

WESTERN UNIVERSITY
Ontario Universities Program in Field Biology

Course Title:	Tropical Biodiversity
Instructor(s):	<p>Dr. Nina Zitani Phone: 519-661-2111 x 85356 Department of Biology, Western University Email: nzitani@uwo.ca</p> <p>Dr. Greg Thorn Phone: 519-661-2111 x 88647 Department of Biology, Western University E-mail: rgthorn@uwo.ca London, Ontario, N6A 5B7 FAX: 519-661-3935</p>
Dates:	10 - 30th August 2019
Location:	Ecuador, South America: Cabañas San Isidro (2,100 m; 7 nights); Yanayacu Biological Station & Center for Creative Studies (2,100 m; 3 nights); town of Coca (300 m, 2 nights); Shiripuno Research Center and Shiripuno Lodge (220 m; 4 nights); the Capital City of Quito (2,800 m, 4 nights).
Cost:	Estimated \$3,500.00 (Includes: all in-country transportation, all accommodation, 3 meals/day at San Isidro, Yanayacu, Shiripuno, and buffet breakfast at hotels) <i>plus</i> roundtrip airfare (Quito to Canada and return), ~ 200.00 US dollars cash for miscellaneous expenses (e.g., taxis, tips, snacks, souvenirs), travel medical insurance, a valid passport, required immunizations (yellow fever, Hepatitis A&B and MMR), and required field and safety gear. You must arrange your own flights to and from Quito (airport code UIO). Once the course is full in ~ mid-February the professors will contact all students, and it is recommended that flights are purchased at that time to ensure a seat. \$350.00 deposit to home university due on registration; ~ \$3,150.00 balance due by 1 March. Note: exact dates, number of days at locations, and cost (depending on exchange rate with currency of Ecuador [US dollar]) may vary.
Prerequisites:	Completion of second year Biology or Environmental Science Program, and at least one course in introductory ecology and evolution.
Enrolment*:	13(6)
Course Description (brief):	<p>This is an introductory course on neotropical biodiversity, ecology, and forest conservation of the Amazon River System. We will spend time in Amazonian cloud forest and lowland rain forest, two of the most biodiverse ecosystems on Earth. Emphasis will be on the most diverse taxa: the arthropods, plants, and fungi. Students will learn fundamental aspects of tropical forest ecology, and field identification skills including how to identify a wide variety of organisms. Some of the extraordinary taxa that students will learn about, and experience first-hand include spectacular insects (e.g. Lepidoptera, Coleoptera, Hymenoptera); a rich arachnid fauna (learning about these animals is required; <i>handling them is not</i>), Onychophora, terrestrial Gastropoda, caecilians, an incredible diversity of birds (e.g., hummingbirds, hoatzins), Primates; tree ferns, flowering Gesneriaceae, enormous <i>Anthurium</i> spp., orchids, bromeliads, palms, and the macroscopic fruiting bodies of many fungi (Basidiomycota and Ascomycota). Students will engage in group hikes/walks led by the professors, which will include various in-the-field learning experiences, and at night again hikes/walks and light-trapping for nocturnal insects.</p> <p>The field portion of the course starts in the cloud forest (high-elevation rain forest) on the eastern slopes of the Andes, Napo Province, very near the equator. We begin at San Isidro (Cabañas San Isidro), which sits on a piece of land comprised of 80% primary tropical forest and is directly connected to national preserves, creating one of the largest intact continuous tropical forests in the eastern Andes (from 250 to 5000 m elevation). Because of the elevation (about 2,100 m) the cloud forest is less diverse as compared to the lowlands. It is above the elevation for malaria and yellow fever, there are no or very few venomous snakes (as far as is known) and relatively fewer biting, stinging insects. Rain is ever-present; light raincoats and rubber boots are a must (<i>waterproof high rubber boots required in the field at all times throughout course</i>), and students should expect to get wet and muddy. We will be working directly with insects</p>

and students must not be squeamish and must be willing to look at and learn about living insects and other arthropods – we will teach what you need to know about them including safe handling practices. *Students are encouraged, but not required to handle live animals of any kind.*

