

**MINISTRY OF ENVIROMENT AND TOURISM**  
Directorate of Forestry

**FOREST MANAGEMENT PLAN FOR THE OSHAAMPULA  
COMMUNITY FOREST**

Kaambu N. T, Mwanyangapo M, Banda J, Banda P, Osub M.D

**Ongwediva, March 2003**

## TABLE OF CONTENTS

Executive summary .....	3
1. Introduction .....	4
2. Ownership and the management of the area .....	4
3. General description of the area .....	5
3.1 Location .....	5
3.2 Physiography (climate, soils).....	5
3.2.1 Soil.....	5
3.2.2 Rainfall .....	6
3.2.3 Temperature.....	6
4. Forest resources.....	7
4.1 Inventory results .....	7
4.2 Trees .....	7
4.2.1 Live trees .....	7
4.2.2 Dead trees .....	8
4.2.3 Regeneration of trees and shrub layer.....	9
5. Wildlife .....	9
6. Current utilization of forest resources.....	9
7. Forest management objectives .....	10
8. Sustained yield estimates for woody forest resources .....	11
9. Management Approach .....	12
9.1 Grazing .....	12
9.2 Firewood extraction.....	12
9.3 Woodcarvings .....	12
9.4 Tree planting/regeneration.....	12
9.5 Silvicultural practices .....	13
9.6 Fire management .....	13
10. Expected revenue .....	13
11. Harvesting plan.....	13
12. Selection of trees .....	13
13. Implementation of management plan .....	14
14. Collaboration.....	14
15. Monitoring .....	15
Reference .....	15
Annexes.....	<b>Error! Bookmark not defined.</b>

## FIGURES

Figure 1. Map showing the location of Oshaampula Community Forest .....	5
Figure 2. Total annual rainfall for Ondangwa (Source: Namibia Meteorological Service, 2003) .....	6
Figure 3. Diameter distribution of stems of the four most frequent tree species.....	8

## TABLES

Table 1. Diameter distribution of stems by species, total nr of trees .....	7
Table 2. Calculation of allowable cut of <i>Combretum collinum</i> .....	11
Table 3. Calculation of allowable cut of <i>Terminalia sericea</i> .....	11
Table 4. Calculation of allowable cut of <i>Burkea Africana</i> .....	11
Table 5. Proposed management prescriptions .....	16

## Executive summary

The Oshaampula Community Forest is located in the eastern part of the Ondonga Traditional Authority in Oshikoto Region. The size of the forest is 1070ha. The idea is to reserve Oshaampula Forest as a community forest. This idea has originated from the Ondonga traditional leader's workshop held at Punyu Hotel in Oshikoto region on the 14<sup>th</sup> of January 1998.

The Directorate of forestry began working in Oshaampula community in early 1998. Forestry extension officers were involved in several community mobilization (campaigns) in order to implement the proposal to reserve the forest as a community forest.

Community representatives, known as Forest Management Committee (FMC) were elected and offered training in community organization. However the committee members did not have a clear direction concerning their responsibilities due to the non-existence of a community forest constitution to guide the committee. It was against this background that an executive committee comprising of members from all the three villages involved was formed.

The inventory covered only 719 ha of the total area. 18 species were identified during inventory with a total number of 218-stem ha<sup>-1</sup>. The most frequent species is *Combretum collinum* with 104 stems ha<sup>-1</sup>, *Terminalia sericea* with 50 and *Dichrostachys cinerea* with 13 stems ha<sup>-1</sup>, and *Burkea Africana* 8 stems ha<sup>-1</sup>.

The volume of all tree species is 21 m<sup>3</sup> per ha. *Combretum* has got the highest volume of 7.3 m<sup>3</sup> per ha. The next highest volume is with *Burkea* and *Terminalia*, 5.6 and 3.1 m<sup>3</sup> per ha respectively. The total area volume is 148,000 m<sup>3</sup>.

Only three tree species can sustainably be harvested which are *Burkea Africana*, *Combretum collinum*, *Terminalia sericea*. There is a potential to harvest 2500 stems per annum. The estimate for current uses in the area is about 1,800 stems per year. In total the community can consumed about 540 tones of fuel wood per annum. It is estimated that about 3900 dead trees would be harvested for fuel wood annually.

There is about four institutions collaborating in the community forest area such as, Ministry of Local Government and Housing, Ministry of Agriculture, Water and Rural Development, Ministry of Women and Children Affairs, and Ministry of Environment and Tourism.

