

BSC 4996, Biodiversity of Bocas del Toro, Panama

Summer A 2004, May 10th – June 18th

Syllabus

Instructors: Dr. Bill Anderson, Dr. Brad Bennett, Dr. Chris Brown, Dr. Dan Childers, Dr. Laurie Collins, Dr. Evelyn Gaiser, Dr. Suzanne Koptur, Dr. Joel Trexler

Objectives: This course teaches environmental biological field methods and approaches to research in tropical America. We cover a wide variety of environmental biological fields, including marine biology, terrestrial ecology, wetlands ecology, biodiversity, plate tectonics, paleoenvironments and ethnobotany.

Note: The following schedule of events is subject to change, depending on the weather and the amount of time the field activities take.

Week 1 -- Orientation at FIU

- Monday May 10th 2-3:30pm. Aims of the field course, natural history and culture of Bocas del Toro. Dr. Laurie Collins, Dr. Brad Bennett.
- Wednesday May 12th 2-3:30pm. Schedule and checklist. Dr. Laurie Collins.

Week 2 -- Orientation at FIU

- Monday May 17th 2-3:30pm. Working in the tropics. Dr. Brad Bennett, Dr. Laurie Collins.
- Wednesday May 19th 2-3:30pm. First Aid Procedures, heat management, rules of conduct. Dr. Laurie Collins, Dr. Evelyn Gaiser.

-- Travel from Miami to Panama

- Saturday May 22nd Dr. Laurie Collins, Vicky Salazar and students travel to Bocas del Toro. Flight schedule: Miami - Panama City, American Airlines #2131, lv 11:02 am, arr 12:50 pm. Panama City - Bocas del Toro, Aeroperlas #582, lv 3:00 pm, arr 4:00 pm.

Week 3 -- Geology and marine biology of Bocas del Toro: Dr. Bill Anderson, Dr. Chris Brown, Dr. Dan Childers, Dr. Laurie Collins. Monday May 24th to Saturday May 29th.

- Rise of the isthmus of Panama, earliest evidence (basalts) and paleoenvironments, Small Plantain Cay and Valiente Peninsula: Dr. Collins
- Modern Carbonate Sedimentology: Dr. Anderson
- Quantification of behavioral responses of damselfishes *Dascyllus* sp. to visual stimuli: Dr. Brown
- Fossil vs. living biotas and paleoenvironments of Bocas del Toro 1 day in field (Cayo Agua), 1/2 day in lab: Dr. Collins
- Isotope Biogeochemistry - marine settings: Dr. Anderson
- Substrate preference in sand dollars: Dr. Brown
- Lecture on the mission and scopes of the STRI Research Station at Bocas del Toro. Lecture will be delivered by Sr. Gabriel Jacome, Station Manager
- Geologic records of recent climate change: Dr. Anderson

Week 4 -- Wetlands ecology, terrestrial biodiversity, ethnobotany: Dr. Brad Bennett, Dr. Dan Childers, Dr. Evelyn Gaiser, Dr. Suzanne Koptur. Monday May 31st to Saturday June 5th.

- Butterfly populations (mark and recapture study): Dr. Suzanne Koptur
- Plant biodiversity: families of tropical plants, Isla Colon forests: Dr. Brad Bennett
- Herbivore diversity on plants of different life forms: Dr. Suzanne Koptur
- Mangrove ecosystems, litter traps for river vs. coastal environmental conditions, field and lab activities: Dr. Dan Childers
- Pollination syndromes and nectar study: Dr. Suzanne Koptur
- Night walk, nocturnal biodiversity in Bocas del Toro: Dr. Brad Bennett
- Ants and Plants with Extrafloral Nectaries: Dr. Suzanne Koptur

Week 5 – Freshwater and marine biodiversity: Dr. Evelyn Gaiser, Dr. Joel Trexler. Monday June 7th to Saturday June 12th.

- Characterization of the fish communities in mangrove habitats of Bocas del Toro: Dr. Joel Trexler.
- Daily migration of plankton of Almirante Bay: Dr. Evelyn Gaiser 1/2 day in lab.
- Bird biodiversity of the tropics: Dr. Evelyn Gaiser
- Biogeography of freshwater fishes in Central America: Dr. Joel Trexler
- Diatoms of tropical wetlands: Dr. Evelyn Gaiser
- Description of life history patterns of poeciliid fishes in the Bocas del Toro area: Dr. Joel Trexler

Week 6: Return to Miami and reports.