We then bus to the town of El Coca (officially: [Puerto Francisco de Orellana](#); ~6 hrs) and spend the night in hotel El Auca. Next morning, we board the bus, drive about 2 hours to the Ranger station to check in on a tributary of the Amazon, the Shiripuno River (~2.5 hrs). We board motorized canoes for a trip downstream (~4 hrs) to the [Shiripuno Research Centre](#) and [Lodge](#) (Amazon lowlands, 220 m elevation). At this remote field station (no electricity), part of the Huaorani Anthropological Reserve, we will be in the Yasuni Biosphere Reserve, and have an unparalleled opportunity to observe the biodiversity of lowland Amazonia. You can't get much lower in elevation in Ecuador, or much higher in biodiversity anywhere in the world. There will be mosquitoes that carry agents of dangerous diseases (malaria, dengue, chikungunya, yellow fever, and Zika virus) as well as poisonous snakes and many types of biting and stinging insects. Here you must exercise caution: wear mosquito repellent on all exposed skin to avoid mosquito bites; wear high boots as required at all times in the field, watch where you put your feet, and do not reach into vegetation without investigating first, to avoid being bitten by an unseen poisonous snake. Do not sit on a log (or the ground) or lean on a tree without looking carefully first. We are likely (but not guaranteed) to see a greater variety of birds and mammals here.

We will then travel back to Coca via the same route (canoe, road), spend a night in Coca, and next day bus to Quito with a brief stop in the Paramo ecosystem of the high Andes (~4200 m elevation). In Quito we focus on the culture and history of Ecuador with visits to museums and the "Centro Histórico," a UNESCO World Heritage Site. The last day of the course is travel home/other destinations.

Some key safety notes, all of which will be reviewed in person at the start of the course and throughout as necessary:

1. Students are responsible for reading, prior to the start of the course, all of the electronic documents provided, including the Field Safety Plan.
2. In the field students are required to use the **Steripen** (provided) and sterilize all drinking water, including water to brush teeth.
3. Prior to going into field each day apply **sunscreen first**, then insect repellent with 20% DEET.
4. Whenever you leave the field station you must: 1) travel with a companion 2) tell someone else where you are going 3) write your destination down on the whiteboard or paper log provided by instructors, and 4) carry your safety whistle (provided).
5. Hotel Rio Amazonas in Quito provides lock-boxes in each room: use it. Ask for key at front desk. Put passport, cash supply, any other valuables inside.
6. Do not take passport or valuables outside hotels. Bring enough cash for daily outing only and small camera if necessary. Always travel with at least one other person; use common sense.

Evaluation:

- a) 5%: Quiz: on Required Reading completed prior to start of course and Safety Lecture given on first day of course
- b) 10%: Enthusiastic participation in all components of the course.
- c) 15%: Identification Quiz: Sight identification of field specimens of Plants, Fungi, Arthropods, and possibly other taxa.
- d) 20%: Independent Research Project. You will design and carry out a hypothesis-driven research project, and prepare a hand-written journal-style paper, which must include an Introduction with hypothesis, Methods, Results, and Discussion. Due prior to oral presentations.
- e) 10%: Oral Presentation. You will make a 10-minute oral presentation about your research project and your findings.
- f) 20%: Field notebook, with daily entries. Guidance on what constitutes a good notebook will be provided.
- g) 10% Journal, with daily entries. Guidance on what constitutes a good journal will be provided.
- h) 10%: Reflection essay (750-1000 words) connecting your observations and experiences during the course, submitted by 5 pm Monday 16 September.

