

COURSE REPORT

Field Course in Political Ecology of Conservation and Restoration of Tropical Forest Landscapes

ELTI Training Landscapes
District of Pedasí, Province of Los Santos
March 10-15, 2019

A field course organized by:

The Environmental Leadership & Training Initiative (ELTI), the Association of Livestock and Agrosilvopastoral Producers of Pedasí (APASPE) and the Yale School of Forestry and Environmental Studies (F&ES)



Students listen to the experience of local farmers conducting forest restoration activities on their farms.

Photo: Eli Wittum

Background: The tropical dry forest, the most endangered ecosystem in the Neotropics, is extremely threatened by the dominance of extensive conventional cattle ranching in Panama's Azuero Peninsula. The destruction of forests has degraded the provision of ecosystem services, which are necessary to support local endemic wildlife and agrarian livelihoods. With an erratic annual rainfall and a dry season lasting from five to six months, the region's extreme climate variations compound the stresses of unsustainable land-use practices and make efforts to restore the ecosystem particularly challenging. Advances in forest restoration and sustainable ranching have been shown to enhance production and ecosystem services in cattle ranching landscapes.

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Students visit with local farmers to learn about the history of settlement and land use in the region.

Nevertheless, successful implementation of restoration activities in mosaic landscapes requires a clear understanding of not only biophysical approaches but also the socio-political context and how it influences land use decision making.

In order to provide a field experience focused on the socio-political aspects of forest restoration, this training was offered to Master's Students from the Yale School of Forestry and Environmental Studies (Yale F&ES) and undergraduate students from Yale College, enrolled in the Yale F&ES course 615 entitled, "Political Ecology of Conservation and Restoration of Tropical Forest Landscapes." Over a period of six days, students learned from ELTI team members and local landholders about the ecology of tropical dry forests, how and why these ecosystems have been modified over time, and the distinct historical, cultural, and socio-economic factors that shape and influence land management practices in the region. Students also visited a network of field sites that showcase a range of forest restoration and sustainable cattle ranching strategies that landholders are adopting in the region with support from ELTI's training and leadership programs. Particular attention was given to the social aspects of conserving and restoring this unique forest type and how and why landowners and community associations facilitate and promote restoration activities on-farm. Students also interacted with local Panamanian NGOs conducting wildlife conservation at the local level as well as the national policy level, regarding Panama's 1-million-hectare Bonn Challenge pledge, much of which is being implemented within complex tropical mosaic landscapes such as the Azuero Peninsula.

This field-based course was facilitated at ELTI's Azuero Training Landscapes in the Province of Los Santos, Panama, which convey ecological and social principles of forest restoration through its interpretative trail network, demonstration sites and model farms.

Course Objectives: The course aimed to provide an engaging and practical field experience to students to complement the seminar course by demonstrating both biophysical and social approaches to tropical dry forest restoration in complex human dominated landscapes of a developing Central American country.



Photo: Eli Wittum

Students learning how to identify tree species in the tropical dry forest ecosystem.

Content: The course was divided in five training modules, illustrated through introductory lectures, field-based demonstrations, discussions and group exercises, as follows:

Module 1: Panama's political-ecological context

Module 2: Dry tropical forest ecology and ecosystem services

Module 3: Ecological and social consequences of deforestation and degradation

Module 4: Forest restoration strategies for sustaining livelihoods in human dominated landscapes

Module 5: The role of community-based farmer organizations and forest restoration

Field-Course Format: This course took place over six days, starting in Panama City and the remainder at ELTI's Training Landscapes in the tropical dry forest, located in the Province of Los Santos in the Azuero Peninsula. These sites demonstrate the varied biophysical and socio-economic contexts of different types of land use ranging from well conserved mature forest to model farms established with silvopastoral and agroforestry systems, home gardens, and riparian forest restoration. The following activities occurred throughout the week:

Day 1: Course participants were welcomed to Panama and after introductions, an initial presentation about Panama was facilitated by Jacob Slusser (Neotropics Training Program Panama Coordinator) and Saskia Santamaría (Neotropics Program Associate). The presentation consisted of a detailed introduction of Panama covering historical, political and ecological themes in order to provide students with a clear understanding of the factors that have influenced the current context. After the presentation, students were given a tour of Panama City, stopping at both historical sites such as Panama Viejo, Casco Viejo and the former Canal Zone, as well as sites of interest such as the Miraflores Locks of the Panama Canal. The day concluded with a traditional dinner and folkloric dance presentation in the historic Casco Viejo.



Students visit a cattle ranch and learn about conventional practices, such as burning and why it is utilized.