The management plan will have a planning horizon of 10 years that will enable to better respond to any changes that might affect the sustainability of their plans.

The forest management committee will implement the management plan and DoF will only play advisory role during this process.

## **1. Introduction**

The Oshaampula community forest was identified with the assistance of the Ondonga Traditional Authority in January 1998. The Ondonga Traditional Authority selected this area as a community grazing area and that vegetation will be maintained and not for settlement purposes. Oshaampula community falls under the jurisdiction of the Ondonga Traditional Authority. This is in line with the Forest bill of 1998.

Oshaampula Community Forest belongs to the people living in and around the Community Forest area. There are three villages namely; Oshaampula, 73; Omahiya, 37; and Egolo, 32 homesteads. In each village there is an average of 8 persons per homestead.

The management period is from March 2003 to March 2011. The management plan will have a relatively short planning horizon (2 years) to enable community to better respond to any changes. The Forest Management Committee for the Community Forest will monitor the progress.

The following institutions are engaged in different activities in and around the Oshaampula community forest: Ministry of Local Government and Housing, through the Councilor for Okankolo Constituency for facilitation role in the general development of the area. Ministry of Agriculture, Water and Rural Development, through Onyuulaye and Onayena Rural Development Centre, provides extension services to the Oshaampula community. Ministry of Women and Children Affairs, through the Ondangwa Community Development Center, supporting community projects such as kindergarten within the community forest area.

The participatory resource assessment was conducted in the Oshaampula community forest area in April 2001. In July 2002, forest inventory of 719 ha out of 1070 ha carried out at Oshaampula Community Forest.

The Directorate of Forestry will give technical advice on the implementation of the management plan.

## **2. Ownership and the management of the area**

Oshaampula Community Forest belongs to the people living in and around the Community Forest area. There are three villages namely; Oshaampula, 73; Omahiya, 37; and Egolo, 32 homesteads. In each village there is an average of 8 persons per homestead.

The Forest Management Committee consists of 12 members composed of 5 women and seven men; Chairperson and Deputy, Secretary and Deputy, Treasurer and deputy, 6 advisors. There is sub-committee in each of the three villages to take care of other

projects that are undertaken within the community forest such as selling of firewood and carving.

### 3. General description of the area

#### 3.1 Location

Oshaampula Community Forest is located 17°57'38" S and 16°32'55" E, 15 km east of Okankolo development Centre in Oshikoto Region.

