

**WILDLIFE CONSERVATION SOCIETY OF TANZANIA (WCST)
THE ULUGURU MOUNTAINS BIODIVERSITY CONSERVATION PROJECT
(UMBCP)**

TREE PLANTING IN THE ULUGURUS, 2000.

BY

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Introduction

In provision of forestry inputs to reforest areas of village land as demonstration plots, the Natural Resources Office as a partner to the UMBCP identified denuded areas in all the villages, established tree nurseries for local seedling production and planted trees, with the aim of promoting conservation of the Ulugurus. This report therefore provides progress that has been initiated to reach the output outlined in the logical framework of the project.

Identification of denuded areas in the project area

Denuded areas were identified in Kinole and Tegetero Wards as follows:

Kinole Ward

- At Tandai village denuded areas were identified in Nyange, Lukenge and Kisambwa sub-villages.
- Also in Kitundu, Kilimani and Luhanga areas of Amin village were identified.
- Lukenge and King'ino are no longer useful for agriculture due to loss of soil fertility hence low crop yields. Therefore the hills have been left bare almost semi-arid.
- Survey conducted in Ludewa village revealed some destruction in Mangala forest reserve. This forest area is highly encroached and deforested. The deforestation could be attributed to demographic pressure, wildfires and overexploitation of wood resources for various uses and other human activities.
- Binde hill of Amini Village was identified as a denuded area. Villagers recognized the problem and promised to replant trees during the coming rain season (2001).
- In Kalundwa village, an area in Mangawe sub-village was identified for planting trees. This area was previously used to be a village communal farm but it lost its value in terms of production, so villagers decided to convert it into a village forest reserve.
- In Tandai village, an area that belongs to Mr. Ramadhani Sanda was also identified and he earmarked it for tree planting in the coming season.

Tegetero Ward

- The survey of Milawilila forest reserve that is in the Mifulu village was done and a lot of destruction was observed. Most of the forests were cleared for agriculture, logging activities and for fuelwood. Also a King'ino hill, which is located in Lung'ara village and which was a natural forest in the past has at this moment no forest trees. Lukonge hill was also identified. All these areas were deforested due to lack of enough farms for cultivation and for timber harvesting and fuel wood demands.
- Some areas were identified in Bagilo village including Mbaru hill, Lulali, Kisae (*Kidago juu and Kidago chini*) and Mbonde hill. Kisae was in the past a coffee plantation but has been abandoned and is set for tree planting.
- Also Hasozi-Ngaramiro were identified as denuded areas, villagers were advised to plant trees there since they are sources of water. They were advised to plant *Ficus sp.*, which is suitable water source areas but villagers refused this species claiming that it is a bad tree because it brings "mashetani" (Satan spirituality).

Kiroka Ward

- Kiroka village was also visited and was found to have denuded areas for afforestation. Since one part of its forest reserves borders with Amin and Tandai villages, the project has decided to include it in the project area in order to easy JFM operations in terms of tree planting.

Tree planting.

Main efforts are directed towards halting loss of forest in project area and that trees are planted in denuded area and farms to provide for fire-wood, building materials and timber for home use and income generation. Tree seedlings of both indigenous and exotic species were planted in the project area in 2000. Some of the seedlings, namely *Cedrela odorata*, *Senna siamea* and *Eucalyptus camaldulensis* were transported to Kinole from the Central nursery. All of them were distributed to schools and villages of Kinole and Tegetero Wards free of charge for planting. More than 19,000 seedlings (Table 1) were planted in the project area.

Table 1: Number of tree seedlings distributed from central nursery and planted in the project area in 2000 by villages

| Village/School | Trees distributed |
|----------------|-------------------|
| Tandai | 5952 |
| Kalundwa | 7061 |
| Amin | 2580 |
| Lungára | 15 |
| Rudewa | 895 |
| Tegetero | 1111 |
| Hewe | 116 |
| Mifuru | 786 |
| Bagilo | 1113 |
| Grand Total | 19629 |

All village nurseries (*i.e.*, cooperative, women, individual and school) raised more than 30,000 seedlings. Members took about 5.7% of the seedlings while 4.8% was sold to other farmers for planting in their respective farms during the short rain season. The Project purchased some seedlings of different tree species such as *Khaya anthotheca*, *Grevillea robusta*, *Cedrella odorata*, and *Afzelia quanziensis* from group and individual nurseries. Therefore about 1721 seedlings were purchased and distributed to Kalundwa, Amini Primary Schools and UMADEP farm plot for planting.

