

# Biological Corridor La Gamba (COBIGA), Costa Rica

## preservation of the region's biodiversity through conservation, reforestation and socio-economic activities

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View from the Fila Cal towards the Fila Gamba

### Introduction

The creation of national parks, biological reserves and forest reserves is a well-established way of protecting natural ecosystems and their biodiversity. In Costa Rica, about 25% of the territory is under protection and the country is a world-renowned example for its conservation efforts. Nevertheless, many national parks are not linked to each other and only represent forest islands within agricultural land. Numerous studies have revealed that the local fauna and flora of isolated forest patches cannot survive in the long term, due to inbreeding effects and the loss of genetic variability in their populations.

During the past few years, the establishment of 'biological corridors', which connect isolated forests or forest patches, has received great acceptance. In initiatives such as the Mesoamerican Biological Corridor Project (MBS), numerous associations and institutions co-operate in order to implement such biological corridors. The vision of this specific project is a green corridor belt between North and South America, with the aim of increasing biological exchange between the two continents.

### The Amistad-Osa Biological Corridor (AMISTOSA)

The proposed AMISTOSA Corridor (Fig. 1) forms a connection between the Osa peninsula and the La Amistad International Park (PILA) in the Cordillera de Talamanca. The pristine forests of the Golfo Dulce region in southern Costa Rica harbour the most diverse ecosystems in Central America. The Piedras Blancas National Park (approx. 150 km<sup>2</sup>) and the Corcovado National Park (424 km<sup>2</sup>) are protected lowland rainforests surrounded by agricultural land and unprotected forests. The Biological Technical Coalition (CTCBO), founded in 2001 by the National System of Conservation Areas (SINAC) and NGOs, aims to (a) generate and transfer technical and scientific information, (b) implement conservation strategies and consolidate local capacities and (c) achieve a sustainable development and management in the region. Currently, different organizations are seeking to formalize the biological corridor, such as the OET (Organization for Tropical Studies), COBIGA Project (Tropical Station La Gamba), FUNDAOOSA, SINAC, CATIE, local groups and others.

### The Biological Corridor La Gamba (COBIGA)

The COBIGA is part of the AMISTOSA Corridor. The focus of the project lies mainly on the connection of the lowland forests of the Piedras Blancas National Park with the 'Fila Cal', a largely unprotected transition area covered with mountain rainforests.

On the basis of aerial photographs taken in 2003 (CARTA 2003), particularly important prospective corridor areas were identified (Fig.2). Special importance was attached to (1) the closing of forest gaps in order to create a continuous forest area as far as possible, and (2) the reforestation or restoration of pastures and/or river banks for water protection and the formation of ± compact corridors.

At present, most of the envisioned sites are in private hands, and the farmers first need to be convinced of the corridor idea. Recently, the Austrian association 'Rainforest of the Austrians' has taken an active part in the COBIGA project and engages mainly in purchasing selected, promising corridor lands, and in restoring and reforesting them. Recently, a monitoring project was started in order to provide useful information on tree species for reforestation projects in Central America.



**Pictures:** a) Eduardo Cascante Fallas in his newly established nursery. b) A 6-month old plantation at Finca La Gamba near La Gamba with *Schizolobium parahyba* (Caesalpinaceae). c) The forest engineer Daniel Jenking shows students and volunteers from La Gamba the best method of tree planting in the field. d) Visits to private Fincas and convincing the people is an important work for a successful cooperation. e) A 4-year old plantation.

