

## CENTRO DE ESTUDIOS INTERAMERICANOS, CEDEI

### ENV 340 CONSERVATION BIOLOGY

#### **PROFESORA: TERESA CLARE**

Conservation biology emerged as an important new discipline during the 1980s in response to the alarming loss of biological diversity throughout the world, a result of rapid growth of the human population and the expansion of human activities. This course is an introduction to conservation biology with an emphasis on Latin America and Ecuador in particular.

We will first introduce general concepts of conservation biology and biodiversity at the species, genetic and ecosystem levels before going on to examine in more detail the geographical and evolutionary factors responsible for Ecuador's outstanding biodiversity. We will overview the main threats to biodiversity using examples from Ecuador and Latin America wherever possible, and then go on to consider the various problems faced by small populations of endangered species. We will discuss conservation strategies for individual species and for communities and ecosystems, both from theoretical and practical standpoints, taking into consideration the problems faced by conservation biologists in developing countries such as Ecuador.

Throughout the term, students will carry out an original investigation on a topic of their choice.

#### Exams and grading

1. Mid-term exam 30%
4. Short assignments / seminars 10%
5. Final exam 30%
6. Term Project 25%
7. Oral presentation of project 5%

Text: A Primer of Conservation Biology, Richard B. Primack, Sinauer Associates, 2004

Additional reading material is available.

1. Monday March 10  
**Introduction to conservation biology in Latin America**  
Ecuador as the birthplace of Ecology  
Population growth and the global biodiversity crisis - what are we losing and does it matter?  
How many species are there?  
Biological and social crisis in Latin America - implications for conservation  
CONSERVATION OF MACAWS IN PERU  
Introduction to basic concepts and interdisciplinary aspects of conservation biology.  
Keystone resources and Flagship species,

2. Wednesday March 12  
**What is biodiversity?**  
 Video –National Geographic Explorers of the High Frontier (rainforest canopy)  
 Species diversity -What is a species and how do species evolve?  
 Adaptive radiation and phyletic evolution  
 EVOLUTION OF DARWIN’S FINCHES  
 Ecosystem and community diversity and organization  
 Keystone species and extinctions
  
3. Friday March 14  
**Why is Ecuador so diverse?**  
 The Main ecoregions of Ecuador  
 The role of the Andes and ocean currents  
 Diversity in the tropics - various hypotheses  
 Biodiversity “Hotspots”
  
4. Monday March 17  
**Extinctions**  
 Extinction rates in the past, extinctions caused by human activities  
 Endemic species and extinctions on islands  
 Island Biogeography  
 Effects of extinctions on ecosystems.
  
5. Wednesday March 19  
**Habitat destruction and degradation.**  
 Loss of habitat, rainforest deforestation, habitat fragmentation, edge effects
  
6. Monday March 24  
**The Galápagos Islands 1**  
 Video- Galapagos – Islands that changed the world.  
 Ecology and evolution in Galapagos.
  
7. Wednesday March 26  
**Galapagos Islands 2**  
 Conservation challenges – introduced species, tourism, illegal fishing.
  
8. Friday March 28  
**Mid term exam**
  
9. Monday March 31  
 Discussion review of exam.  
**Wildlife Trade.**  
 The CITES convention  
 What to do with confiscated animals?  
 Zoos, rescue centres and ex-situ conservation

10. Wednesday April 2  
**Problems of small populations.**  
Minimum viable populations.  
Loss of genetic diversity, inbreeding and outbreeding depression, effective population size  
Stochastic demographic and environmental variation, Extinction vortices.
11. Wednesday April 9  
**Conserving populations and species**  
flagship species, conservation categories etc.  
Monitoring populations. Establishing new populations.
12. Friday April 11  
**Conserving ecosystems - Defining priority areas for conservation**  
Hotspots, key wilderness areas, global 200 etc.  
Rapid assessment programs, Indicator species and endemic bird areas  
Gap analysis  
Design and management of protected areas – in theory and practice  
Ideal size and design for reserves. - The SLOSS debate  
Wildlife corridors  
Buffer zones and extractive reserves
13. Monday April 14  
**People and parks in Ecuador**  
Ecuador's system of protected areas.  
Indigenous people and national parks  
Squatters and *colonos*  
*Ecotourism*
14. Wednesday April 15  
**Conservation outside protected areas, restoration ecology.**  
Restoration of rainforest, dry tropical dry forest and mangrove habitats
15. Friday April 17  
**Conservation and sustainable development**  
seminars
16. Monday April 21  
**Final exam**
17. Wednesday April 23  
**Presentation of Project Reports.**  
Discussion