



Marine Conservation – MSC 430

45 contact hours (3 credits)

Pre-requisite: MSC 113

Faculty: Domenico Sgambati

COURSE DESCRIPTION

This course will focus on the key principles of marine conservation biology, analyzing the main threats for the organisms and ecosystems that inhabit the world oceans, from the marine pollution and bio-invasions to the serious problem of fisheries and ocean over-exploitation. In the second part of the course, students will study the most important conservation approaches (fishery management, species and habitat conservation measures, etc.) and the Marine Protected Area strategies to maintain and restore the natural equilibrium. Conservation biology emerged as a recognized field of mission-oriented scholarship about a half century ago when many terrestrial ecologists, geneticists and systematists were horrified by the gathering momentum of a great planetary extinction event. After 50 years many conservation strategies reported good data in recovering population and restoring ecosystem.

GOALS

The course aims at providing a solid educational background in basic and applied marine conservation biology, exploring the main threats for marine ecosystems and the programs to reduce human impacts on them. Very important is the idea that understanding humans – who are both the cause and the victims of biodiversity loss – is as integral to conservation biology as is understanding biology. The opportunity to focus on a case study – the well-known Marine Protected Area of Punta Campanella – sited in the Sorrento Peninsula and partner of Sant'Anna Institute, will help students to understand marine conservation initiatives through the on-field approach.

COURSE REQUIREMENTS

Students have to be undergraduate in Marine Biology. Each week classes will consist of lectures on selected topics followed by discussion. The course will incorporate both student presentations and debates. Due to the interactive nature of the class, student participation is a critical component of the grade. On-field trips to the Marine Protected Area of Punta Campanella (by boat, kayak and snorkeling require) a good connection with the marine environment. Note: a mask and a snorkel for the on-field activities are needed.

FIELD TRIPS

The course includes 2 field trips to the marine protected area of Punta Campanella. This activity is aimed at giving students a practical approach and a better understanding of marine conservation. The first one

consists of the exploration of the Marine Protected Area with the park boat to highlight the marine resources and threats for the local ecosystems. The second trip will take place in Ieranto bay, a special reserve of the Park, where the motor navigation and sportive fishing is forbidden. Students will reach this bay through a kayak experience and will examine the results of conservation with on-site observation and data collection.

TOPICS

Module 1: Marine Biological Diversity (10 hrs)

- A. Marine populations
- B. Benthic biodiversity
- C. Pelagic biodiversity
- D. Plankton Biodiversity
- E. Extinction risk in marine species
- F. The Man and the Sea
- G. Marine resources exploitation

Module 2: Threats to Marine Biodiversity (10 hrs)

- A. Nutrient over enrichment
- B. Bio invasions
- C. Diseases
- D. Multiple stressors in marine ecosystems

Module 3: The greatest threat: Fisheries (10 hrs)

- A. Industrial fishing – Impacts
- B. Local fishing – Impacts
- C. By-catch and overfishing
- D. Fishing on target populations
- E. Are sustainable fisheries achievable?

Module 4: Management of Marine ecosystems (10 hrs)

- A. Toward a sea ethic
- B. Marine Protected Areas and Biodiversity Conservation
- C. Fisheries in Marine Protected Areas
- D. Place-based Ecosystem management in the Open Ocean
- E. Metapopulation structure and Marine Reserves
- F. Recovering populations and restoring ecosystems

Evaluations and presentations (5 hrs)

ASSESSMENT

- A. 25%: Mid Term Evaluation
- B. 25%: Presentations
- C. 20%: Attendance and Participation
- D. 30%: Final Exam

Grading Scale

A	95%-100%
A-	90%-94%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%
C	73%-76%
C-	70%-72%
D+	67%-69%
D	63%-66%
D-	60%-62%
F	under 60

Texts

- *Marine Conservation Biology: The Science of Maintaining the Sea&s Biodiversity*. Norse, Elliott A., Crowder Larry B., eds. Island Press, Washington, DC, 2005. 470 pp.
- *Marine Protected Areas and Ocean Conservation*, [Tundi S.](#), Academic Press, 20 mar 1997 - 244 pp.