



Environmental Science and Policy in the Tropics

(Duke University - ENV 282A)

Fall 2017

Course Description

This course encourages students to evaluate the conservation and management of natural resources using tools and perspectives relevant to both the natural and social sciences. Students are introduced to issues and problems in environmental science and conservation biology under three main themes: 1) Social and Political History of the Costa Rica as a case study of the Neotropics, 2) Tropical Ecosystem Management, and 3) The Global Environment.

Instruction consists of field trips, lectures, discussions, presentations, and writing assignments. In addition, there will be background readings from textbooks, research papers, and review articles. Field trips highlight major conceptual themes as well as practical challenges faced by Costa Rica and other Neotropical countries. Examples include visits to banana and coffee plantations, managed wetlands, forest fragments, and private farms and reserves. Formal lectures and writing assignments are often linked to field activities and orientation walks.

Goals

1. Understand the historical social and economic context of conservation planning and financing.
2. Understand the relationship between different agro-ecosystem models and the conservation of biodiversity in the tropics. (e.g., tropical wet and dry forests, and montane forests).
3. Understand other global and local threats to the environment, their causes, consequences and the pros and cons of possible solutions.
4. Understanding of different conservation models; conservation of environmental services and how they are critical in providing global environmental services.
5. Provide students with the skills necessary to adequately and critically assess environmental issues pertinent to the areas in which they work.
6. Communicating discoveries of natural world to a broad audience.

Specific Objectives and Skills

By the end of the semester, students will be able to:

1. Understand the role of international community in conservation issues in developing economies.
2. Discuss the conflict between development goals and conservation goals.
3. Understand of the landscape context of conservation decisions.
4. Understand agricultural impacts on the environment.
5. Discuss pros and cons of top-down and bottom-up management in conservation systems.
6. Discuss problems that arise from the human-environment interface.

7. Articulate the cultural, social and economic environmental framework in which decisions are made.
8. Explore strategies that promote biodiversity/habitat conservation and/or recovery.
9. Critically examine conservation models and how these are marketed internationally.
10. Identify environmental services provided by different ecosystems, particularly in the tropics.
11. Interact with local people and be able to incorporate their perspectives into conservation and management issues.
12. Gain an appreciation of the difficulties in communicating science and be effective.

Faculty

J. Mauricio Garcia-C., Msc. Guest lecturers and local stakeholders also participate in the course.

Readings/Textbooks

Arriagada. 2010. Modeling fertilizer externalities around Palo Verde National Park. *AgEcon* 41:567-575.

Dorcas et al. 2012. Severe mammal declines coincide with proliferation of invasive Burmese pythons in Everglades National Park. *PNAS*. 109(7):2418-2422.

Fletcher and Breitling. 2012. Market mechanism or subsidy in disguise? Governing payment for environmental services in Costa Rica. *Geoform* 43:402-411.

Grant et al. 2013 Pesticide in blood from Spectacled Caiman. *EnvToxChem* 32(11):2576-2583.

Perring et al. 2015. Advances in restoration ecology: rising to the challenges of the coming decades. *Ecosphere* 6(8):1-25.

Rizo-Patrón, F. et al. 2013. Macroinvertebrate communities as bioindicators of water quality in conventional and organic irrigated rice fields in Guanacaste, Costa Rica. *Ecological Indicators* 29:68-78.

Sodhi, N. S. and P. R. Ehrlich (Eds) 2010. *Conservation Biology for All*. Oxford University Press.

Whitfield et al. 2016 Amphibian Decline and Conservation in Central America. *Copeia* 104(2):351-379.

Primary literature and review articles are also assigned throughout the course. A schedule of reading assignments is provided at the beginning of the semester. Readings take two forms: those that are intended to reinforce class material by presenting the subject in a different framework, and those that are intended to complement and add to material presented in class by expanding on a particular topic.

Class Meeting

A detailed calendar with topics, instructors, and meeting times will be posted at each site. However, scheduling is subject to change due to unforeseen circumstances typical of a field course (e.g. weather, last-minute cancellations, etc.). Meeting locations will be specified upon arrival at each site.

Course Evaluation

	<u>% Final Grade</u>
Three exams (15 points each)	45
Written assignments	15
Journal/Blog (4 submissions)	10
Ecological Footprint assignment	5
Participation and Discussions	15

Exams

There will be three exams during the semester. Exams will cover material presented in class, in readings, and during laboratories, activities, and field trips. Exams questions may take a number of formats, but are typically short-answer questions. Exams are intended to encourage you to review the information presented and demonstrate to the instructors your understanding of and ability to synthesize course material. We will make every effort to grade exams within a reasonable time frame. After exams are handed back to students will be advised of the time period during which you may review your answers and ask questions. This time frame is typically one weeks. All appeals regarding grading decisions should be made within this time frame.

Written Assignments

Written assignments are base on topics that have been presented during the course and need to be expanded individually or in groups. They will be assigned and graded by the professor in charge of the activity.

Journal/Blog

Communicating scientific experiences and findings to a non-scientist audience is increasingly important. The Tropical Biology blog assignment is designed to communicate research, ecology and conservation issues to the general public, and to encourage you to share your experiences and research findings in a fun and non-traditional way. Through reflective journaling and web publishing students hopefully find themselves thinking about course content in ways they might not have otherwise.

During the semester, students should prepare and post four blogs: two from before Semester Break, and two after. The format is should be at least 1 page Times New Roman 12 pt font, 1 inch margins, 1.5 line spacing.

