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**THE PROCEEDINGS OF  
THE MAPUTO WORKSHOP  
TOWARDS CONSERVATION AND  
RESPONSIBLE USE OF**

*Dalbergia melanoxylon*

**6-9 November 1995**

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## 8. Status of *Dalbergia melanoxylon*

### 8.1 Presentation from S. Oldfield (WCMC) – An overview of the status and distribution of *Dalbergia melanoxylon*

This overview paper takes the information in the CITES proposal to list *Dalbergia melanoxylon* on Appendix II of the Convention as its basis. Supplementary information has been added from the analyses of proposals to amend the Appendices of CITES (IUCN/SSC and TRAFFIC, 1994). Recent publications and unpublished reports have also been consulted notably the theses prepared by David Beale and Hazel Sharman at the University of Edinburgh in the UK. Further information has also been culled from files of the Protected Areas Data Unit and the Species Unit at the World Conservation Monitoring Centre (WCMC). The overview information presented remains fragmented and is mainly derived from literature and anecdotal sources. The major-need is to hear from the people with real expertise and first hand knowledge of this globally important species.

#### Distribution

*Dalbergia melanoxylon* has a widespread distribution in the drier parts of tropical Africa. It occurs naturally in at least 26 countries south of the Sahara. According to Lock (1986) indigenous populations are recorded in: Angola; Botswana; Central African Republic; Chad; Cote d'Ivoire; Ethiopia; Burkina Faso; Kenya; Malawi; Mozambique; Nigeria; Senegal; South Africa; Sudan; United Republic of Tanzania; Uganda; Zaire; Zimbabwe. The species is also reported to occur in Cameroon, Benin, Eritrea, Ghana, Guinea, Mali, Togo and Zambia. Outside Africa, *Dalbergia melanoxylon* has also become naturalized in parts of India and possibly elsewhere in Asia.

Table 1 summarizes information on the distribution of *Dalbergia melanoxylon* within a number of its range countries. The table is currently incomplete, with information particularly patchy for the West African region. This mainly reflects the availability of information in the literature and from limited enquiries to experts in the UK. There are, for example, very few West African herbarium records for the species at the Oxford Forestry Institute (Hawthorne, in litt. 1995) and the survey of herbarium records undertaken at Kew (see below) did not provide much data for the region. No doubt we can add to this table substantially during the meeting or in follow-up enquiries to local experts.

Table 1. Distribution within African countries

Country	Distribution
Angola	Recorded from Cuando in Cubango
Botswana	Sparsely distributed in NE along the Zimbabwean border
Burkina Faso	Common in the S. Sahel steppe area and also occurs in N. Sahel valleys
Kenya	Primarily occurs along the coast and in the dry southern and northern provinces
Malawi	Widely distributed
Mozambique	Recorded from the Rio Save to the north of the country
Nigeria	Occurs in the north with records from Kano, Bauchi, Bornu and Adamawa
South Africa	Common from the Mozambique border through the eastern Transvaal
Sudan	Occurs in patches along the savanna belt which extends from the Blue Nile Province, South Kordofan Province northwards to the foot of the Jebel Marra
Tanzania	Originally mainly in the central thorn-brush country, now reported as most frequent in mixed deciduous forests and savannas of the coastal region. Found in Kagera, Mwanza, Shinyanga, Mara, Arusha, Kilimanjaro, Usambara Mts, Tabora, Kigoma, Rukwa, Singida, Dodoma, Morogoro, Ruvuma, Mtwara, Lindi.
Uganda	Found in Bunyoro, West Nile, Madi, Acholi, Karamoja and Mbale Districts; limited to areas of low elevation, below 1000 m.
Zaire	Known from Kasai, Lake Albert and Haut-Katanga
Zambia	Occurs in the southern and eastern half of the country, comprising Western, Southern and Eastern Provinces, the southern half of Central Province and parts of Mpika, Chinsali and Isoka districts
Zimbabwe	Widespread and common at low altitudes

Sources: CITES proposal; IUCN/SSC and TRAFFIC, 1994; Fontés and Guinko, 1995

Detailed distribution data for *Dalbergia melanoxylon* does not appear to be currently available. Forest inventories have been carried out within the range of the species, for example, within Tanzania and Zimbabwe, but no inventories specifically for *Dalbergia melanoxylon* are known.

Sharman (1995) compiled data from herbarium specimens at Royal Botanic Gardens, Kew, UK; National Museums of Kenya and the Botany Department of the University of Dar es Salaam, Tanzania and has compiled maps based on the geographical information on the specimen sheets. It is interesting to note that only six out of over 230 herbarium specimens recorded gave geographical co-ordinates. A copy of the data has been given to WCMC and it is hoped that we can supplement the data and develop a comprehensive range map for the species using GIS.