Village nurseries

Before the inception of the project there were three individual nurseries in three villages of Amin, Kalundwa and Tegetero. These nurseries were not actually performing well due to improper management. Number of tree nurseries in the project area in year 2000 increased to twenty-three. Presently, in the project area seven P/Schools have established tree nurseries. These schools include Amin, Kinole, Kalundwa, Tegetero, Bagilo, Hewe and Bulugi. Ten farmers group (women and cooperative) nurseries have been established

during the same period. Three individual nurseries and one demo-nursery were also instituted apart from the previous ones (Fig. 1). In these nurseries efforts have been made to raise more indigenous tree species (mainly *Khaya athonthea*) than *alien* trees. However, the exotic species that are preferred by the farmers due to their fast growing characteristics and economical values like *Tectona grandis*, *Cedrela odorata* and *Grevillea robusta*) have been and are still being raised in these nurseries.

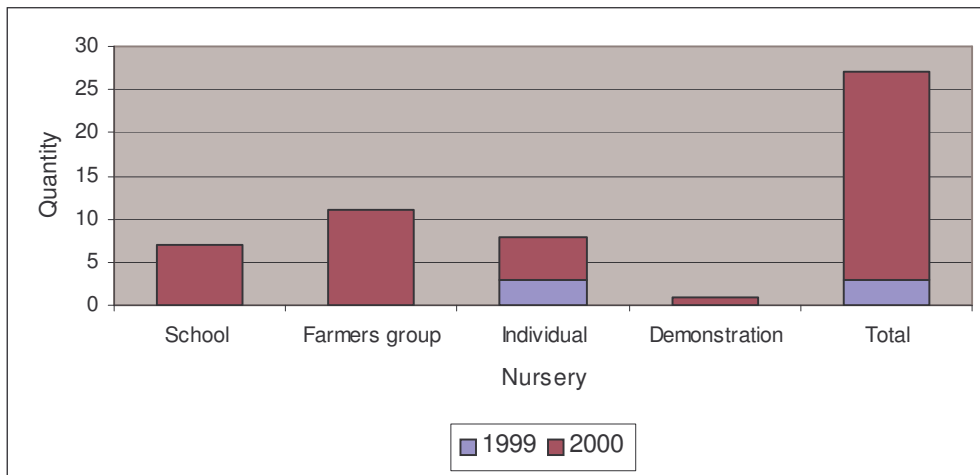


Figure 1: Total number of school, farmer group and demonstration nurseries established by the project.

Tree seedlings raised by the village nurseries

The village nurseries in the project (Table 2) have raised more than 30,000 seedlings of different tree species. About 41% were raised in the Primary Schools while 24%, 23% and 12% were raised by Women and cooperative farmers groups and individuals, respectively.

Table 2: Tree seedlings raised by village nurseries indicating seedlings sold and planted in farm plots

| Group/ Individual/School | | Village | Initial stock | Seedling issued for planting 2000 | Seedlings sold in 2000 | Stock of seedlings present |
|--------------------------|-----------------|----------|---------------|-----------------------------------|------------------------|----------------------------|
| Women Group | LUGALUGA | Tandai | 3230 | 100 | - | 3130 |
| | TWIYUNDE | | 1350 | - | 300 | 1050 |
| | UMWE | | 2200 | - | - | 2200 |
| | TABAHA | Ludewa | 300 | - | - | 300 |
| | GENDAUYE | Amin | 350 | - | - | 350 |
| Sub Total | | | 7430 | 100 | 300 | 7830 |
| Cooperative Group | VUMILIA | Bagilo | 1500 | - | - | 1500 |
| | TEGEREZA | Kalundwa | 500 | - | - | 500 |
| | LUKEMO | Kalundwa | 3292 | 570 | 50 | 2672 |
| | MWINGIRENI | Kalundwa | 600 | - | - | 600 |
| | GAIKA | Amin | 350 | - | - | 350 |
| | GENDEGENI | Tegetero | 600 | - | - | 600 |
| Sub Total | | | 6842 | 570 | 50 | 6222 |
| Primary School | Amin | Amin | 1474 | 135 | 100 | 1239 |
| | Kinole | Tandai | 1565 | 306 | 50 | 1209 |
| | Kalundwa | Kalundwa | 1950 | - | - | 1950 |
| | Tegetero | Tegetero | 3500 | 360 | - | 3140 |
| | Bagilo | Bagilo | 3300 | - | - | 3300 |
| | Bulugi | Ludewa | 600* | - | - | 600* |
| | Hewe | Hewe | 200* | - | - | 200* |
| Sub Total | | | 12589 | 801 | 150 | 11638 |
| Individual | Mr. Bomoa | Tandai | 2084 | 114 | 920 | 1050 |
| | Mr. Salim Kombo | Kalundwa | 1311 | 100 | - | 1211 |
| | Mr. Ramadhani | Ludewa | 360 | 360 | - | - |
| Sub Total | | | 3755 | 574 | 920 | 2261 |
| Grand Total | | | 30616 | 2045 | 1420 | 28902 |

