

# **Demonstrating Techniques of Natural Forest Rehabilitation in Kakamega, Kibiri, Gwassi, Wire & Homa Hills**

A Progress Report (Quarter 3 – 2008 / 09)

By

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## **1. Introduction**

Deforestation has become one of the greatest threats to biodiversity conservation, rural livelihoods and wealth creation, particularly in the tropics. On average, the global rate of deforestation has been estimated at 14.6 million hectares yr<sup>-1</sup> over the past decade. In Kenya, the area under closed-canopy forest decreased from 2.8% to 1.7% during this period. The main causes of deforestation have been identified as illegal encroachment, overexploitation of forest products and forest fires. Rehabilitating these degraded forests requires sound understanding of principles of woody species recruitment and forest regrowth following deforestation. In particular, forest managers require information on the spatial and temporal forest community dynamics following site disturbance in order to initiate intervention strategies necessary to accelerate forest regeneration. Over the past 3 years, the Kenya Forestry Research Institute, working in partnership with the Kenya Forest Service and local community groups, has initiated research activities aimed at demonstrating techniques of natural forest rehabilitation in degraded forests in western Kenya. This report outlines natural forest rehabilitation activities carried out in Kibiri, Gwassi, Wire and Homa hills during Quarter 3 of 2008 / 09 financial year.

## **2. Overall objective**

To demonstrate natural forest rehabilitation techniques in some of the degraded natural forest sites in western Kenya

### **2.1 Specific objectives**

- To identify degraded natural forest sites suitable for rehabilitation in Kibiri, Gwassi, Wire and Homa hills
- To identify natural forest rehabilitation techniques suitable for each of the degraded forests

- To select suitable aided regeneration tree species where necessary and determine appropriate planting density
- To assess natural forest regeneration patterns following rehabilitation interventions

### 3. Materials and methods

#### 3.1 Project sites

The project is being implemented in Kibiri, Gwasssi, Wire and Homa hills. These are some of the most degraded natural forests in western Kenya. The figure below shows the location of natural forests in western Kenya.