An Average Day – What to Expect

(a) Daily timeline	<p><u>Typical daily routine during the first week prior to start of independent research projects (times may change somewhat depending on weather, etc.):</u></p> <p style="padding-left: 40px;">5:00-7:00 am bird/animal-watching (not all but some mornings)</p> <p style="padding-left: 40px;">7:00-8:00 am - Breakfast & field prep</p> <p style="padding-left: 40px;">8:00-12:00 pm - Morning hike/in-the-field learning activities</p> <p style="padding-left: 40px;">12:30-1:00 Lunch</p> <p style="padding-left: 40px;">1:00-2:00 pm power nap/journal-writing/study time</p> <p style="padding-left: 40px;">2:00-3:30 lecture</p> <p style="padding-left: 40px;">3:30-6:00 – Afternoon hike/in-the-field learning activities</p> <p style="padding-left: 40px;">6:00 – 7:00 - Dinner</p> <p style="padding-left: 40px;">7:00- 8:30 - Evening group meeting and discussion</p> <p style="padding-left: 40px;">8:30 - 10:30 – Light trapping for insects and night hike/field observations</p> <p style="padding-left: 40px;">11:00 pm Bedtime/Silence/lights out (enforced)</p>
(b) Work habitat & Physical exertion	<p>Students must be able to hike in high rubber, waterproof boots for ~ 4 hours at a time in hard rain, on very muddy slopes at high elevation in the Andean cloud forest, and in high heat and humidity in lowland rain forest, carrying a knapsack with field supplies, water and snacks. Students should be prepared for remote tropical field station conditions (e.g. no electricity in the lowlands; limited or no internet; open air cabins in lowlands), be interested in learning about and at least tolerate living with a variety of arachnids (spiders and relatives) and other tropical fauna (e.g. diverse and abundant insects, bats, snakes). Students may need to use the bush as toilet (packing out all trash with them) on occasion. During hikes rest periods are taken when necessary.</p>
(c) Common activities	<ul style="list-style-type: none"> • common activities: day and night hikes in potentially hard rain on very muddy trails in cloud and lowland rain forest; bus rides on steep Andean slopes; urban walks in Quito; 4-hour open, motorized canoe ride down a tributary of the Amazon River; data-gathering in the field for independent research projects; unforgettable, once-in-a-lifetime, fascinating natural history and science learning experiences in the Amazon rain forest with highly trained, seasoned professors. • associated risks: altitude sickness (medication can be obtained from your doctor), collisions, getting lost, twisted ankles, fatigue, blisters from poor footwear, heat exhaustion, sun burn. We discuss safety and risks in person during the first day in the field and throughout the course as necessary. Students are instructed in basic field safety.

Deadline to apply is **Feb 8, 2019**.

If interested please complete the application form and submit it to the OUPFB course coordinator at your school.
Deposit of \$350 is due at the time of registration.

Tuition at your home institution is *in addition* to any field module costs.

Students who drop a field course should not expect a refund of any field course costs.

Students are encouraged to purchase cancellation insurance if airline tickets are required.

Students are responsible for all fees incurred by the home or host university due to any bounced cheque.

(d) Weather, dehydration, & biting insects	<ul style="list-style-type: none"> • weather conditions likely to be encountered: cool and wet conditions in high elevation cloud forest, hot and humid conditions in lowland rain forest; strong sun, high UV, high humidity, dehydration from hiking and sweating, heavy rain possible at any time. • a variety of biting and stinging arthropods are possible (e.g., mosquitoes, blackflies, no-see-ums, sand flies, deerflies, horseflies, stinging wasps, biting, stinging ants, chiggers, spiders) • Long pants and high, waterproof boots, and waterproof pants and rain jacket are required for field gear. Long-sleeved shirts recommended. Pants and shirts do not need to be fancy and new, in fact old pants and shirts work well in the field.
(e) Toxic/poisonous, wildlife/ plants	<p>Dangerous animals possible: mosquitoes carrying a variety of tropical diseases including but not limited to malaria, dengue, Zika, Yellow fever, chikungunya; stinging bees/wasps/ants, centipedes, arachnids, caiman, venomous snakes, large mammals, toxic plants.</p>
(f) Sleeping, washroom & laundry facilities	<ul style="list-style-type: none"> • sleeping accommodations: students may be required to share a room with students of another sex for one or two nights; for most days students will share a room with one or more students of same sex • washroom facilities: flush toilets, access to toilet paper at field stations but not guaranteed during travel and in urban areas; private showers, sometimes hot, sometimes cold water; shower in piped-in river water in lowlands) • washing/laundry facilities: handwashing clothes in sink available although clothes not likely to dry due to humidity; last few days in Quito laundry service in hotel (paid by student).
(g) Meal plans & food allergies	<p>3 meals a day provided at field stations and breakfast at hotels (when staying at hotels, students are responsible for lunch and dinner at a local restaurant). The places we go have been very good in the past about accommodating allergies and vegetarian/vegan diets. Students are responsible for informing their airlines about food preferences/allergies during flights.</p>
(h) Non-academic responsibilities	<p>Daily non-academic student responsibilities are: following all safety recommendations and requirements; respectful, courteous behavior towards everyone in the group and towards our Ecuadorian colleagues at all times; keeping rooms reasonably clean, taking short showers, sharing space and access to washrooms, keeping the shared laboratory space organized and neat, and helping cleanup rooms and temporary laboratory prior to departure from field stations; help carrying course supplies in large coolers at various times from the bus to field station, etc.</p>
(i) Degree of isolation	<p>At the field stations (majority of the time) do not expect access to internet. Hotels have wifi. First week electricity is readily available at San isidro and Yanayacu in cloud forest, but not at Shiripuno in the lowlands other than possibly at night. This is a field course. There is no access to shopping of any kind other than occasional truck stops during bus rides, until the last few days in Quito. <i>Students must pack all necessary supplies such as hygiene needs and prescription medication, clothing etc.</i> Please see section below “Required vaccinations/Insurances” for further information.</p>
(j) Alcohol & drugs	<p>No drugs or alcohol use are permitted during this course for safety reasons.</p>

