Participatory identification of tropical dry forest management alternatives for livestock production and forest conservation in the Chamela region, Mexico.

Interim Report

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December 2016

The main contribution of this project will be the identification of an alternative management strategy for tropical dry secondary forests in the Chamela-Cuixmala region, aimed at reducing the potential long-term negative effect on forest conservation while using it for livestock production. The identification of such set of alternative management practices will be based on a participatory approach, including different stakeholders (landowners, farmer groups, local authorities and the scientific community).

In the reported period (May-November 2016) work was carried out in Activities 1, 2 and 5 of the approved proposal:

Activity 1. *Characterization of forest management practices for livestock production*. In order to characterize the management practices of secondary forests for livestock production, 24 semi-structured interviews were carried out between May and August 2016, with livestock owners belonging to six *ejidos* (agrarian communities) located north of the Chamela-Cuixmala Biosphere Reserve. These ejidos were chosen as most of their land is devoted to cattle grazing. Ejidos south of the CCBR were not chosen as they were strongly affected by Hurricane Patricia (October 2015), meaning that the effect of livestock on secondary forests could not be properly evaluated. The analysis of the information is still under way, so preliminary results are now presented.

Livestock farming is one of the main activities in the region. Even though the region started to be deforested and transformed into grasslands only four decades ago, all livestock owners come from families dedicated to this activity. Thus, their knowledge is not only inherited, as they have been acquiring new capacities. Livestock farming is extensive, mainly of beef cattle. One-year old calves are generally sold at around 200 kg live weight to middlemen who then sell these animals to feedlots located about 60 km away from the Coast. Milk production, when present, is minimum and destined to self-consumption. Feeding is based in cultivated grasslands and foraging in secondary forests. In some cases it is also supplemented with silage or purchased Straw bales.

Average area destined for cattle is 95.6 has (18 – 245), which can be divided into several plots. These areas are composed by patches of cultivated grasslands and secondary forests in different successional stages.

Average herd size is 73 (24-150). Herds are composed by crosses of European and zebu breeds. European breeds achieve higher liveweights but are not very tolerant to the extreme climatic conditions of the region (heat, drought, parasites), so they require a higher level of management. In contrast, zebu cattle are more resistant to environmental conditions and are more accustomed to foraging in the forests.

Grasslands are highly important for livestock owners. Grassland maintenance activities are crucial to avoid weed invasion and include applying herbicides, manual weeding using sickles and burning. Periodically, forest areas are slashed and burned in order to be transformed into grasslands, in a cycle that normally lasts over 15 years.

Image: Rosa Sánchez.

Some practices aimed at conservation were identified in the interviews, such as cattle rotation between and within plots, in order to allow plant regrowth and prevent soil degradation. Some woody plants are conserved within grasslands in varying degrees, mainly of forage species. This practice has effects on soil properties as well as biodiversity conservation. The ten most named forage species growing in secondary forests are shown in Table 1.

Table 1. Top ten most named forage species growing in secondary forests

Common name	Scientific name	Mentions (n=24)
Cascalote	*Caesalpinia coriaria*	20
Huizache	*Acacia spp*	19
Habillo	*Hura polyandra*	10
Guajillo, Guaje	*Leucaena lanceolata*	9
Ébano	*Caesalpinia sclerocarpa*	10
Cuero de vaca, cuero de Indio	*Lonchocarpus mutans*	8
Canelillo	N.I.	7
Barcino	*Cordia eleagnoides*	6
Ciruelo	*Spondias purpurea*	6
Guácima	*Guazuma ulmifolia*	6

N.I. Not identified

Activity 2. Evaluation of the effect of management practices for livestock production on forest conservation.

Twenty one plots measuring 1 ha were sampled at the end of the rainy season (September-November 2016). Transects were taken in order to measure abundance, richness and cover of plantlets, herbs and woody species. The sampling techniques were described in the project proposal. Results are being processed, but the ten most abundant species are shown in Table 2.

Table 2. The ten most abundant species in sampled plots.

Species	Abundance (indiv.)
Lonchocarpus mutans	114
Caesalpinia eriostachys	72
Cordia eleagnoides	68
Apoplanesia paniculata	58
Acacia macracantha	47
Caesalpinia platyloba	41
Caesalpinia caladenia	35
Leucaena lanceolata	27
Caesalpinia pulcherrima	25
Caesalpinia coriaria	24

Activity 5. Identification of native forage species suitable for pasture and forest enrichment.
In order to assess the forage potential of woody species present in secondary forests, 12 priority species were selected, using as criteria: number of mentions in the interviews, abundance in the vegetation samplings and presence in the sampled plots. Results are being analysed. Nutritional quality will be analysed in the following months in terms of crude protein, energy and fibre contents and digestibility, according to standard methods.

Table 3. Woody species selected for forage potential evaluation

Species	Common name
Lonchocarpus mutans	Cuero de vaca, cuero de indio
Caesalpinia coriaria	Cascalote
Acacia macracantha	Huizache
Leucaena lanceolata	Guajillo, Guaje, Leucaena
Spondias purpurea	Ciruelo
Cordia eleagnoides	Barcino
Caesalpinia platyloba	Coral
Guazuma ulmifolia	Guácima
Piranhea mexicana	Guayabillo borcelano
Caesalpinia sclerocarpa	Ebano
Apoplanesia paniculata	Tahuitole, llora sangre
Caesalpinia caladenia	N.A.