GEO Study Abroad

SYLLABUS

Neotropical Ecology Field Studies
Course equivalent in Biology Department is *Bi410: Neotropical Ecology Field Studies*
Instructor: Tobias Policha
Language of Instruction: English
UO Credits: 4 (P/NP only)
Contact Hours: 40
Total Hours of Student Engagement (THSE) in all course activities: 152

Various locations in Ecuador

COURSE DESCRIPTION

The *Neotropical Ecology Program* consists of two courses that provide opportunities for students to learn firsthand about some of the important ecosystems found in the neotropics including: lowland rain forest, middle elevation montane and cloud forests and the diverse ecosystems of the high elevation shrub lands (páramo). The first course is on the UO campus in the spring and prepares students for their studies in Ecuador. It also involves students developing a field project that will be conducted in Ecuador. The second course includes field work in all of the ecosystems mentioned above, as well as lectures lead by an international team of biologists and field guides.

COURSE OBJECTIVES

The goals of this course are to:

- Give students the opportunity to experience and explore tropical ecosystems.
- Give students the opportunity to engage with a variety of people living and working in Ecuador including both native and non-native Ecuadorians, locals, Ecuadorian and non-Ecuadorian scientists, and guides.
- Give students the opportunity to see firsthand the interplay among biodiversity (both human and non-human organisms), threats to ecosystems from humans (including deforestation and oil exploration) and threats to human cultures (especially the endangered Waorani peoples).

Student Outcomes. Students who successfully complete this course will:

- Have a deeper understanding of the diversity of ecosystems found in the tropics (there are a lot more than just lowland rainforests).
- Be able to describe the abiotic, biotic and historical reasons why each of these ecosystems in Ecuador exists in their particular location and be able to predict where these various ecosystems might exist in other tropical countries.
- Be able to describe some of the characteristics one would expect to find in the plants of each ecosystem and the reasons those characteristics have evolved.
- Be able to identify many of the organisms they encounter in Ecuador including many of the common plant families; insects to the level of order; general common names of many of the birds; specific common names of many of the mammals; major groups of amphibians and reptiles.

- Be able to discuss and write about the history and issues surrounding the interplay among oil exploration, deforestation and indigenous sovereignty.

INSTRUCTIONAL METHODOLOGY

This is an intensive field course where we will spend 24 hours a day, most days, in the ecosystems that we are studying. Most mornings we will get up with the sun (around 6AM) and spend the entire day and evening in the field. Even most meals will occur in the field as most of the dining facilities have roofs, but no walls. We often will go on night walks in order to study nocturnal animals. We all will be exhausted at the end of each day, but our heads will be filled with the amazing biodiversity and experiences from that day.

Students will have the opportunity to interact with the course instructors, local workers, local guides and various tropical ecologists during the course of the day, including during meals. Most of the time will be spent learning with the entire groups, but there will also be opportunities to explore in smaller groups (we really don't want you going into the forests on your own).

There will be several formal evening lectures given by visiting scientists. In the past this program has had scientists and artists who study and work with birds, insects, amphibians and reptiles, bats, mammals, plants, biodiversity measures, monkeys, indigenous cultures, ecotourism and conservation. In addition, each visitor will take the group out in the field to study their particular area of interest and research.

A substantial part of the time will be spent hiking in the various ecosystems either with the entire group, or in smaller subgroups. These hikes will be led by scientists and local guides. There will be many informal discussions as well as opportunities for students to ask questions, formulate hypotheses and conduct mini-experiments. All students will keep a field notebook to record their observations and ideas.

We will travel between ecosystems by bus and motorized canoe (see below for specifics). While we are traveling we will continue to study the ecosystems, both within the bus or canoe and during our frequent stops along the way.

METHOD OF EVALUATION (GRADING- P/NP only)

Students must satisfactorily complete all aspects of evaluation in order to receive a grade of P. (i.e. Not meeting *any* of the criteria will result in a grade of NP.)