- Sunday June 13th: Dr. Gaiser, Dr. Trexler, Vicky Salazar and students return to Miami.
Flight schedule: Bocas del Toro - Panama City, Aeroperlas #483, lv 9:25 am, arr 10:25 am.
Panama City - Miami, American Airlines #2132, lv 2:07 pm, arr 6:04 pm.
- Students will write a report of what they found most scientifically interesting during the field course in Bocas del Toro (graded jointly by Dr. Evelyn Gaiser and Dr. Laurie Collins). The report will be limited to a maximum of six pages with double spaced lines, 1-inch margins, 12 point font (Times). See Evaluation of Student Performance (below) for grading guidelines. The **report** and the **field notebook** are due on Friday, **June 18th at 5 pm** at either instructor's office (may be emailed).

Living at the STRI Research Station, Bocas del Toro

STRI Facilities

- Laundry: wash \$1.25/load, dryer \$1.00/load; both quarters only
- Internet connection (only one computer)
- Phone: ATT phone cards are cheapest
- Four rooms, we will try to have 2-3 people per room but there are beds for 4 people/room. You may have other researchers staying in your room from time to time – this is a field research station.
- Dining room and small kitchen at the dorm
- Lab: new (one year old) laboratory with tables, chairs, counters and sinks, used for processing and examining field materials, and for evening lectures.

Rules of the station: see handout Code of Conduct (aka THE RULES)

Living in Bocas del Toro

- Faculty stay in town at the Hotel Bahia.
- One faculty member will have dinner with the students every night.
- Drink only filtered tap water, available in the dorm and at the main building.
- The dorm leader is Vicky Salazar. She is the only student who may drive a vehicle (except for emergencies). Report any problems with the dorm facilities to Vicky, who will tell the station manager.
- Meals are cooked by Chef Desuz, who cooks them in town at his restaurant and brings them to the dorm. His style of cooking is more Caribbean/Central American than American and it is delicious.
- Daily schedule (except when scheduled otherwise):
 - Breakfast 7:00 am
 - Ready for the field 8:00 am
 - Lunch in field
 - Back to the station about 4:30 pm
 - Dinner 6:00 pm
 - Evening lecture 7:30 pm. We will introduce new material and present the schedule for the next day's activities. Students are expected to take notes.
- Lab component and outside activities:
 - We anticipate having lab time for plant identification, marine ecology, data analysis, etc., but most of the time will be spent in the field.
 - We anticipate at least one night walk to study animals, and possibly a weekend sea turtle watch.
- Be ready to stay at the Research Station for hours at a time because of tropical downpours!!!! We will distribute a reading list for such occasions.
- Free time: starts from the time we return to the research station on Saturdays until Sunday night at 10pm (curfew). If you plan to leave the research station for any reason you must inform both the dorm leader (Vicky) and the faculty, telling them where you are going and when you will return. Meals will be scheduled every day; if you intend to miss any meals, inform Vicky a day in advance so she can tell the cook.

Evaluation of student performance

- Field-lab notebook (40% of final grade). It will be graded by Dr. Laurie Collins and Dr. Evelyn Gaiser. We will pay attention to extent and content of notes taken in the lab and field, organization and neatness.

- Participation in the field and lab (20% of final grade) It will be jointly graded by Dr. Laurie Collins and Dr. Evelyn Gaiser.
- Student report (40% of final grade). It will be jointly graded by Dr. Laurie Collins and Dr. Evelyn Gaiser. The purpose of the report is to write about what you found most scientifically interesting during the field course in Bocas del Toro. The report will be limited to a maximum of six pages with double spaced lines, 1-inch margins, 12 point font (Times). See Evaluation of Student Performance (below) for grading guidelines. The **report** and the **field notebook** are due on Friday, **June 18th at 5 pm** at either instructor's office (may be emailed).

