

The University of Georgia Avian Biology Study Abroad Program in Costa Rica



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Abstract

Students enrolled in the College of Agricultural and Environmental Sciences (CAES) at the University of Georgia traditionally had not participated in study abroad programs at a rate similar to the rest of the student body at the University. This lack of study abroad involvement by students in the College was related to the shortage of study abroad opportunities with content geared towards them. Therefore, an Avian Biology Study Abroad Program in Costa Rica was created in 2008 to complement and enhance the avian biology major offered through the Department of Poultry Science within CAES. Student participation has reached the targeted goal each year of 15, 18, and 20, for a total of 53 students. Testing and survey results indicate that student learning objectives have been met and that students have been very satisfied with the overall experience of the program. Pre/post-test results show a 43% gain in knowledge from the study abroad experience. The mean overall rating of the course by students for years 2008-2010 was 5.0 out of 5.0 and the mean rating of overall quality of the program, for the same period of time, was 4.8 out of 5.0. All but five of the participating students have been fulltime enrolled CAES students. In addition, 19 of the participants were avian biology majors and seven more became avian biology majors after participating in the program. Thus, the Costa Rica Avian Biology Program has provided a capstone opportunity to avian biology majors and increased the study abroad participation of CAES students.

Introduction

With about 2,000 students participating in study abroad programs during the 2009-2010 school year, the University of Georgia (UGA) ranked tenth in the nation among higher education institutions for the number of students who study abroad each year (Simmons 2011). More specifically, the number of UGA students who participate in study abroad

programs that were shorter than eight weeks, placed UGA fourth in the nation among doctoral/research institutes (Institute of International Education Open Doors 2011). As a result of UGA's commitment to provide international educational opportunities to its students, almost 30% of the total graduates from UGA each year have participated in a study abroad course during their academic program, and the University now has faculty-led programs on every continent (University of Georgia 2011).

Despite the University's overall stellar record in student involvement in study abroad experiences, students enrolled in the College of Agricultural and Environmental Sciences (CAES) within the University had participated in study abroad programs at a rate of less than 10% of each graduating cohort. The demand for agricultural programs to provide college students with an international perspective has been noted by several organizations and studies (APLU 2009, Nassar 2004, NRC 2009, Zhai and Scheer 2002). Although the CAES had strived to incorporate various forms of international awareness into its curricula, this was not resulting in CAES students seeking study abroad experience and, as Crunkilton et al. (2003) indicated, weaving topics, sections, or a few lectures of internationally-related issues into curricula is not sufficient to provide students with understanding, compassion, and empathy for different global cultures. Previously, McPherson (2001) had argued that the time for debate as to whether colleges of agriculture and life sciences should incorporate international experiences into curricula had long passed and that it was now time to ask how agricultural colleges could participate in the internationalization of education through study abroad opportunities. This challenge was met by the Department of Poultry Science within the CAES. In 2008 the Department created a three-week, Maymester Avian Biology Study Abroad Program based on the hypothesis that the lack of study abroad involvement

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by students in the CAES was related to the shortage of study abroad opportunities with content geared towards them and taught by faculty within the College. The program was also developed to complement and enhance the Department's major in avian biology which it initiated in 2004.

Materials and Methods

Identifying the Country or Region of Study

One faculty member and one graduate student directed by this faculty member were given the responsibility to plan, design, and conduct the Avian Biology Study Abroad Program. Costa Rica was chosen as the destination for the program because it has many diverse, but distinct, ecosystems which allow over 850 species of birds to thrive in a country that is slightly smaller in size than the state of West Virginia (Henderson 2002, Wainwright 2007). In addition, in 2001, the University of Georgia purchased a farm in the Monteverde region of Costa Rica and has since developed it to be a fully operational campus. In the fall of 2005 the University of Georgia opened the Costa Rica Office at its main campus in Athens, Georgia to promote and recruit students to participate in study abroad programs at its Costa Rica campus and thus the support structure at the home campus to initiate a new study abroad program was in place. Finally, a graduate student with travel experience in Costa Rica, which included a semester long study abroad program in ecology and serving as a naturalist for seven months at a research facility, was selected for planning the program.