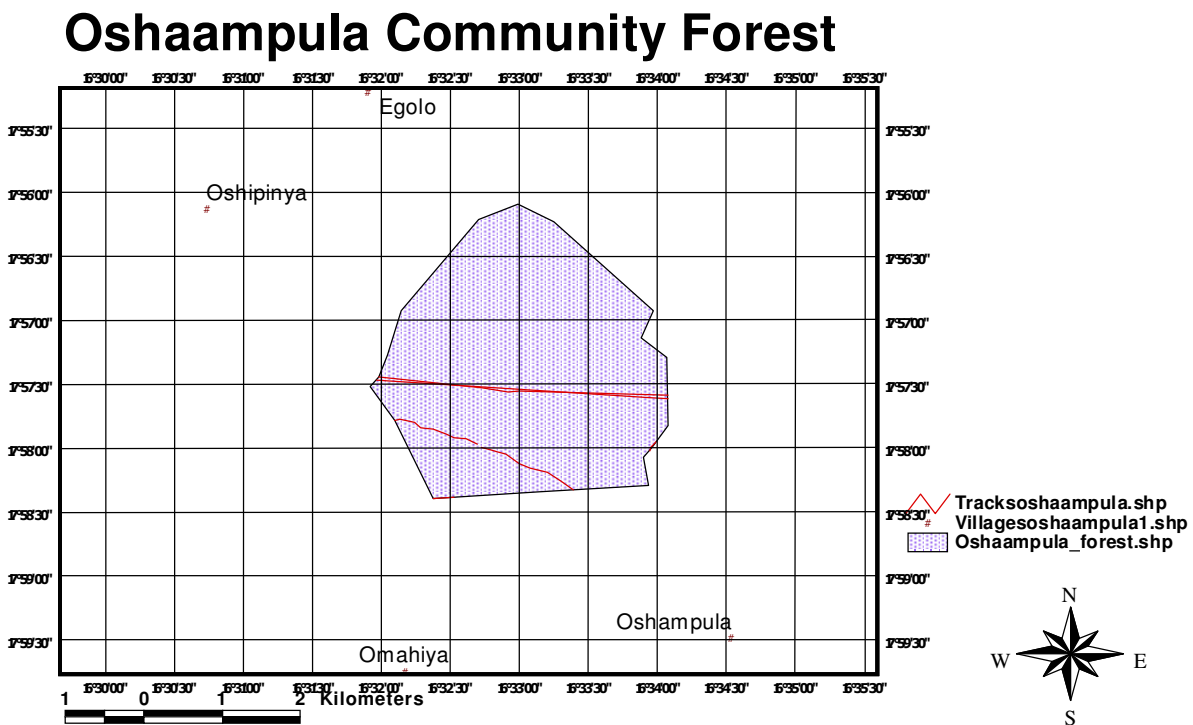


Figure 1. Map showing the location of Oshaampula Community Forest

#### 3.2 Physiography (climate, soils)

##### 3.2.1 Soil

In general Oshaampula Community Forest is a slightly elevated terrace with an oshana to its west to northwest, and a number of clay pans and oondombe. Deep Kalahari sands dominate the area. The soils in the scattered clay pans, is interdune valleys and fossil drainage channels with clay sands and therefore favoured for crop production The

oshanas, clay pans and oondombe usually start filling with rainwater in December, and the oshanas usually are completely dry by July-August.

### 3.2.2 Rainfall

An average rainfall is about 390 mm per annum [see figure 2).

North central Namibia has two seasons: the dry season lasting from May to October; and 'rainy' season with occasional rainfall between November and April.

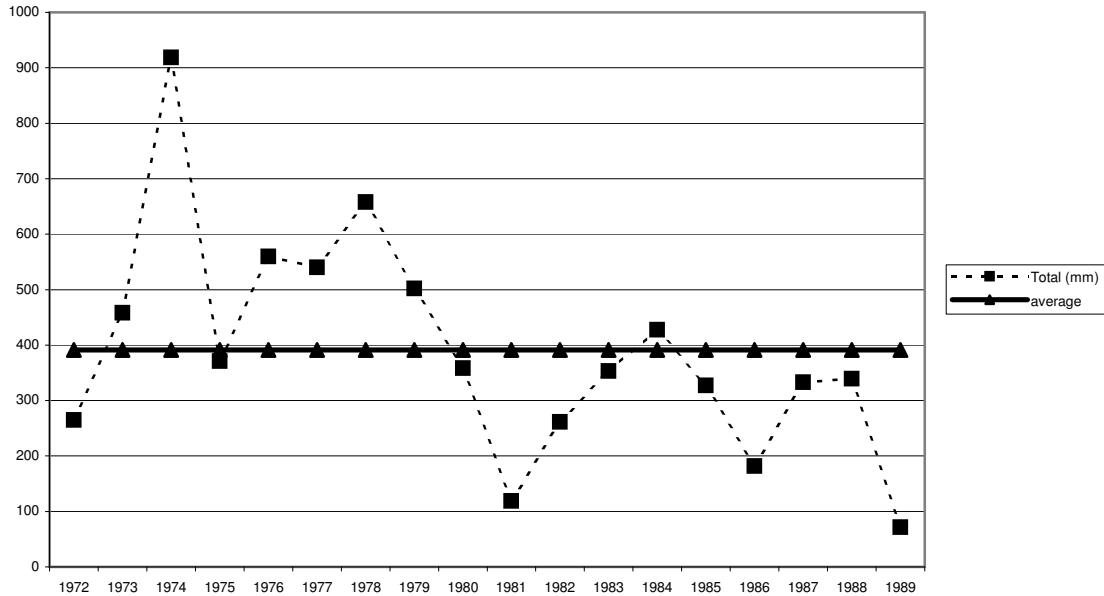


Figure 2. Total annual rainfall for Ondangwa (Source: Namibia Meteorological Service, 2003)

The average rainfall sitting around 400 mm per year. After 1990 the total annual rainfall is below the average (See fig.2).

### 3.2.3 Temperature

The monthly mean temperature at Ondangwa ranges from 26°C in November to 16°C in July. The coolest period is July to August with night temperatures as low as 7°C and the day temperatures is as high as 27°C or more. Frosts is common. The hottest period is from October to December, and maximum day temperature may reach 40°C. Evaporation is very high throughout the year but is extreme during the months of the first rains (Namibia Meteorological Service, 2003).

