1.4 Conservation and sustainable management of dry forests in Peru

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Introduction

Northern Peru still has more than three millions of hectares (ha) of tropical dry forest, even after centuries of exploitation. Harvesting for wood and charcoal, overgrazing by goats, drought, and more recently, expansion of agro-industry, contribute to a clearance rate of about 20,000 ha per year. This triggers soil erosion and loss of biodiversity and increases the vulnerability of local people to climate change. Rural communities are working against these pressures, and the impacts of El Niño weather events, to maintain the traditional use and management of these dry forests, and in doing so, to conserve them for future generations.

In 2002 members of the community of Tongorrape in Motupe District, in the province of Lambayeque, created the Association for the Protection of Dry Forests (La Asociación de Protección de los Bosques Secos, or ASPROBOS). The association was initiated by former patrollers (ronderos) and volunteer park rangers who were increasingly concerned about the threats to their forest. ASPROBOS members developed its constitution; it is managed by its members and is based on the fair distribution of income. The association has formed and maintained strategic alliances with local government and with other rural communities in the area.

The example of ASPROBOS has also spurred the creation of nine similar organizations in the Olos and Chiniama watersheds, and the establishment of an Area of Regional Conservation. Through its own efforts and these spin-off impacts, it has contributed to the conservation and sustainable management of more than 1,000 ha of endangered dry forest in northern Peru. These forests provide essential ecosystem services and are sources of income for the community. The principal economic activities of ASPROBOS are the production of honey,

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collecting honey from stingless bees, and making marmalade from mamey (*Mammea americana*) in agroforestry systems.

**Deserts and forests in northern Peru**

Since the mid-1900s, the desert of the northern coast of Peru has been called *eriazolo* (bare ground) or “virgin land,” despite the presence of remnant native seasonally dry forests. These are diminishing in area. According to the Ministry of Environment’s Map of Vegetation Types (MINAM 2012), there are seven types of dry forest, including dry forest savannah, *algarrobales* (*Prosopis*-dominated woodlands), and those that differ by topography, on *lomadas* (a kind of hill), foothills, low hills, high hills and mountains. About 70% of the three million ha of dry forests is in the province of Piura. In 2010 the provinces of Tumbes and Piura had the longest continuous stretch of this forest, which is also known as the Equatorial Pacific Dry Forest biome. Farther south, in the provinces of Lambayeque and La Libertad, deforestation has caused this area to become very fragmented, and remaining forests exist only as isolated patches.

These forests are located in arid and hyper-arid areas, where extreme temperatures and very scarce and uncertain rainfall are the common denominators. Summer daytime temperatures can exceed 40°C; mean annual rainfall can be less than 40 mm in some areas, and rain may not fall at all in some years. The biological and cultural diversity of these forests has adapted to this harsh environment and lack of rainfall. El Niño also determines the dynamics of these ecosystems: in 1982–83 there was up to 4,000 mm rainfall in just six months. As local people say, “These rains wake the forest up from a long sleep,” and they stimulate processes of natural regeneration from the seed bank that has remained dormant for decades. This in turn leads to the revival of traditional practices by local people. They make use of the water by cultivating seasonal crops, using stored seed or seeds exchanged from distant locations, storing seed for the future, and making full use of forest resources.

Unfortunately, since the late 1990s illegal logging has led to deforestation rates of 7,000–12,000 ha per year, mostly in Piura province. The most common trees, algarrobo (*Prosopis pallida*), are usually cut for charcoal making; sapote (*Capparis scabrida*) and *overo* (*Cordia lutea*) on forests plains are cut for timber and wood for handicrafts; and hualtaco (*Loxopterygium huasango*) and palo santo (*Bursera graveolens*) in the hill forests are felled for wood for making fruit boxes. The deforested land is overgrazed, mainly by goats, which limits regeneration.

In addition, the rights to large areas of remaining forests are being awarded to the owners of various companies, mostly privately and foreign-owned, for conversion to biofuel production based on sugar cane for oil companies and for other agro-industrial uses. Land is being distributed without adequate planning for agriculture, livestock
activities and changes in tenure. In Piura province, these activities — as well as illegal logging — result in deforestation that exceeds 20,000 ha per year (Castillo 2011). According to regional government figures, in Lambayeque, with nearly 20% of the dry forest area, deforestation has reached 10,000 ha per year.

