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# A dry tropical forest ecosystem restored

BY DANIEL H. JANZEN

People are rallying in countries of the South as well as the North to preserve tropical rain forests. Tropical dry forests, on the other hand, have excited and organized much less public interest and concern. These forests receive rain for only about half the year. They are half-time rain forest, half-time desert.

Extending from sea level to an elevation of 2,000 meters, these forests once constituted 60 percent of all tropical forests. They were the forests of almost all of India, western tropical Africa, Madagascar, Southeast Asia, northern Australia, southern Brazil, Pacific Central America, tropical Mexico, and still other regions of the globe. These strongly seasonal tropics have been the home of major agroecosystems for millennia. Their forests once occupied what are today's bread-baskets, pastures, cottonfields, and lands for a multitude of other crops. Today less than 1 percent of them remain intact. In the 5- to 6-month dry season, they are easily removed by fire; their plentiful game is speedily taken, and they are easily settled. Their soils are much better than rain-forest soils. If human beings could be as successful in tropical rain forest as they have been in tropical dry forest, we would have virtually no rain forest to argue over today.

The restoration of a dry-forest ecosystem was the goal in 1986 when the Guanacaste National Park project was started in northwestern Costa Rica. The materials were a small and thoroughly damaged national park, two isolated mountaintop "cloud" forests, and a sprinkling of small bits of remnant dry forest. Today this project is the Guanacaste Conservation Area (GCA). Its 110,000 hectares (about 400 square miles) contain an entire dry-forest ecosystem undergoing regeneration, four volcanoes bearing rain

and cloud forests as a dry-season refuge for migratory animals, and 50 miles of nearly pristine beach and marine habitats. The varied habitats harbor, altogether, an estimated 300,000 species of organisms.

What this required, more than anything else, was a 100 percent efficient fire prevention and control program. Sale of the land was compelled by public domain, but it was bought from its owners at reasonable prices. Termination of hunting and logging came as the effort proceeded. The birds, mammals, and wind began to move the seeds into the abandoned pastures and old fields.

A highly dedicated staff of 85 Costa Ricans, a local governing board, and a decentralized decision-making process brought the surrounding communities to see the Guanacaste Conservation Area as an upstanding member of the community. GCA is a major employer, a major spender, and the major educator of the local children in biological literacy and understanding of the landscape they and their parents live in. The on-site administrative structure thus promotes conservation by establishing a local economic and cultural interest in through jobs, purchasing, and teaching.

The management, now entirely Costa Rican, uses foreign technical advisers at their own discretion. In a hierarchy-bound society, people have been learning to share authority and responsibility horizontally. Absentee landlords are no more appropriate to conservation than to agriculture.

GCA, evolving as a wildland biodiversity enterprise (rather than conforming to the "no trespassing" international image of conservation), generates livelihoods through nondestructive use that promotes the restoration GCA is meant to foster. The work of fire control and watershed protection has now brought ecotourism and biodiver-

sity prospecting to the creation of jobs. Enough biological understanding is abroad in the community and the staff for them to make the "big picture" management decisions about the development of these possibilities.

The community, business, and government leaders, who make up the membership of the board of directors who hire and fire the director and approve the annual operation plans and budgets, have come to see GCA as "theirs." They defend it against big-money assaults by promoters of sulfur mining, crass megahotels, irrigated plantation projects, and land grabs by other government sectors.

In support of this enterprise, the national government of Costa Rica has lived up to its initial commitment to decentralize authority and delegate it to the local community. It helped to produce the original

\$12 million needed for investment in land purchase, infrastructure, and long-term equipment. Coverage of the \$1.3 million annual management costs comes from interest income on an \$11 million endowment established by Sweden, the Costa Rican government, and donations from other governments, foundations, and private donors.

The GCA administrative structure has become part of a national movement to convert a traditional, centralized, protectionist, national park system to a decentralized, user-oriented, and self-supporting system of conservation areas that cover approximately 25 percent of the national territory. In 1989, the GCA biodiversity inventory stimulated the creation of the Instituto Nacional de Biodiversidad (INBio), a private nonprofit institution with the mission of facilitating the intellectual and commercial use of

Costa Rica's wildland biodiversity resources. In this manner, the conservation of wildland diversity becomes the byproduct of its incorporation in society. One of INBio's major tasks during the coming decade is to take a complete census of Costa Rica's estimated 500,000 species. Simultaneously, it is a pilot project for the nondestructive, commercial exploitation of biodiversity as a mechanism to finance the management costs of conserved wildlands and contribute to the gross national product of Costa Rica.

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