

Tropical Biodiversity Field Course (BIOC51H3S)
Winter Semester 2019
Syllabus

Instructor: Dr. Nathan Lovejoy
Office: SW552. Email: lovejoy@utsc.utoronto.ca

Teaching Assistant: JP Fontenelle
Office: SW552. Email: jp.fontenelle@mail.utoronto.ca

Campus Lectures: UTSC campus lectures/workshops (location BV 359): Wednesdays 1300-1400 (weekly prior to field trip, with one or two meetings after we return from field trip)

Field trip: Caño Palma Biological Station, Tortuguero, Costa Rica
Departing **approximately** Friday, February 15
Returning to Toronto, **approximately** Sunday, February 24
(*final times of arrival and departure subject to airfares/flight schedules*)

Prerequisites: Permission from instructor (Nathan Lovejoy); prior coursework: BIOB50H3, BIOB51H3, BIOB52H3.

Note: Students will also need to complete any University of Toronto mandated training related to participation in field activities and animal ethics. Also, students will need to fill out university and field station required application forms, documents, and legal waivers,

Text: Handouts and readings will be provided in class or on the intranet. Students may want to purchase field guides, details to be provided.

Description: This is an intense experiential-learning course geared towards upper-level undergraduates interested in field research in the tropics. Students will explore both practical aspects of field biological research, and conceptual topics related to tropical biodiversity. The emphasis for the course will be on aquatic habitats, since the Caño Palma field station offers excellent access to a variety of aquatic environments. In particular, we will focus on freshwater fishes of Costa Rica and Central America. While considerable information is available for other vertebrate groups in this area (e.g., birds, mammals, amphibians and reptiles), the fish fauna is more poorly known, thus our research will directly contribute to ongoing scientific and conservation efforts to understand the biodiversity near the Caño Palma station. Students will also participate in activities that introduce other components of the local flora and fauna (potentially including plants, insects, birds, mammals, reptiles, and amphibians).

In Toronto, we will start with exercises and workshops (accompanied by readings), where we consider biogeographical patterns of vertebrate distributions (with special emphasis on the fish fauna) in Central America. Emphasis will be placed on critical thinking with regards to the origins of neotropical biodiversity, including references to speciation, phylogeny, paleogeography, climate, and general ecology. We will prepare for the expedition by considering the logistical and practical aspects of field research, including safety, mapping, collecting and preserving material, photography, and measurement of environmental variables.

In the field in Costa Rica, we will discuss and conduct surveys of the fish fauna at the Caño Palma Biological Station. Students will learn different methods for collecting fishes. Representative samples of species collected from each habitat will be preserved and examined, identified, and cataloged in the afternoon/evenings at the field station facilities. We will discuss aspects of form, function, physiology, and behavior, emphasizing adaptations to life in aquatic habitats at different life stages. We will also consider general aspects of the Neotropical flora and fauna via excursions in the rivers and rainforest that surrounds the station. Students will gain an appreciation of the ongoing research and conservation efforts based at the research station.

- Primary Goals:**
1. To understand biogeographical patterns for Neotropical organisms and underlying evolutionary and paleogeographic explanations.
 2. To understand methods of aquatic sampling for biodiversity inventories and conservation (including identification of freshwater Costa Rican fishes).
 3. To develop knowledge of tropical biodiversity research and conservation practices.

Evaluation:

Short assignments (pre-field trip):	30%
Participation:	20%
Written report (post-field trip):	50%

Short assignments: Students will be responsible for preparing two short assignment during the pre-field trip component of the course (15% each). These will be two page essays on an assigned topic, that will also be briefly presented to the class.

Written report (post-field trip): There will be written report where students summarize the findings of our trip, and present a short evolutionary and biogeographic synthesis.

Course Cost: The cost for the course is **\$2200**, in addition to the regular tuition cost for 0.5 FCE). This amount covers return airfare to Costa Rica, transportation

in Costa Rica, food and accommodation in Costa Rica, and station fees (boat trips, etc.).

The course fee of \$2200 should be provided as a cheque, and turned in by October 19th to Tony Rupnaraine, Business Officer of the Department of Biological Sciences (SW 421G) or Ava Auyeung, Financial Assistant, Department of Biological Sciences (SW421F). Both Tony and Ava's offices are in the administrative suite of the Department of Biological Sciences.

Additional costs: You are responsible for arranging (and for the costs of) transport to and from Toronto Pearson International airport. You are also responsible for purchasing travel insurance (mandatory), as well as costs for personal equipment (including sunscreen, insect repellent, medications, field clothing, etc). You are also responsible for meals while we are not at the field station (i.e., while we are in transit, and during possible transit overnights in San Jose).

Physical Demands, Risks, and Requirements:

In the field, we will spend long hours outdoors in tropical conditions. Students should be physically and mentally prepared for field work in remote locations. We will also spend considerable time on (and in) the water, so students should be comfortable with swimming and aquatic activities. Risks are similar to those for any eco-tourist visiting Costa Rica (diarrhea, parasitic infections, diseases, snake and insect bites or stings, crime). Students should be aware that there is limited access to medical assistance while at Caño Palma station; therefore, travel insurance is mandatory.

Students are responsible for ensuring they meet all requirements for entry to Costa Rica). A valid passport is required (with expiry date at least 6 months after entry). Passport holders from countries other than Canada may require a visa.

To participate, students will need to fill out university and field station required application forms, documents, and legal waivers, and take any required workshops.

Web sites:

Caño Palma Biological Station: <http://www.coterc.org/?tag=cano-palma>