Outside support
In this context of great environmental and socio-economic pressures, producer associations began to emerge, especially after the El Niño event in 1997–98. Heavy rains led to a series of development projects that promoted the conservation and management of the resulting forest regeneration, and took advantage of the increased productivity of the desert trees, especially the dominant algarrobo.

The Small Grants Programme of UNDP’s Global Environmental Facility (GEF-SGP) sought to strengthen the capacities and infrastructure of existing producer associations in the region. They financed small projects to promote sustainable management and use of dry forest resources, working closely with other activities in the wider agricultural landscape.

This work is being built on by the Center for Arid Lands Research of the National Agrarian University (CIZA-UNAM) in La Molina district with the project “Seasonally dry forest conservation through productive consolidation of small producers and promoting advocacy for its sustainability.” This project, which is also supported by GEF-SGP, is dedicated to learning the lessons of previous projects in the Peruvian north coast, integrating these lessons and identifying the most successful initiatives for up-scaling.

A local initiative is born
ASPROBOS was one of the organizations supported by GEF-SGP between 2003 and 2009, and one of the most successful. It was established in 2002 with nearly 60 members from the villages of El Choloque, El Cardo, Yocape, Higuerón and Marripón in the peasant community of Tongorrape in Lambayeque. Its origins go back further, with a history that dates back to the 1980s. At that time the villagers of El Choloque were organized into a group of forest guards, as in other departments of the Sierra, to counteract minor crime, illegal logging and cattle rustling and to bring security and comfort to their families. The association thus reflects a long period of self-management.

ASPROBOS currently has 33 members, including men and women. It is made up of a board council with a president, vice president, secretary, treasurer and spokesperson, who are elected every two years. Through assembly meetings, council members decide which members will receive payments from ASPROBOS and how payments will be calculated; i.e., by the days or hours worked, or through a share of product sales. Surpluses are invested by the association in infrastructure and equipment, and to support the search for new sources of financing.
The deep concern of the members of ASPROBOS to protect their forests resulted in the creation of a Committee to Protect the Forest only a year after the association was formed. This is a group of volunteer park rangers whose task is to stop illegal logging through prevention and through continual surveillance with the support of the police and district and departmental authorities. The volunteer park rangers were trained by the Lambayeque Forestry and Wildlife Administration in the legal aspects of illegal logging and in intervention procedures in control and surveillance. They were given basic equipment and supplies to make them better able to perform their functions.

Production and diversification
ASPROBOS is a community-based organization whose members carry out multiple activities to earn income. One of the most important is the production of honey from various trees in the area, as is done in other towns of the north coast. In 2005 ASPROBOS was the first association in Lambayeque to obtain organic certification (BIOLATINA). The association allocated nearly 50% of its land to establish beehives far away from areas of intensive or semi-intensive agriculture where agrochemical use is widespread.

This was a milestone in the region. Having organic certification of honey and other bee products showed that there are sustainable ways to earn a livelihood from dry forests while conserving them, rather than logging and converting them to agriculture. Producers in the hills also found that honey from two abundant tree species, *pasallo* (*Eriotheca ruizii*) and *hualtaco*, was very high-quality and was well received in the market, so they decided to expand its production. Honey from algarrobo trees on the plains is also of high quality.

One activity that emerged from local experiences — especially from observations of children and youth — was the production of honey from small native stingless *alpargate* bees. The resulting honey is rich in potassium, and is used as a medicine and a relaxant to combat respiratory diseases. These bees build their hives on tree trunks, and the association has developed a low-input, low-cost and chemical-free system of moving swarms into hives made from gourds. The honey is treated by producers and consumers alike as “organic by default,” and has been well received in the market even without being certified. Although the volumes produced are relatively low, the honey fetches twice the price of honey from European honeybees (*Apis mellifera*).