Demonstration Nursery

Establishment of the Project Demo nursery that has an area of ¼ acre was done at Tandai village. MR. KAPERERA has offered the area to the project free of charge and an offer letter, which was signed by the two parts, was officially made.

This nursery was established by the project for demonstrating good techniques of nursery to villagers in the surrounding and for raising tree seedlings that will be planted in the denuded areas and farm boundaries of individuals.

Activities such as ingredient collection (yard manure and forest soils), soil sieving and mixing, pot filling, and seed sowing have been done by members of the newly formed women groups as one way for them to get some extra income.

The yard manure was bought from Morogoro town and transported to Kinole nursery site, as there was nowhere we could get the product at Kinole to suffice our needs. About 23,000 pots have so far been filled with soils out of which more than 22,000 have different tree seedlings.

Central Nursery

More than 59,000 seedlings of different tree species and 23,300 of variety of fruits were raised in 2000 in the Central Nursery (Table 3). Some seedlings died due to different causes (drought, insect attacks). Others didn't germinate (poor viability). Very few seedlings were offered as complementary and some were sold. Tending operations in the nursery were undertaken as usual. However, due to strong sunlight, temporary sheds for preventing tree seedlings from drying have been put in place.

Table 3: Present stock of tree and fruit seedlings in the Central Nursery

| Species | Pots sown | Death/Not germinated | Trees given out | | Closing stock |
|--------------------|--------------|----------------------|-----------------|---------------|---------------|
| | | | Sold | Complementary | |
| Khaya anthotheca | 34000 | 3280 | - | 100 | 30620 |
| Grevillea robusta | 8000 | 1440 | - | 60 | 6500 |
| Cedrella odorata | 9000 | 1280 | - | - | 7720 |
| Azadirachta indica | 3300 | 52 | 15 | 33 | 3200 |
| Senna siamea | 3010 | 3 | 1000 | 7 | 2000 |
| E. camaldulensis | 600 | 150 | - | - | 450 |
| Tectona grandis | 1500 | - | - | - | 1500 |
| Milicia excelsa | 60 | 10 | - | - | 50 |
| Sub-Total | 59470 | 6215 | 1015 | 200 | 52040 |
| Citrus limon | 15000 | 2000 | - | - | 13000 |
| Citrus sinensis | 2000 | 1740 | - | - | 260 |
| Psidium guajava | 1500 | - | - | - | 1500 |
| Annona sp. | 800 | 300 | - | - | 500 |
| Mangifera indica | 1000 | - | - | - | 1000 |
| Syzygium sp. | 3000 | 1200 | - | - | 1800 |
| Sub-Total | 23300 | 5240 | | | 18060 |
| Total | 82770 | 11455 | 1015 | 200 | 70100 |

Our aim is to raise more indigenous tree species than *alien* trees. However, the exotic species that are mostly preferred by the farmers due to fast growing characteristics and economical values (*Tectona grandis*, *Cedrella odorata* and *Grevillea robusta*) are still being raised in the nursery. From table 2 it can be that more than 57% of all tree species are indigenous while the difference is composed of exotic species.

Type of seedlings raised in the central and demo nurseries

Before the project could start establishing demo nursery and other village nurseries in the villages, a survey was conducted in the project area to solicit information on what type of trees that the villagers preferred most. Most of the respondents indicated that the indigenous species were preferred to exotics. For that reason indigenous tree species are the most trees which are raised in the demo and central nursery (Fig. 2) with exception of fruit trees (all of them being exotics).