## Habitat

*Dalbergia melanoxylon* occurs in a range of woodland habitats throughout Africa including deciduous savannah woodlands, wooded grassland and bushland. In West Africa, *Dalbergia melanoxylon* occurs in savannah vegetation of the Sudan zone, which has an affinity with the Miombo and Mopane savannas of Southern Africa.

The mean minimum temperature in its native range is 18°C and the maximum 35°C with no frost. Annual rainfall averages 700–1200 mm, often distributed on a bimodal pattern of 3–6 months. Soils vary from loamy sands to clayey vertisols ('black cotton soils'). The species is water- and light-demanding. It is more common near water and will not regenerate under heavy cover.

## Conservation status

Although *Dalbergia melanoxylon* has a wide distribution, there is general agreement that the species has declined significantly in abundance and that it is now scattered in occurrence. Recent concern about decline in populations of *Dalbergia melanoxylon* have focused on populations in eastern Africa. It was recorded as fairly plentiful in the United Republic of Tanzania in the 1930s (Grant, 1934), for example, but by the 1980s concern was noted about the rapid depletion of the species within the country and the limited regeneration (Hall, 1988). Populations in Tanzania have continued to be depleted by overexploitation and inadequate control of fires (Read, 1993). Estimates have suggested that no more than 20 years' supply remains in the country and loggers are having to travel up to 200 km to find large trees to harvest.

In Kenya, the species is reported to be declining due to habitat loss, in particular conversion of land to agriculture, and exploitation for the carving and furniture industries. The species was formerly common along the coast and in the Shimba Hills, but now is apparently becoming rare.

In Uganda, the species is still quite abundant in some areas and its status is considered to be stable. Nshubemuki (1994) points out, however, that fire and drought are affecting the ability of the species to regenerate and that few seedlings reach maturity. Although not currently overexploited in the country, harvest might increase due to demand from Kenya.

In the Sudan, *D. melanoxylon* is considered to be threatened and its range is retreating southwards due to exploitation for fuelwood, furniture, and carvings. The clay plains or grass savannah areas where the species occurs are being converted to zones for mechanized agriculture and other forms of habitat loss also threaten the species within the country.

There has been less documented concern about the decline of *D. melanoxylon* in west African countries but Geerling (1985) noted that in the savannah vegetation of the Sudan zone exploitation has resulted in the 'practical disappearance of trees of any size, although the species as such is not necessarily endangered'. Timber of the species is reported to be a major trade commodity in savannah areas of the region, particularly in

Senegal (Lapido, 1994) where felling is controlled by law (Loi No. 74-46, 18.7.74 Portant Code Forestier).

In southern Africa, the species is considered to be widespread and common in Zimbabwe, Malawi and South Africa. The wood is one of the most valuable ornament and turnery timbers within the country (Drummond, 1981) but exports to Europe, attempted about 10 years ago were not successful because it was found that the wood was not of the desired quality.

In South Africa, *Dalbergia melanoxylon* is common from the Mozambique border through the entire eastern Transvaal. In southern Africa, the natural range of the species has not decreased and the species is not considered to be overexploited in South Africa.

The main area of concern within southern Africa has apparently been in Mozambique. In the 1960s it was recorded as being rare due to intensive exploitation, whereas it had previously been abundant within the country (Gomes e Sousa, 1967). Recently *Dalbergia melanoxylon* has been included in a preliminary list of threatened plants of Mozambique. It has been suggested that to work further on this preliminary list and to apply categories of threat analysis of herbarium voucher specimens is required together with *in situ* observations and information from neighbouring countries (Bandeira *et al.*, 1994).

### The IUCN Categories of Threat

The IUCN categories of threat are the most widely used assessments of species conservation status. The categories of Endangered, Vulnerable, Rare, Indeterminate and Not Threatened were replaced in November 1994 by a new system with published criteria for determining the category of threat. The new threat categories are: Critically Endangered, Endangered and Vulnerable.

A first attempt to apply the new categories for *Dalbergia melanoxylon* was made by Sharman (1995). She proposes that the species should be classified as either 'Vulnerable' or at the very least 'Near Threatened'. One of the criterion for the category 'Vulnerable' is that the global population size has reduced by at least 20% over the last 10 years or three generations. As pointed out by Sharman (1995), there is no quantitative information on which to reach such a conclusion for mpingo but from the information that is available it is probable that there has been such a decline.

