BIO 591  THE ECONOMICS OF CONSERVATION

Spring 2017

Meeting times:  Tuesday, Thursday, 10.30-11.45, COOR L-184
SCRs:  3
Course instructor: Charles Perrings (LSA 127) Charles.Perrings@asu.edu
Office hours:  Tuesdays 1.00pm-3.00pm or by appointment

Prerequisites:  One of the following courses – or approved alternatives:
BIO/AML 424/524 Mathematical Models in Ecology
BIO 434 People and Nature

Aims:  To introduce students to the economic foundations for the conservation of natural and other assets

Objectives:  (a) to develop students’ understanding of the economic principles of conservation,
(b) to show how these principles connect to biological principles of conservation
(c) to enable students to apply these principles to a range of problems in the conservation of natural resources

Description:  The course offers training in the economics of conservation. It assumes some prior familiarity with the principles of economics, but does not require prior knowledge of constrained optimization methods. It includes a review of the basic theory of conservation—when to keep an asset in a particular state or use, or to convert it to an alternative state or alternative use. Examples extend from wine storage to world heritage sites. The theory is then related to the principles applied in biological conservation, and is used to reveal the factors that enter into conservation decisions inside and outside of protected areas. It is also used to show why conservation effort is underprovided in market economies, and what options exist to assure the optimal level of conservation. Students will apply the economic theory of conservation to an analysis of a range of conservation problems at multiple scales.

The course comprises lectures and seminars. The first part of the course will be largely composed of lectures, supported by three problem sets. The second part of the course will include student presentations on specific conservation problems.
Assessment: Problem sets: 30%
Mid term exam: 30%
Term paper: 40%

Readings: There is no prescribed text for this course, although you will find the following particularly useful:


Some readings will be posted online. For others you will be given the citations and expected to retrieve the readings yourselves.

Outline

Introduction

Current approaches to the conservation of natural resources and the field of conservation biology; scarcity and resource allocation in economics; concepts of value and opportunity cost.


The Hotelling rule and the conservation of natural resources

The Hotelling rule and implications for the conservation of natural resources; whether and when to exploit environmental resources; whether and when to cut forests; environmental protection as a 'wine storage problem'; how the value of resources evolves over time; sensitivity to changes in preferences and technology; the discount rate.


The value of natural capital

Biodiversity, ecosystem services and the value of environmental assets; methods for valuing ecosystems and ecosystem services; the Solow-Hartwick rule and conservation of the value of natural capital; tradeoffs and synergies between natural and other forms of capital; inclusive wealth and sustainable income; the Fenichel-Abbott measure of the value of natural capital; the portfolio of natural assets; valuation and wealth measurement


**Why the environment is underprotected**

a) Environmental public goods; common pool and open access resources; property rights, laws and patents; the problem of jurisdiction; b) environmental external effects of market transactions; land use change and habitat loss; roads, railways and habitat fragmentation; trade, travel and the dispersal of pests and pathogens; c) poverty, risk, and time preference; landlessness and land insecurity; impacts on the discount rate and resource use.


**Protected areas from an economic perspective**

Protected areas as a conservation strategy; the institutional and historical context; protected areas in terrestrial and marine systems; biological conservation value and the selection of protected areas; the ecosystem services yielded by protected areas and the opportunity cost of protection; the external effects of protection; determining the size and location of protected areas.


**The conservation problem beyond protected areas**

Conservation in agriculture, forestry, and fisheries; ex situ and in situ protection of the genetic diversity of crops, livestock, and wild relatives; conservation in multiple use forests; conservation in urban environments; conservation and development tradeoffs; ICDPs, tradable development rights, biodiversity and environmental offsets; incentive systems and payments for ecosystem services.


**International dimensions of the conservation problem**

The nature of the international problem; global environmental change and global economic change; multilateral conservation agreements; the intergovernmental organizations and the Global Environment Facility; strategic behavior and the protection of areas beyond national jurisdiction.


**Schedule of meetings**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-Jan</td>
<td>Introduction to the course</td>
</tr>
<tr>
<td>12-Jan</td>
<td>Basic decision tools 1</td>
</tr>
<tr>
<td>17-Jan</td>
<td>Current approaches to conservation</td>
</tr>
<tr>
<td>19-Jan</td>
<td>Basic decision tools 2</td>
</tr>
<tr>
<td>24-Jan</td>
<td>The Hotelling rule and conservation 1</td>
</tr>
<tr>
<td>26-Jan</td>
<td>Basic decision tools 3</td>
</tr>
<tr>
<td>31-Jan</td>
<td>The Hotelling rule and conservation 2</td>
</tr>
<tr>
<td>2-Feb</td>
<td>Basic decision tools 4</td>
</tr>
<tr>
<td>7-Feb</td>
<td>The value of natural capital 1</td>
</tr>
<tr>
<td>9-Feb</td>
<td>The value of natural capital 2</td>
</tr>
<tr>
<td>14-Feb</td>
<td>The value of natural capital 3</td>
</tr>
<tr>
<td>16-Feb</td>
<td>Why the environment is underprotected: externalities 1</td>
</tr>
<tr>
<td>21-Feb</td>
<td>Why the environment is underprotected: externalities 2</td>
</tr>
<tr>
<td>23-Feb</td>
<td>Why the environment is underprotected: public goods 1</td>
</tr>
<tr>
<td>28-Feb</td>
<td>Why the environment is underprotected: public goods 2</td>
</tr>
<tr>
<td>1-Mar</td>
<td>Review, test guide</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
</tr>
<tr>
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</tr>
<tr>
<td>7-Mar</td>
<td>Spring break</td>
</tr>
<tr>
<td>9-Mar</td>
<td>Spring break</td>
</tr>
<tr>
<td>14-Mar</td>
<td>Protected areas from an economic perspective 1</td>
</tr>
<tr>
<td>16-Mar</td>
<td>Protected areas from an economic perspective 2</td>
</tr>
<tr>
<td>20-Mar</td>
<td>Conservation beyond protected areas 1</td>
</tr>
<tr>
<td>21-Mar</td>
<td>Conservation beyond protected areas 2</td>
</tr>
<tr>
<td>23-Mar</td>
<td>Student led discussions: Protected areas</td>
</tr>
<tr>
<td>28-Mar</td>
<td>Student led discussions: Beyond protected areas</td>
</tr>
<tr>
<td>30-Mar</td>
<td>International dimensions of the conservation problem 1</td>
</tr>
<tr>
<td>4-Apr</td>
<td>International dimensions of the conservation problem 2</td>
</tr>
<tr>
<td>6-Apr</td>
<td>Student led discussions: International dimensions</td>
</tr>
<tr>
<td>11-Apr</td>
<td>Student led discussions: International dimensions</td>
</tr>
<tr>
<td>13-Apr</td>
<td>Term paper presentation</td>
</tr>
<tr>
<td>18-Apr</td>
<td>Term paper presentation</td>
</tr>
<tr>
<td>20-Apr</td>
<td>Term paper presentation</td>
</tr>
<tr>
<td>25-Apr</td>
<td>Term paper presentation</td>
</tr>
<tr>
<td>27-Apr</td>
<td>Review</td>
</tr>
</tbody>
</table>