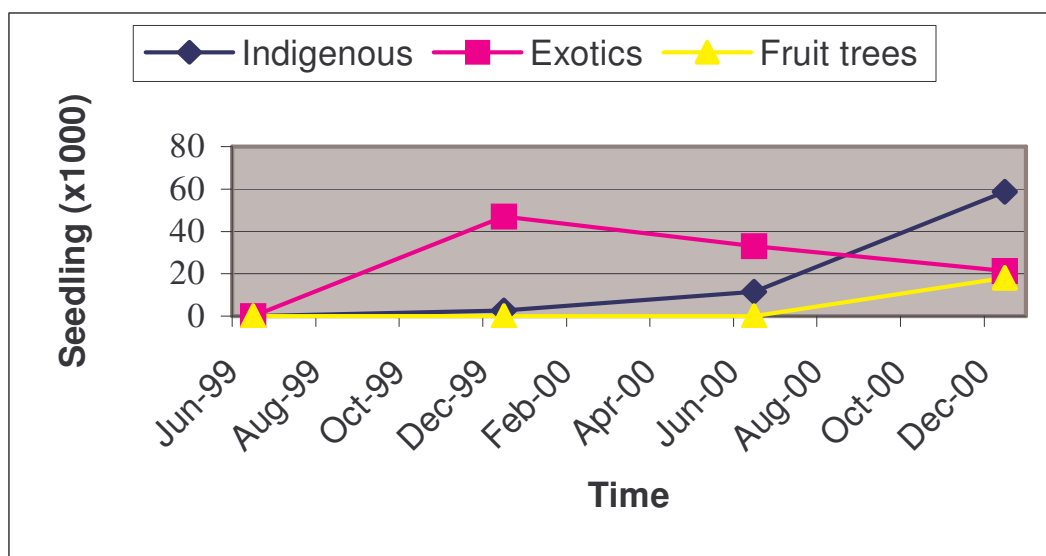


Figure 2: Indigenous and exotic tree species and fruit trees raised in nurseries that are supported by the project.

Trees distributed for planting.

More than 29,000 tree seedlings were distributed to farmers up to June 2000 for planting. About 55% of them were distributed and planted in the project area (Table 4) whereas the rest were offered to areas outside the project. Actually when we say outside the project it does not mean other districts and region it simply means other areas than the nine villages. Most of the seedlings that have been taken from the central nursery have actually been planted within the municipal area.

Table 4: Number of farmers that planted trees in the project area by village.

| Ward | Village | Males | Females | Total | Households | People planted trees | % | Indigenous tree | Exotics | Total |
|--------------------|--------------|-------------|-------------|--------------|-------------|----------------------|-------------|-----------------|--------------|--------------|
| Kinole | Amin | 835 | 827 | 1662 | 132 | 412 | | 682 | 526 | 1208 |
| | Kalundwa | 1057 | 1167 | 2224 | 294 | 638 | | 199 | 6532 | 6731 |
| | Lung'ara | 571 | 635 | 1206 | 252 | 2 | | | 15 | 15 |
| | Ludewa | 1177 | 1417 | 2594 | 1361 | 5 | | | 25 | 25 |
| | Tandai | 1275 | 1417 | 2692 | 750 | 716 | | | 5336 | 5336 |
| Total | | 4915 | 5463 | 10378 | 2789 | 1973 | 19 | 881 | 12434 | 13315 |
| Tegetero | Bagilo | 935 | 1187 | 2122 | 243 | 332 | | | 1453 | 1453 |
| | Hewe | 576 | 505 | 1081 | 233 | 4 | | | 116 | 116 |
| | Mifulu | 1407 | 902 | 2309 | 250 | 730 | | | 786 | 786 |
| | Tegetero | 1061 | 960 | 2021 | 294 | 78 | | | 651 | 651 |
| | Total | | 3908 | 3625 | 7533 | 1020 | 1144 | 15.2 | | 3006 |
| Grand Total | | 8823 | 9088 | 17911 | 3809 | 3117 | 17.4 | 881 | 15440 | 16321 |

Survival Rates of the trees planted in the project area

According to the physical survey made in June 2000 by the project staff who are stationed at Kinole the survival rate of the distributed seedlings is very promising (Table 5). The highest survival rate reads at Kalundwa village (99.07%) village while the lowest was found at Kinole P/School (91.8%).

Table 5: Survival rates for the trees distributed and planted in the project area

