

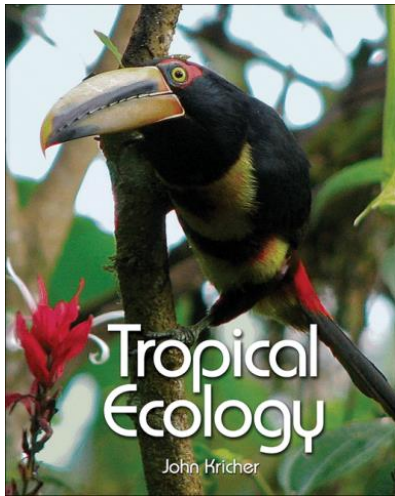
A photograph of a tropical forest. In the foreground, a large tree with thick, dark branches and dense green leaves dominates the left and top portions of the frame. The background is a vast, misty forest with rolling hills, creating a sense of depth and atmosphere. The overall color palette is dominated by various shades of green and greyish-blue from the mist.

Field Course Tropical Ecology

2024, UU-USFQ (B-MEBFFL22)

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The course will be based on **Tropical Ecology. John Kricher. PUP, 707pp., ~75 Euro**



"This full-color illustrated textbook offers a comprehensive introduction to all major aspects of tropical ecology. It explains why the world's tropical rain forests are so universally rich in species, what factors may contribute to high species richness, how nutrient cycles affect rain forest ecology, and how ecologists investigate the complex interrelationships among flora and fauna. It covers tropical montane ecology, riverine ecosystems, savanna, dry forest--and more.

Tropical Ecology begins with a historical overview followed by a sweeping discussion of biogeography and evolution, and then introduces students to the unique and complex structure of tropical rain forests. Other topics include the processes that influence everything from species richness to rates of photosynthesis: how global climate change may affect rain forest characteristics and function; how fragmentation of ecosystems affects species richness and ecological processes; human ecology in the tropics; biodiversity; and conservation of tropical ecosystems and species.

Drawing on real-world examples taken from actual research, Tropical Ecology is the best textbook on the subject for advanced undergraduates and graduate students.

Offers the first comprehensive introduction to tropical ecology; Describes all the major kinds of tropical terrestrial ecosystems; Explains species diversity, evolutionary processes, and coevolutionary interactions; Features numerous color illustrations and examples from actual research; Covers global warming, deforestation, reforestation, fragmentation, and conservation; The essential textbook for advanced undergraduates and graduate students; Suitable for courses with a field component."

The book has 15 chapters. Fourteen will be used as a guideline for our lectures.

Chapter 1: What and Where Are the Tropics?

Chapter 2: Biogeography and Evolution in the Tropics

Chapter 3: Inside Tropical Rain Forests: Structure

Chapter 4: Inside Tropical Rain Forests: Biodiversity

Chapter 5: A Study in Biodiversity: Rain Forest Tree Species Richness

Chapter 6: A Shifting Mosaic: Rain Forest Development and Dynamics

Chapter 7: Biotic Interactions and Coevolution in Tropical Rain Forests

Chapter 8: Trophic Dynamics in Evolutionary Context

Chapter 9: Carbon Flux and Climate Change in Tropical Ecosystems

Chapter 10: Nutrient Cycling and Tropical Soils

Chapter 12: Other Tropical Ecosystems: From the Mountains to the Rivers to the Sea

Chapter 13: Humans as Part of Tropical Ecosystems: Focus on the Neotropics

Chapter 14: Forest Fragmentation and Biodiversity

Chapter 15: Conservation Outlook for the Tropics

Field trip to Ecuador

The second and third week will be a field trip to Ecuador. This trip takes the form of an extensive excursion. We will arrive in Quito and since some may suffer a bit from altitude sickness, we will start Day 2 with an orientation day, including a visit to our host institute the University San Francisco de Quito and a walk through the old center of Quito.