<p>(k) Vaccinations/ Insurances</p>	<p>Required Vaccinations: To travel to Shiripuno (the Amazon lowlands and the ancestral lands of the Waorani) you are required to have the vaccinations for: 1) Yellow Fever, 2) Hepatitis A, 3) Hepatitis B, and 4) MMR (measles-mumps-rubella). Visit either your family physician, or a travel medical clinic to obtain these required vaccinations (and prescriptions, see below). At a later date (TBD) before we depart you must provide documentation to us that indicates that you have had the above vaccinations, so be sure to obtain the vaccination <i>and the documentation from the doctor</i>. The most common form of documentation is a yellow immunization card where the doctor/nurse writes down your vaccinations and the dates you received them.</p> <p>Recommendations: Due to the remote locations of our destinations, and the presence of malaria (http://www.cdc.gov/malaria/travelers/country_table/e.html), and dengue, chikungunya, and Zika viruses the following are additional medicines/products that are strongly recommended by us: 1) Antimalarial medication used in the prevention and treatment of malaria; 2) Sufficient insect repellent with DEET or other proven effective repellent (over-the-counter): http://wwwnc.cdc.gov/travel/yellowbook/2016/the-pre-travel-consultation/protection-against-mosquitoes-ticks-other-arthropods</p> <p>3) A course of Cipro or other broad-spectrum antibiotic to use in the event of a bacterial infection; 4) Medication to be used in the event of altitude sickness; 5) All other routine immunizations, e.g., Typhoid, Tetanus, flu shot, etc.</p> <p><i>Also, be sure to bring any other prescription medications that you will require -- do not expect to be able to obtain prescription medication while in Ecuador.</i></p> <p>Our advice from many years working in the neotropics: The most common medical conditions that students and profs have suffered from on our past courses are #1 TD - traveler's diarrhea (frequent hand washing and drinking sterilized water during the trip are the best preventatives, #2 mild altitude sickness and #3 viruses we bring with us from Ontario e.g influenza and the Norovirus - 24 hour stomach flu. When traveling in the Neotropics it is best to be informed, have an open mind, and be flexible. Sometimes things do not go as planned. If they do not, most likely the outcome will be even more adventure and even more fun. However, in the unlikely event that problems arise, our attitude is "better safe than sorry". We follow all of the recommendations listed above.</p> <p>Each student is required to have travel medical and trip cancellation insurance: You are required to purchase travel medical insurance (that includes helicopter transport within Ecuador, in the event of a medical emergency), and trip cancellation insurance that covers the dates of the trip. For most of the trip we will be in remote locations (except Quito) with limited or no immediate access to medical assistance. Each student must provide proof of insurance and vaccinations at our request (once the course is in progress we will communicate by email about this).</p>
<p>(l) Social Situations</p>	<p>This is a university course and students are expected to behave at all times according to the Academic Code of Conduct at their home university, and in addition students are expected to be respectful and courteous towards everyone in the group and to our Ecuadorian colleagues at all times, and, wear required field gear in the field and appropriate and respectful clothing in urban areas.</p>

Deadline to apply is **Feb 8, 2019.**

If interested please complete the application form and submit it to the OUPFB course coordinator at your school. Deposit of \$350 is due at the time of registration.

Tuition at your home institution is *in addition* to any field module costs.

Students who drop a field course should not expect a refund of any field course costs.

Students are encouraged to purchase cancellation insurance if airline tickets are required.

Students are responsible for all fees incurred by the home or host university due to any bounced cheque.

(m) Final comments	<p>The professors have taught this course five times, and both professors are highly experienced tropical field biologists. We take safety very seriously, and each time we teach this course we strive to provide a positive, rich, and rewarding learning experience for every student. This course provides students with a once-in-a-lifetime opportunity to experience and learn about one of the most biodiverse places on Earth, the Amazon rain forest, with two seasoned, enthusiastic professors, a graduate student teaching assistant, and a variety of outstanding Ecuadorian field naturalists, Amazonian indigenous people, and peers.</p>
--------------------	---