

COURSE REPORT

Fundamentals of Ecological Restoration of Tropical Forests

Cali, Cauca Valley, Colombia
December 1-6, 2013

A field course jointly organized by:

Environmental Leadership & Training Initiative (ELTI)

Center for Research on Sustainable Agriculture Production Systems (CIPAV)

with support from Patrimonio Natural: Fondo para la Biodiversidad y las Áreas Protegidas



Background: Ecosystem services are, in broad terms, the benefits that humanity obtains from a range of ecosystems. The Millennium Ecosystem Assessment (2005) classifies ecosystem services into the following four primary categories: provisioning, regulating, cultural and supporting services. Within municipal watersheds, forested areas provide a range of services that are important to local communities and for human populations at a regional scale, including the regulation of water quality and quantity and the production of hydroelectric power. Efforts to protect forests in these watersheds are needed to ensure the long-term provision of these and other services.

ELTI is an initiative of:

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In collaboration with:



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The Cali River Watershed is a strategic area for the urban population of the Cali municipality because it provides 20% of the water supply to the distribution system. The watershed covers much of the Los Farallones Natural National Park (located in the outskirts of the city), where the landscape has been undergoing rapid transformation due to the expansion of the agricultural frontier and the disorganized settlement of rural populations. To reduce environmental degradation within the watershed, a scheme of conservation incentives was proposed by local organizations. The scheme supports actions geared towards conserving and restoring the ecology of areas of the watershed, with a focus on the ecosystem and water resources of the region.

As a strategy to ensure that the watershed basin continues to regulate water quantity and quality, conservation incentives can motivate landowners to improve the conditions of their properties (e.g., protecting riparian corridors) and restrict agricultural practices that impact and pollute water resources. However, the complexity and slope of the terrain and the range of unsustainable land use practices found in the region, pose a challenge to the design and implementation of conservation and ecological restoration strategies aimed at maintaining or improving environmental services without compromising the livelihoods of the people, who depend on these landscapes.

Due to these complexities, it is important that landholders are informed about a range of tools for conserving and restoring the region's natural resources that are compatible with their livelihoods. Towards this goal, it is imperative to provide landholders with the knowledge to evaluate and compare an array of tropical forest restoration methodologies that can be adapted to the region's biophysical and socioeconomic situations and guide the decision-making process about which strategy/strategies is/are most adequate to their particular circumstance.



To achieve this goal, a two-part series of courses was designed to strengthen the capacity of landholders, community groups and environmental institutions using the Cali River Watershed as an example. The first training event took place from March 3-9, 2013, with the objective to strengthen payment for environmental services (PES) initiatives that were already underway in various regions of Colombia.

The second course that took place in December 1-6, 2013 – and is the focus of this course report – introduced participants to the principles of forest ecology, natural and anthropogenic disturbances and the fundamentals of ecological restoration. The general objective of this course was to provide participants with the information needed to understand how the ecological condition of a site and the disturbance history impact the design of appropriate restoration strategies for the multiple degradation situations that can be found in the watershed.

Objectives:

- Introduce participants to the fundamentals of natural resources conservation and the provisioning and regulation of environmental services, specifically as they relate to watersheds;
- Present participants with the principles underlying tropical forest ecology and tropical forest restoration and the multiple strategies, tools and techniques available to guide restoration efforts;
- Explain the necessary steps involved in the design and implementation of a restoration strategy, illustrated through practical exercises;
- Present case studies of ecological restoration projects carried out in watersheds to analyze the elements that have facilitated or impeded their success, as well as to extract lessons that can be applied to watershed restoration;
- Provide participants with the opportunity to meet and establish contacts for collaboration and to generate ideas that can be supported through the Leadership Program.

Course Format: The course took place over six days and was divided into four modules. Each of the modules included a series of lectures and case studies, as well as field visits and exercises to illustrate the concepts presented in the classroom. The course also included a session during which participants presented their PES initiatives. The objective was to allow them the opportunity to incorporate the new concepts learned during the course into their projects and to receive feedback from instructors and peers.

The thematic modules were:

Module 1. Introduction to conservation and ecosystem services focused on productive landscapes in Colombia;

Module 2. Fundamentals of forest ecology and forest restoration in productive landscapes and the experiences from the Cali River Watershed;

Module 3. Technical aspects and strategies of plant material production for ecological restoration projects;

Module 4. Economic opportunities of ecological restoration and introduction to the monitoring and adaptive management of restoration projects.

Instructors and Coordinators: Researcher Antonio Solarte Sánchez, CIPAV's Coordinator of the Environmental Services and Incentives Area, facilitated the delivery of the course in collaboration with Cecilia Del Cid-Liccardi, ELTI's Neotropics Training Program Coordinator. Victor Galindo and Iván Valverde of CIPAV and Saskia Santamaría of ELTI organized the course.



The following instructors covered different topics during the course according to their expertise:

- Dr. Wilson Ramirez from the Alexander von Humboldt Institute provided the opening talk entitled, *"National context of decision making in ecological restoration"*;
- Zoraida Calle, MSc. (CIPAV) provided the context for conservation and restoration in productive/agricultural landscapes;
- Dr. Patrick Lavelle and Dr. Elena Velásquez introduced the themes of ecosystem service and services related to soils and agricultural landscapes, as well as facilitated a field exercise about the indicators related to soil's ecosystem services;
- Dr. Sergius Gandolfi, Dr. Pedro Brancalion and Dr. André Nave (Laboratory of Ecology and Forest Restoration - LERF) presented the fundamentals of forest ecology and succession, disturbance regimes, the principles of ecological restoration, the technical aspects of restoration (such as seed collection and nursery production) and discussed a variety of ecological restoration models;
- Dr. Severino Ribeiro Pinto (Northeast Center for Environmental Research - CEPAN) covered the monitoring of ecological restoration, governance of ecological restoration and ecological restoration as an economic alternative to rural communities.

Participants: This training course was offered to 30 representatives from government, environmental organizations and NGOs who are working on the design and implementation of payment for environmental services (PES) schemes in multiple regions of Colombia.





Course Follow-Up: Participants were actively engaged throughout the course and benefited from the practical exercises and the feedback they received from instructors and their peers. ELTI's Leadership Program (LP) was presented during the event and generated interest among participants. The goal is to work with CIPAV if promising candidates present proposals to the LP in order to help them carry out their initiatives. Additionally, ELTI will follow-up with participants through an online questionnaire to determine if and how the course has influenced their professional development and project implementation.

This event was possible thanks to Arcadia Fund, whose Environmental Conservation grants support programmes that protect and enhance biodiversity, and provide field training and academic research.