

TROPICAL BIOLOGY: AN ECOLOGICAL APPROACH 2014-3

10 JUNE - 21 JULY, 2014

(arrive 9 June, depart 22 July)

6 Graduate Semester Credit Hours granted
by the University of Costa Rica



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Are you ready for a tropical biology boot camp?
Are you ready to push yourself academically and
physically?

The tropical biology OTS "Fundamentals course" is an intensive, six-week course in tropical ecology for 22 graduate students that will challenge you in every way. This classic OTS field course has trained tropical biologists since the 1960s. At its heart lie the highly regarded OTS "field problems", which engage students in the fast-paced formulation of research questions, experimental design, data collection, analysis, and oral and written presentations. Students will take away advanced skills in research design, data analysis, writing, science communication, modeling, and collaborative research – all in the breath-taking tropical setting that is Costa Rica. Long days and late nights, filled with science.

Coordinators:

Jane Zelikova, Ph. D.

Dept. of Botany, University of Wyoming

Jennifer Stynoski, Ph. D.

The Organization for Tropical Studies

Application Deadline:

February 17, 2014. Followed by Open Enrollment until full

Invited resource faculty students will likely meet during the course

Dr. Ralph Saporito, John Carroll University
– ecology and evolution of anti-predator adaptations in vertebrates, particularly amphibians and reptiles

Dr. Gloriana Chaverri, Pacifico Sur University, Costa Rica – bat ecology and biology

Dr. Nate Dappen, Days Edge Productions – lizard behavior, science communication and photography

Dr. Neil Losin, Days Edge Productions – anoles behavior, science communication, photography, film-making

Dr. Silvia Alvarez, University of Montana – tropical biogeochemistry

Dr. Susan Whitehead, University of Colorado – plant animal interactions, bat frugivory of *Piper*

Dr. Karen Lips, University of Maryland – amphibian biology, species declines

Dr. Rachel Gallery, University of Arizona – tropical biogeochemistry and microbial ecology

Dr. Rob Guralnick, University of Colorado
– ecological niche modeling

Pablo Allen, University of Florida – tropical entomology

Dr. Andrea Vincent, Universidad de Costa Rica.

Dr. Nathan Sanders, University of Copenhagen - Macroecology

Dave Bloom, University of California at Berkely - VertNet Coordinator

Dr. Zak Zahawi, Director of OTS Las Cruces Biological Station - Environmental Restoration

Pat Walters, Pop-Up Magazine - Senior Editor

Dr. Justin Calabrese, Smithsonian Institution - Smithsonian Conservation Biology Institute.

Dr. Cesar Nufio, University of Colorado - Museum of Natural History



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The 2014 course will place emphasis on research and analysis tools as well as science communication and for the first time, include a course-long capstone project that will partner a group of students with a non-profit organization. We guarantee that you will return to your home institution a better scientist. Who could ask for more?!

Course Objectives

The students will get extensive experience designing and conducting group and individual research projects across a range of tropical ecosystems. A large emphasis will be placed on concrete research and analytical tools, including research design, statistical analyses, and ecological modeling using R, as well as scientific writing. Students will have the opportunity to employ the latest technology to conduct behavioral experiments (including digital video analysis), learn biogeochemical tools for tropical ecosystem studies, phylogenetically based community analyses, sound analysis, and ecological niche modeling. In addition, the course will emphasize skills for communicating science both to scientists and the general public in today's media-based world. This will include maintaining a student blog, the production of a course podcast, and short films based on student research. Finally, students will complete one science communication capstone project, working with local and internationally-based non-profit organizations.

Sites Visited

Tropical Biology is a highly mobile course that travels to field sites throughout Costa Rica. Costa Rica has an incredible diversity of ecosystems and the course field sites represent most of the major ecosystem types in the country, ranging from wet forest to dry forest, low elevation to high elevation, terrestrial to marine. The course visits all three OTS field stations (La Selva, Las Cruces, Palo Verde), as well as Cabo Blanco Absolute Reserve, Cuerici Biological Station, and Las Alturas Biological Station.

La Selva Biological Station, a large and well-known research station on the Caribbean side of Costa Rica. La Selva has over 1,500 hectares of lowland tropical wet forest, and connects to Braulio Carrillo National Park via a forested altitudinal transect.

Las Cruces Biological Station has a world-class plant collection in the Wilson Botanical Garden and an associated 160 hectare tract of old growth mid-elevation forest. Las Cruces is surrounded by agricultural landscapes, ideal for research on fragmentation and restoration ecology.



Palo Verde Biological Station is in the heart of Palo Verde National Park in Guanacaste province, and is surrounded by semi-deciduous tropical dry forest, one of the most endangered of tropical ecosystems. A seasonal freshwater wetland, designated as a RAMSAR site in 1991, lies in front of the station and attracts abundant waterfowl.

Cabo Blanco Absolute Reserve is situated at the extreme southern tip of the Nicoya Peninsula. It encompasses 1,172 hectares of mixed forest, which is classified as moist tropical forest. An additional 18 hectares of the ocean belongs to the protected area of Cabo Blanco and the abundance of life underwater greatly exceeds that on land. The reserve was established in 1963 when the land was donated to Costa Rica from Olof Wessenberg and Karen Morgenson, years before a national park system was created in the country.

Cuericí Biological Station, near Cerro de la Muerte, is a high elevation site containing stunning tropical oak forest and access to the paramó. The forest itself is protected as a private reserve and the station is also a sustainable development project and trout farm.

Las Alturas Research Station, mid-elevation research station (10,000 ha) that is contiguous with the UNESCO Amistad Biosphere Reserve (500,000 ha spanning Costa Rican and Panamanian borders), with highly endemic flora and fauna that is

characteristic of the pre-montane forest ecosystem.

Post-Course Opportunities

Course participants are eligible for small grants to support short-term research projects at OTS stations. These projects begin either immediately following the course, or up to a year after the course ends. Also following the course, students may visit the Barro Colorado Island (BCI) research station of the Smithsonian Tropical Research Institute (STRI) in Panama. Transportation and station fees for this trip are covered by STRI.

Application Submission

Application forms and instructions may be found online at www.ots.ac.cr/educacion/tb. Applications should be submitted by e-mail simultaneously to one of your institution's OTS Delegates and to the OTS Costa Rica Education Program (academic@ots.ac.cr). Delegates will review the applications and provide an email endorsement to OTS for you, so the application needs to arrive to your Delegate a few days before the deadline. There are two delegates at each OTS member institution and their names can be found on the OTS website.

Eligibility and Costs

Applicants must be enrolled in, or accepted to, a graduate degree program. Preference is given to students enrolled at OTS member institutions but others will be considered if space is available. Students from OTS member institutions receive a \$5,000 fellowship to offset course costs. Often the remaining cost is covered by member institution funds. Check with your OTS representative.

Application fee (nonrefundable): \$25
Course fees:

- OTS member institution students: \$2,900
- Students from other institutions: \$7,900

Course fees are due in full one month prior to start of course; the first \$500 constitutes a nonrefundable deposit.

Course fees cover housing, meals, and in-country transportation to field sites. International transportation to Costa Rica and personal expenses are not included.