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Sacred forests in India

For a given land area, is it better to protect one large natural area or several small ones? Sacred forests are often presented as relics of natural forest preserved from human activities by respect for tradition and fear of the deities they harbour.

In the Western Ghats range in India, a world biodiversity hotspot, the French Institute of Pondicherry, Lyon I University and CIRAD have conducted a study of sacred forests (devarakadus) in Kodagu district, Karnataka State. These devarakadus are pockets of forest nestling among rice fields and coffee plantations. From a scientific standpoint, they are ideal for analysing the contribution a network of microreserves can make to conserving a region's biodiversity.

Results show that the sacred forests are not relics of virgin forest as people like to think. They do house a high degree of biodiversity, with about 20% more species than comparable areas of protected forest. But about half of the Western Ghats' endemic species, with their high conservation value, are no longer to be found there. And when it comes to defining biodiversity conservation policy, it is important not to mistake quantity for quality. Moreover, nearly 70% of the devarakadus land area bears traces of human activity, compared to less than 3% for the protected forests. Sacred forests are by no means places where man fears to tread.

However, the sacred forests are the most natural elements in a landscape greatly affected by human activity. They act as biological corridors for insects and birds. Their symbolic and religious value ensures that they have a place in the landscape. They also provide examples for educating local communities to take account of biodiversity and environmental issues.

To draw conclusions that may serve other parts of the world, the symbolic value of these forests must be set aside. The results show that although a network of micro-reserves is no substitute for a system of large protected areas, it can complement such a system. And where population density, economic interests or other factors rule out the establishment of nature parks and sanctuaries, a network of micro-reserves can maintain a minimum of natural vegetation and wildlife and make it possible to integrate biodiversity with other components of a region's social and economic life.



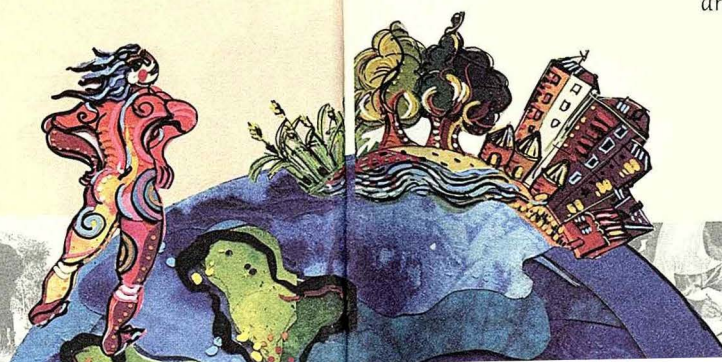
• The Sacred Forests are often presented as relics of natural forests untouched by man and respectful of traditions and fears inspired by the resident gods. A study carried out in India showed that half of the endemic species have actually deserted these forests and that traces of human action could be found. The sacred forests, thus, are not at all areas where man has never tread.



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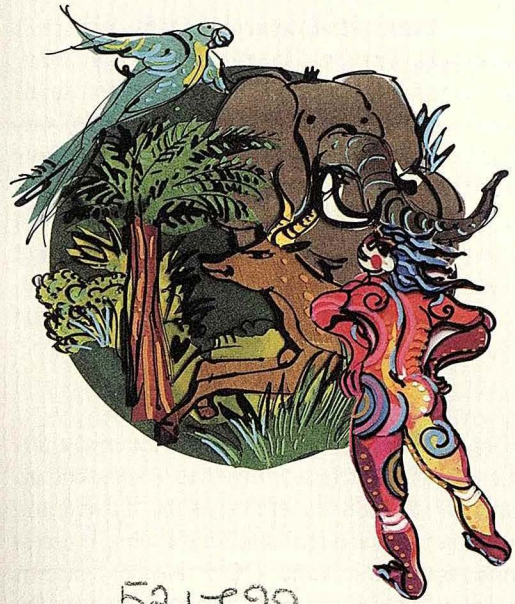
The African plum tree in Gabon

Biodiversity in forest ecosystems is the product of their natural history and the impact of human activity. Management of biodiversity, at the interface between conservation and use, requires knowledge of biological and human processes. In partnership with the CNRS (CEFE) in Montpellier and the CIRMF in Gabon, CIRAD is trying to understand and assist the social and biological processes that generate cultural and biological diversity in tropical forests, with a view to in situ management. The aim is to understand local practices that interact with the biological dynamics of forest ecosystems to shape the organisation of trees' genetic diversity. The scientific approach is based on the postulate that renewable biological resources of species used by human societies are both biological entities and social constructs.



There are 22 species of the genus *Dacryodes* (Burseraceae) in Africa's tropical rainforests. Five of the ten species found in Gabon are endemic. Wild *Dacryodes* species have long been used for human food. *Dacryodes edulis* (African plum or safou in Cameroon, atanga in Gabon) has always been planted as a crop, its fruit being much appreciated. Regional and international trade of fruits generates many contacts between human societies and also vigorous genetic mixing.

The research is about the impact of historical factors of the evolution of forest cover on the spatial organisation of genetic diversity. Until now no study of the phytogeography of *Dacryodes* in the Congo basin had been made which would enable researchers to assess the impact of these factors on the organisation of *Dacryodes* genetic diversity. Researchers hope to clarify this diversity by using chloroplast markers to compare, on a large scale, the genetic diversity in the "cultivated" species *D. edulis* and two or three wild Gabonese species. Another objective, both local and region-wide, is to assess the impact of human activity on the dynamics of genetic diversity of species of *Dacryodes* whose modes of use are different (gathering only, gathering and harvesting of planted trees, plantations only).

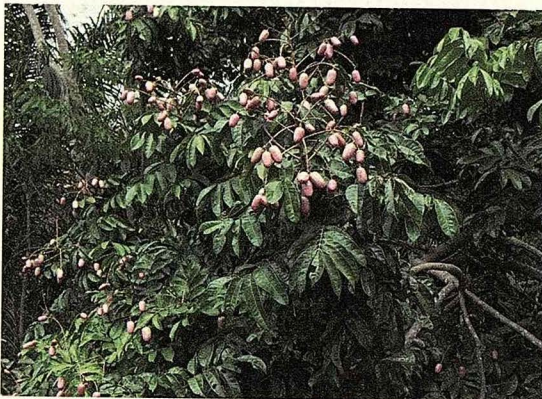


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Biodiversity at the periphery of a national park

The regional Park W was formed when the governments of Benin, Burkina Faso and Niger decided to manage three adjoining national parks together. It was recently named a trans-national Unesco Biosphere Reserve under the MAB, and is a site of major importance for biodiversity. The Park W regional ECOPAS programme has been in place there since 2001, financed by the European Commission.

To reconcile conservation with agro-silvo-pastoral systems of communities living at the periphery of the park, the interface between the protected area and the village lands have to be organised and managed. Some 400,000 people of about ten different ethnic groups are concerned. Although conserving biodiversity has been little discussed by the managers, who are mainly concerned for populations of species that attract ecotourism and the habitats those species require, the local populations see things quite differently. Nature means different things to different groups, and to talk of biodiversity one must talk of peoples' perceptions of biodiversity. Thus one can speak of "sociodiversity", meaning a set of representations of the environment, farming knowledge and practices.



• African farmers protect the shea nut tree in their agroforestry fields. The flesh of the fruit is greatly appreciated, and the kernel is used for edible oil and cosmetics. Agroforestry, combining trees and crops, maintains a high level of ecosystem biodiversity which is highly desirable near nature protection areas.

