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NATURAL HISTORY WORKSHOP IN THE GALAPAGOS ISLANDS
SPONSORED BY CLEMSON UNIVERSITY
May 26 - June 1, 2005

May 26: The trip begins in Quito, Ecuador. On arrival (late evening), you will be transferred directly to the HOTEL MERCURE ALAMEDA where we will spend the night. We think very highly of the HOTEL MERCURE ALAMEDA. It is said that, of the finer hotels, they have the most personal service. Our experiences strongly support this impression.

May 27: After breakfast, we board a morning flight to San Cristóbal Island in the Galápagos on TAME AIRLINES. After paying a \$100 National Park Entrance Fee/ Galápagos Port Tax per person (in U.S. dollars), we will be transferred to our yacht, the M/Y TIP TOP III, waiting for us in the harbor. **[B, L, D]**

Your first landing in Galápagos will be at **Isla Lobos**. Only an hour from the town of Puerto Baquerizo Moreno, this small island is a perfect introduction to the wonders of Galápagos. Separated from the main island of San Cristóbal by a narrow stretch of calm water, the rocky shores of Isla Lobos provide a restful spot for sea lions, while blue-footed boobies nest nearby. May is the last month of the breeding season for the Great Frigatebird, identifiable by the green sheen of their black plumage; you should encounter males of the species displaying their bright red gular pouch in hopes of enticing the females flying overhead. The ubiquitous lava lizard can be seen darting everywhere. Seven species populate the islands, their absence being noted on only 3 islands - the far northern Darwin, Wolf, & Genovesa. This distribution pattern can be attributed directly to prevailing ocean currents, which would not have carried them that far north. Following our visit, we will make our way to the striking remains of a vertical tuff cone, **León Dormido**. Centuries of erosion have split this 500 ft. formation, and given it its characteristic shape, that of either a sleeping lion, or a shoe; thus its English name - Kicker Rock. Numerous blue-footed and Nazca boobies, as well as frigatebirds can be found on its precipitous sides, with sea lions along the shore.

May 28: Española (Hood) Island. This southernmost island in the archipelago, Española, is the gateway into and out of the Galápagos for many of the sea birds. The remote location relative to the other islands has resulted in a high degree of species differentiation, such as the brightly colored marine iguanas found here. The waved albatross is endemic to Española as well as to the Galápagos. Punta Suárez is the western tip of the island, and for many Galápagos visitors their favorite site. Aside from the sally light-foot crabs and sea lions, you will be approached by the endemic Hood mockingbird, and red-billed tropicbirds will be winging their way back and forth. The lava lizards here are above-average size, and the female's red throat coloring is pronounced. Once on the trail you will soon approach a series of tall rock formations on which a colony of Nazca boobies is generally found. As you continue on, nesting blue-footed boobies will most likely be everywhere, both on and just off the trail. These are the type of scenes you envisioned when your decision was made to visit the Galápagos Islands. What comes next is even more dramatic, for you will soon approach an open area that forms the home to the entire world population (estimated at over 10,000 pairs) of waved albatrosses - large strikingly beautiful birds. Finally, before you head back, you will come to a spectacular blowhole, roaring loudly while spouting forth a foamy spray as high as 100 feet in the air. Gardner Bay is situated on the northeastern shores and its white-sand beach is a swimming and snorkeling site. The beach is home to a large colony of sea lions, while closer to the vegetation fronting the beach you will often find sea turtle nests, territorial lava lizards, yellow warblers and finches. American Oystercatchers and Hood Mockingbirds are typically on the beach as well.

May 29: Floreana - Punta Cormorán - Forming the northern tip of Floreana, Punta Cormorán is one of the most interesting visitor sites in the islands, with an emphasis on shorebirds and plant life. Your first lesson will be in geology, however, as the tour begins with a wet landing on a beach with "green sand." Olive green, that is, for these are olivine crystals, volcanically derived silicates of magnesium and iron. The trail soon leads to a brackish lagoon, where there are usually a

few flamingos at the far end, as well as pintail ducks and common stilts. Surrounding the lagoon are several of the steep, palo-santo covered hills that dot Floreana; the stark gray color and the twisty, usually barren branches give an eerie feeling to this island, whose history is mysterious enough. The tour continues across the neck of the point to a beach on the other side. Along the way, there are a rich variety of plants, including the beach morning glory, cutleaf daisy, lantana, leather leaf, palo verde, and scalesia. The beach at the far end is composed of fine, white sand particles, and there are stingrays feeding right off the shoreline; you can see them float in and out with the wave action.