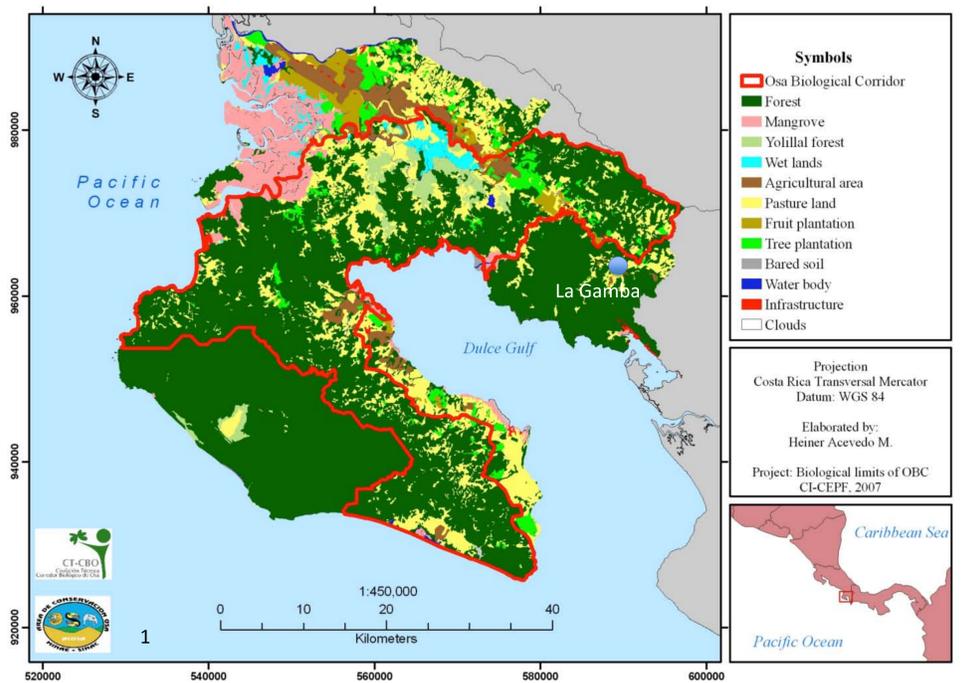


Fig. 1. The Amistad-Osa Biological Corridor (AMISTOSA) connects the Corcovado NP with the Piedras Blancas NP and the La Amistad International NP.

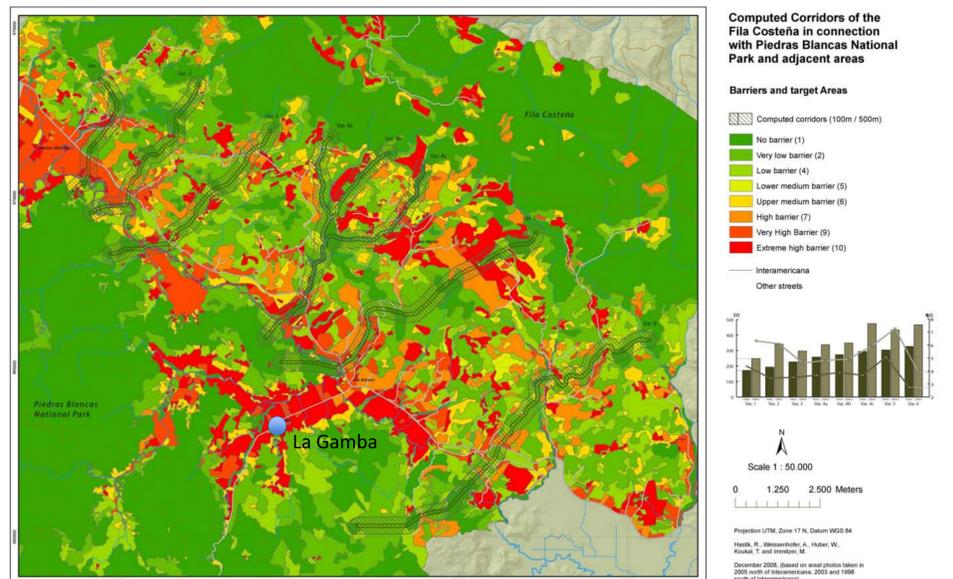


Fig. 2. The COBIGA project focuses on the connection of the lowland forests of the Piedras Blancas NP with the unprotected forests of the Fila Cal. Note: the computed corridors zones (shaded). Green=forest=no biological barrier, yellow-red=anthropogenic ecosystems=medium to high barriers.

### Reforestation of agricultural land and restoration of forests

Reforestation and restoration of forests with native tree species is an important step in the establishment of biological corridors because it helps to promote certain species that face a particularly high risk of extinction, that are endemic, or that have very slow growth rates.

What is the difference between reforestation and forest restoration?

(a) **Reforestation** projects are mainly conducted by or in cooperation with private farmers. In this case, up to 50 species of selected timber trees and species of high ecological value are used. The private owners may use the wood after a certain period of time and must replant the trees after cutting. In this way, a simple and sustainable forest management can be established, which has thus far not existed in the Golfo Dulce region.

b) **Restoration** of forests means that there is no intention of using the planted trees after the forest has developed. In this case, one has to attach great importance to species selection for each individual site. Up to 100 different species have to be planted per hectare. Restoration of forests is only practicable at sites where natural succession is difficult, due to soil conditions and/or a lack of natural vegetation, e.g. on pastures without contact to natural forest.

### Species selection and production

In order to perform a selection of suitable species for a given location, it is necessary to know certain factors such as soil type, climatic conditions and topography, as well as the ecological characteristics of each species that is to be planted. Proper species selection can best be achieved in close cooperation between forest engineers, botanists and locals with a good knowledge of forest trees. On average we selected approx. 40 'main species' for each site, which are produced by local farmers and in the nursery of the Tropical Station La Gamba. Seed material was collected throughout the Golfo Dulce region to avoid inbreeding effects.

### What is the current situation?

Over the past years more than 30 ha of land in the vicinity of La Gamba have been reforested with more than 25.000 trees out of 100 native tree species. Data on growth rate, site preference and mortality were taken in the field. Furthermore, courses and workshops for farmers, students and organisations on biological corridors, planting trees, soil improvement etc. were held at the Tropical Station. The book "Creating a forest", which deals with native trees for biological corridors in the region and the ways to cultivate them, appeared recently and aims to provide further incentive to people to plant their own forest.