

Field Research in Tropical Ecology

The *Field Research in Tropical Ecology* course is an intensive field course designed specifically to provide students with the opportunity to undertake a field research project in a tropical forest. More specifically, each student will be guided through the entire field research process, from the selection and design of her/his project, through project implementation, through completion of the research project report. The objective of this course is to provide each student with her/his first field research experience in tropical ecology while, at the same time, making a meaningful contribution to scientific knowledge and conservation on Bioko Island, Equatorial Guinea. Students will conduct 12-14 days of field research. At least some of the students participating in this course will produce results worthy of publication. This course provides much field experience in a short time, helps students determine whether they wish to pursue a career in field biology and conservation, and may serve as a stepping-stone to such a career.

Each course consists of 6-12 students from North America and of up to 10 students from the Universidad Nacional de Guinea Ecuatorial. There were 18 students on the Fall 2006 course and eight students on the Spring 2007 course.

The Field Research in Tropical Ecology course is offered once or twice each year. The course takes advantage of the excellent field research opportunities to be found in the Gran Caldera Southern Highlands Scientific Reserve on the southern one-third of Bioko Island, as well as of the presence of the staff of Arcadia University's Bioko Biodiversity Protection Project and of the Universidad Nacional de Guinea Ecuatorial. The course is held at the Moka Wildlife Center which is located on the edge of the Scientific Reserve near the village of Moka. The Moka Wildlife Center is at 1,350 m a.s.l. (4,400 ft) on the edge of lower montane forest. From here, the measured, marked and mapped Moka Research Trail System gives access to a continuum of forest types, from lowland forest at 700 m (2,300 ft) to montane forest at 1,830 m a.s.l. (6,000 ft) on Pico de Biao (where the crater lake Lago de Biao is located).

The Moka Research Area is rich in species of plants and animals, many of them represented by endemic and threatened species and subspecies. Bioko Island (2,017 km²) harbors over 300 species of vertebrates, of which about 2% are endemic species and one-third are endemic subspecies. Of the 1,105 species of plant known to occur on Bioko, 4% are endemic. Bioko is arguably the most important site in Africa for primate conservation, with 11 species, nine of which are represented by endemic subspecies. Five of the species of primates on Bioko are on the internationally recognized *Red List of Threatened Species* and, thus, considered to be in danger of extinction. All 11 species of primates once occurred on the Moka Research Area, but at this time only seven species are known to be present (including four species of galagos).

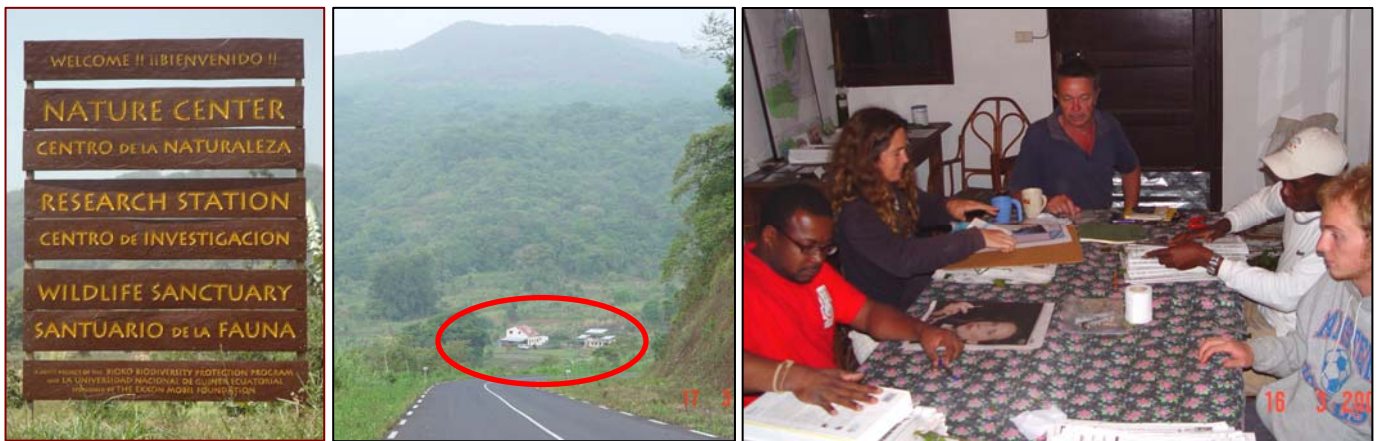
All of the research projects conducted by students on this course are selected and designed to have direct value for the conservation of Bioko's biodiversity. Most of the projects contribute significantly to the establishment of a biodiversity baseline against which both short-term and long-term changes in the conservation status of species and ecological communities can be monitored and assessed. These data help determine priorities for conservation action on Bioko and guide the management of Bioko's biological resources.