Ecological Footprint assignment

The objective of this assignment is to have each student estimate their ecological footprint. Students will then use the information from these calculations to identify ways in which they could potentially reduce their footprint by observing different lifestyle choice between students US lifestyle and that of their Costa Rican homestay family. This is an individual assignment and students need to find information on the web to make the calculations. Students will need to write a short report and be prepared to discuss this with the class.

Participation

Participation includes attendance of lectures, workshops and field trips, completion of assignments, positive contributions to discussions and lectures, listening to others, and demonstration of academic initiative and enthusiasm in the field as well as in the classroom.

Grading

Course grade (%)	Letter grade
97-100	A+
93-96.99	A
90-92.99	A-
87-89.99	B+
83-86.99	B
80-82.99	B-
77-79.99	C+
73-76.99	C

Statement of Accessibility

This class represents an environment that is open and welcoming to all students. If you believe you may need accommodations during the class that may not traditionally be available, please contact any of the instructors within the first week of the course to plan a way to meet these needs within the potential logistical restrictions posed by a field course. Please communicate with us openly and recognize that accommodations are collaborative efforts between students and faculty.

Statement of Expectations for Student Conduct

We expect you to conduct yourself in a professional, honest, and ethical manner and adhere to Duke University's academic policies. As such you will be held to the highest standards regarding academic integrity. Academic dishonesty includes: lying (communicating untruths or misrepresentations); cheating (using unauthorized materials, information, or study aids); fabrication (falsifying or inventing information); assisting (helping another commit an act of academic dishonesty); tampering (altering or interfering with evaluation instruments and documents); plagiarism (representing the words or ideas of another person as one's own); and stealing (appropriating the property of another without permission). For additional information about academic dishonesty at Duke University please go to: <https://studentaffairs.duke.edu/conduct/z-policies/academic-dishonesty>

Additional Policies & Procedures

The Organization for Tropical Studies and Duke University complies with and will comply with all applicable federal, state, and local laws, regulations and guidelines in addition to policies and procedures outlines in the Duke University Undergraduate Catalog.

American with Disabilities Act

“Duke University does not discriminate on the basis of an individual’s disability and complies with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act in its admission,

accessibility, treatment and employment of individuals in its programs and activities. The University provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law, who are otherwise qualified to meet the institutions academic and employment requirements. For more information, visit or call the Center for Students with DisABILITIES. For more information on University policies and services to students with disabilities, see the Undergraduate Catalog.

Additional Notes on Academic Dishonesty

Academic dishonesty (i.e. plagiarism, cheating) will not be tolerated. Any person suspected of academic dishonesty will be subject to the policies and procedures set forth by Duke University as outlined in the Undergraduate Catalog.

Statement on Plagiarism

Plagiarism is define as taking the words or ideas of another person and using them without citation as though they were your own. As such, acts of plagiarism include using song lyrics, words from an interview, words or ideas from a conversation or in-class discussion, words from a lecture by a professor, jokes from a comedian, or lines from a movie or dramatic play. Other sources of plagiarism will be articles from peer-reviewed journals, news sources, books, or magazines, in a scholarly work of your own without crediting their place or person of origin. In this class, students will be expect to properly cite all sources from which words, information, and ideas in their papers come, including quotation marks for precise wording and in-text citations for all ideas, as well as a full bibliography at the end of the paper. As we will be using APA style, please consult the APA website, <http://www.apastyle.org/>, for specific instructions on proper citation.

According to the Duke University policy on plagiarism, students found to have plagiarized in classwork or written assignments will be given a grade of “F” for the paper on which they have been found to have plagiarized and may be subject to an official investigation of their academic honesty by the University. This investigation, even if the student is found to have been innocent, will be **permanently documented** on the student’s academic transcript. If you are uncertain about the citation criteria for an idea in your paper, please see the instructor and ask before submitting. Your honesty is greatly appreciate, and will serve you in all of life! For more on University policies regarding plagiarism please see the handbook.

Class Attendance & Authorized/Religious Absences

Regular and punctual attendance is expected. Attendance begins on the first day of class. Attendance is taken every class period. Class attendance is essential for participation, performance, and intellectual progress. Attendance is generally an indication of how serious of a student one is, and will most likely account for the success, or lack of success, of a student. In this class, attendance is a symbol of participation, which represents part of your grade. Notes taken during class will enhance that physical presence by allowing you to capture essential information, meaning, and details of the course. University authorized absences and religious absences are provided in accordance with Duke University policy and state law.

Acting Responsibly

Any acts of misconduct as defined by the Student Code of Conduct, which is available from the Duke University Dean of Students Office, will be referred to the University and may be subject to the university Code of Conduct and Discipline.

Please remain respectful of others' time. Turn off cell phones, let others speak, and be on time to class, field trips, and activities. Tardiness is inconsiderate and unacceptable. Please let us know if you will not be able to make it to class. It is your responsibility to obtain notes from a classmate for any missed time.

Also, please mind your food and drinks. Avoid creating disruptions related to eating/drinking during class or other activities. Avoid spills, crumbs, etc. and clean up after yourself immediately. Remove any trash you or others create.

Finally, an essential element to successful class meetings is your preparation. Please read and complete assignments on time, and be prepared for class participation and discussion. We will do everything in our power to provide you with a positive and inclusive learning environment and will guide and assist you in your learning experience. But, ultimately, your education is your responsibility. Please take this responsibility seriously.