## 4. Forest resources

### 4.1 Inventory results

#### 4.2 Trees

The inventory covered only 719 ha of the total area. A number of 18 species were identified during inventory with a total number of 218-stem ha<sup>-1</sup>. The most frequent species is *Combretum collinum* with 104 stems ha<sup>-1</sup>, *Terminalia sericea* with 50 and *Dichrostachys cinerea (setulosa)* with 13 stems ha<sup>-1</sup>, and *Burkea // fricana* 8 stems ha<sup>-1</sup>. There are three species of which only one specimen could be recorded during inventory i.e. *Baphia massaiensis*, *Commiphora angolensis* and *Lonchocarpus nelsii*.

#### 4.2.1 Live trees

**Table 1. Diameter distribution of stems by species, total number of trees**

Table: Number of stems ha<sup>-1</sup> of all species in a diameter Class

<i>Species/ diameter class</i>	5_15	15-25	25-35	35-45	45-55	Total	% of total
<i>Acacia erioloba</i>	2					2	1.2
<i>Acacia fleck</i>	1					1	0.6
<i>Acacia hebeclada ( hebeclada)</i>	3					3	1.9
<i>Acacia karoo</i>	3					3	1.9
<i>Baphia massaienses</i>	1					1	0.6
<i>Burkea africana</i>	1	2	2	1		6	3.8
<i>Combretum collinum</i>	60	13	1			75	46.1
<i>Combretum psidioides (Psidioides)</i>	2	1				3	1.9
<i>Combretum zeyheri</i>	6	2				8	5.1
<i>Comiphora angolensis</i>	1					1	0.6
<i>Croton gratissimus</i>	5		1			5	3.1
<i>Dichrostachys cinerea ( setulosa)</i>	8	1	2			9	5.7
<i>Lonchocarpus nelsii</i>		1				1	0.6
<i>Ochna pulchra</i>	4		1			4	2.5
<i>Terminalia sericea</i>	31	5	1			36	22.9
<i>Ximenia // fricana// var americana</i>		1	5			1	0.6
<i>Ximenia coffra var microphylla</i>		1				1	0.6
<i>Ziziphus mucronata</i>		1	1			1	0.6
<b>Total</b>		130	24	4	2	157	101.3

