

How Sustainability was integrated into Tropical Biology (Biology 195) taught Jan Intersession 2010 by John Conway

I incorporated a general lecture module on sustainability in my Tropical Biology course offered during the Jan 2010 Intersession in Costa Rica and Panama. Students also read my Feature Articles in **Biology Digest** on Costa Rica, Panama, the Rainforests of Belize and Guatemala, the Belizean Barrier Reef and Chap 14, Deforestation and the conservation of biodiversity, in our textbook, **The Neotropical Companion**. The main emphasis of these readings was on sustaining tropical rainforests and coral reefs to maintain their extreme biodiversity.

Some of the topics discussed were: the Minimum Critical Size of Ecosystems project, the MacArthur-Wilson theory of island biogeography, the impact of forest fragmentation (i.e. edge effects), and the use of corridors to mitigate these effects, the SLOSS debate among conservation biologists, characteristics of species most prone to extinction, the importance of keystone species, global warming and greenhouse gases, Chico Mendes and the use of rainforests as extractive reserves, the effects of overpopulation, ecosystem services of rainforests and coral reefs, the Gaia hypothesis, estimates of biodiversity worldwide and in tropical rainforests and coral reefs, the aesthetic value of preserving rainforests and reefs (ecotourism, "biophilia"), the economic value of rainforests and reefs (Thomas Eisner's "chemical prospecting" for foods, medicines, fuels, etc.), and organizations that study and preserve biodiversity (INBio in Costa Rica, ANCON in Panama, OTS biological stations in Costa Rica, such as La Selva and Palo Verde, Smithsonian stations, such as Barro Colorado in Panama, Earthwatch Expeditions, Save the Rainforest, etc.).

University of Scranton
Department of Biology

SYLLABUS

COURSE: Biology 195 Tropical Biology. January Intersession 2010

LOCATION: University of Scranton & Costa Rica/Panama

INSTRUCTOR:

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TEXTBOOK:

A Neotropical Companion by John C. Kricher. 1997. Princeton University Press. Princeton.

Selected readings from reprints

COURSE DESCRIPTION: A general course open to fulfill the General Education Natural Science requirement. The course can also be taken by Biology majors to fulfill the Population and Organismal areas. The course is designed to broaden a student's educational perspective by exposure to new biological and cultural environments. Students will experience first-hand the two most diverse biological ecosystems on earth: the coral reef and the tropical rainforest. Students will learn about the flora and fauna of the rainforest and study and identify common invertebrates and fish by snorkeling coral reefs and turtle grass beds and exploring tide pools, sandy beaches, and mangroves.

LEARNER OBJECTIVES:

1. Students will identify common invertebrates and become familiar with the biology and ecology of marine invertebrate phyla
2. Students will identify common reef fish and learn the characteristics of their families
3. Students will learn about the location, formation, ecology and evolution of coral reefs and rainforests
4. Students will discuss factors contributing to the worldwide destruction of coral reefs and tropical rainforests
5. Students will discuss the importance of preserving coral reefs and rainforests
6. Students will study mangroves, turtle grass, tide pools and other tropical marine environments and identify indicator organisms
7. Students will identify animals and plants encountered in primary and secondary rainforests
8. Students will study the biology of tropical ants, such as leafcutter and army ants, and ant-plant associations, such as Aztec ants and *Cecropia*, and ants associated with bull's-horn acacia
9. Students will record the common and scientific names of organisms they encounter or collect, and keep field notes on their habitat, behavior, interactions, etc.
10. Students will observe life in developing countries
11. Students will keep a daily journal to record information on

people and places

12. Students will learn about sustainability: definition, ecological footprint, and the preservation of tropical ecosystems

COURSE PREREQUISITES: Swimming proficiency and a sense of adventure

COURSE REQUIREMENTS:

1. **Regular attendance and participation.** You will be evaluated on your academic work, cooperation, promptness, initiative, enthusiasm, and how well you represent the University and the United States. **Inappropriate or irresponsible behavior such as excessive loudness after 10 PM, failure to inform the instructor of your whereabouts, failure to follow directions, destruction of property, drunkenness, etc. may result in dismissal and/or a failing grade.**

2. **Successfully complete tests over reading assignments.**

3. **Notebook** with the following sections:

A. **Field notes.** List all organisms observed and identified each day. Wherever possible give both common and scientific names (genus and species) and include information on date, time, behavior, habitat, and intraspecific and interspecific interactions. This section should show evidence of careful and accurate observations in the field. When making observations think of the following questions: What, When, and Where? **The format for entries should be date, time, location, habitat, common and scientific name of organism, and observations.**

B. **Daily journal** that includes **your impressions of people, places, food, customs, prices, and daily activities.** You can include photographs, brochures, postcards and maps. The purpose of this section is to encourage careful observation and allow you to relive the trip later.

C. **Notes from talks by guides and other speakers.**

Your entire journal will be graded on its content, organization, neatness, completeness, accuracy, and originality.

COURSE EVALUATION:

Notebook

250 pts (Section A-150 pts, B-50 pts, C-50 pts)

Participation	50 pts
Tests	200 pts
Total	500 pts

GRADING SCALE:

GRADE	PERCENTAGE	TOTAL POINTS
A	93-100	465-500
A-	90-92	450-464
B+	87-89	435-449
B	83-86	415-434
B-	80-82	400-414
C+	77-79	385-399
C	73-76	365-384
C-	70-72	350-364
D+	67-69	335-349
D	60-66	300-334
F	below 60	below 300