

## Biology Foreign Studies Program (Bio 55,56,57): Winter 2017

### Course description and grading policy

**Instructors:** Matt Ayres, Hannah ter Hofstede, Celia Chen

**Graduate TAs:** Braden Elliott, Madeline Gamble

**Textbooks:** *The Tapir's Morning Bath* by Elizabeth Royte (Mariner Books)  
*Neotropical Companion* by John Kricher (Princeton University Press, 2nd ed., 1997).  
*A Guide to the Birds of Costa Rica* by Stiles and Skutch (Cornell University Press)  
*Costa Rican Natural History*, edited by D.H. Janzen, University of Chicago Press.  
*A Field Guide to Coral Reefs: Caribbean and Florida*. Roger Tory Peterson. 1982.  
*Reef Fish Identification: Florida, Caribbean, Bahamas*. Humann and DeLoach. 2002.  
*Reef Fish Behavior: Florida, Caribbean, Bahamas*. DeLoach and Humann. 1999.

**Meeting times:** Various sites in Costa Rica (5 Jan - 17 Feb). See schedule.  
Little Cayman Research Center (18 Feb - 9 March). See schedule.

**Course website:** [www.dartmouth.edu/~biofsp](http://www.dartmouth.edu/~biofsp)

#### Ecological Research in the Tropics I and II (Bio 55 and 56)

The Biology Foreign Studies Program (Biology 55, 56, 57) exposes students, through intensive, full-immersion study, to Earth's most diverse biological communities. Biology 56 is a continuation of Biology 55; these courses comprise the first two-thirds of the FSP, and focus on land (tropical forests) and tropical freshwater ecosystems in Costa Rica. Biology 57 focuses on coral reef ecosystems in the Caribbean. Students are challenged to know, understand and appreciate the diversity of form and function in organisms, and the interactions that generate the often-spectacular patterns they see in the field. Habitats in Costa Rica include lowland rain forest (La Selva and Corcovado), cloud forest (Monteverde), dry forest (Palo Verde and Santa Rosa), pre-montane wet forest (Las Cruces), montane forest (Cuerici), alpine paramo, streams, and wetlands. The schedule is full, including fieldwork, laboratories, lectures and discussions, with emphasis on original research, mostly in small groups of 2-3. Faculty and advanced graduate TAs share field accommodations with students and are in continuous contact as mentors throughout the program. Students master field and analytical methods (including hypothesis testing, statistical and software skills) for observational and experimental research. We pursue a great variety of research topics, including plant-pollinator and plant-herbivore interactions, processes driving coral reef structure (and coral reef decline), determinants of species distributions, animal behavior, and conservation ecology. Students practice contemporary scientific inquiry: making observations, asking testable questions, generating hypotheses, developing experimental protocols, collecting data, making statistical inferences - including multi-model comparisons, writing scientific papers, and presenting seminars. Research papers are published in an annual book. Accommodations are at field stations in Costa Rica, and at a marine laboratory in the Caribbean.

#### Ecological Research on Coral Reefs (Bio 57)

Field and laboratory investigations of marine organisms and coral reef communities. A continuation of Bio 55 and 56 above. Lecture and research topics include studies of algae, aquatic plants, invertebrates, and fish, with emphasis on populations, species interactions, community structure and energetics, and reef conservation and management. The course is based at the Little Cayman Research Center, Little Cayman Island. Scuba diving is optional.

Prerequisite: Bio 16; one course from among Bio 20-28, 31; acceptance into program. Bio 15 and 29 recommended.

**Grading policy:** Grades are based on the quality of research projects (including seminar presentations and resulting manuscripts); development of skills in natural history; development of skills in research design, statistical analyses, and strong inference; and development of skills as collaborators within research work groups.

Students with disabilities are encouraged to discuss them with the staff so that appropriate accommodations can be made.