Planning the Program

Locations within different ecological zones of Costa Rica were chosen to allow the examination and analysis of the natural habitats and evolutionary adaptations of avian species in each of these habitats and to provide the student participants the opportunity to see at least 250 species of birds, as well as a diverse array of mammals, insects and plants (Henderson 2002, Zuchowski 2007). The three-week program was designed to utilize biological stations as well as ecological preserves and resorts to immerse students in the premontane cloud forest, lower montane rain forest, tropical dry forest, Caribbean lowlands, and Pacific coast lowland ecological zones (Henderson 2002). Lectures for the six-credit-hour course (POUL 4150, Field Studies in Avian Biology) were adapted for each environment in order to illustrate to students the incredible array of physiological and anatomical

adaptations as well as nutritional strategies that bird species of Costa Rica use to limit their competition with one another. The course was also designed to encompass field components which comprise about 80% of the course learning objectives and activities. The field learning components include guided bird and nature hikes that occur at least twice a day, and guided boat tours of mangroves and coastal estuaries on the Pacific and Caribbean coast locations.

A goal of any study abroad experience is to introduce students to other cultures and, as a CAES program, this experience is also needed to provide participants an appreciation for international agriculture and environmental perspectives. Therefore, other field learning components beyond avian biology were chosen to provide students the opportunity to gain an appreciation of the Costa Rican culture, conservation efforts, and sustainable and organic farming practices. Recreational activities were also planned to provide both direct and indirect cultural exposure. For example, one site visit is to a family farm near Monteverde that grows organic coffee that is sold to the local Co-Op Santa Elena, a fair-trade coffee cooperative that sells under the brand Café Monteverde. The small farm also produces sugar cane, beans, bananas, and other fruits and vegetables. The farmer and his family provide in depth knowledge about cooperative and organic farming practices as well as about their daily life. In addition, the students observe methods of harvesting sugar cane and then are able to extract the juice from the cane by hand powering a century-old trapiche (Figure 1). The extracted juice is either consumed as a fresh beverage or concentrated by boiling.

To provide further knowledge resources to the student participants, the same Costa Rican, bilingual travel guide with a degree in ecology has been hired each year for the duration of the trip. In addition, each location visited has staff guides which are very valuable in providing information about Costa Rica as well as the location of elusive flora and fauna.

Equipment and Group Projects

Due to the nature of the course and its focus on birds, appropriate reference books and specialized equipment were purchased to help observe, identify and record the avian fauna throughout the country. For bird identification, the course utilizes several copies of *The Birds of Costa Rica* by Richard Garrigues (2007) and many students opt to purchase and bring their own copy of this field guide with them. Other field guide references provided by the course include *Wildlife of Costa Rica* by Carrol Henderson (2002), *The Mammals of Costa Rica* by Mark Wainwright (2007) and

Figure 1. Students observe how to harvest sugar cane and then are able to extract the juice from the cane by hand powering a century-old trapiche. The extracted juice is either consumed as a fresh beverage or concentrated by boiling.



Figure 2. With assistance from course equipment such as binoculars, spotting scopes, HD video cameras and SLR digital cameras (top left), students are able to acquire and practice avian field identification skills, identifying over 250 species each year. A few rare species that are typically observed on the course are the Resplendent Quetzal (top right), Great Curassow (bottom left), and Great Green Macaws (bottom right).



Tropical Plants of Costa Rica by Willow Zuchowski (2007). It is recommended that students bring their own waterproof binoculars, though the program has purchased several pairs for loan if needed. Additional equipment purchased for the course includes three digital SLR cameras with zoom lenses (Figure 2), two spotting scopes, three high definition video cameras with night recording capabilities and three laptop computers for student group projects.

Bird watching in the tropics is much more difficult than in the temperate zones due to the dense foliage and lack of sunlight under the canopy. At the beginning of the course, an introductory birding lecture is conducted that includes binocular and spotting scope use, birding etiquette, and field marks to look for on the birds. The students are also trained on the use of the photography equipment used to document what they have observed.

Using the observational techniques learned and the provided equipment, the students work in small groups to create photo and video documentaries as well as write essays depicting the immense array of flora and fauna seen, green initiatives observed and culture learned. The student projects and written reports are presented at the end of the trip. These group projects and reports combine several skills including observation, reflection, collaboration, and public speaking to reaffirm and test comprehension of the knowledge that the students have learned in the three-week duration of the program.

The students are pre and post tested to assess their gain in knowledge over the course. The same test covering bird biology and identification as well as Costa Rican culture, geography, and agriculture was given at both the start and end of the program. In addition, student surveys were conducted at the end of the program to determine overall student satisfaction and to provide an indication of things that could be changed to enhance the program. Students were asked questions to evaluate both the course and the overall program using a scale from 1 to 5 with 1 = poor, 3 = average, and 5 = outstanding. Open-ended questions were also asked to encourage students to write their thoughts on the program experience.