- Attendance is required for all activities unless a prior arrangement has been made with one of the course instructors.
- Full active participation is vital to learning. This can be particularly challenging while spending long days in the field, but it is crucial in order to meet the goals of the course. Full participation requires engagement which can be demonstrated by paying attention to the guides, scientists and other students while they are talking.
- Students should strive to ask good questions, offering insights or hypotheses during the various parts of the course including in the field, during formal talks, and during meals.
- Students are required to keep a field notebook where they keep notes on material they are learning in the field and at the stations. In addition, students should include original ideas and questions they have while in the field or during talks (both formal and informal). The field notebook will be collected at the end of the course, but it is not meant to be something that another person can necessarily understand fully.
- Students will also keep a journal that is intended to be shared by others. This is where each student should summarize, synthesis and expand on their experiences in the field. Each student

should plan to spend about 1 hour each day working on their journal either at the station or lodge or while traveling in the bus or canoe.

- There will be several specific field projects, both group and solo, during the course. These may be purely observational or may include some experimentation. The observations and results should be recorded in the field notebook and then written up in the journal.
- Students should include, in the journal, a short written reaction to each of the formal talks.
- Every student is expected to act in a mature and professional manner during the entire course. It is very important to act in a respectful way with all of the various people we encounter while in Ecuador, including the workers, scientists, guides and locals. Any student who is found to be intoxicated can be dropped from the course immediately.
- Every student is expected to act in a manner that is safe for themselves and the group while in Quito and while in the field. There will be several discussions, both in Eugene and while in Ecuador, where we will discuss how to be safe while in Ecuador. Students that don't act in a safe manner can be dropped from the course immediately.

COURSE OUTLINE

The following is a ***tentative*** outline of the program in Ecuador. Be aware that it is difficult to plan everything this far in advance so there may be some changes.

High-elevation Inter-Andean Valley Ecosystems (~3 days)

Quito, the capital of Ecuador, is situated in a high valley in the middle of the Andes Mountains. The elevation of Quito is about 9,000 feet. There is very little native vegetation left in this valley because it has been one of the highest human population areas for 1,000's of years. We will spend a total of three nights at hotels in Quito: the first two nights, and the final night at the end of the course near the airport. On the first day we will spend a few hours in a classroom going through an orientation. The afternoon will be devoted to visiting some local city sites (possibly Old Town Quito). We will leave Quito right after breakfast in our private bus. Along the way we will get a chance to see and learn about the ecosystems in the inter-Andean valley. This will mostly happen while we are traveling in our bus, but we will make some stops in these ecosystems and spend some time viewing and learning about the native and current vegetation including the role of introduced species.

Mid-elevation Andean Montane Ecosystems Western Slope (~4 days)

We leave the inter-Andean Valley by traveling up the western slope of the valley and then begin a descent down the western slope of the Andes. We will experience an immediate change in the ecosystem as we start our descent. We will travel down the Andes and see the changes that occur as we change elevation. After about an hour or two (with some stops) we will arrive at a trail leading to a remote reserve called Santa Lucia at about 7,000 feet elevation. This is an area that is dominated by mid-elevation montane forests.

The Santa Lucia lodge is about a two hour hike up a steep muddy trail (the lodge has mules that will be used to carry our gear). We will study the local ecosystem while hiking to the lodge. While at the lodge we will continue to spend early mornings learning about birds, and the rest of the day hiking on the trails. Like all locations, we will spend the entire day in the field from early morning (6AM) until about 9PM. One or two scientists will join us while we stay here or at other locations: most likely an expert on orchids and biodiversity, and other scientists that works with amphibians/reptiles or bats. All visiting scientists give formal talks at the lodge and spend time with us in the field. (Many past students use these opportunities to arrange for working with these scientists in the future.) Note that while there is running water and modern bathrooms here, there is no electricity. We are visiting this area to experience an undisturbed montane forest.

High-elevation Andean Ecosystems (~2 days)

We will leave Santa Lucia and travel for several hours to the high-elevation town of Papallacta (~11,000ft) that is famous for its geothermal activity. On the way we will be studying several different high elevation ecosystems including polylepis forests (the elfin forests at the tree line that are the highest forests in the world), grass páramo, and cushion páramo. The following day we will travel to Antisana Ecological Reserve at about the same elevation, and continue our high-elevation exploration.