Day 2: The group departed Panama City and traveled the five hours to Achotines Tuna Laboratory and were introduced to the laboratory and provided a tour of the installations. Afterwards, Jacob presented on ELTI's capacity building model in Panama, discussing the needs for training in Panama, audiences, types of courses and the development of ELTI's Training Landscapes to facilitate interactive field-based courses. The day concluded with a discussion about ELTI's training and leadership development model.

Day 3: Jacob presented on the social and economic history of deforestation and degradation drivers of tropical dry forests of the Azuero, in order to provide a background on the livelihoods and common land uses in the landscape. Afterwards, the group traveled to Los Asientos where they met two brothers from one of the first families that settled the area. The brothers provided a historical perspective on how and why the area was transformed from forests into agriculture and cattle pasture landscapes. Attention was focused on the different phases of settling the area, as well as traditional gender roles and later migration out of the province by many landless farmers who then homesteaded in other unsettled areas of Panama.

Afterwards, the students visited a conventional pasture to better understand the effects of the system by removing trees and managing it with use of fire and agrochemicals. This provided them with a baseline for conventional systems, which can benefit greatly from restoration activities. They also visited a traditional home garden of one of the brothers, which illustrated farmer's traditional knowledge of trees and plants for their different uses that benefit farmers and their families.

After lunch, Jacob facilitated a presentation about tropical dry forest ecology, so that students could understand how this type of ecosystem functions, is disturbed, responds, as well as how it produces different services. To complement the presentation, Jacob led a walk on ELTI's interpretive trail network, within the Achotines Forest Reserve. Students were able to learn about a mature tropical dry forest, its seasonal characteristics and visualize the type of ecosystem which farmers originally encountered in the area over 100 years ago. Students also visited different demonstration areas in order to learn in more detail about the flora and fauna. Jacob stressed learning how to identify the key tree species in the forest as well as their functional characteristics, which would be seen throughout the field visits.

After dinner, the day concluded with presentations from Dr. Pedro Méndez from Pro-Conservation of Panamanian Primates Foundation, which focuses on primate conservation and José Vargas from The Peregrine Fund, which focuses on harpy eagle conservation. Both presenters discussed the mission and objectives of their organizations, which are both locally based in Panama. In addition, they stressed the importance of going beyond conservation, and working with local communities



Photo: Eli Wittum

Students visit the model farm of an APASPE member and learn about sustainable ranching practices such as silvopastoral systems.

and landowners in order to conduct conservation of primate and harpy eagle habitat. They discussed the challenges of working with farmers who often consider wildlife as a threat to their crops and livelihoods. As an alternative, increasing awareness and educational opportunities for local people can help change beliefs and inspire sustainable alternatives that strengthen conservation efforts while also improving livelihoods.

Day 4: The course shifted into a focus on forest restoration strategies for tropical dry forests. Jacob delivered an introductory presentation about the range of passive to active forest restoration strategies, highlighting many of the restoration activities being conducted both by local landowners. Jacob focused on silvopastoral and agroforestry systems, which are strategies that have proven successful for local ranchers to maintain their traditional livelihoods and improve ecosystem health. The presentation was followed by an open discussion session about the adoption of restoration strategies by farmers.

To visit with different landowners and view their restoration activities, participants first visited Eco Venao, which is a 100-hectare property that offers ecological lodging at Venao Beach, a popular tourist destination. Eco Venao also focuses on the production of native and exotic timber in the mixed plantations they established after buying the degraded cattle ranch in 2005. Participants were given an informal presentation by Nico Nickson, who came to Panama in 2005 to manage the property for a friend. Nico discussed the owner's objectives in terms of offering more sustainable alternatives for lodging in an increasingly developing area, by conserving forest patches, reforestation and offering low impact lodging via low density construction, structures made from locally sourced materials and electricity via solar power. Students were given the opportunity to ask questions about tourism development in the area, how local people are being included and whether other hotels are also focused on sustainability. Overall, the visit provided students with the perspective and values of a foreign property owner making attempts to conduct a hospitality business while also trying to conserve the local ecosystem and offer sustainable lodging options.



Photo: Eli Wittum

Students ask APASPE members about the challenges of conducting forest restoration on-farm.

After the visit students were given free time to enjoy the beach, before returning to the Panga Restaurant, located at Eco Venao, which offers a farm to table dining experience. Participants learned about how the restaurant sources food from local producers, fisherman and ranchers.

Day 5: This day focused on local landowners and their efforts to conduct forest restoration strategies. As an introduction, Jacob delivered a presentation on the role of community-based farmer organizations and forest restoration, specifically discussing the history and restoration activities of the APASPE sustainable rancher's association. APASPE is an organization that consists mainly of ELTI alumni and has

worked with ELTI for almost ten years, receiving training and leadership development. They now serve as co-facilitators of ELTI field courses utilizing their model farms as farm schools to illustrate the range of forest restoration strategies that can be used in cattle ranching landscapes.