Results and Discussion

Program Popularity

The University of Georgia now has over 25 Costa Rica study abroad programs, yet the Avian Biology Maymester has met its targeted enrollment goals of 15, 18 and 20 students for the years 2008, 2009 and 2010, respectively. A total of 53 students have participated

in the Avian Biology Study Abroad Program in Costa Rica. Of the total students that have participated, 49 have been from the University of Georgia and 48 of these students have been enrolled in the CAES. The remaining four students enrolled in the CAES as transient students to participate in the program. The faculty members of the Department of Poultry Science advise more than 700 students enrolled in the animal health, avian biology, biological science, and poultry science majors within the CAES. Of the 48 CAES participants, 19 were avian biology majors, 18 were biological science majors, five were animal health majors, four were poultry science majors, one was an animal science major and one was an environmental economics and management major. The overwhelming participation in this program by CAES students supports our original hypothesis that providing a study abroad program with content geared towards these students and taught by faculty within the College would encourage their involvement in such a program.

The avian biology study abroad program was also created to enhance the relatively new avian biology major offered by the Department of Poultry Science. The created study abroad program has served this purpose by providing a capstone experience for many avian biology majors. In addition, the program has been an effective recruiting tool for the major. Seven students that participated in the program subsequently changed their major to avian biology.

Knowledge Gained

Pre-program test results indicate a base knowledge average of 44%, while the post-program test average of 87%. This is a 43 point gain in knowledge attributable to the instruction and overall experience of the three-week course. It has been readily evident by the end of the program each year, that the student participants are knowledgeable about basic avian science, can site-identify common Costa Rican birds, and are familiar with the natural history of dozens of species of birds. Each year, about 250 bird species, representing over 50 avian families, have been observed throughout the country. These birds include several near threatened, threatened, vulnerable, or endangered species such as the Resplendent Quetzal (near threatened), Black Guan (near threatened), Great Curassow (vulnerable), Bare-necked Umbrellabird (vulnerable), Three-wattled Bellbird (vulnerable), and Great Green Macaw (endangered) (Figure 2) (BirdLife International IUCN Red List for birds 2011).

Student Satisfaction

The course designed for this study abroad program has been well received by the student participants from the first year (Table 1), and thus, has not been altered for subsequent years except to provide new topics and creative angles for the assigned group photo and video documentaries. In contrast, aspects of the overall program logistics were changed based on student dissatisfaction from the first year of the program (Table 2). For the first year the staff of the University of Georgia Costa Rica Office handled the planning of

the daily logistics of the program and conducted the orientation for the program. This seemed logical given their experience in doing this for the University's other Costa Rica study abroad programs. However, this did not work well because their experience was based on programs that stayed entirely at the University of Georgia Campus in Costa Rica or used the campus as their base for excursions to other locations in Costa Rica. Because the Avian Biology program only visited the University of Georgia Campus briefly, the orientation provided by the Costa Rica Office staff and the arrangements made by them using several vendors were not suitable for our program.

After the initial year, the instructor and graduate student for the program started to handle all aspects of the program with the help of the tour company that employs our program guide. This decision has allowed us to better prepare our students through orientations preceding our departure for the program (Table 2). In addition, the continuity provided by utilizing one tour company for all local arrangements has been invaluable. The addition of a constant tour bus driver throughout the program that is also highly knowledgeable about the wildlife and agricultural practices of the country has especially benefitted the program by allowing an increase in the number of student participants without a decrease in faculty and staff to student ratio. In addition to having a constant bus driver, having the same local, bilingual guide with a degree in ecology has provided insight and perspective on local bird population shifts, climate change, and effective conservation practices that faculty from the United State could not provide without being constant residents of Costa Rica.

The anonymous student evaluations for the program were very valuable in summing up their thoughts about the overall experience. Some primary examples are: *“Doing birding in the field and complementing that with lecture and activities allows the student to constantly reinforce what we learned daily. I will never forget certain lessons I have learned here,”*

Table 1: Summary of course perceptions of students participating in the Avian Biology Maymester in Costa Rica program from 2008 to 2010¹.

