

COURSE REPORT

Theory and Practice for Engaging Landholders and Communities in Conserving and Restoring Tropical Forest Landscapes

ELTI Training Landscapes
District of Pedasí, Province of Los Santos
May 11-16, 2022

A field course organized by:

The Environmental Leadership & Training Initiative (ELTI), the Yale School of the Environment (YSE), and the Association of Livestock and Agrosilvopastoral Producers of Pedasí (APASPE)



Jacob L. Slusser

Students observing an emergent tree in a mature stand of the Achotines Forest Reserve.

Background: The tropical dry forest, the most endangered ecosystem in the Neotropics, is extremely threatened by extensive, treeless cattle ranching practices in Panama's Azuero Peninsula. The degradation of forest landscapes has impaired the provision of ecosystem services – necessary to support local 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. Efforts to restore the ecosystem, therefore, are particularly challenging. Integrating forest restoration strategies into agricultural mosaics have proven to enhance on-farm production and ecosystem services. However, successful approaches require engaging with landowners and communities to incorporate their perceptions, values, and objectives into holistic restoration interventions that provide benefits for local communities and biodiversity.

ELTI is an initiative of:

Yale SCHOOL OF THE ENVIRONMENT
The Forest School



Students meet with YSE alumna Mirei Endara.

To provide a field experience focused on the socio-ecological aspects of forest restoration, this training was offered to masters students enrolled in the Yale School of the Environment (YSE) course 615 entitled, "Theory and Practice for Engaging Landholders and Communities in Conserving and Restoring Tropical Forest Landscapes." Over a period of six days, students learned from ELTI team members and local experts about the ecology of tropical dry forests, how and why these ecosystems have been modified over time, and the distinct historical, cultural, and the 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 a diversity of landholders are adopting in the region with support from ELTI. 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 reforestation, its Bonn Challenge pledge, much of which is being implemented within complex agricultural mosaic landscapes of the Azuero Peninsula.

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

Course Objective: 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.

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



Students hiking on the ELTI ecological trail network, learning about tropical dry forest dynamics.

Module 1: Panama's political ecology context

Module 2: Tropical dry 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 in 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. 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: Students were asked to watch a prerecorded lecture about Panama's political and ecological history, to provide a clear understanding of the factors that have influenced the current context. The lecture was facilitated by Jacob Slusser and Saskia Santamaría (Neotropics Training Program Panama Coordinator and Program Associate, respectively). Introductions to the course were conducted at the Panama Viejo ruins, where the origins of the city were described. Afterwards, students were given a tour of Panama City, stopping at historical sites such as Casco Viejo, the Causeway, and the former Canal Zone.

Lunch was offered at The Country Store, a farm-to-table restaurant owned by George Hanily, who also serves as the director of the Panama's oldest conservation NGO, the National Association for the Conservation of Nature (ANCON). George explained his motives for operating a restaurant that serves food from his family's sustainably managed farm. George was joined by YSE alumna and former Minister of the Environment of Panama, Mirei Endara. Both candidly spoke about their careers working in the environ-



Visit to the Miraflores Locks of the Panama Canal.

mental conservation sector in Panama, highlighting their successes and failures. Students inquired about the difficulties of facilitating restoration at the government and NGO level and how to effectively engage with a diversity of stakeholders, while meeting target restoration goals.

After lunch, students visited the Miraflores Locks of the Panama Canal. Most of the museum exhibitions were still closed due to COVID-19 restrictions, so Jacob and Saskia provided an overview of the Canal's history and operations. They highlighted the importance of forest conservation for the provision of water, which is needed for the Canal's reservoirs, lock operations, and hydro-electricity production and the difficulties of managing interests with landowners of the Panama Canal Watershed. The day concluded with a traditional dinner and folkloric dance presentation at a local restaurant.

Day 2: The group departed Panama City and traveled the five hours to the Achotines Tuna Laboratory, a research station of the Inter-American Tropical Tuna Commission (IATTC), located on the south coast of the Azuero Peninsula, and were introduced to the station and provided a tour of the installations. Afterwards, Jacob presented on ELTI's capacity building model in Panama, discussing the needs for training, audiences, types of courses and the development of ELTI's Training Landscapes to facilitate interactive field-based courses.