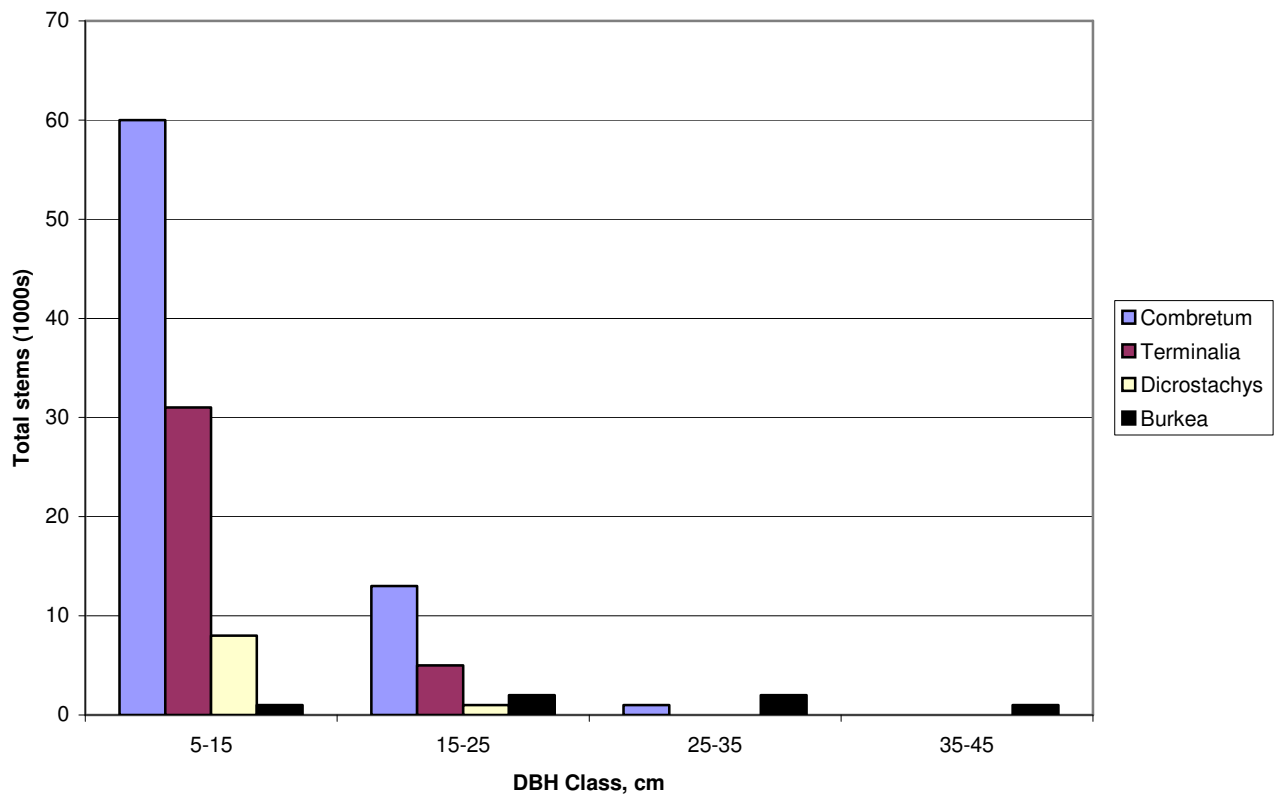


Figure 3. Diameter distribution of stems of the four most frequent tree species

The diameter distribution of the four most frequent species has been illustrated in figure 3. The diameter distribution of *Combretum collinum* is good, however there is a big number of small trees. About 80% of all *Combretum* stems are less than 15 cm at breast height. This gives a potential for harvesting some poles without risking the future of the forest. The distribution of *Terminalia* is not good, even though it has smaller trees than bigger ones. The distribution of *Dicrostachys* and *Burkea* has fewer stems than the former two tree species. The possibilities of utilization of trees in the Oshaampula Community Forest are mainly related to *Combretum collinum* and *Terminalia sericea*.

The volume of all tree species is 21 m<sup>3</sup> per ha. *Combretum collinum* has got the highest volume of 7.3 m<sup>3</sup> per ha. The next highest volume is with *Burkea* and *Terminalia*, 5.6 and 3.1 m<sup>3</sup> per ha respectively. The total area volume is 148,000 m<sup>3</sup>.

#### 4.2.2 Dead trees

The total number of dead trees for all species found in the inventory area were 55 trees per ha and a total of 39,643 trees in the whole area. The most frequent dead trees found are *Terminalia sericea* and *Combretum collinum*. The total dead tree volume is 3,720 m<sup>3</sup>. About 10% of the dead wood can be harvested annually, for a planning cycle of 10 years. This is equivalent to 3,900 dead trees be harvested annually.



### 4.2.3 Regeneration of trees and shrub layer

A total of 981 tree saplings per hectare were found in Oshaampula inventory area. The regeneration of the common big trees like *Combretum collinum* and *Terminalia sericea* is very good. 7 Shrub species were recorded in the inventory area. *Grewia retinervis* (79 shrubs per ha), *Mundulea sericea* (24 shrubs per ha), *Ozoroa schinzii* (24 shrubs per ha), *Rhus tenuinervis* (10 shrubs per ha) and *Vangueria infausta* (5 shrubs per ha).

## 5. Wildlife

The community has objectives to maintain bio-diversity in the area. However, the Oshaampula Community Forest has only few wild animals and birds. The most common animals are *Ictonyx striatus* (striped polecat), *Canis mesomelas* (Black-backed jackal), *Galerella sanguinea* (slender mongoose) steenbok, *Sylvicapra grimmia* (common duiker), *Xerus inauris* (ground squirrel), and *suricata suricata* (suricate) as well as birds such as red billed francolin, red-crested korhaanor and black-billed korhaan. Due to the fact that the area is very small about 1070 ha surrounded by a settlements (fields), whatever is done in the community forest area will not necessarily affect wildlife so much in the area. Therefore, it is proposed that the following management strategies be applied to enhance wildlife resources; installation of water points inside the forest, exclusion of illegal hunting and control of grazing inside the forest.

## 6. Current use of forest resources

According to the Oshaampula Community members, people living in the three villages (Oshaampula, Omahiya and Egolo) are not extracting woody resources from the proposed community forest area. There are 142 households in all three villages adjacent to the Oshaampula Community Forests. Dead wood branches used as fuel wood. According to the interviews conducted with the community, an average of about 104 poles per households is needed to renovate a house. Every fourth year a house is renovated, which translates into 36 houses. A conservative estimate is made that 2 poles can be obtained from a tree. This implies that about 3,700 poles (1850 trees) are used for renovation annually. The total poles used for renovation annually are below the sustained yield of 6500 poles predicted by Geldenhuys 2002. This sustained yield prediction was done on all tree species with significant number of stems. Hence, the number of poles will reduce if only preferred species for the community utilization is considered.