| School/Village | Species planted | Quantity supplied | Dead | Survived | Survival rate (%) | Remarks |
|---------------------------------|---|-------------------|------------|--------------|-------------------|---|
| Amin P/School and village | <i>Senna siamea</i> | 100 | 72 | 1136 | 94.1 | There was a boundary conflict between villagers and Amin school that resulted in uprooting some of seedlings but it has been resolved |
| | <i>Khaya anthotheca</i> | 240 | | | | |
| <i>Azelia quanziensis</i> | 180 | | | | | |
| <i>Cedrella odorata</i> | 200 | | | | | |
| <i>Eucalyptus camaldulensis</i> | 60 | | | | | |
| | 80 | | | | | |
| <i>Grevillea robusta</i> | 348 (villagers) | | | | | |
| | Total | 1208 | 72 | 1136 | 94.1 | |
| Kalundwa P/School | <i>Senna siamea</i> | 50 | 36 | 1573 | 97.8 | The mortality could be attributed to injuries caused by people during planting process. However, the trees are doing very fine |
| | <i>Khaya anthotheca</i> | 88 | | | | |
| <i>Azelia quanziensis</i> | 101 | | | | | |
| <i>Cedrella odorata</i> | 1155 | | | | | |
| <i>Eucalyptus camaldulensis</i> | 200 | | | | | |
| | 15 | | | | | |
| <i>Azadirachta indica</i> | | | | | | |
| | Total | 1609 | 36 | 1573 | 97.8 | |
| Kinole P/School | <i>Cedrella odorata</i> | 410 | 34 | 376 | 91.2 | The high mortality rate here could have been attributed to animal trampling (i. e., sheep and goats) |
| | Total | 410 | 34 | 376 | 91.2 | |
| Bagilo | <i>Cedrella odorata</i> | 1283 | 46 | | | Poor season timing and animal browsing. |
| | <i>Senna siamea</i> | 170 | | | | |
| | Total | 1453 | 46 | 1407 | 96.9 | |
| Tegetero | <i>Senna siamea and Cedrella odorata</i> | 651 | 15 | 636 | 97.7 | Poor handling and animal browsing. |
| | Total | 651 | 15 | 636 | 97.7 | |
| Tandai village | <i>Senna siamea, Khaya anthotheca, Afzelia quanziensis, Cedrella odorata, Eucalyptus camaldulensis and Azadirachta indica</i> | 4926 | 49 | 4877 | 99.01 | Animal browsing and poor handling of seedlings |
| | Total | 4926 | 49 | 4877 | 99.01 | |
| Kalundwa village | As above | 5122 | 48 | 5074 | 99.07 | Poor handling of seedlings |
| | Total | 5122 | 48 | 5074 | 99.07 | |
| GRAND TOTAL | | 15379 | 300 | 15079 | 98.05 | |

Source: UMBCP Kinole staffs Survey (2000)

Lessons learnt from the project area.

- ◆ Most of the local people in the area have perceived well the idea of conserving their environments by planting trees in their farms and open areas in their respective villages.
- Farmers in the project area have shown interest of establishing farmer groups only that they do not have capital. However, the project is taking care of this by providing them with nursery inputs and training.
- Local people are deforesting Ulugurus in the expense of banana cultivation. Banana has ready market in DSM and other nearby town centres. People clear forests in order to obtain fertile lands for planting agricultural crops. In this case, all the public forests have been depleted due to opening of new banana, mountainous rice and cocoyam farms
- There is a problem of firewood hence more cutting of forest trees.
- It was also noted that people in the area, like to plant trees that grow fast and, which get them early returns. The tree species mentioned by farmers include *Khaya anthotheca*, *Cedrella odorata*, *Tectona grandis* and *Grevillea robusta*.

Conclusion and Recommendations

From the information given above, it can be concluded that the operation of planting trees in the project area has been a success since 10% of the villagers have planted tree as required by the logical framework. However, the following recommendations are still being insisted. The raised seedlings should however, be given to local people at a cost for planting in their farms BUT for planting to the village-denuded areas, should be given free of charge from the demo nursery.

The Licensing Authorities in Morogoro are advised to suspend issuing of licenses to timber businessmen in the project areas for a while. More sensitization through seminars and workshops to local people on environmental conservation should be enhanced. Education on soil conservation practices and technologies to the project area is required to enable farmers utilize their existing farms intensively and productively. Women involvement should be enhanced. If properly mobilized and sensitized can do wonders in environmental conservation. More exchange visits should increased. Farmers need to be exposed to other areas like Songea and Shinyanga where local people practice *matengo* farming on very steep slopes and *ngitiri* practices for water and soil conservation, respectively.

Land suitability evaluation in the project area should be undertaken. This means that land that is suitable for forest should left for forests and not for agricultural cultivation. Indigenous Knowledge (IK) should be incorporated in all phases of planning and implementation. Multidisciplinary approach should be adopted. Forest experts alone can not conserve Uluguru Mountains. Other professionals like socialists, ecologists, economists, soil scientists should sit in one table in order to achieve an integrated and sustainable management of the Mountains On the other hand, all the land use sectors and plans should be integrated. Establishment of other social projects in the project area is important. These projects may include health education, livestock keeping, and road improvement to improve health and economical welfare of the local people.