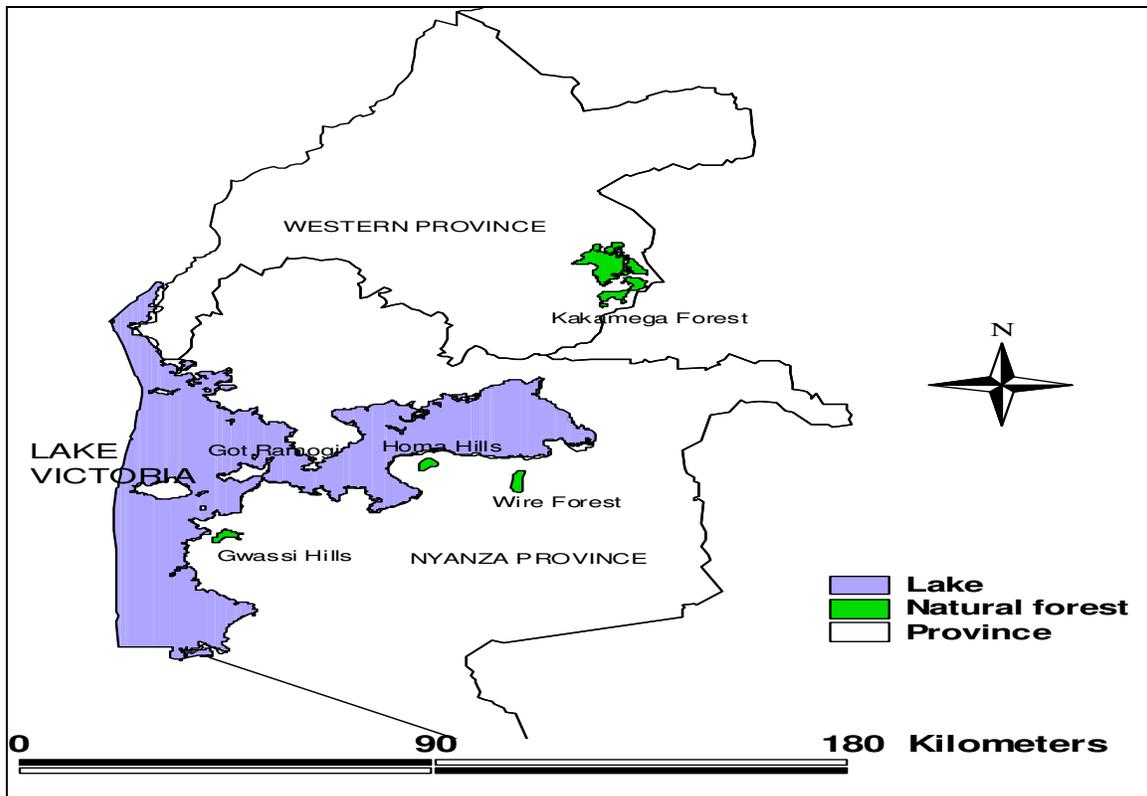


Figure 1: The distribution of natural forests in western Kenya

#### 3.2 Forest rehabilitation techniques

Two techniques of natural forest rehabilitation are under demonstration, namely: natural regeneration and aided regeneration. Natural regeneration involves protecting rehabilitation sites from external interference, through enclosures, to facilitate natural regeneration. The technique is employed in situations where there are some trees left in the landscape to act as seed sources during secondary succession.

Aided regeneration, on the other hand, involves planting indigenous tree species that have been identified to dominate the degraded sites during early stages of secondary forest succession. The trees planted are intended to act as nurse trees that provide shade, enrich the soil and the microhabitat for naturally recruiting woody species. The technique is employed in situations where deforestation has led to loss of seed sources and in areas where harsh site conditions are unfavourable for natural regeneration.

#### **4.0 Results and discussion**

The following activities were carried out in Q3 of 2008 / 09 financial year.

##### ***4.1 Assessment of impact of rehabilitation interventions***

- Survival counts and growth performance of planted seedlings were carried out in Kibiri, Wire and Gwassi rehabilitation plots.
- Possible changes in vegetation community structure and composition as a result of rehabilitation interventions were assessed in Kibiri, Wire, Homa hills and Gwassi rehabilitation sites (using nearby non-intervention areas as control)

##### ***4.2 Maintenance of rehabilitation plots***

- Maintenance was carried out in the rehabilitation demonstration plots in Kibiri, Wire, Homa hills and Gwassi hills.

NB: The Kakamega rehabilitation plot was destroyed by fire during Quarter 3 of 2008/9 financial year.

- Arrangements are in place to relocate the plot to South Nandi Forest.

Maseno Regional Research Centre

Natural Forests Programme

Natural Forest Rehabilitation Project – Quarter 3 Report (2008 / 09)

Scientist involved	Project / Activity	Targets	Achievements for Q3	Cumulative achievements	Remarks
	<b>Project NF3: Rehabilitation of natural forests and Woodlands</b>				
	<b>Objective 2:</b> Demonstrate rehabilitation of selected degraded natural forests				
<b>John Otuoma</b>	<ul style="list-style-type: none"> <li>Expand, maintain and monitor forest rehabilitation plots in Kakamega, Kibiri, Gwasssi, Homa hills and Wire forests</li> </ul>	<ul style="list-style-type: none"> <li>Five forest rehabilitation demonstration plots maintained in Kakamega, Kibiri, Wire, Homa hills and Gwasssi</li> <li>Impact of rehabilitation interventions assessed and documented in Kakamega, Kibiri, Wire, Homa hills and Gwasssi</li> <li>Seedlings raised for plot maintenance in Kakamega, Kibiri, Wire, and Gwasssi</li> </ul>	<ul style="list-style-type: none"> <li>Forest rehabilitation demonstration plots maintained in Kibiri, Wire, Homa hills and Gwasssi</li> <li>Plot assessment carried out in Kibiri, Gwasssi, Homa hills and Wire</li> <li>Germplasm propagation completed</li> </ul>	90% of annual targets achieved so far	Kakamega plot destroyed by fire