The utilization of fuelwood varies from season to season, and the quantity used is determined by the composition of wood. During summer one headload is used per day per household. Where, during winter each household uses two headloads of firewood per day. One headload consists of 17-20 sticks (Geldenhuys et al., 2002). The fuel wood preferred by local communities is from, *Terminalia prunoides*, *Dichrostachys cinerea*, and *Combretum collinum* for fuelwood.

A normal family (seven members) consumes one bundle of average 10.5 kg per day of fuel wood (Angula, 2000). This translates in 3800 kg per household per annum (142

households). Their annual consumption is 540 tones of fuel wood. The inventory results have given about 55 dead trees per hectare and a total of 39,643 dead trees in the inventory area (Kanime, 2002). It is difficult to predict sustained yield for fuel wood because annual deadwood biomass is difficult to determine accurately. Hence, is cautiously proposed that 10% of total dead trees being harvested for fuel wood annual for the planning cycle of 10 years. This will result in 3900 dead trees being harvesting for fuel wood annually.

The information on the quantities of non-woody forest products utilize by the communities is very patchy, though the communities use the resources year round. Therefore, no prediction was made on sustain yields for these products. However, fruits are normally collected for own consumption and income generation. Some of the fruit are used to make dry gin (Ombike). A variety of species used *Vangueria infausta*, *Ziziphus mucronata*, *Grewia flavescens* and many others (Geldenhuys et al., 2002).

Moreover, thatching grass is found mostly at water pans inside the forest area. The thatching grass is readily harvested from June onwards. The availability of thatching grass depends on the rainfall received.

It is increasingly an important issue to define the community forest area. Generally, community members do not utilize resources from the smaller core area (inventoried area). However, they are using resources from the larger area as whole. According to Geldenhuys (2002), communities collect forest resources (woody and non-woody) about one kilometer radius around them. Which means in most that it is outside the smaller core area? Thus, it is easy to sustainably manage this smaller core area than the larger area as whole. Therefore, it is very important that the DoF staff and Forest Management Committee to come together and address this issue, so that the larger area be managed sustainable as whole.

## **7. Forest management objectives**

In order to make a feasible plan for resource utilization, objectives for the management was defined. It was clear from the Oshaampula community that they aimed at developing a forest management plan that considers both wood and non-wood products and services. Therefore, the following specific objectives were set with consideration of desired benefits from the forest;

1. To sustainably manage and use forest for grazing of livestock.
2. To conserve trees and plants for medicinal purposes.
3. To protect the forest resources against wild fires.
4. To maintain the biological diversity in the forests.
5. To generate income for the community by selling wood and non-wood products.

## 8. Sustained yield estimates for woody forest resources

The calculation is based on the growth of the trees and the movement of stems from smaller diameter classes into bigger diameter classes. The main assumption in the calculation is that the diameter distribution during the ten years period of implementation of the plan will remain constant. This implies that the structure of forest could remain the same in the future too. A mortality rate of 10 % has been used in the calculation. In practice, a portion of these dead trees can be harvested too. However, in the following calculation this has not been taken into account.

According to the inventory report, there are three tree species, *Combretum collinum*, *Terminalia sericea* and *Burkea Africana*, which can be utilized for renovation of homesteads (according to the by-laws no new homesteads can be constructed) and firewood. The sustained yield of three species is indicated below.

Table 2. Calculation of sustainable yield for *Combretum collinum*

Diameter class	# of stems/ha	# of stems/ha after 10 years	Total # of trees in area	Annual allowable cut
15-25	18	28	7248	725
25-35	2	5	1927	193
<b>Total</b>				<b>918</b>

Table 2 shows allowable harvesting of *Combretum collinum*. The Estimates indicates that for *Combretum. Collinum* is 900 stems per year, harvested in both diameter class 15-25cm and 25-35cm. There are few trees in the diameter class above 35 cm, therefore harvesting should concentrate more on the smaller diameter class to maintain a diversity of age classes.

Table 3. Calculation of sustainable yield for *Terminalia sericea*

Diameter class	# of stems/ha	# of stems/ha after 10 years	Total # of trees in area	Annual allowable cut
5-15	44	46	1754	175
15-25	7	13	4285	429
<b>Total</b>				<b>604</b>

The calculation in table 3 results in annual harvesting of *Terminalia sericea* of 600 trees per year in both dbh classes.