Low-elevation Amazon Basin Rainforest and Riverine Ecosystems (~6 days)

The long trip to the Amazon Basin begins early in the morning. As we travel by bus down the Andes, we will be able to see the various changes in vegetation that occur with changes in elevation. We will spend one night "on-the-road" and get a chance to take in the biogeographical gradient that we are passing through. When we arrive in the bustling Amazon city of Coca, we will board a motorized canoe and travel two hours down the Napo river (one of the major tributaries of the Amazon). We will then take an open-aired bus for another two hours down a road owned by an oil company ("Maxis road") to the Tiputini river. Here we board yet another motorized canoe and travel three hours to our final destination of the Tiputini Biodiversity Station (TBS). TBS is right next to Yasuní National Park: *the* most biodiverse area on the planet! It is also in the traditional homeland of the Waorani people. Like always, we will be looking for rainforest animals along the way. TBS is a research station where there are usually scientists and other students in residence. We will spend several days hiking in the forest, as well as working on independent research projects.

Mid-elevation Andean Montane Ecosystems Eastern Slope (~4 days)

We will spend a two nights in a hotel in Baños and students will have an opportunity to get laundry done. Students will be responsible for paying for their laundry (about $10) as well as purchasing dinner at one of the many local restaurants. The following day will be a "day off." This will be a good time not only rest, and do some exploring in small groups (please use the buddy system!), but also ***to catch up on your field journals*** and send some postcards. The following morning, we will travel to a nearby village where students will stay with local families for two nights (home stays with 2 students per home). We will visit some important local research reserves to continue our studies of montane ecosystems.

Many students choose to stay in Ecuador to do some more traveling. (Your instructors highly recommend that you take the opportunity to do that!) We will discuss possible places to visit during the spring term course and during the program in Ecuador.

COURSE READINGS

There will be little time to read during our stay in Ecuador**. These are required readings to do before arriving in Ecuador.**

<u>Books that students need to purchase</u>

Forsyth, A and K. Miyata. (1987) *Tropical Nature: Life and Death in the Rain Forests of Central and South America*. 248 pages. Touchstone. (This is out of print but there are many cheap used copies available online.)

Ridgely R.S. and P. J. Greenfield. (2001) *Birds of Ecuador, Vol 2: Field Guide*. (Students should read the introduction and bring the colored plates with them to Ecuador to use for identifying birds.)

<u>Other required readings (these will be provided in pdf format)</u>

Excerpts from Jorgensen, P. M. & León-Yanez, S. (eds) (1999) Catalogue of the Vascular Plants of

Ecuador. Missouri Botanical Garden Press, St. Louis, Missouri. We will be reading 20 pages from the introduction that summarize information about the various ecosystems in Ecuador.

Stilings, P. (2001) *Ecology: Theory and Applications*. Chapter 2 on climate and climate diagrams. 15 pages. Prentice Hall.

Kane, J. (1993) With spears on all sides: letter from the Amazon. *The New Yorker*. Sept 27:54-79.

Kane, J. (1994) Moi goes to Washington: letter from the Amazon. *The New Yorker*. May 2:74-81.

Pitman, N. (2000) *The sadness of loving trees*. An email from Joe Kane shared with a previous Neotropical Ecology student. This is an unpublished essay by Nigel Pitman that Joe Kane sent in an email.

Kimerling, J. (2013) Oil, Contact, and Conservation in the Amazon: Indigenous Huaorani, Chevron, and Yasuni**.** *Colorado Journal of International Environmental Law and Policy*. 24(1):43-115.

Purcell, J, A. Brelsford and M. Kessler. The world's highest forest. *American Scientists,* 92:454-461.

Kritcher, J.C. (1999) *A Neotropical Companion*. Excerpt from book on leks. Pages 268-279.

Fernandez-Duque E., A. DiFiore and G. Carrillo-Bilbao. (2008) Behavior, Ecology, and Demography of Aotus vociferans in Yasuní National Park, Ecuador. *Internation Journal of Primatology*. 29:421-431.

Optional (but highly recommended) books:

Policha, T. 2012. Plantas de Mindo: Una Guía de Bosque Nublado del Chocó Andino/ Plants of Mindo: A guide to the Cloud Forest of the Andean Choco. American Herbal Dispensary Press. Eugene, OR.

Optional books:

Davis, W. 1997. One River. Simon & Schuster. New York, NY.
Kane, J. 1996. Savages. Vintage. New York, NY.