Economics 144
Economics of Conservation
Summer Session II

Course Hours: MW 2:00 – 4:50 PM  Classroom: CSB 001

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Office: Econ 108  Office Hours: Immediately preceding class or by appt

Course Dates:  Monday, August 6 – Saturday, September 8, 2012
Final:  Saturday, September 8, 3:00 – 5:59pm Solis 107

Purpose: Biodiversity and ecosystems and their services face growing threats. Their loss affects human welfare. Humans depend on natural systems to produce a wide variety of ecosystem goods and services, ranging from direct use of certain species for food or medicines to ecosystem functions that provide water purification, nutrient retention, or climate regulation. Sustaining biodiversity and ecosystems in the face of increasing human populations and increased human economic activity promises to be a major challenge. Since most of the threats to biodiversity and ecosystems originate from human actions, understanding human behavior and the social, political and economic systems in which people operate is an essential component for those interested in conserving biodiversity and ecosystems. Conservation biology, ecology, or economics alone are insufficient to address their growing threats.

This course examines conservation policy from an economic perspective, applying economics principles to develop policy, but drawing upon conservation biology and ecology. Major themes include: biodiversity and ecosystems and their services have economic value; both market and non-market benefits and costs should be evaluated and balanced; there are opportunity costs to conservation; policies should be crafted utilizing both social norms and economic incentives to redirect individual and group human behavior and economic systems toward the social-ecological optimum that includes sustainability.

This is not a class in sustainable development; rather the focus is upon conservation of biodiversity and ecosystems and their services through policies that orient social norms and economic incentives to align individual and group behavior with the social-ecological optimum. Crafting such policies requires an appreciation of applied economic theory -- in particular that of common resources and impure public goods -- and the implications that follow. Special attention will be given to conservation of endangered species. Climate change, an important driver of changes in biodiversity and ecosystems and their services, is covered in Economics of the Environment, Economics 131, and hence not covered here.
Students interested in related political science issues should consider Political Science 125: The Politics of Conservation in Developing Countries.

Readings Availability

- All readings are available in pdf files from the class Blackboard (Ted) website.
- Basic economic theory is in your textbooks from microeconomics classes, although I will lecture on it and the core readings present the concepts.
- Most of the sections below start with conceptual readings and the last reading or two is an example. I do not test on examples (empirical studies), but you should read to better understand the concepts.

Core Readings


- Barbier, E. Chapter 2, Economics for the Wilds. (Covers total economic value, costs and benefits, discounting, fundamental reasons for market failure / economically inefficient resource allocation (insufficient conservation) – due to inability of resource users to capture the full economic value over their opportunity cost, importance of incentives)
- Alyward, B. Chapter 3, Appropriating the Value of Wildlife and Wildlands. (Covers pure and impure public goods and three resources considered public goods – species and habitat existence, ecosystem services, and genetic resources – how public good nature of resources leads to external benefits and insufficient incentives to provide public goods (i.e. conserve) since don’t capture full benefits, non-market external benefits and free riders, dispersion of benefits but concentration of conservation costs on resource users, private and communal resource users and incentives for conservation.)
- Swanson, T. Chapter 4. The Role of Wildlife Utilization and Other Policies in Biodiversity Conservation. (Discusses global public goods and transboundary issues, international collective action, conservation funding, property rights, wildlife trade regulation.)
- Barbier, E. Chapter 5. Community-Based Development in Africa. (Introduction to indirect incentive approach to conservation through community conservation and integrated development and conservation projects plus discussion of poster child CAMPFIRE program.)


**General Source of Information**
Mongabay.com

**Evaluation: Exams, Grades, and Re-Grades**

- One midterm and final exam, each of which is 50% of the final course grade.
- Bluebooks are required.
- Re-grade requests are to be made in writing and must explain the reason why a re-grade is requested, i.e. a logical discussion and thorough explanation of why your answer deserves more credit. Exam answers must be written in pen to be eligible for a re-grade.

**1. Introduction**

- **Powerpoint Lecture:** 1. Introduction

- Millennium Ecosystem Assessment PowerPoint. (I cover a fair amount of this, but this extensive powerpoint summarizes the well-known MEA and gives lots of background facts on the problems. Skim this to get even more an idea of the factual background and issues.)
- Polasky, Costello, and Solow. Economics of Biodiversity, Section 2. (Skim to get basic idea.)
- Norton-Griffiths. 2007. How Many Wildebeest Do You Need? *World Economics* 8(2): 41-64. (Read to understand many of the basic issues within a Kenya context.)
http://www.spiegel.de/international/world/0,1518,554982,00.html (Read to get idea of the basic issues and magnitudes of economic values involved.)

Additional Reading (Not Required):

- Pearce, D. and D. Moran. 1994. The Economic Value of Biodiversity. IUCN — The World Conservation Union. London: Earthscan Publications. (Very comprehensive overview relying upon a basic benefit-cost approach.) Section 1. (Surveys basic biodiversity.)

2. Review of Economic Concepts

2.1. Externalities

- Powerpoint Lecture: 2. Environmental Externalities and Market Failure (Reviews basic economic concepts)


2.2. Total Economic Value and Markets for Biodiversity

- Powerpoint Lecture: 3. Biodiversity Markets

- Barbier, Economics of the wilds, Chapter 2 in Swanson and Barbier, eds.
- Polasky, Costello, and Solow Section 3.
- Example: Naidoo, Malcom, and Tomasek. 2009. Economic benefits of standing forests in highland areas of Borneo: quantification and policy impacts. Conservation Letters 2: 34-44. (Skim to get basic idea)
- Example: Adger, W. N., Brown, K., Cervigni, R., & Moran, D. 1995. Total economic value of forests in Mexico, Ambio 24 (5): 286-296 (Skim to get the basic idea and an example.)