Here is a list of the projects that were conducted by students on the Fall 2006 and Spring 2007 courses:

- Bird activity in several fruiting fig trees
- Census of great blue turacos (*Corythaeola cristata*) and yellow-billed turacos (*Tauraco macrorhynchus*)
- Monkey census for 2006
- Ecology and behavior of four species of galagos
- The effects of altitude and vegetation type on galago distribution
- A survey of galagos, owls, and hyrax
- Chameleon diversity, density and ecology
- Location, sustainability, density and population structure of *Prunus Africana*
- Forest regeneration: a comparative study of tree plots focusing on the population and basal area variance at differing post-clearance intervals
- Density of fig trees (*Ficus* spp.) along the Rio Teo
- Wild plants, their local names, and their uses
- Tree community structure of transition forest
- Tree community structure of montane forest
- Survey of butterfly species in transition forest
- Survey of butterfly species in montane forest
- Columns of *Dorylus* sp.: movement of ants and objects

The Field Research in Tropical Ecology course is lead by Dr. Tom Butynski, Senior Conservation Biologist of the Bioko Biodiversity Protection Program. He has worked as a field biologist and conservationists in Africa for 37 years, mostly in Botswana, Uganda, Equatorial Guinea, Tanzania, Kenya, and Democratic Republic of Congo. His primary research interests relate to the taxonomy, ecology, distribution and conservation status of primates, birds, and ungulates. He is the past Director, Institute of Tropical Forest Conservation (Uganda) and, until 2006, was Director of Conservation International's 'Eastern Africa Biodiversity Hotspots Program'. Dr. Butynski has well over 100 publications and serves on more than a dozen scientific and editorial committees. He is presently one of three Editors working on the 6 volume set of books titled *The Mammals of Africa* (Elsevier Press).

It is expected that each Field Research in Tropical Ecology course will also be supported by at least one expert in some aspect of tropical ecology research and conservation. These 'Visiting Experts' will be present during at least the first week of the course while students are designing and testing their project methods and selecting their research plots/transects. For example, for the first week of the Spring 2007 course, Mr. Quentin Luke (field botanist with the East Africa Herbarium and with Missouri Botanical Garden), and Mr. Steven Collins (butterfly expert and Director, Africa Butterfly Research Institute) came from Nairobi, Kenya, to work in the field with the students.



The Moka Wildlife Center provides a base for visiting research scientists and a venue for sharing their expertise with UNGE faculty and students. American students and professors provide role models for taking full advantage of this expertise. Right: UNGE Professor Maxi Fero, CEA students and BBPP guide Filemon Etingue press plants with visiting expert botanist Quentin Luke. Photos by Jessica Weinberg and Gail Hearn.



Butterfly expert Steve Collins shows the students how to capture butterflies (left); the students go out on their own, using the techniques they've learned (middle) and work late into the night classifying their catch (right) using reference collections Steve left them after he returned to Kenya. Photos by Jessica Weinberg and Gail Hearn.

Examples of three 'Final Research Reports' and of three 'Final Research Posters' produced by student on the Fall 2006 course are available at the Bioko Biodiversity Protection Program website: www.bioko.org