

NEOTROPICAL HERPETOLOGY

June 15 through July 10

**Bocas del Toro Biological Station
Isla Colon, Republic of Panama**

COURSE SYLLABUS

This course is designed to provide the student with a sound foundation in ecological concepts and field techniques as applied to Neotropical rainforest amphibians and reptiles. The material covered is equivalent to a university upper level course in herpetology. The course is divided into five distinct categories; formal classroom lectures, informal field lectures, readings and critiques, group projects and individual research projects.

Instructor: **Peter N. Lahanas, Ph.D.**, Institute for Tropical Ecology and Conservation, 2911 NW 40th Pl., Gainesville, FL 32605; phone: 352-367-9128; email: lahanas@itec-edu.org.

Specialty: Neotropical, herpetology, forest ecology, animal behavior, biogeography and molecular genetics of sea turtles.

Grading: Up to 6 units of credit will be given, 3 for the lecture portion and 3 for the field portion. A letter grade will be assigned based on exams, reports, proposals, attendance at lectures, as well as by less tangibles such as personal attitude, motivation, and contribution to the course. A letter reporting a grade and will be made available to the student and the student's institution. The student will be responsible for providing direct evidence of participation (e.g., lecture notes, reports, exams, etc.).

COURSE STRUCTURE

The first part of the course (orientation) will be spent getting acquainted with the trail systems and many habitats available in Bocas del Toro. Following this we will work on group projects involving various herp species or assemblages. Following data collection, these projects will be analyzed and presented as a written research report by the group. During group project period students will develop his/her own independent research project idea. Students will write a research proposal and submit a final draft before the cloud forest trip. Midway through the course we will travel to the highlands of Volcan Baru National Park and explore both cloud forests and tropical dry forest habitats. On return to the station, students will work on their independent research project. Towards the end of the course, students will analyze, write a technical research report and present the project as a PowerPoint presentation to the class.

Field Trips

This is a field course in herpetology and as such, a great deal of time will be spent in forests, swamps, streams, ponds and other habitats. While most of our work will be done during the day, nighttime forays will also be made to frog breeding ponds, forest trails, sea turtle nesting beaches, and caiman pond. Expect to get wet and muddy during any or all of these outings.

Formal Lectures

Formal lectures will take place in the classroom and will include the use of, chalk boards and PowerPoint presentations. Topics that will be covered are provided in the "Course Schedule". Unless otherwise noted, these will be at 7:30 pm each evening. (Not: Having lectures at this time June not be ideal, but it is preferable to taking up daylight hours that could be better used for fieldwork). Other lectures, such as those dealing with group research projects, will be presented just prior to the onset of the project.

Informal Lectures

Informal lectures will be provided periodically during orientation walks (when you first arrive), during group field projects or in discussion groups. These will cover a wide variety of topics and will generally be prompted by what we encounter in the field, or by the direction taken during group discussions.

Readings

Readings corresponding to lecture subjects will be assigned in the text. We will also read and critique papers brought by students and faculty and additional readings June be assigned from time to time. In addition, each student will read, critique, and provide oral reports on published papers brought to Bocas.

Required Texts:

- Pough, F. H., et al., 2003. Herpetology, 3rd ed. Prentice-Hall, Inc., New Jersey.
- Köhler, Gunther. 2008. Reptiles of Central America, 2nd edition. Herpeton, verlag Elke Köhler.
- Köhler, Gunther. 2011. Amphibians of Central America, 2nd edition. Herpeton, verlag Elke Köhler.

Note: These volumes essential are important resources for the course. If you cannot afford them, copies exist in the field station library four your use.

Other valuable books on Neotropical herpetology and ecology:

- Savage, J., 2002. Amphibians and Reptiles of Costa Rica: a Herpetofuana Between two Continents, Between Two Seas. Univ. Chicago Press, Chicago and London, pp. 1-934.

Note: Although the taxonomy in Savage is dated, it nevertheless provides a wealth of ecological information on many amphibians and reptiles in our area.

Kricher, J.C. A Neotropical Companion. Princeton University Press, Princeton.

Forsythe, A. and K. Miyata . Tropical Nature. Scribners, Inc., New York.

Janzen, D.H. , Costa Rican Natural History. University of Chicago Press, Chicago.

Terborgh, John, Diversity and the Tropical Rain Forest. Scientific American Library, New York.