Important Phone Numbers and Contact Addresses (Panama country code is 507):

- American Embassy in Panama City: Calle 37 y Avenida Balboa, Apartado 6959, Panamá 5, Panamá. Phone: 507-207-7000, Fax: 227-1964
- Smithsonian Tropical Research Institute Headquarters: Roosevelt Avenue Ancon, Balboa - Tupper Building, P.O. BOX 2072 - Phone: 507- 212-8000
- Hotel Bahía, Bocas del Toro, Panama. Faculty stay at this hotel in Bocas del Toro. Phone: 507- 757 - 9626, Fax: 507 – 757- 9692
- Smithsonian Tropical Research Insitute (Instituto de Investigaciones Tropicales Smithsonian), Bocas del Toro Research Station. Students will stay at this station. Phone: 507 – 7579794, Fax: 507 – 7579896, email: jacomeg@si.edu (Gabriel Jacome, Station Manager)
- Emergency contacts at FIU: Daytime: Office of International Studies, 305-348-1913, Liza Carbajo, Coordinator
Evening/Night: Public Safety, 305-348-2626, ask them to reach OIS people

Student Field Equipment Checklist

Documents and Other Paper Items

- Passport
- Photocopy of passport (give Laurie a copy)
- Credit card
- ATM card
- ATT phone card
- Small Spanish-English dictionary (if needed)
- Emergency contacts in U.S. written down
- Reading material

Packing Equipment

- Backpack
- Duffle bag
- Tags for luggage

Field Equipment

- Poncho/rain cover for pack
- Waterproof fieldbook (Rite in the Rain, 4 5/8" x 7 1/4", Item no.118 at Herbarium Supply Company, 1-800 348-2338, www.herbariumsupply.com, \$15.75)
- Waterproof pens & pencils w/ erasers
- Pocketknife
- Hand lens on string, 10X
- Whistle
- Compass
- Watch, preferably waterproof
- Folding umbrella
- Clippers (optional, we will have 2 pairs)
- Water bottles, 2 L
- Hat or visor
- Binoculars (if you have them)
- Sun screen & chapstick, at least spf 15
- Insect repellent for skin & clothes (can get spray Off in Bocas; no aerosols on plane!)
- Head net (optional)
- Pocket flashlight & extra batteries
- Gatorade mix (optional)

Personal Toiletries

- Soap in plastic soap dish
- Shampoo/conditioner
- Toothbrush & toothpaste & floss
- Comb/brush
- Razor
- Flip-flops for shower
- Deodorant, unscented
- Beach towel
- Feminine hygiene products (if appropriate)

- Vitamins (optional)
- Any required prescription drugs

First-Aid Kit

- Pain reliever (aspirin, ibuprofen or tylenol)
- Neosporin or similar fast-healing cream
- Thermometer
- Tweezers
- Band-aids, small and large
- Adhesive tape & gauze patches
- Moleskin (for blisters)
- Anti itch lotion (1% cortisone cream)
- Decongestant or cold tablets
- Antihistamine (Benadryl)
- Stomach med. (Pepto-Bismol, Immodium D)
- Small toilet paper roll, smashed/kleenex
- Chloroquin (or other antimalarial) and Cipro

Miscellaneous

- Money, enough for 3 days off
- Quarters for laundry (\$2.25 for 1 wash & dry)
- Ziplock baggies of different sizes
- Sunglasses for the field, good quality
- Mask, snorkel, flippers (STRI also has these)
- Thick string (several m) or travel clothesline
- Travel alarm clock
- Extra pair of glasses or contact lenses
- Few plastic bags for laundry, etc.

Clothing

- Long field pants (2 pair. Nylon/cotton good)
- Light weight, long-sleeved shirts (2)
- Tee shirts (4)
- Shorts (2 pair, preferably fast-drying nylon)
- Underwear, 10 pairs
- Socks including liner socks if desired
- Rubber boots to wear without shoes
- Reef walkers/dive booties
- Sandals or tennis shoes for leisure
- Casual city clothes, 1 set
- Swim suit, one-piece

Photographic Equipment

- Camera, lenses & flash
- Extra batteries for camera and flash
- Film (Bocas may have poor selection)
- Lens tissue or chamois cloth
- Equipment instruction booklets