Afterwards, students visited Eco Venao, a 140-hectare reforestation project that offers ecological lodging at Venao Beach, a popular tourist destination. Students were given an informal presentation by Nico Nickson, co-owner, who discussed the business's objectives, 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 also focus on sustainability. Overall, the visit provided students with the perspective, values, and approach of a foreign business owner to facilitate a hospitality



Students learn how local NGOs work with landowners to facilitate primate conservation.

illustrate the ecosystem's dynamics and help students identify key plant species and their traditional uses. To complement the presentation, Jacob led a walk on ELTI's ecological trail network, within the Achotines Forest Reserve. Students learned about a mature tropical dry forest, its seasonal characteristics and visualized the type of ecosystem which farmers originally encountered in the area over a century ago. Students also visited different demonstration areas to learn about the flora and fauna and how the trees interact and recover after disturbances. Jacob stressed learning how to identify the key tree species in the forest as well as their functional characteristics, which are directly related to their selection and propagation in local farms.

After dinner, the day concluded with presentations from Dr. Pedro Méndez from the Pro-Conservation of Panamanian Primates Foundation, which focuses on primate conservation and José Vargas from The Peregrine Fund Panama and Fundación Rapaces y Bosques de Panamá, which focus on harpy eagle conservation. Both presenters discussed the mission and objectives of their locally based organizations. In addition, they stressed the importance of working with local communities and landowners to conduct conservation and restoration of primate and harpy eagle habitat. They discussed the challenges of collab-

business that conserves the local ecosystem while making economic profit.

Day 3: Jacob presented a lecture on the social and economic history of deforestation and degradation drivers of tropical dry forests of the Azuero. This provided a background on the livelihoods and common land uses in the landscape. Afterwards, the group traveled to Los Asientos to meet Alcibiades "Chivi" Vergara and his wife Edelmira, who are from two of the original families that settled the area in the early 1900s. The couple provided a historical perspective on how and why the area was transformed from forests into agriculture and cattle pasture landscapes. Attention was focused on different gender roles and the land use changes that have occurred over the past decades. They also visited the family's stables and traditional home garden, which illustrated traditional knowledge of animal husbandry and trees and plants for their different uses and benefits.

After lunch, Jacob presented a lecture about tropical dry forest ecology, to il-



Yukiko Ichishima

Students visited a series of model silvopastoral farms to learn about a diversity of restoration strategies.

that reintegrates organic waste from the kitchen and provides fruits and vegetables for the onsite restaurant. During a group discussion, students reflected on the trip's activities and asked a range of questions to ELTI affiliates. Afterwards, the student spent the afternoon enjoying the nature trails and beach at Eco Venao.

Day 5: Due to a student testing positive for COVID-19, the day's activities were modified. Students and staff that tested negative visited two model silvopastoral farms. To avoid risk of contagion, the farm owners were not present during the visits. Jacob described the evolution of the farms from conventional to sustainable practices and highlighted the specific details to establish and manage restoration activities. Students viewed a range of strategies including silvopastoral and agroforestry systems, native timber plantations, agro-succesional systems, home gardens and riparian buffer zones. The visit illustrated the diversity of the restoration activities that farmers have implemented on their farms and examples of adaptive management based on their own values and objectives.

Day 6: After breakfast, the students departed for Panama City.

orating with farmers who often consider wildlife as a threat to their crops. As an alternative, increasing awareness and capacity building for local people helps to 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 by local landowners. Jacob centered on silvopastoral and agroforestry systems, which are strategies that have proven successful for local ranchers to maintain their traditional livelihoods and improve ecosystem health.

After the lecture, students were given a tour of Eco Venao. Students learned about their solar energy project that provides the site with most of its electricity demand, a permaculture project



Students pose for a photo during a farm visit.

Instructors and Coordinators: The course was facilitated by ELTI's Neotropical Training Program Staff: Jacob Slusser (Panama Coordinator) and Saskia Santamaría (Program Associate), in collaboration with help from Dr. Eva Garen (ELTI's Director), Yukiko Ichishima (Program Manager), and Francis Commercon (teaching fellow). Jacob delivered introductory lectures and field demonstrations and led classroom discussion. Saskia planned all the course arrangements in collaboration with Eva, Yukiko, and Francis. Both Jacob and Saskia provided translation throughout the week during field visits. Invited guests provided lectures or field visits as noted in earlier sections of this report.

Participants: The course was offered to 14 master's students from the Yale School of the Environment and 1 master's student from the Jackson Institute for Global Affairs, who were enrolled in the YSE course 615 entitled, "Political Ecology of Conservation and Restoration of Tropical Forest Landscapes."

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