

Tree Diversity Conservation in Mesoamerican Dry Forest

A briefing paper for international conservation agencies

The Problem

Mesoamerican dry forest is rich in biodiversity and contains many socio-economically important tree species, used and planted both within the region and elsewhere in the tropical world.

It is difficult to use conventional protected areas to conserve tree diversity in the dry forest, as so much has already been converted to agriculture and other land uses. Alternative forms of conservation are needed which take into account local people.

The Research

The research project "CUBOS" has looked at how to conserve the rarest dry forest tree species and at the same time help local people to benefit from their forest resources. The project worked for four years in coastal Oaxaca in Mexico and southern Honduras.

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 the high bioquality forests are small and fragmented in global terms. However many of the agricultural areas which surround them are also of high bioquality, and may be important for maintaining biological connectivity between the forests.
3. Communal organisation, management and control have contributed to conservation in Oaxaca. They have led to activities being zoned and regulated and benefits to be shared between forest users. These systems are under threat from trends towards private land ownership.
4. The farming systems of the hills of southern Honduras support surprisingly high levels of tree diversity. Trees, stumps and seed survive because topography, climate and resource limitations make it difficult for farmers to intensify their agriculture. It appears that genes can flow adequately between trees in this landscape.
5. However, the southern Honduran agroecosystem is of low bioquality. No patches of high bioquality mature forest remain and most of the species there are widespread, adapted to disturbance and not of global conservation importance.

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.



6. Honduran dry zone farmers often protect trees which they find growing in their fields, because they value their products and services. This helps to maintain the status of these species, some of which are of international socio-economic importance. However this only happens when:

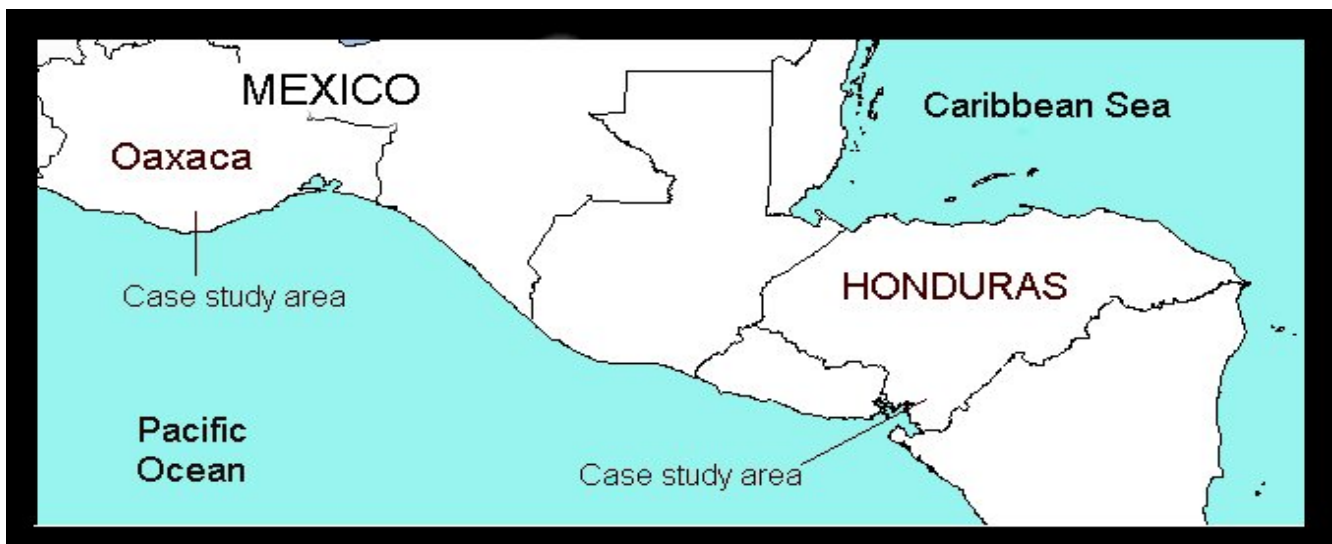
- off-farm trees are scarce;
- farmers depend on trees for subsistence;
- farmers have no other means of meeting tree-based needs;
- farmers have experience of combining trees and crops;
- there is sufficient germplasm of valued trees to assure adequate natural regeneration.

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

To conserve tree diversity in Mesoamerican dry forest, international conservation organisations should:

- Focus resources on conserving mature forest patches such as those of coastal Oaxaca, rather than low bioquality areas such as southern Honduras or transnational biological corridors which include large areas of low bioquality.
- Politically and financially support community-based conservation in high bioquality areas.
- Promote the management of 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, for example through the sale of environmental services and ecotourism.
- Develop 'species-by-species' strategies for the few rare species which are not well represented in conservable mature forest fragments (promoting awareness of their conservation status among local actors and as a last resort, considering *ex situ* conservation).
- Oppose the excessive restriction of farmers' activities in low bioquality areas, where there are likely to be 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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