Santa Cruz - The town is located on Academy Bay, named after the famous scientific expedition of 1905-06 by the California Academy of Sciences and their boat, the ACADEMY. The Charles Darwin Research Station was established in 1961 to help solve the problems of wildlife conservation in the archipelago. It remains the scientific heart of the islands. For many tourists this is also the best opportunity to see the giant tortoises at close range. Most famous is Lonesome George, the last-surviving member of the Pinta Island subspecies; the origin of his name is sadly evident. The Tortoise Rearing Center is also visited. National Park Wardens have collected tortoise eggs from various islands where they have been preyed upon and threatened to the point of extinction by several species of introduced mammals. The eggs are then incubated, and the hatchlings raised for several years, until they are able to withstand the predatory effects of the mammals that man has introduced to the Galápagos. Since 1970, hundreds of tortoises have been repatriated to their native islands.

May 30: This afternoon we will make our first landing at **South Plaza** Island. The Plazas are a pair of islets situated just off the east coast of Santa Cruz Island. Only South Plaza is a Visitor Site, and a fine example of a geological uplift. The trail leading to the cliffs goes through a combined Coastal and Dry Vegetation zone with prickly pear cactus and extensive patches of salt-tolerant sesuvium, usually seen as distinctive red mats (although it turns green when rainfall is abundant). The prickly pear (opuntia) cactus is the food base of the land iguana, also found in this area. The walk along the sea cliffs is wonderful, as swallow-tailed gulls, shearwaters, and red-billed tropicbirds are making seemingly-endless back and forth flights in preparation for landing in their nests, located in the crevices found along the overhanging ledges. Towards the end of the cliff-side walk you will encounter a bachelor sea lion colony; a battle-scarred collection of old bulls in various stages of recuperation or in total retirement. **Santa Fe Island** - This is another chance to see the land iguana, the specimens on Santa Fe being some of the more brightly colored in the archipelago, look for them as sunset nears. A particular attraction is the unusually tall forest of prickly pear cactus, which has a trunk wider than in any other island. Galápagos hawks are also found. Around sunset, with a bit of luck, it is possible to see the endemic rice rat.

May 31: Puerto Baquerizo Moreno - The Interpretation Center here was built by Spain as a gift for the islands. The Center focuses primarily on the history of the archipelago, from its volcanic origins to the present. Two interpretation panels, representing the natural and cultural history of the archipelago are linked together in chronological order. The center includes a small outdoor stadium, meeting rooms and audio-visual equipment for the entire Cristobal community to enjoy. After the visit, we will go to the airport for our afternoon TAME AIRLINES flight to Quito. On arrival (early evening), we will be transferred directly to the HOTEL MERCURE ALAMEDA where we will spend the night. **[B, L]**

June 1: Early morning departure for your return flight home. **[B]**

COURSE INFORMATION & SYLLABUS

**BIOLOGICAL SCIENCES 490 - SECTION 002
Spring 2005 – 2 Credits**

**SEMINAR TO PREPARE FOR
NATIONAL SCHOLARS GALAPAGOS ISLAND TRIP**

**COORDINATING
INSTRUCTOR**

Dr. Jerry A. Waldvogel Dept. of Genetics, Biochemistry & Life Science Studies
Clemson University

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**COURSE
DESCRIPTION**

BIOSC 490, Section 2 introduces students to various scientific, historical and socio-political aspects of the Galapagos Islands in preparation for a trip to those islands in May 2005. An academically diverse team of instructors will present topics in their areas of expertise via lecture and discussion to help students develop a broad perspective about the Galapagos Archipelago. Students will read from historical texts as well as popular science descriptions of the islands and discuss this material in class. Several short written assignments related to these readings and discussions will be required during the semester, and a 10-15 page summative reflection paper will be due after completion of the Galapagos Islands trip.