Plaza de San Francisco



Plaza Grande

The next day we will visit the Antisanilla region, dominated by the impressive Antisana volcano. Here we will study the Páramo vegetation, see the effects of long-term Inca inhabitation and see stunning wildlife. It is extremely likely that we will see the fantastic Condors that breed in the canyon on the way to the Páramo. Andean fox, deer, tracks of Spectacled bear and many hummingbirds are likely sights.



Antisana volcano (5752m). Insets: Andean Condor, Andean fox, Black faced ibis, Sparkling violetear.

Day 3 we will transfer to San Jorge/San Isidro with a hike through the Páramo, around 3,900 m.a.s.l, a hike through upper montane forest (3,300 ma.s.l) and ending at the Yanayacu (2,140 m.a.s.l) with lower montane forest and many, many hummingbirds



Rio Quijos



Yanayacu Biological Station (2140 m)

Day 4 we will transfer to a location at 700 m close to the Napo river in the transition from lower montane to lowland rainforest. We will stop at several locations to see the upper and lower Andean forests wild stunning plant forms and flowers.



Cabañas San Isidro (2050m)



Saurauia sp.

From there we will transfer (Day 5) to Coca and by boat to the Repsol oil concession (2 hours), where we will continue by bus to the Tiputini river (2 hours). On the way we will shortly visit a Shuar village. Then after two more hours of boating we will arrive at the to the Tiputini station.