	2008	2009	2010	Mean
1. Stimulation of interest in subject matter ²	4.8±0.11	4.8±0.09	4.7±0.11	4.8±0.06
2. Instructor concern for students ³	5.0±0.00	4.9±0.06	4.9±0.07	4.9±0.03
3. Academic quality and appropriateness of workload for the program environment	4.5±0.29	4.6±0.20	4.6±0.17	4.6±0.12
4. Course organization ⁴	4.9±0.09	4.8±0.13	4.8±0.12	4.8±0.07
5. Methods of instructions ⁵	5.0±0.00	4.9±0.08	4.9±0.11	4.9±0.05
6. Critical thinking ⁶	4.9±0.09	4.8±0.12	4.7±0.13	4.8±0.07
7. Overall rating of the course ⁷	5.0±0.00	5.0±0.00	4.9±0.07	5.0±0.03

¹Values are the mean response for each question using a scale from 1-5 with 1 = poor, 3 = average, and 5= outstanding, of the 15, 18 and 20 students participating in year 2008, 2009 and 2010, respectively.
²Question continued: One measure of an instructor's success is the ability to convey enthusiasm for and generate interest in the subject matter. How well did your instructor(s) do so?
³Question continued: In a positive learning environment, an instructor shows respect and concern for the intellectual development of students. How well did your instructor(s) do so?
⁴Question continued: A well-organized course provides the student with a syllabus that outlines the course topics and assignments and clearly defines how the students' grades will be determined. How well was this course organized?
⁵Question continued: An instructor can use a variety of teaching and learning strategies to guide students toward an understanding of course material. How well did the instructional methods help you to understand course material?
⁶Question continued: A major goal of UGA Costa Rica's study abroad programs is to foster critical thinking. How well did this course improve your ability to think critically on your own about the subject matter?
⁷Question continued: Taking into account the many qualities that contribute to a good course, rate the overall quality of this course.

Table 2: Summary of program perceptions of students participating in the Avian Biology Maymester in Costa Rica program from 2008 to 2010¹.

	2008	2009	2010	Mean
1. Accuracy and usefulness of orientation programs and materials in preparing for the program	2.5±0.32	4.8±0.09	4.5±0.17	3.9±0.17
2. Safety of program locations, facilities, excursions, and transportation	4.1±0.32	4.6±0.18	4.1±0.14	4.3±0.12
3. Choice of locations for excursions, field trips and site visits	4.7±0.15	4.8±0.09	4.8±0.10	4.8±0.06
4. Overall effectiveness of program staff in managing program	3.2±0.31	4.9±0.08	4.8±0.16	4.3±0.20
5. Overall effectiveness of your program's professor and staff in dealing with students' academic and personal needs and concerns	5.0±0.00	4.9±0.12	5.0±0.05	5.0±0.05
6. Value of program in relation to the cost	4.8±0.11	4.8±0.09	4.9±0.11	4.8±0.06
7. Overall quality of the program in relation to your expectations	4.7±0.15	4.9±0.08	4.8±0.09	4.8±0.06

¹Values are the mean response for each question using a scale from 1-5 with 1 = poor, 3 = average, and 5= outstanding, of the 15, 18 and 20 students participating in year 2008, 2009 and 2010, respectively.

"I loved the Study Abroad Program. It opened my eyes to the world of birds and I will forever look for birds instead of just looking at the scenery around me," "I am happy that my first trip out of the country was one so deeply immersed in culture and nature," and other similar sentiments were the most frequent on students' list of positive experiences. Overall the student participants have been very pleased with the course format having a strong field component as reflected best by one student who wrote, *"The experience I had here cannot even begin to compare with conventional classroom learning. I feel as though I have put to practice what others will never take out of the classroom."* When asked of the value of the course in relation to cost, replies included, *"Especially valuable for this length of a trip and the birds we saw,"* and *"Best value ever! Would have paid twice as much!"* The cultural component of the course also left a significant impact with comments including, *"Writing the paper on conservation made me really admire the Costa Ricans and their way of life. It makes me want to make the United States more advanced in conservation,"* *"Walking through the towns of each place we stayed, I feel had the greatest impact. It was so different from home and it was interesting to see the livelihood,"* and *"Seeing the culture & experiencing it helped me appreciate the people and their lifestyle."*

Summary

In response to a need to increase the globalization of the students enrolled in the CAES of the University of Georgia, the Department of Poultry Science initiated an Avian Biology Study Abroad Program in Costa Rica. The three-week summer program has been conducted successfully for three years and has significantly increased the number of CAES students that study abroad. It has also been an effective recruiting tool for the avian biology major and has provided a unique capstone experience for students enrolled in this major. Results from post-course surveys indicate that students were satisfied and perceived the experience to have had a very positive impact on their future academic endeavors, personal growth, and cultural understanding and awareness. This program will continue to be an indispensable component of the CAES undergraduate student experience and already has served as a model for the development of other successful study abroad programs within the department of poultry science and other departments within the CAES.

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