Table 4. Calculation of sustainable yield for *Burkea Africana*

Diameter class	2002 # of stems/ha	2012 # of stems/ha after 10 years	Total # of trees in area	Annual allowable cut
5-15	2	16	10210	1021
35-45	2	2.3	244	24
<b>Total</b>				<b>1045</b>

Table 4 shows the allowable cut for *Burkea africana* 1045 stems per year for both diameter classes. There is potential to harvest 2500 stems per annum. The estimate for current use in the area is about 1,800 stems per year.

## **9. Management Approach**

### **9.1 Grazing**

Grazing is based on the availability of grass. Cattle for the community graze in the forest throughout the year. Outsiders have to ask permission from the headman to graze livestock in the forest from July to November. The cattle herders are not allowed to set up new cattle posts but live with other village members.

### **9.2 Firewood extraction**

The community has realized a potential to sell firewood, due to the abundance of dead wood in the forest. They intend to collect dead wood from the forest and sell, when ever markets are available. Village based committees were established to coordinate the collection and selling of firewood. This venture is well in progress, although the communities face a problem of transport and the availability of market. Firewood collection for sale should be managed to ensure sustainable production. If this includes live trees in rehabilitating areas of bush encroachment, it should be done in a manner that will sustain a regular supply over time. It will require zoning of potential areas for firewood collection (areas with *D. cinerea* and possibly *A. ataxacantha*) and to be managed as firewood production areas. The available area and the density of the plants would determine the harvesting rate and cycle.

### **9.3 Woodcarvings**

The community is embarking on wood carving project. This is a well-established income generating activity for the Oshaampula community including wooden spoons, pestles, mortars, case planks. They exhibit their products at Ongwediva Annual Trade Fair. The products are made of *Burkea africana*, *Acacia erioloba* and *Commiphora* species.

### **9.4 Tree planting/regeneration**

Tree planting promotion is done through homesteads, community woodlot, live fencing and orchards. The tree planting of seedlings is done at beginning of the rain season to enable the seedlings to become established before the end of the rainy season. The protection of planted trees should be rendered to avoid browsing animals and small rodents to destroy seedlings. The most of preferred species for planting are *Acacia nilotica*, *Acacia erioloba*, *Opuntia*, *Dichrostachys cinerea* and *Combretum africana*. Homestead tree planting will be given priority before planting out in the community forest.

## 9.5 Silvicultural practices

The forest management committee wants to closed-off some areas in the forest, which has some species such as *Terminalia sericea*, and *Burkea africana* that are coppicing. These will encourage the growth of these trees into mature trees from where poles and timber can be extracted for own use and sales. The community would like to apply selective harvesting of poles in the forest.

## 9.6 Fire management

The community's by-laws prohibit setting fires in the forest. The by-laws make provision for punishing anyone found culprit for lighting fires in the forest. All community members will participate in fires extinguishing whenever necessary. However, all mechanisms such as construction of cut lines and fire management committees establishment is considered thoroughly. These will be implemented as soon as the DoF staff rendered their logistical and technical advice to the community.

## 10. Expected revenue

The average price for a bundle of firewood, which weighs 20 kg is N\$5.00. Annually, it is estimated that 54000 kg of fuel wood (10% of own consumption) can be harvested for sale. This translated into 2700 bundles being harvested by all households annually and will result in the total annual revenue of N\$13,500.00. Whether selling of the poles is financially feasible, depends on the cost of labor required for collecting firewood and transporting it to the markets.

## 11. Harvesting plan

In order to propose harvesting in Oshaampula community forest, community needs to regulate yields throughout the forest area. The size of the area proposed for harvesting is 770 hectares. There is only one visible cut lines which goes through the community forest. Hence, it is difficult to divide the forest into blocks. Therefore, it is proposed that the forest committee members should see to it that the community members selectively cut, a given annual amount of poles in a radius of 1-2 kilometer from the homesteads. The aim is to keep the annual harvesting yield at a reasonably constant level.

## 12. Selection of trees

In practice, the selection of trees will differ according to diameter class and species. Some rule of thumb is given below to assist with the selection of trees.

### *Combretum collinum*

- No *combretum* trees with dbh less than 15 cm and greater than 35 cm should be cut (table 2).
- All sizes between 15 and 35 cm should be selectively harvested.
- The distance of 100 m should be kept between trees in diameter class 15-25 cm.

- Similarly, distance of 200 m should be kept between trees in diameter class 25-35 cm.

#### *Burkea africana*

- No *Burkea africana* trees with dbh less than 5 cm and greater than 45 cm should be cut (table 4).
- All sizes between 5 and 45 cm should be selectively harvested.
- The distance of 90 m should be kept between trees in diameter class 5-15 cm.
- Similarly, distance of 560 m should be kept between trees in diameter class 35-45 cm.