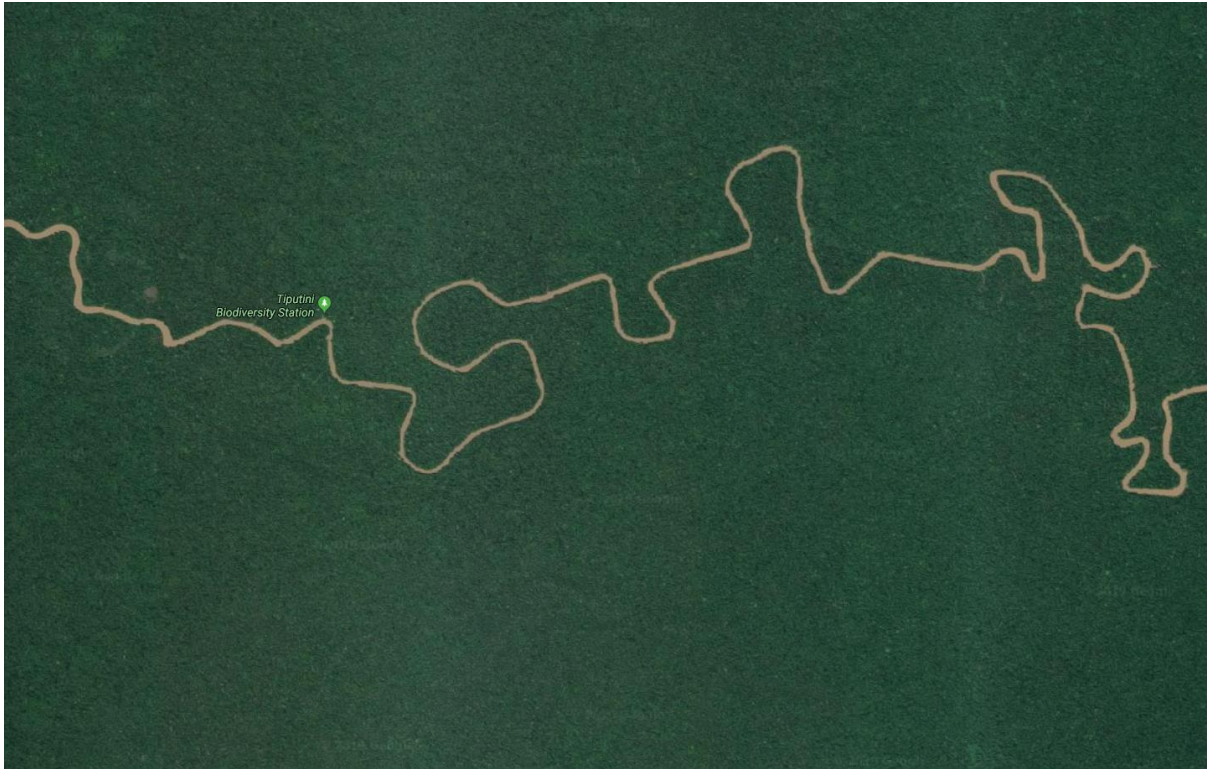
Napo river



Repsol concession



Tiputini river



At Tiputini station we will spend three full days. The program includes forest excursions, night walks, visit to tree inventory plots, canopy tower, lake with Hoatzins, parrot clay lick, and a final swim of over an hour in the Tiputini river. On all trips you will be accompanied by lecturers of the UU , USFQ and field guides of Tiputini station

Day 10 we will go back to Coca, where we will spend the night. Day 11 we will see some of the effects of oil mining in tropical rainforest areas, after which we will fly back to Quito.

In the evening the USFQ will host a dinner in the restaurant Marcus, where will enjoy a beautiful meal.



Restaurant Marcus

Then finally, day 12, Sunday Dec 15 we will depart for Amsterdam and will continue with the last week on Tuesday December 17.

Tiputini Biodiversity Station

The Tiputini Biodiversity Station (TBS) was established in 1995 by the Universidad San Francisco de Quito in collaboration with Boston University to accommodate the academic community and discerning naturalists.

The Tiputini Biodiversity Station is located in the pristine Eastern Ecuadorian Amazon on a 650 hectare tract of lowland rainforest. This remote location provides an unparalleled amount of flora and



fauna to observe and study. Situated in the Yasuni Biosphere Reserve, the Station has been recognized as one of the best spots in the world to study biodiversity because of its protection and isolation. TBS has an extensive system of well-marked trails for the use of researchers and visitors.

In 2005, TBS was awarded a grant to make several major improvements. The National Science Foundation grant has allowed for expanded laboratory and guest facilities, and improved communications. Reconstruction of the second canopy tower and canopy walkway is currently underway. The new lab facility was completed in 2008; it includes not only ample research space, but a library, classrooms, storage, and administrative offices.

Facilities

Our facilities include a laboratory building of 600m² (6000 ft²) fitted with wireless internet access, divided into two floors and distributed as classrooms, library, offices and research space. Housing is available for about 60 visitors and standard food service is provided. A network of well-marked trails that extend for about 40km (25mi) allows access for all visitors to all habitats. Several restricted trails and long-term research plots (two 1km² areas separated by about 1km in upland forest, each with a 100m grid system and geo-referenced) are only available to investigators and their collaborators. Two observation towers (36 and 39m) and one system of suspended walkways (approximately 100m in length, at 25 to 30m height), all in terra firme, provide access to the uppermost parts of the canopy.

For more information about the workings of our camp and operations in general, please see the section Visitor Information and the website in YouTube called Visting Tiputini.



Tiputini station Jan 2019

Camp Design and Layout

Generally speaking, our camp consists of a series of buildings dispersed over a space of about 3 hectare, adjacent to the north bank of the Tiputini River; no building is more than 200m from the river's edge but all are situated on high ground that has no potential to flood. Each building is situated in its own clearing; we have made efforts to minimize the amount of deforestation that was necessary to accommodate our facilities so the rainforest is literally just out the door from every structure. The laboratory is the only two-story structure and is situated in the middle of our camp about 100m from the river.

To minimize our ecological footprint at the site, we import all food and other supplies, primarily from the nearest town, El Coca, which is about 100km away. Our water supply comes from rainwater or the river depending upon the season. In any case, it all gets filtered and chlorinated to protect the health of our visitors and staff. We only generate electricity during about 6 hours each day; electricity is available in the lab building 24 hours through a battery system. Most trash resulting from our operation is exported and incorporated into regional industrial or municipal operations.

