much of it will focus solely on the threats. Perseverance is key.
Plagiarism:

Plagiarism of any kind will not be tolerated and will automatically result in a failing grade.

Plagiarism.org writes:
“All of the following are considered plagiarism:

- turning in someone else’s work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (see our section on “fair use” rules)

Most cases of plagiarism can be avoided, however, by citing sources. Simply acknowledging that certain material has been borrowed, and providing your audience with the information necessary to find that source, is usually enough to prevent plagiarism”
(http://www.plagiarism.org/plag_article_what_is_plagiarism.html)

Class Attendance:

Class participation grade is based on students contributing class discussions as well as attendance. Students are expected to attend all classes. If a student needs to miss a class, students should notify the instructor ahead of time and if missing a class is justifiable (e.g. illness), the student will not be deducted class participation marks towards their grade, but it is up to the student to make up for the material covered in the missed class. In the case of extended class absence, students will be deducted marks towards their grade. Attendance will be taken at the beginning of each class. Students that are late for class more than once will receive a 0.5% reduction on their final grade for each instance they are tardy (max 10% reduction). Students that miss class without notification to the instructor and approval will receive a 1% reduction in overall course grade (max 10% reduction). Students can take off class for any religious holiday, but only if the student disclosed her or his specific intentions to the faculty member in writing within the first three days of class meeting.