2.3. Opportunity Costs of Conservation: Impacts on Local Inhabitants

- Powerpoint Lecture: 4. Opportunity Costs of Conservation
- Borneo rain forests: http://www.timesonline.co.uk/tol/news/world/asia/article5908207.ece

2.4. Costs, Benefits, and Discounting

- Powerpoint Lecture: 5. Costs, Benefits, and Discounting
- Sinden, Chpt. 5 “Valuation with Market Prices” and Sinden, Appendices.

Further Reading (Not Required):

2.5. Property Rights, Public Goods, Common Resources, Coase Theorem

• Powerpoint Lecture: 6. Property Rights
• Powerpoint Lecture: 7. Impure Public Goods

• Aylward, Appropriating the value of wildlife and wildlands, Chapter 3 in Swanson and Barbier. (Discusses basic public good approach to conservation.)
• Example: Norton-Griffiths, M. 1996. Property rights and the marginal wildebeest: an economic analysis of wildlife conservation options in Kenya. Biodiversity and Conservation 5: 1557-1577. (Read to see an illustration of the importance of property rights and the importance of many of the basic economic concepts.)

Further Reading (Not Required)

2.6. Collective Action, Social Norms, and Economic Incentives

• Powerpoint Lecture: 8. Collective Action Social Norms
3. Biodiversity and Ecosystem Services

- Polasky, Costello, and Solow, Sections 2 and 3

3.1. Biodiversity and Ecosystem Services

- Powerpoint Lecture: 9. Ecosystem Services
- Polasky, Costello, and Solow, Section 3.3.
- Barbier, Economics for the Wilds, Chapter 2 in Swanson and Barbier
- Aylward, Appropriating the Value of Wildlife and Wildlands, Chapter 3 in Swanson and Barbier

Further Reading (Not Required):
- Millennium Ecosystem Assessment PowerPoint. (I won’t directly lecture on this, but this extensive powerpoint summarizes the well-known MEA and gives lots of background facts on the problems. Skim this to get an idea of the factual background and issues.)
through the executive summary to get an idea of the factual background and issues.)


3.2. Sustainability

- I don’t cover this section, but included for comprehensiveness.

4. Direct Incentive Approaches: Markets and Market-Based Policy

- *Powerpoint Lecture*: 10. Direct and Indirect Conservation
- Polasky, Costello, and Solow, Section 5

Further Reading (Not Required):


- Bulte et al. Section 3.1.
4.2. Payments for Environmental Services (PES)

- **Powerpoint Lecture:** 11. Conservation Payments
- **Powerpoint Lecture:** 12. Selling Environmental Services to help Finance Reforestation.

- Cooley, D. and L. Olander. 2011. Stacking Ecosystem Service Payments: Risks and Solutions. Nicholas Institute for Environmental Policy Solutions Working Paper NI WP 11-04. Duke University, **Section 1. (Read Section 1 only unless you want to delve deeper. Introduces basic idea of stacking and additionality, both of which are discussed more extensively in this paper.)**
- **Example:** Nelson, F. et al. 2009. Payments for Ecosystem Services as a Framework for Community-Based Conservation in Northern Tanzania. *Conservation Biology* 24(1): 78-85. (Skim to see an example.)

**Further Reading (Not Required):**

- Niesten, E., Gjertsen, H., Fong, P. In press. Incentives for Marine Conservation: Options for Small Island Developing States. *Environmental and Development Economics*. (Brings together the concepts of incentives, PES/direct conservation, and community/indirect conservation plus has three detailed case studies.)
4.3. Compensatory Mitigation / Biodiversity Offsets

- **Powerpoint Lecture: Offsets**

**Further Reading (Not Required):**

4.4. Eco-Tourism

- **Powerpoint: Ecotourism**

4.5. International Conventions, Markets, and Trade

- Swanson, T. 1992. The role of wildlife utilization and other policies in biodiversity conservation, Chapter 4 in Swanson and Barbier, editors. 1992. *Economics for the Wilds*. (Skim this for basic idea, some of the material is dated by now.)
- Norton-Griffiths, M. Some Thoughts on the International Ban on the Ivory Trade, 4pp. (Feisty and contrarian viewpoint! Only four pages.)
Further Reading (Not Required):


- Example: Jackson, R. 2004. Pakistan’s Community-based Trophy Hunting Programs and Their Relationship to Snow Leopard Conservation.

Further Reading (Not Required):


• Sims, K. The Effects of Protected Areas on Land Use and Local Economic Development: Evidence from Northern Thailand. (An empirical analysis of impact of protected areas / parks on well-being of adjacent inhabitants.)

6. Applications and Case Studies

6.1. Forests, Carbon, REDD+

• Introduction to the concepts and opportunities of forest carbon and carbon markets, with an emphasis on emission reduction schemes, avoided deforestation, and opportunity costs of conservation.

6.2. Game Ranching

• Powerpoint Lecture: Game Ranching Illegal Trade


6.3. The Tiger

• Powerpoint Lecture: Tigers
• Background: http://www.21stcenturytiger.org/index.php?pg=facts
Further Reading (Not Required)


6.4. Snow Leopards

- Jackson, R.. 2004. Pakistan’s Community-based Trophy Hunting Programs and Their Relationship to Snow Leopard Conservation.

6.5. BIGHORN SHEEP/MOUNTAIN LIONS/WOLVES

- Guest Speaker

6.5. The Vaquita

- Guest Speaker

6.5. Migratory Species

- Guest speaker on migratory seabirds

6.6. Conservation in San Diego County

- Guest speaker