An International Course in Tropical Entomology: The “El Cielo” Experience

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The Biosphere Reserve El Cielo is in the state of Tamaulipas, Mexico, just south of the Tropic of Cancer and about 483 km south of Brownsville, TX. In 1986, El Cielo was designated a Biosphere Reserve by The United Nations Educational, Scientific, and Cultural Organization (UNESCO) in cooperation with The International Union for the Conservation of Nature under the “Man and Biosphere Program.” El Cielo is one of more than 350 biospheres located worldwide and the closest tropical biosphere to the United States.

The floral and faunal diversities of El Cielo are among the highest in the world because this biosphere lies at the ecotone between the tropics and the temperate region (Augustine 1993). El Cielo, with elevations ranging from 100 to 2,300 m, has four distinct ecosystems including tropical jungle, mountain cloud-forest, pine-oak forest, and dwarf oak-heath forest. The Institute of Ecology and Food at the University of Tamaulipas and UNESCO manage the resources, while maintaining the lifestyle of the people in the reserve who depend on the land for their livelihood. Farmers are scattered among various ejidos (villages) ranging in size from approximately 900 inhabitants in Gomez Farias to 10 families at San Jose. These people are progressing from subsistence to sustainable agriculture, while at the same time protecting the biodiversity that has only just begun to be studied. National parks in Mexico are different from those of the United States because people live and work in them. Perhaps “man living in harmony with nature” is a romantic notion, but that is the purpose of “Man and the Biosphere” and, in our view, the program is working.

This relatively pristine, exotic environment provides the setting for the joint “Curso Internacional Sobre Entomologia Tropical en la Reserva de la Biosfera El Cielo,” open to students from the Universidad Autonoma de Tamaulipas and Texas Tech University. Students are housed at Los Cedros Biological Field Station, located in a remote valley at the edge of Gomez Farias. The two-week field course, held each May since 1992, enrolls a total of 15-20 students from both universities (Fig. 1). The number of students from each university is deliberately limited to discourage ethnocentricity and to foster personal and individual experiences.

The objectives of the course are to introduce students to tropical ecology with an emphasis on entomology, expose them to a different culture, and allow them to develop an independent research project. Lectures and field exercises are led by professors from other universities in Mexico including the Technical Institute of Ciudad Victoria, Monterey Tech, and Nuevo Leon University, and individuals from organizations such as Secretaría de Desarrollo Social (Organization of Social Development). Topics have included forest entomology, economic entomology, lepidopteran ecology, aquatic entomology, nocturnal insect sampling, management of pest ants, tropical fruit production, and environmental education programs. Day trips to agricultural communities and extended overnight trips to Canindo Biological Field Station (accessible only by foot or four-wheel drive vehicles) also are scheduled. Most students make an insect collection to compare the biodiversity among the four different ecosystems, but some address more sophisticated research questions (Anderson 1997). Students report that they gain valuable information and experience from the course content. However, we feel that the real value of the course lies in the intangible benefits derived by students and faculty from this cross-cultural experience.

Students from Texas Tech University probably derive additional value from being
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When students collect specimens in the tropics, it is almost as if they undergo "ecological release." Initially, they try to collect everything in sight. But, with time, they become more selective and observant of insect behavior (Fig. 2). A distinguished, retired faculty member in the Texas Tech University entomology program once said that good entomologists also are great collectors. If this is true, what better way to instill in students the love of entomology than by offering them the chance to collect in such an unspoiled, pristine, and challenging environment as a biosphere in Mexico? We believe this concept must be instilled at an early stage in their education if they are to develop a love for collecting, identifying, cataloging, and contributing to the knowledge of biodiversity.

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