One of the association’s most profitable activities is preparing marmalade from mamey (*Mammea americana*). ASPROBOS members tried out various recipes. To reduce the amount of firewood needed to cook and prepare the marmalade, the association has developed and promoted improved stoves (which are more efficient and also produce less smoke) as well as other adapted equipment and infrastructure. This activity is dominated by women in the association, and has proved to be a driving force within households due to its large impact on improving family income. ASPROBOS has also produced *algarrobina*, a
molasses-like syrup made by boiling the sweet beans (or fruit pods) of Prosopis trees, but this activity has declined in recent years due to the scarcity of fruit as a result of pest infestations.

Managing the Tongorrape dry forests
In the area where the association is based, illegal logging is widespread because of the diversity of its forests and its large trees, which are commercially attractive. El Choloque is located at the base of the western slopes of the northern Andes, bounded by the Yocape and Chiñama rivers, at 150-600 metres in elevation. It experiences prolonged droughts, with an annual rainfall between 40 and 100 mm (except in El Niño years), and a mean annual temperature of 23–25°C.

In the more than a thousand hectares that ASPROBOS manages, there are two distinct areas. In the hilly dry forest there is a wide diversity of trees, shrubs and other plant species. On the plains between agricultural areas and the hills are the algarrobal woodlands dominated by *Prosopis pallida*, which is the typical vegetation of the north coast and in Tongorrape. During the rainy season, it is transformed into a meadow with abundant grasses.

At the outset, the association prepared long-term (20-year) management plans for these different forests for the period 2003–23. This work included forest inventories, participatory planning workshops, a silvicultural plan (protection of natural regeneration and reforestation) and a forestry plan. The forestry plan also incorporates territorial zoning and forest management based on the current and potential use of forests that are in the best interests of local households. In addition, the association proposed a map of territorial zoning based on community review meetings and participatory diagnosis. In 2011 this experience of self-management helped ASPROBOS — along with other producer associations and the regional government of Lambayeque — to promote the creation of the Mollan Palacios Regional Conservation Area in the Olos and Chiniama watersheds.

ASPROBOS is highly regarded by local and regional authorities as an agent of local development and conservation due to these initiatives and its local accomplishments. As a respected representative of local communities, its members are frequently asked to participate in departmental planning activities in Lambayeque, including the Bureau of Forestry Coalition, the Regional System of Conservation Areas, and the Honey Bureau of Consultations. The association also maintains conservation agreements with various communities.
Conclusions
The association has had important outcomes and has maintained its activities over the years. This is due to good leadership, good financial management (based on reinvestment and resource management), adequate and committed technical assistance during project implementation, and equitable distribution of benefits. In 2014, ASPROBOS arranged with the local government to install electricity and potable water services in their facilities so they could better develop their activities in terms of product processing and organization of meetings.

Perhaps its greatest achievement is the interest that ASPROBOS generates in replicating its experience. This has motivated nearby villages such as La Capilla, Marripón and Yocape to use improved stoves and begin beekeeping, thanks to the support and advice of supporters trained through farmer-to-farmer methodologies. Thanks to these successes, nine other groups involved in forest conservation and management have been created in Olos and Chiniama watersheds. ASPROBOS has evolved from a community-based organization to a regional network. It has been recognized at the national level and internationally (Medina and Calderón 2014). In 2010 the Food and Agriculture Organization cited it as a model of sustainable forest management in Latin America and the Caribbean (FAO 2010).

ASPROBOS is revising its business plans to improve the production of mamey marmalade and honey through better management of forest and water resources. The association has also received visits from the Promotion Fund of Protected Natural Areas of Peru and from representatives of the World Bank. Through the regional government of Lambayeque, these organizations will support ASPROBOS with a new five-year project. The project will execute the Intervention Plan of the Mollan Palacios Protected Area by implementing sustainable dry forest management in the area.

Through its good management and its ability to raise funds from forest product sales and donors, ASPROBOS has achieved a level of self-management and established a local and regional presence. This will allow the association to sustain new resources and maintain the livelihoods of local families well into the future.

References


Medina, P. and A. Calderón. 2014. La Semilla en buena tierra. ASPROBOS: Experiencia de un proceso de desarrollo autogestionario comunal, alrededor de la conservación de los bosques secos. Documento de trabajo.