

Caprivi State Forest - The forest resource (From Forest Inventory)

The total tree volume in the State Forest is 4.86 million cubic meters. *Baikiaea plurijuga* dominates, 2/3 of the total tree volume comes from this species. The average tree volume per hectare is 33.3 m³. The tree volumes varies considerably between the different vegetation types.

Comparable figures for other areas inventoried so far are: Uukwaludhi Community Forest 6.31 m³/ha; 21.4 m³/ha for Caprivi Region, 17.8 m³/ha in West Tsumkwe; and 4.2 m³/ha for "East and South Tsumkwe, Otjinene and Okakarara" area. The Caprivi State Forest, therefore, has the highest average tree volume per hectare of all areas so far inventoried.

Baikiaea dominated woodlands under similar conditions (rainfall, soils) in the Chobe Forest Reserve in Botswana have a higher average volume, on average 49 m³/ha. This indicates that there is a potential for higher volumes also in the Caprivi State Forest.

The diameter distribution of *Baikiaea plurijuga* is good, with trees in all diameter classes and the bulk in the smaller classes. The situation is the same for *Burkea africana*, *Combretum collinum*, *Terminalia sericea* and *Lonchocarpus nelsii*. *Pterocarpus angolensis* has very few stems in the lower diameter classes, hence the distribution is not good from a management point of view. The same is the situation for *Guibourtia coleosperma*.

The following can be concluded on the economic utilisation of the Caprivi State Forest for timber in a short term perspective:

- ◆ *Baikiaea plurijuga*, *Burkea africana*, *Pterocarpus angolensis* and *Guibourtia coleosperma* are species found in the State Forest that are utilised by the wood carving, furniture and construction industry and hence have a financial value as timber trees.
- ◆ *Baikiaea plurijuga* is the only species that is feasible to be harvested at the moment. But also here the financial benefits are rather small. The size of the State Forest, and the fact that the timber trees are scattered all over makes the logging time consuming and costly. There is about 1/2 million *Baikiaea* trees with DBH more than 45 cm. This gives an average saw log volume of 2.69 m³/ha, which is about 0.8 m³/ha of sawn timber.
- ◆ The potential for economic utilisation of *Pterocarpus angolensis* is very limited. The trees are few and very scattered. At the moment there is on average one harvestable (DBH>45 cm) *Pterocarpus angolensis* tree on every 3 hectares.
- ◆ The price for sawn timber of *Pterocarpus angolensis* was in September 1999 N\$6160 in Windhoek. There was no current price for *Baikiaea plurijuga*, since sawn timber was not available, the price in 1995 was N\$2200. No other indigenous species are sold as sawn timber in Windhoek. According to a carpenter interviewed, the indigenous species would most probably be utilised if they were available.

From a management perspective the following can be concluded:

- ◆ The diameter distribution for *Baikiaea plurijuga* and *Burkea africana* are satisfactory, hence the proper management of smaller trees will enable harvesting in the future.
- ◆ There are few *Pterocarpus angolensis* and *Guibourtia coleosperma* stems in the smaller diameter classes. Hence, even a proper management of the now existing smaller trees will not considerably increase the harvesting possibilities in the future.

The regeneration

There is a considerable number of seedlings in the shrub layer, on average 3573 seedlings/ha. One third of the seedlings are from species also occurring as trees in the State Forest, and therefore have the potential to grow into trees in the future. *Baikea plurijuga*, *Combretum collinum* and *Terminalia sericea* have quite a good regeneration. In fact, these species count for 69% of the seedlings from species that grow into trees. Hence, these species are going to be the most common species in the tree layer in the State Forest also in the future.

The regeneration of *Pterocarpus angolensis*, *Burkea africana* and *Guibourtia coleosperma* is not good. If nothing is done to ensure the regeneration of these species, their future looks bleak in the Caprivi State Forest.

The following can be concluded on the management options for the regeneration:

- ◆ The status of the regeneration is encouraging in that if it is well managed it will contribute to the continued existence of the forest/woodlands in the Caprivi State Forest.
- ◆ If the management is built on the existing seedlings, the economic benefit from the State Forest is going to be concentrated to *Baikea plurijuga*, *Combretum collinum* and *Terminalia sericea* in the future. Since there is going to be very few *Pterocarpus angolensis*, *Burkea africana* and *Guibourtia coleosperma* trees, the economic benefits from these species is going to be limited.
- ◆ If the enhancement of the regeneration of other species is a part of the management, the future species composition in the State Forest can be decided through management decisions.

Damages on the woody vegetation

The most common damage to the woody vegetation is fire. The stand level classification indicates that, on 75% of the area there are visible signs of damages to trees caused by fires. Although the woody vegetation on a big part of the State Forest show signs of fire damage, surprisingly few trees are damaged, and the damage is mild or moderate.

However, it is clear that fire is the most common damage to the trees. Hence, there is need for concerted effort to protect the forest resources from uncontrolled wild fires. Concerted planning and action in fire control and management to save the woodlands from further degradation are therefore required. The endeavour should involve local communities to ensure long term success.

Human influence

There are very few signs of cutting in the Caprivi State Forest. Only on 4751 Ha (3% of the area) could such signs be observed. Also signs of utilisation of the area for agricultural purposes, in this case grazing, were few. Only on 2376 (1.6% of the area) could grazing be observed. Hence, except for the frequent fires, the human influence on the Caprivi State Forest is very limited.