

# EX SITU-CONSERVATION

ARBONETH - The Ethiopian Arboretum Network

01/2015 – 12/2018

## The Importance of *Ex Situ*-Conservation in Ethiopia

The Horn of Africa (Ethiopia, Eritrea, Djibouti and Somalia) is characterized by a low forest cover, yet mostly small-scale forest stocks are harboring a wide variety of native and endemic tree species. These forests are extremely endangered by human activities. The overuse of natural resources leads to a constant decrease of forest habitats and thus a concomitant loss of tree and shrub species. Recurrent droughts - whose effects are intensified by climate change - also contribute to biodiversity loss.



For the majority of the population, the security of livelihood has precedence over the sustainable use of natural resources and the protection of biodiversity. This dilemma must be overcome in order to create a greater awareness of sustainable use systems, to enable long-term livelihood and to preserve the endangered biodiversity.

According to the Red List of Endemic Trees & Shrubs of Ethiopia and Eritrea (FFI, IUCN et al. 2005) tree species play a central role in the life assurance strategies of the rural population. About 90% of the energy used in Ethiopia is produced from biomass – whereby firewood is the main component.

**Under these circumstances, the development of sustainable use of natural resources as well as *in situ* (lat. for "in place") and especially *ex situ* (lat. for "outside the [original] site") nature conservation are indispensable.**



## Where to start? – The Collection Management

Following guiding documents are essential for an *ex situ*-plant collection:

- Mission Statement – what you want to do?
- Landscape Master Plan – where you're going to do it?
- Management Plan – how you're going to look after it?
- Plant Accessions policy – what you're going to grow?
- Staff roster with defined roles and responsibilities – who is doing what?

Other important guidelines to consider:

- Only collect what you can cope with in your facilities!
- Effective irrigation and shade structures are essential in the nursery.
- Invest in good machinery and tools!
- Creation of specialized growing conditions may be necessary.
- Mapping the collection – record every plant in each area!
- Check the inventory – is every plant still present? Is the plant labelled?

And how is the planting working?

choose an appropriate site → prepare the ground as necessary → provide irrigation if necessary → small plants often establish better than big ones → protect young plants → label the plant with its permanent label → map the planting position → record the planting information on a database

(Source: J. GRIMSHAW)

## Accession Policy – Selecting the focus of a collection

Any plant or group of plants, seeds, cuttings, or vouchers obtained by a botanic garden or arboreta from a single source received on the same date constitutes a plant accession.

Plant accessions are given a unique number signifying the year and the chronological order within that year of their receipt.

An example? 012-2014 is the twelfth accession received in 2014!

### Important questions concerning Plant Accession:

Plant names | Specimen data | Collection Date | Wild Collected Sources or other Sources  
Locational data | Biological associates | Conservation status

### What makes Plant Accessions so important?

Preserve the identity of a subset of the genetics of a taxon or species for:  
Conservation reintroductions | Ethnobotanical uses (biomedical, food, fiber) | Educational uses | Ornamental uses | Buffer against natural and man-made disasters

Accession starts with seeds – and here starts also the labelling!

## What is an Arboretum?

An arboretum (derived from the latin word for tree: "arbor") is a botanical garden containing living collections of distinct trees and shrubs intended mainly for scientific studies and conservation measures. Moreover, an arboretum serves as an educational platform for visitors.



## Arboretum of Wondo Genet College

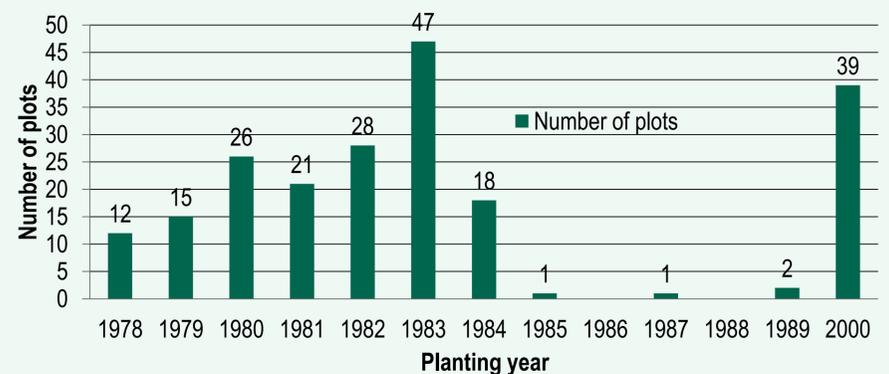
Established in 1978, the Wondo Genet College Arboretum covers an area of 4 hectares. There are about 300 plots of 10m x 10m single areas for research and conservation purposes. On each plot at a spacing of 2m between trees 25 trees have been planted.

Overall nowadays there are about 95 different tree and shrub species represented in the arboretum, predominantly consisting of exotic species. There has been continuous planting from 1979 until 1990 as well as a replanting and an additional expansion in the year 2000 and during the ARBOPRO-project.



Entrance to WGC Arboretum

### Number of plots planted (1978-2000)



### Objectives of the Wondo Genet College Arboretum

Education | Research | Biodiversity conservation | Species and provenance trial | Recreation | Seed source

### Vision

To become a known arboreta globally, and center of tree and shrub collections of the East African Region and one of the best examples for *ex situ*-conservation in Africa.

### Mission

To represent most of the endemic and endangered indigenous tree species in the next 10 years (to have a collection of 400 tree and shrub species)

(Source: H. ASAYE 2014)

## Probably the most important work: Labelling

Labelling of a living collection of plants is one of the most important and difficult of the curatorial tasks. The collections policy outlines how plants are to be labelled and whether their locations are to be plotted on any relevant garden maps.

### Plant identification

- for reference and research purposes all plants need to be correctly identified and named.
- the Latin name of a plant is a vital key to accessing the scientific literature about the plant. Names are thus an essential means of communicating information about plants.
- display labels for the use of the visiting public should inform at least about the scientific name, the common name and the geographic origin of the plant.



remains of old label



new label



metal label

(Source: BGCI 1998)

### Temporary nursery labels

Many gardens use a temporary nursery label until an accession number is assigned. Nursery labels should include the collection number and if possible the name of the accession.

### Permanent labels

Permanent plants should have an accession tag or small metal label (e.g. engraved or impressed aluminium) directly attached to every plant of the accession, preferably wired or otherwise securely fastened.

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