Students spent the day meeting with the APASPE board members, Belgis Madrid – President, Manuel Cedeño – Treasurer, and Odielca Solís – Secretary. Participants also met Jorge Gutiérrez – ELTI consultant, who provides follow-up assistance to ELTI alumni and Peace Corps Response Volunteer Austin Broderick who is developing educational materials for the association.

The first visit was to Odielca Solis' farm, small but intensively managed. She focuses on producing beef cattle as well as annual crops, fruit and coffee, some of which is sold in local markets. Students learned about the history of the farm and why Odielca made the decision to start a conversion, conducting restoration efforts. Odielca stressed both the ecological and social benefits of silvopastoral and agroforestry systems, but also highlighted how the process was difficult since it was a system with counterintuitive practices, which required a high initial investment in labor of which there is a shortage in the area. Students were very interested in her experience as a single mother working in a male-dominated sector. Odielca emphasized the difficulty, but also recognized that women have a different land-use ethic and are better land stewards than men, which she illustrated with the diversity of products and high yields from her farm.

After lunch with the association members, the students received a presentation from Edelmira Navarro, the President of the Save A Tree Live Better (SAVIM) Ecological Producer's Association. SAVIM is another community-based association that consists of ELTI Alumni and have received numerous years of support from ELTI to become recognized as local environmental leaders in conservation and sustainable ranching. Edelmira discussed the history of the association and learning about forest restoration and difficulties of receiving support for projects. She mentioned the turning point was being awarded a project from the Small Grants Programme to establish silvopastoral systems, which



Edelmira Navarro, President of SAVIM discusses their efforts to conduct ecological restoration as a community association.

now serve as model farms for their region of the Azuero. Edelmira articulated the importance of restoration efforts to improve the local ecosystem but to also improve their agrarian livelihoods by increasing and sustaining production.

After the presentation, students visited the farm of APASPE member Dolores Solís, who has utilized several restoration strategies to improve production while conserving soil and water on his farm. Students visited the different areas where he has conducted native species reforestation and inquired about his management of the trees which have grown quickly in a short time. In addition, students had the opportunity to ask Edelmira, Dolores, Belgis, and Manuel about local cultural and political issues related to restoration and sustainable ranching. The four were very candid about discussing the hardships of living an agrarian livelihood and the lack of assistance they receive from the authorities as small farmers. Overall, the exchange provided students with a clear understanding of the complexities of conducting forest restoration in an agricultural landscape, where there are diverse landowners with differing values and objectives. It also highlighted the importance of providing farmers long-term training and leadership building in order to ensure long-term restoration impacts.



Students visit a silvopastoral model farm of an APASPE member.

After the visits, students returned to the main plaza of Los Asientos and enjoyed dinner and the performance of a traditional accordion and bongo drum musical group.

Day 6: After breakfast, the students departed for Panama City. After lunch, Yale F&ES Alumna and former Minister of the Environment of Panama, Mirei Endara, gave an informal presentation about her experience with conservation and restoration at the government policy level. Students inquired about her career trajectory, challenges as a woman in Latin American politics and environmental laws and initiatives that help or hinder restoration. Special attention was given to Panama's national restoration initiative, the One-Million Hectare Reforestation Alliance. Mirei highlighted the difficulties of implementing such an ambitious restoration endeavor in a short time via a bureaucratic system, but emphasized the importance of collaborations in the public and private sector to achieve restoration goals. The course concluded with a final dinner in Panama City.



Photo: Eli Wittum

Students pose for a photo during one of the field visits.

Instructors and Coordinators: The course was facilitated by ELTI's Neotropical Training Program Staff: Jacob Slusser (Panama Coordinator) and Saskia Santamaría (Program Associate), with help from Yale Faculty Dr. Amity Doolittle and Dr. Eva Garen (ELTI's Director), who helped to facilitate field-based exercises and classroom discussion. Jacob delivered introductory lectures and field demonstrations and led classroom discussion. Both Jacob and Saskia provided translation throughout the week during field visits. Jorge Gutiérrez (ELTI Consultant) and Austin Broderick (Peace Corps Response Volunteer) provided insight for mentoring and following up with alumni. In addition, course collaborators: Edelmira Navarro, Belgis Madrid, Manuel Cedeño, Odielca Solís, and Dolores Solís of SAVIM and APASPE facilitated presentations and visits to the model farms. Eli Wittum, Peace Corps Response Volunteer, documented the course via photography and video.

Participants: The course was offered to 15 Master's students from the Yale School of Forestry and Environmental Studies (Yale F&ES) and undergraduate students from Yale College, who were enrolled in the Yale F&ES course 615 entitled, "Political Ecology of Conservation and Restoration of Tropical Forest Landscapes."

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