Housing and Laundry Service

Visitors are housed in any of several cabins that are located within 100m of the central lab building. Each cabin has two rooms with large screened windows, for ample ventilation and light. In the scientists' section of camp, each room has two single beds; in the students' section of camp, each room has two bunk beds. Each room has a full bath with a flush toilet and shower; we do not have hot water but the weather is generally warm. Towels are changed twice per week and bed linens are changed once per week. Laundry service is available to visitors that stay for more than one week. You do not need any camping gear or mosquito nets.

Dining Hall and Food service

Our dining hall is located at about 100m from the lab building overlooking the river. The spacious open air building has room to seat over 60 individuals. The menu is rather international in general but we have incorporated a few typical Ecuadorian dishes that have proven to be popular with all our guests. We are happy to accommodate the needs of vegetarians or anyone who has allergies; please advise us of such requirements with some lead time, preferably when making reservations.

Meals are served at 6:30am, 12 noon and 7:00pm. We remind visitors that this schedule should be respected; our kitchen staff is limited and cannot attend to individuals throughout the day. If entire groups require a modification of this schedule to allow for specific activities, arrangements must be made in advance with the camp manager. A box lunch may be prepared for those who expect to be in the field right through any particular meal; this must also be arranged previous to the event; the kitchen staff will take orders each evening immediately after dinner in preparation for the next day.

Trip schedule (tentative & dates p.m)

DAY	DATE	ACTIVITY	Ecosystem	TRANSFER	LODGING	MEAL
Wednesday	17-Jan	Arrive in Quito		Transfer airport - Hotel Cumbaya	Hotel Cumbaya	
Thursday	18-Jan	AM Orientation & Welcome Lunch USFQ PM City Tour		Bus	Hotel Cumbaya	B, L
Friday	19-Jan	Antisana	Paramo	Bus	Hotel Cumbaya	B, L
Saturday	20-Jan	Cayambe, Papallacta, Yanayaca, Cosanga	Paramo	Bus	Yanayacu	B, L, D
Sunday	21-Jan	Travel to near Coca	Cloud/Andean Forrest	Bus	Hotel in Coca	B, L, D
Monday	22-Jan	Enter TBS	Rain Forest	Boat, Chiva, Boat	TBS	B, L, D
Tuesday	23-Jan	TBS	Rain Forest		TBS	B, L, D
Wednesday	24-Jan	TBS	Rain Forest		TBS	B, L, D
Thursday	25-Jan	TBS	Rain Forest		TBS	B, L, D
Friday	26-Jan	Exit TBS	Rain Forest		Hotel in Coca	B, L, D
Saturday	27-Jan	AM transfer to Quito & Farewell Dinner		Bus	Hotel Cumbaya	B, D
Sunday	28-Jan	Departure to AMS			#NA	B

Costs:

With 15-20 students the costs in Ecuador will be \$2,140.00 per student.

The current price for a ticket from Amsterdam to Quito is €1000 Euro.

For further information mail Hans ter Steege at: hans.tersteege@naturalis.nl



Students of the January 2019 course

Testimonies

It was nice to see the collaboration between the teachers of the VU, UvA and USFQ (and UU) work so well, which definitely added to the quality of the course. All teachers were passionate about their subjects and were able to convey their information very well.

It was great! Learnt a lot and thought it was a great experience to see everything.

The field work was fantastic and added greatly to the educational value of the course. The only improvement I can think of is to include a tour of a cloud forest (perhaps instead of the Quito tour? - which was great in its own right, but maybe not top priority with limited time. Alternatively, the trip could be extended to accommodate both Quito and cloud forest tours).

The Tropical Ecology course is a great addition the Master's program and can only get better in the subsequent years this course is taught.