**COURSE
OBJECTIVES**

The primary objective of this course is to provide students with the necessary scientific, historical, and socio-political background to fully appreciate their visit to the Galapagos Islands. A second objective is to help students see the importance of preserving the world's remaining natural habitats as laboratories for understanding the fundamental processes that organize and lead to change in living systems. A third objective is for students to recognize the critical role that unaltered habitats such as the Galapagos Islands play in furthering our knowledge about the impacts that humans have on the living world, and to reflect on personal and societal changes that can help make those impacts more positive.

**REQUIRED
TEXTBOOKS**

Students will read and discuss the following books during this course:

Darwin, Charles (1839) *Charles Darwin's Journal of Researches: Voyage of the Beagle*.
Penguin Classics, London. ISBN 0-140-43268-X

Larson, Edward J. (2001) *Evolution's Workshop: God and Science on the Galapagos
Islands*. Basic Books, New York. ISBN 0-465-03811-5

Weiner, Jonathan (1994) *The Beak of the Finch*. Vintage Books, New York. ISBN 0-
679-73337-X

Selected readings from other academic sources or the popular press may be added as warranted by specific discussions.

ATTENDANCE

Attendance is expected at all class meetings of this seminar as well at the activities specifically associated with the Galapagos Islands trip. If the instructors are late for any of the seminar meetings, you are expected to remain for 15 minutes past the official start time before assuming that class has been postponed for that day.

EVALUATION & GRADING

Grades in this course will be based on the following:

Class attendance & participation	20%
Pre-trip writing assignments	40%
Post-trip reflection paper	40%

Details regarding the instructor's specific expectations for each of these assignments will be provided at relevant points throughout the course.

The following table shows how final course averages will relate to letter grades and grade points for BioSci 490 (section 002):

<u>Final Average (%)</u>	<u>Letter Grade</u>	<u>Grade Points</u>
90-100	A	4.0
80-89.9	B	3.0
70-79.9	C	2.0
60-69.9	D	1.0
< 60	F	0.0

ACADEMIC INTEGRITY & DISHONESTY

The following is Clemson University's official statement on academic integrity:

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning". Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

Academic dishonesty includes giving, receiving, or using unauthorized aid on any academic work. It also includes plagiarism; the copying of language, structure, or ideas of another and passing them off as one's own work. All academic work attempted contains an implicit pledge by the student that no unauthorized aid has been received. The official procedures for handling academic dishonesty are described in the current edition of the student handbook. You should read and become familiar with this information.

A student guilty of first-offense academic dishonesty in this course will receive a grade of zero for the work attempted. Second offenses will result in a grade of "F" for the course, and will raise the possibility of suspension or permanent dismissal from the University.

TENTATIVE LECTURE & DISCUSSION SCHEDULE

Key to instructors: JW = Jerry Waldvogel (Genetics, Biochemistry & Life Science Studies)
PM1 = Pamela Mack (History)
MM = Michael Morris (Political Sciences)
PM2 = Patrick McMillan (Biological Sciences)

<u>Week of</u>	<u>Topic</u>
10 Jan	Personal introductions & course mechanics. (JW)
17 Jan	NO CLASS
24 Jan	An overview of the Galapagos Islands. (JW & PM1)
31 Jan	Historical perspectives on the Galapagos Islands and Charles Darwin. (PM1 & JW)
7 Feb	An introduction to evolutionary thinking. (JW)
14 Feb	Science in a social context and a discussion of <i>Voyage of the Beagle</i> . (PM1 & JW)
21 Feb	NO CLASS
28 Feb	Discussion of <i>The Beak of the Finch</i> . (JW)
7 Mar	Socio-political importance of the Galapagos Islands. (MM)
14 Mar	Discussion of <i>Evolution's Workshop</i> . (JW)
21 Mar	SPRING BREAK (no class)
28 Mar	NO CLASS
4 Apr	Fauna of the Galapagos Islands. (JW)
11 Apr	Flora of the Galapagos Islands. (PM2)
18 Apr	Environmental issues on the Galapagos Islands. (JW)
25 Apr	NO CLASS
25/26 May	Depart for Galapagos Islands.
1 June	Return from Galapagos Islands.
15 June	Final reflection paper due to Dr. Waldvogel.