#### *Terminalia sericea*

- No *Terminalia sericea* trees with dbh less than 5 cm and greater than 25 cm should be cut (table 3).
- All sizes between 5 and 25 cm should be selectively harvested.
- The distance of 210 m should be kept between trees in diameter class 5-15 cm.
- Similarly, distance of 130 m should be kept between trees in diameter class 15-25 cm.

### **13. Implementation of management plan**

According to the discussion held with the communities from three villages namely Oshaampula, Egolo and Omahaia (17-18 December 2002) the community decided on who will have the responsibility to implement the management plan and when. After the discussion the community agreed on the following points:

- The Executive members and committee should have the responsibility to implement the management plan.
- The management plan will be implemented by March 2004, if is ready.
- The Directorate of Forestry staff to give technical assistance to the community in the implementation of the management plan.
- The harvesting of firewood and poles in the community forest to be monitored by members of FMC and assisted by the DoF staff to direct the community.
- The DoF staff should make sure that the FMCs and the communities who are responsible for the implementation of the management plan are well-equipped with all necessary skills which will ensure running smoothly.

### **14. Collaboration**

Oshaampula Community Forest Management Committee needs technical advice as well as other services from the Ongwediva District Office (ODO). They will require assistance in preparation of annual implementation plan until harvested products are marketed. However, the committee emphasized that DoF staff will only play advisory, facilitation

and supervisory role. The committee will be entirely responsible for the actual implementation of activities on the ground.

## **15. Monitoring**

The resource use from the community forest should be monitored closely. Each potential user must apply for the use of specific resources for specific products through the FMC. The amount allocated should be recorded as part of the permit system. The amounts harvested to be recorded by the user and information to be provided to the Forest Management Committee. The areas where the resources have been harvested should be indicated by zones. Also, monitoring would be carried out on any changes in the forest (illegal harvesting, damages by fires, wildfires, pests, etc.). This should be done by FMCs when patrolling the community forests.

## **16. Reference**

Angula, M (2000). Report on forest resources utilization in Oshaampula Community, Windhoek.

Geldenhuis, C (2002). Interim Management Plan for Oshaampula Community Forest, Windhoek.

Kanime, N (2002) Inventory Report for Ohepi, Oshaampula and Ekolola Forests. Directorate of Forestry, Windhoek.

Ministry of Environment and Tourism, Directorate of Forestry (1999) Forest Bill, Windhoek.

Ministry of Environment and Tourism, Directorate of Forestry (2001) Forest Act No.12, 2001, Windhoek.

Namibia Meteorological Services (2003). Rainfall data, Windhoek.

Otsu, M.D, Laamanen, R (2002). Forest Management Guidelines, Namibian-Finland Forest Programme, Windhoek.

Annex 1

Table 5. Proposed management prescriptions

	Activities					
	Firewood collection	Tree planting	Grazing	Income generating projects	Fire management	Fruit harvesting
Months						
<b>January</b>	Harvesting Searching for market Selling Administering finance	Nursery establishment Pot filling and sowing, transplanting, watering,	Grazing	Ploughing and sowing of Mahangu field Carving		
<b>February</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving Weeding		
<b>March</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving Weeding		
<b>April</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving		
<b>May</b>	Harvesting Searching for market Selling Administering finance	Seed collection Selling	Grazing	Carving		Harvesting and selling
<b>June</b>	Same as above	Watering	Grazing	Carving Harvesting of mahangu, Basket making		Harvesting and selling
<b>July</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving, threshing and winnowing, selling of Mahangu	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling	Harvesting and selling
<b>August</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving, selling of mahangu, Stove making	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling Identify areas for clearing cut lines Training	Harvesting and selling



					Formulation of FMU, Construction of cut lines, patrolling	
<b>September</b>	Same as above	Watering	Grazing	Carving, selling mahangu, stove making	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling	Harvesting and selling
<b>October</b>	Harvesting Searching for market Selling Administering finance	Watering Planting in homestead, live fencing	Grazing	Carving, selling	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling	Harvesting and selling
<b>November</b>	Harvesting Searching for market Selling Administering finance	Watering	Grazing	Carving, selling	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling	Harvesting and selling
<b>December</b>		Watering	Grazing	Carving, selling	Identify areas for clearing cut lines Training Formulation of FMU, Construction of cut lines, patrolling	Harvesting and selling