

Conservation Biology
BIOL 466
Winter 2008

Faculty: Dr. Kristina Ernest Dr. Daniel Beck

Credits: 5

Course Location: Morelia and Chamela, Mexico

Course Description: Introduction to the principles and practice of conservation biology, with emphasis on case studies. Field trips to see conservation projects in action and areas of concern to conservation biologists. Lectures will present a broad treatment of conservation biology theory, while readings, discussions, and field trips will focus on conservation biology problems and practice in Latin America, with special emphasis on Mexico.

Goals and Objectives

Students will be able to:

1. define the scope and contributing disciplines of conservation biology
2. identify major threats to biodiversity
3. explain different measures of biodiversity
4. critically evaluate conservation literature and conservation projects
5. appreciate the interdisciplinary nature of conservation biology
6. apply basic biological and ecological concepts to conservation issues

Format

Lectures & Discussions (based on readings): MWF, 2 hours/day (Morelia) plus occasional discussions in Chamela

Field Trips – approx. biweekly half-day or full day trips (Thursday or Saturday from Morelia; to be arranged from Chamela)

BIOL 377- *Regional Natural History: Ecology of Dry Tropical Forests*

Faculty: Dr. Daniel Beck

Dr. Kristina Ernest

5 Credits

Jan. xx- Feb. xx -- Lecture/discussion in Morelia, Michoacán 2-3 hours weekly

Feb. xx- Mar. 12 -- Research projects at Estación de Biología, Chamela, Jalisco

Texts:

Required: Selected readings from "Mexico Biology Program" packet.

Suggested reference: *Seasonally Dry Tropical Forests* (S. H. Bullock, H. A. Mooney, and E. Medina, eds.), 1995, Cambridge University Press, Cambridge, Great Britain

Course Goals and Objectives

Students will be able to:

- 1) Describe the characteristics of tropical dry forests, with emphasis on southwestern Mexico, including their causes, distribution, climate, structure, and characteristic plant and animal inhabitants.
- 2) Experience, first hand, Mexican tropical dry forest and understand threats to the future of tropical dry forests.
- 3) Record data and field observations in an organized field journal.
- 4) Conceive, design, and conduct biological research relating to tropical dry forest ecology.
- 5) Interact with Mexican and other Latin American researchers investigating tropical dry forests.

Overview

This two-part course is an exploration of tropical dry forests with an emphasis on southwestern Mexico. Six weeks of lecture/discussion in Morelia, Michoacan will be followed by 3 weeks of field study in a tropical dry forest in coastal Jalisco. In Morelia, students will gain a background on dry forest ecology and develop proposals of research to be conducted during our three-week stay at a biological field station in Chamela, Jalisco. In Chamela, students will also conduct general field observations on the natural history of the region and keep a detailed field journal.

Course Format

Morelia: Course meets once each week for lecture, discussion, and research proposal development. The class will lead a discussion of selected readings relating to the lecture topic for that day. Everyone is required to read the selected papers, come with a written summary and questions, and participate actively in discussion. See detailed discussion guidelines for additional information.

Chamela: Daily field work plus occasional discussions. You will keep a field journal, and participate in various field activities. In addition, you will perform your own field investigation (in groups) of a specific research question that relates to the theme of this course.

Grading

Participation during discussions of readings	50 pts
Exams (2; short answer, identification, and essay)	150 pts
Investigation proposal	100 pts
Field notebook	100 pts
Periodic field notebook checks or quizzes	50 pts
Field Investigation	<u>200 pts</u>
Total	650 pts

If you earn the following course percentages you can expect no worse than the grade indicated (you may fare better) 90%+ = A, 80 - 89% = B, 70 - 79% = C, 60 - 69% = D, below 60% = F.

Field Notebook

Your field notebook will be an important companion on the fieldtrip. You will keep a daily field journal, and record all your field observations in your field notebook. Detailed guidelines for keeping field notes will be discussed in class.

Field Project Guidelines

A major objective of this course is to provide a framework for you to cultivate your own interests in field ecology. During our stay in Morelia you will develop a question/project to be pursued on the fieldtrip and will write a detailed project proposal. The individual projects will be linked to an overall theme focusing on biological comparison of upland and arroyo habitats within tropical dry forest. Most importantly, pick a project in which you are interested and ***make it fun***. Additional guidelines for the project topics and proposals will be discussed in class.

BIOL 377 -- *Ecology of Dry Tropical Forests*

Tentative General Topics/Schedule

- January 12 - The “dry tropics” and its relationship to other biomes; climate, and habitat types.
- Assigned readings: 1 (Ecology of tropical dry forest)
3 (Climate of Chamela)
- Discussion: Reading 1
- January 19 - Vegetation and plant diversity
- Assigned readings:
4 (Floristic diversity and structure of upland and arroyo forests),
5 (Diversity of life forms of higher plants in neotropical dry forests).
- Discussion: Readings 4, 5
- January 26 - Plant adaptations
- Assigned readings: 6 (Phenology of canopy trees)
7 (Soil and stem water storage)
- Discussion: 6
- Topic statement/title due
- February 2 - Animal/vertebrate diversity; animal adaptations
- Assigned readings: 8 (Vertebrate diversity, ecology, and conservation)
9 (Ecology of the beaded lizard)
- Discussion: 8
- Proposal outlines due/hypotheses
- February 9 - Plant-animal interactions; Forest community dynamics
- Assigned readings:
10 (Plant-herbivore interactions)
11 (Disturbance and seasonal dynamics of mycorrhizae)
- Discussion: 10, 11
- Proposal drafts due
- February 16 - Conservation of tropical dry forests
- Assigned readings:
2 (Tropical dry forests: the most endangered major tropical ecosystem)
12 (Conversion of tropical dry forest to pasture and agriculture)
- Discussion: 2, 12
- Final proposal due
- Proposal presentations
- February 20-March 12 – Field research projects