# Tree Diversity Conservation in Mesoamerican Dry Forest

## *A briefing paper for international conservation agencies*

### The Problem

Mesoamerican dry forest is not only rich in biodiversity but also contains many socio-economically important tree species. In addition to those used by rural people within the region, many are planted and used in other parts of the tropical world.

Much dry forest has been converted to agriculture and other land uses. Because the dry forest is now so fragmented and altered, it is difficult to use conventional protected areas to conserve its tree diversity. Alternative forms of conservation are required, which take into account the needs and practices of local people.

### The Research

A four-year research project, "CUBOS", looked at how to conserve the rarest tree species of the dry forest and at the same time identify ways to help people obtain increased benefits from their forest resources. The project focused on two case study areas: coastal Oaxaca in Mexico and southern Honduras. In each interviews and workshops were carried out with 80 farm families, together with extensive botanical sampling.

### Key Findings

1. The highest levels of "bioquality" were found in the most intact and largest forest areas of the Oaxaca case study area.
2. Most of these high bioquality forests are small and fragmented in global terms. They are, however, surrounded by agricultural areas, many of which are also of high bioquality, and may be important for maintaining biological connectivity between forest areas.
3. Communal forms of organisation, management and control have contributed to the conservation of high bioquality forests in Oaxaca. They have facilitated zoning and the regulation of activities and allowed benefits to be shared and maintained by user groups. These systems are under threat from de facto and de jure trends towards private land ownership.
4. Fields, fallows and secondary forests in the steepland basic grain farming systems of the Honduran dry zone support surprisingly high levels of tree diversity. The survival of large amounts of tree germplasm, in the form of stumps, seedlings, seeds and actively protected trees, is largely due to topographical, climatic and resource limitations on the intensification of farming practices. The limited evidence that exists to date suggests that geneflow between trees is maintained across this landscape.
5. However, the southern Honduran agroecosystem is of low bioquality. There remain no patches of mature forest of high bioquality and most of the species found there are widespread, adapted to disturbance and not of global conservation importance.
6. Many small farmers in the Honduran dry zone actively protect trees which they find regenerating naturally in their fields. These trees are valued locally for the various products and services they provide,. This conservation through use helps to maintain the status of a wide range of species, some of which are of international socio-economic importance. Its success depends on the following conditions being met:

**What is bioquality?**
*Bioquality is a measure of the proportion of rare species in the vegetation, weighted by their global rarity. A tract of vegetation with many species found in few other parts of the world is defined as being high in terms of bioquality. Biodiversity, by contrast, is related to numbers of species, regardless of their conservation importance. Bioquality can therefore be seen as a measure of the significance of a given patch of vegetation in the context of global biodiversity patterns, and indicates the potential importance of vegetation to conservationists*.

*Photo-*
*people using dry forest trees*

- a scarcity of off-farm trees;
- a dependence on trees for subsistence;
- a lack of alternative means of meeting tree-based needs;
- local experience of combining trees and agricultural crops;
- the availability of sufficient germplasm of valued trees to assure adequate natural regeneration.

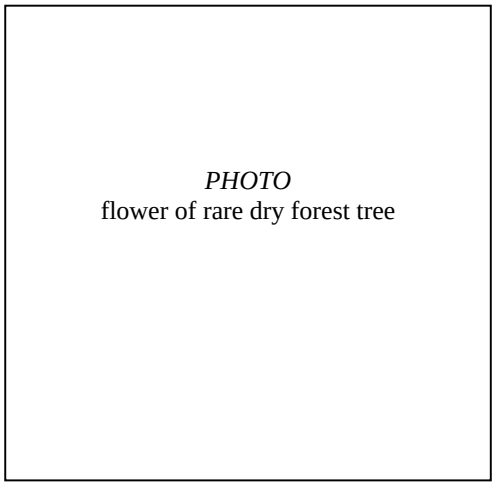
7. There is little overlap between those species which farmers value and protect, and those which are most threatened. None of the 108 species mentioned as used by the farmers interviewed in southern Honduras, and only 4 of the 281 mentioned in coastal Oaxaca, are globally rare. Conservation through use at the species level therefore

has limited value for diversity conservation.

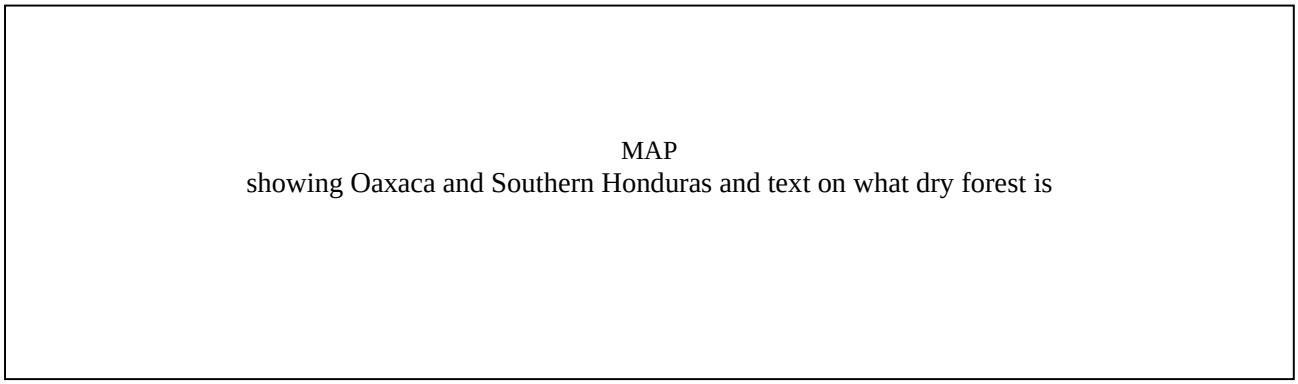
## Recommendations

International conservation organisations must:

- Maximise the impact of the resources available for the conservation of dry forest tree species by focusing on mature forest patches such as those of coastal Oaxaca, rather than the low bioquality areas such as southern Honduras. Transnational biological corridors, which encompass large areas of low bioquality, do not offer good value for money for tree diversity conservation.




- Provide political and financial support to community-based conservation initiatives in high bioquality areas.
- Support initiatives to manage high bioquality forest patches as part of the wider agro-ecosystem, in order to increase their effective size and maximise the gene flow between them.
- Promote conservation through use at the *ecosystem* level in high bioquality forests in Oaxaca, for example through the sale of environmental services and ecotourism.
- Develop 'species-by-species' strategies for those very few rare species which are not well represented in conservable mature forest fragments and promote awareness of their conservation status among local conservation and development organisations.. As a last resort *ex situ* conservation measures should be considered.
- Oppose the excessive restriction of farmers' activities in low bioquality areas as this would impose unnecessary opportunity costs on them with low returns for tree diversity conservation.
- Support the provision of fair and appropriate compensation to farmers whenever they are asked to bear the costs of conservation.
- Promote further botanical surveying, by national and international research institutions, to gauge whether these recommendations can be generalized across the region.

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*This publication is an output from a research project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed here are not necessarily those of DFID. R6913 Forestry Research Programme.*