### Genetic erosion

There is widespread concern that *D. melanoxylon* is suffering from genetic erosion, particularly in East Africa. Experts contacted in the analysis of the CITES proposal (IUCN/SSC and TRAFFIC, 1994) assert that exploitation and habitat loss are resulting in alteration of population structure; there are fewer large trees, and in many populations only young and deformed trees remain. The concern is that, while as a whole the species is not threatened with extinction, the genetic diversity of the species is deteriorating.

### Presence of *Dalbergia melanoxyton* in protected areas

Based on current information, it is difficult to assess the extent to which populations of *Dalbergia melanoxyton* occur within protected areas. It would be useful to know where populations are safe in order to protect a comprehensive range of genetic variation. Relatively few protected areas in Africa appear to have comprehensive botanical inventories, at least from accessible information. The Protected Areas Data Unit at WCMC maintains information on protected areas world-wide. All the files for countries where *Dalbergia melanoxyton* occur were scanned recently to see where the species is recorded. Table 2 summarizes the results. One possible next step would be to produce maps of the protected-area distribution and compare this with the known range of the species to predict where populations are likely to have some form of protection.

Table 2. *Dalbergia melanoxylon* in protected areas

Country	Protected Area (PA)	Notes
Botswana	Chobe National Park	
Central African Rep.	Saint Floris National Park	
Chad	Reserve de faune de Ouadi Rime - Ouadi Achim	Area of PA – 8,000,000 ha. confined to wetter areas
Kenya	Tsavo National Park Meru National Park	
Malawi	Liwonde National Park Lengwe Game Reserve Vwaza Marsh Game Reserve Mwabvi Game Reserve Majete Game Reserve	
Mali	Bandiagara Escarpment Natural and Cultural Sanctuary	<i>Dalbergia melanoxylon</i> present in plain of Douentza.
South Africa	Kruger National Park	
Tanzania	Mikumi National Park Ruaha National Park  Selous Game Reserve Ngonogoro Conservation Area Lake Manyara National Park Mkomazi Game Reserve	found in <i>Brachystegia</i> zone: between 1100-1800 metres; often in poorly drained and swampy habitats.
Uganda	Kidepo National Park	
Zimbabwe	Hwange National Park	

Source: Protected Areas Data Unit files at WCMC: Sharman (1995).

### Research

Recent research on *Dalbergia melanoxylon* by conservation organizations has concentrated on collecting information on levels of trade and the impacts on wild populations.

The United Nations Environment Programme (UNEP) provided assistance to the Government of Tanzania through two short term missions in 1987 and 1988 which looked at the availability and use of mpingo resources.

The Fauna and Flora Preservation Society (now FFI) launched its Ebonies and Rosewoods Project in December 1993, to ensure the long-term survival of ecologically and economically viable populations of the timber species used in musical instrument manufacture. One of the first activities was to commission a study in Tanzania, 'to provide a baseline of information which can be used to gain an understanding of the problem of overexploitation of mpingo' (Platt and Evison, 1994).

FFI has also provided funding for research visits to Tanzania and Kenya by two post-graduate students of Edinburgh University, Hazel Sharman and David Beale.

The use and conservation implications of use of *Dalbergia melanoxyton* in Kenya have been researched by consultants to TRAFFIC International with financial support from the Kenya Indigenous Forest Conservation Programme. Information was collected mainly by interviews with timber users and individuals knowledgeable about the timber trade within the country.

As part of the conservation effort for *Dalbergia melanoxyton* silvicultural research is being undertaken in Tanzania. The country's 10-year National Forestry Research Master Plan identifies the species as a priority for improvement and *in situ* conservation. Research already carried out includes species and provenance trials, comparison of establishment techniques, assessment of planting material, improvement of tree growth and form, and studies of natural regeneration (Nshubemuki, 1994).

In general the short-term studies have highlighted the paucity of information on *Dalbergia melanoxyton* and the need for more extensive and intensive research. The range of research needs recently identified include:

- 1 Surveys and inventories to establish the distribution and abundance of *Dalbergia melanoxyton* in all range states (Sharman, 1995).
- 2 Assessment of conservation status at a global and national level.
- 3 Inventory of miombo woodland resources in Tanzania including extent and nature of commercial timber, non-timber products, environmental functions and local uses; and long-term study of biological productivity of forest resources (Beale, 1995).
- 4 Inventory of mpingo stocks within the country (Platt and Evison, 1994)
- 4 Establishment of research areas for investigation into silviculture and fire protection to facilitate regeneration and ensure sustainability.
- 5 Provenance trials and seed sources (Platt and Evison, 1994).
- 6 Increased germplasm collection, conservation and evaluation in West Africa (Ladipo, 1994).
- 7 Improved methods of wood use (Platt and Evison, 1994).

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