Economics 145 **THE ECONOMICS OF OCEAN RESOURCES** Spring, 2004

Course Hours: MWF 4:00 – 4:50 PM, Center 214

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Office: TBA

Office Hours: Immediately preceding class or by appointment

Course Objectives

The Economics of Ocean Resources is designed to provide students with both the economic theory and management concepts of natural resource use as they apply to ocean resources, and the factual and institutional knowledge necessary for well-informed applications.

The course develops several basic themes and applies them to different resources. First, the common thread running throughout the course is the theme of optimal allocation of ocean resources. Second, property rights for ocean resources are often limited or incomplete, and many resource allocation decisions are intertemporal in nature. As a consequence, competitive markets for ocean resources often fail to form, or when they do form, they fail to optimally allocate ocean resources among the competing uses. The market failure and subsequent suboptimal use of ocean resources therefore calls into play explicit options of management and public regulation. Third, population dynamics of species forms the basis of bioeconomic models for renewable resources, which combines population dynamics, habitat, biodiversity, and economics. Fourth, standard bioeconomics has neglected the broad role of the ecosystem, which raises the issue of ecosystem management. Fifth, the economic concepts of total economic value (use, existence, and option value) and mixed goods (a mixture of private and public goods) are applied to dolphins, whales, sea turtles, and coral reefs in which management requires attention to both private and public uses and total economic value.

This first section of the course will include one video discussing the current plight of the world's fisheries and discussing various policy measures. It will also include an in-class presentation of a computer game graphically illustrating the effects on a fish population of alternative harvesting strategies and fishery management policies.

The second section of the course is more applied and broader in nature, covering environmental issues associated with living marine resources. The section first develops an overall economic analytical framework, focusing on management of mixed goods (a mixture of private and public goods) and accounting for total economic value. Mixed good management forms one the current "hottest" environmental issue of the oceans, including dolphins, whales, sea turtles, and coral reefs. Specific analytic topics covered include

public and mixed goods, total economic value, biodiversity, habitat, and wildlife management. Ecosystems management and sustainability are also touched upon. Videos and guest lectures will supplement the in-class treatment of several topics. Students are responsible for the readings on their own.

Course Requirements and Grading

1. Midterm examination in approximately week six -- 45% of course grade.

2. Final examination B 50% of course grade

   $ Covers all of the course material between the midterm and the class end but not the material covered by midterm.

Several problem sets will be provided during the first part of the course. They will not be graded, but a record will be kept of those completed and turned in. They will count for 5% of the grade.

Reading Material

Most required reading material can be purchased in a packet from Cal Copy. The number of students wanting a packet will be determined on the second day of class and the order given to Cal Copy at that point. A few articles will be placed on reserves in the Undergraduate Library and some of the papers are available on-line.

* denotes required reading available by purchase

Department of Economics
University of California, San Diego
Economics 145

Dale Squires
Spring, 2004

THE ECONOMICS OF OCEAN RESOURCES
READING LIST

(* required material packet to be purchased from Cal Copy)

I. INTRODUCTION

1. Ocean Resources: An Overview

Note: The reference in this section should be skimmed to capture the main points. The material is primarily for background.

* AThe Sea,@ Survey in *The Economist*, May 23, 1998, 18pp.

2. Property Rights, Public Goods, Externalities, and Environmental and Resource Problems

Scott, A. 2000. "Introducing Property in Fishery Management." In R. Schotten, ed., *Use of Property Rights in Fisheries Management*. FAO Fisheries Technical Paper 404/1. Rome: Food and Agriculture Organization of the United Nations. Sections 3 and 4.
Available online at: http://www.fao.org/docrep/003/x7579e/x7579e00.htm

II. THE ECONOMICS AND MANAGEMENT OF RENEWABLE MARINE RESOURCES

1. The Theory of Open Access and Bioeconomics

* Wilen, J. ALife Histories of Organisms,@ Section 4.2.(pp. 91-93) in ABioeconomics of Renewable Resource Use,@ Chapter 2 in A.V. Kneese and J.L. Sweeney, eds., *Handbook of Natural Resource and Energy Economics*, Vol. I. New York: Elsevier Science Publishers B.V., 1985.

Case, T. 2000. "Density Dependent Population Growth," Chapter 5 in T. Case, *An Illustrated Guide to Theoretical Ecology. Oxford University Press*. (Not required – read for further understanding of density-dependent population growth and logistic equation in particular.) (Will be placed on reserves.)

* Hartwick, J. and N. Olewiler. *The Economics of Natural Resource Use*. New York: Addison-Wesley, 1997, Chapter 4.

Computer simulation game in class to illustrate population dynamics and fisheries management.

2. Regulation and Public Policy within a Bioeconomics and Property Rights Framework

* Hartwick and Olewiler. Chapter 5.

* Grafton, Q., D. Squires, and J. Kirkley. " Private Property Rights and the Crisis in World Fisheries: Turning the Tide?@ *Contemporary Economic Policy* XIV (1996): 90-99.

Scott, A. 2000. "Introducing Property in Fishery Management." In R. Schotten, ed., *Use of Property Rights in Fisheries Management*. FAO Fisheries Technical Paper 404/1. Rome: Food and Agriculture Organization of the United Nations. Section 5. Available online at: http://www.fao.org/docrep/003/x7579e/x7579e00.htm

Possible guest lecture.

Video in class on fisheries issues and policy, *Empty Oceans, Empty Nets*

MIDTERM EXAMINATION

III. THE MANAGEMENT OF MIXED GOODS IN AN ECOSYSTEMS FRAMEWORK: DOLPHINS, WHALES, SEA TURTLES, AND CORAL REEFS

1. Public Goods, Mixed Goods, Total Economic Value, Biodiversity

* Heal, G. "Biodiversity (Chpt. 6)," "Valuation (Chpt. 7)," "Sustainability (Chpt. 9)" in *Nature and the Marketplace*. Island Press (2000).

2. Dolphins

Hedley, C. "The 1998 Agreement on the International Dolphin Conservation Program: Recent Developments in the Tuna-Dolphin Controversy in the Eastern Pacific Ocean." *Ocean Development and International Law* 32 (2001): 71-92. Available online at: http://www.oceanlaw.net/hedley/pubs/32odil71.pdf

Video in class and possible guest lecture.

3. Whales

* Schneider, V. and D. Pearce. 2004. "What Saved the Whales? An Economic Analysis of the 20th Century Whaling." *Biodiversity and Conservation* 13(3): 543-562.

Possible guest lecture.

4. Sea Turtles

* Dutton, P., L. Sarti, R. Márquez, and Dale Squires. "Sea Turtle Conservation Across The Shared Marine Border." In L. Fernandez and R. Carson, eds., *Both Sides of the Border: Transboundary Environmental Management Issues Facing Mexico and the United States*. Kluwer Academic Publishers (2002).

Guest lecture.

5. Coral Reefs (Readings supplied if we get this far)

Video and lecture in class.

* Pennisi, E. ABrighter Prospects for the World=s Coral Reefs?@ *Science* 277 (25 July 1997): 491-493.

* Moberg, F. and C. Folke. AEcological Goods and Services of Coral Reef Ecosystems.@ *Ecological Economics* 29 (1999): 215-233.