Group Field Projects and Exercises

These are research or instructional projects designed by the faculty and worked on in groups of four or six students. The purpose of these projects is to familiarize students with an array of field sampling techniques and equipment commonly used in field studies. With help from a faculty member, students set up projects, collect data, and generally (depends on the project), analyze data, present the results to the class, and write a report. Student groups will rotate through all projects and faculty so that all students will equivalent experience. During the report writing phase, each student will be responsible for one section (introduction, methods, results, etc.). In the evening before each project, student groups will meet with their respective project leader to discuss aspects of the next days' project. Data collection for each group project will take place the following morning directly after breakfast (generally 8:00 am but these starting times June change depending on type of project, e.g., birds like getting up early!) and/or after lunch. There will be four to six group projects. One or two students will be designated project write-up secretary for each project.

Group Project, Demonstrations, Exercises and Excursion Topics:

- Population biology in strawberry poison-dart frogs
- Forest night hikes
- Tail flicking behavior in yellow-headed geckos
- Comparative leaf litter herpetofauna
- Soropta Beach; nesting behavior in leatherback sea turtles
- Canopy herpetofauna using canopy access techniques
- Cave ecology; bats, rats, frogs and snakes
- Soropta Canal; iguanas, caimans and crocodiles
- Herpetofaunal biodiversity analysis
- Renacimiento Creek excursion; aquatic anoles and glass frogs
- Cloud forest herpetofauna

Individual Research Projects

Working closely with faculty, students will be responsible for designing and completing an original research project of their choosing. The project June deal with any topic in Neotropical herpetology. By the middle of the second week, students will have submitted their written project proposal to the faculty for evaluation in terms of conceptual validity, analytical design and ability to complete in a the time-frame of the course. During the final week of the course, students will write and orally present their findings to the class. A full-length draft of all reports must be complete before leaving Bocas.

TENTATIVE COURSE SCHEDULE

Abbreviations:

- m= mornings (6:00 a.m.-noon)
- a= afternoon (1:00 p.m.-6:00 p.m.)
- e= evening (7:00 p.m.-9:00 p.m.)

Day	Activity	Lecture Subject	Readings
June 15	m arrive in Bocas a arrive in Bocas e lecture	Station policies, safety & Forest etiquette	none
June 16	m orientation walk a orientation walk e lecture	Herpetology, a brief history	Ch. 1
June 17	m orientation walk a lecture e Sea turtle nesting trip	Sea Turtle Ecology	none
June 18	m orientation walk a orientation walk e lecture	Evolution of <i>O. pumilio</i> in Bocas del Toro Archipelago	none
June 19	m Solarte Island field trip a Bastimentos field trip e lecture	Evolution of amphibians and reptiles	none
June 20	m group projects a group projects e lecture	Phylogenetics, systematics and biogeography in herp.	Ch. 2,3
June 21	m group projects		

	a e	group projects lecture	Neotropical amphibians, classification	Savage
June 22	m a e	group projects group projects lecture	Neotropical reptiles, classification	Savage
June 23	m a e	finish group projects write up projects lecture	Island biogeography and the Evolution of insular fauna	none
June 24	m a e	proposal research & write proposal research & write lecture First draft of proposal due at 6:00 pm	Physiological ecology of amphibians and reptiles	Ch. 5
June 25	m a e	finish group project write ups Caiman capture	Brief lecture on Caimans	
June 26	m a e	proposal research & write proposal research & write night hike Final draft of proposal due at 6:00 pm	Herps of the Pacific Cloud and Dry Forests	
June 27	m a e	Trip to cloud forest Cerro Punto Hotel Los Quetzales	no lecture	
June 28	m a e	Hike Quetzal Trail Quetzal Trail Hotel Fundador	no lecture	
June 29	m a e	Tropical Dry Forest trip petroglyphs, hot springs Hotel Fundador	no lecture	
June 30	m a e	Free time return to Bocas lecture	no lecture	
June 31	m	individual research		

	a	reality check , is the project working?		
	e	lecture	Life histories, reproduction	Ch. 7, 12
July 1	m	individual research		
	a	individual research		
	e	lecture	Life histories, feeding ecol.	Ch. 9, 13
July 2	m	individual research		
	a	individual research		
	e	lecture	Historical biogeography of Neotropical herps	none
July 3	m	individual research		
	a	individual research		
	e	lecture	Life histories, communication and movement patters	Ch. 10, 11
July 4	m	individual research		
	a	individual research		
	e	Swamp forest night hike	Sources of problems in conservation efforts	none
July 5	m	individual research		
	a	individual research/		
	e	present paper critique lecture	Conservation of amphibians and reptiles	Ch. 15
July 6	m	individual research		
	a	individual research		
	e	lecture EXAM		
July 7	m	Bird Isl. trip		
	a	project write up		
	e		no lecture	
July 8	m	project write up		
	a	project write up		
	e		no lecture	
July 9	m	project write up		
	a	project presentations		
	e	End of Course Party		
July 10	m	Depart for Panama City and home		