Introduction

(Withgott & Brennan [2007 hardcopy] Chapter 1)

- Course Overview and Objectives
- Syllabus

Environmental Biology (ECOL 206)
University of Arizona, spring 2007
Kevin Bonine, Ph.D.
Anna Tyler, Graduate TA

Your Instructors...

1. Kevin Bonine
2. Anna Tyler

Course Overview

1. Environmental Biology/Science (what is it?)
2. Ecology and Evolution
   - Energy
   - Nutrients
   - Interactions among species and the abiotic environment
   - Adaptations
   - Processes
3. Human Influence
   - Society/Culture
   - Affluence
   - Population
   - Roles

Overall course objectives

• Grasp scientific material (content & literacy)
• Provide real-world relevancy and applications
• Place in context of students’ lives
• Foster life-long appreciation and respect for:
  - field, findings, ecosystem services, biodiversity, etc.

Where and when was this photo taken?

Habitat Modification = leading cause of species/population declines

Santa Cruz River at A-Mountain, Tucson, early 1900s

Global Climate Change

Sierra Magazine
Jan/Feb 2008
Global Climate Change

Human Economy depends on Healthy Environment

Wright and Nebel 2002

Natural Capital and Natural Resources:
- everything flowing in natural economy and human economy

Miller 2003

“Life Support System”

Wright and Nebel 2002

Ecosystem Services

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar energy</td>
<td>Generate electricity, heat, light</td>
</tr>
<tr>
<td>Geothermal energy</td>
<td>Generate electricity, heat, light</td>
</tr>
<tr>
<td>Water cycle</td>
<td>Dissolve, transport, and store nutrients</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Maintain ecological balance</td>
</tr>
<tr>
<td>Ecosystem services</td>
<td>Provide goods and services to humans</td>
</tr>
</tbody>
</table>

Miller 2005

Brennan and Withgott 2005

Savannah and Withgott 2005

Notes: "Ecosystem services..." (Walters and others 2005). Other notes...
Syllabus (con't)

Course Work Details

- Exams, Cumulative Final
- Attendance, Participation, and Quizzes
- Current Environmental Events Journal (due Fridays)
- Creativity Project
- Field Trips and Lab (take notes)
- Lab Assignments, Quizzes, Attendance

I P A T

Developed Countries
1.2 billion people (~19%)
high average per capita purchasing power
have 85% world’s wealth
use 88% natural resources
generate 75% waste and pollution

Environmental Impact = Population x Affluence x Technology
(consumption)

Developing Countries
83% of the people
have 15% world’s wealth
use 12% world’s natural resources
produce 25% waste and pollution

Poor parents in a developing country
need to have 70-200 children to equal the environmental
impact of 2 U.S. children

Figure 1-7: Natural capital degradation: major environmental and resource problems.
Miller 2005