Natural Resource Economics

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I. Course Synopsis and Goals

The central concern of economics is the allocation of scarce resources. It does not require much reflection to realize that our natural and environmental resources are scarce. Minerals, fossil fuels, fish, forests, clean air and water, the diversity of species, and perhaps even a stable global climate are clearly not available in unlimited supply. Perhaps economics has something useful to say about the management of our environment and natural resources.

This is indeed the case. Economics has three fundamental messages for natural resource utilization and environmental protection. First, economic analysis makes a compelling case for the proposition that an unfettered market system will often inefficiently exploit natural resources and generate excessive pollution. The incentives provided by a market system for natural and environmental resource exploitation can explain much of the degradation that we see in the world around us. Thus, economics makes a basic and persuasive case for the need for public intervention in the form of natural resource and environmental regulation.

Second, economics provides some guidance for the setting of standards for natural resource usage and environmental quality. For example, economics provides one approach to answering the question, "how clean should the environment be?" Often this approach is simply an application of the more general economic principle that any activity should be extended to the point where marginal benefits equal marginal costs. For some resources (e.g., fishery stocks), this principle must be amended in present value terms to account for the intertemporal (and biological) connection between actions taken today (e.g., harvesting) and the level of economic opportunities tomorrow.

Third, once we have determined the standards for resource usage or environmental quality, economics has some important things to say about the design of policy instruments to achieve these standards. In particular, economic analysis suggests how we can structure policy measures so as to realize our natural resource and environmental goals in the most effective and least cost ways.

The purpose of this course is to apply microeconomic analysis to a variety of important natural and environmental resources in order to more deeply understand the causes of resource and environmental degradation and evaluate the potential success of policy measures designed to protect and improve these critical resources.

II. Course Materials

Textbook: Jon M. Conrad, Resource Economics, 2010, second edition, Cambridge University Press.

Other Readings: Stavins, ed., Economics of the Environment, sixth edition, 2012, Norton.

III. Grades

Grades will be based on a midterm exam (50%) and the final exam (50%).

IV. Tentative Course Schedule

Introduction, Mathematical Preliminaries, and Microeconomics

* Conrad, Ch. 1

Efficient Resource Allocation, Market Failure, and Externalities

*Coase, "The Problem of Social Cost," in Stavins

Economics of Pollution Control

*Fullerton and Stavins, "How Economists See the Environment," in Stavins

Environmental Regulation

*Conrad, Ch. 6

*Pasurka, "Perspectives on Pollution Abatement and Competitiveness: Theory, Data, and Analyses," in Stavins

*Porter and van der Linde, "Toward a New Conception of the Environment-Competitiveness Relationship," in Stavins

*Palmer, Oates, and Portney, "Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm?," in Stavins

*Goulder and Parry, "Instrument Choice in Environmental Policy," in Stavins

Renewable Resources: Fish

*****Intriligator, "The Maximum Principle," in *Mathematical Optimization and Economic Theory.*

*Conrad, Ch. 3

*H. Scott Gordon, "The Economic Theory of a Common-Property Resource: The Fishery," *Journal of Political Economy,* 1954

*Stavins, "The Problem of the Commons: Still Unsettled after 100 Years," in Stavins

*Tarui, Mason, Polasky, and Ellis, "Cooperation in the Commons with Unobservable Actions," *Journal of Environmental Economics and Management,* 2008.

Renewable Resources: Forests

*Conrad, Ch. 4

Nonrenewable Resource Extraction

*Conrad, Ch. 5

*Livernois, "On the Empirical Significance of the Hotelling Rule," in Stavins

*Ellis and Halvorsen, "Estimation of Market Power in a Nonrenewable Resource Industry," *Journal of Political Economy,* 2002.

Option Value

*Krutilla and Fisher, The Economics of Natural Environments, pp.69-72.