

## Inclusion of the genus *Dalbergia* in CITES Appendix II without annotation, with the exception of the species included in Appendix I

### Proponents: Argentina, Brazil, Guatemala and Kenya

**Summary:** *Dalbergia* is a genus of trees, shrubs and lianas with a pan-tropical distribution in Africa, Asia and Central and South America, ranging in habitat from tropical rainforests to seasonally dry tropical to subtropical humid and dry forest, woodland and wooded grassland. There are currently around 300 accepted names according to the Plant List but there is still substantial taxonomic uncertainty within the genus. Currently one species *Dalbergia nigra* from Brazil is in Appendix I, *D. cochinchinensis* from Southeast Asia, *D. granadillo*, *D. retusa*, and *D. stevensonii*, from Mexico and Central America, and all Malagasy species in the genus (ca. 70) are included in Appendix II. A number of Central American populations of various species are in Appendix III. Thirteen Mexican and Central American species are subject to a separate proposal (Proposal 54) for inclusion in Appendix II.

Some species produce high quality timber, often known as “rosewood”, which commands high prices in trade and is used in construction, cabinet work, marquetry, inlay, furniture construction, musical instrument manufacture, tools and carvings. The term rosewood is imprecise, and used differently in different contexts. Not all timbers characterised as rosewood are *Dalbergia* (the name is also variously applied to species in the genera *Jacaranda*, *Guibourtia* (the subject of Proposal 56) and *Machaerium*), and not all *Dalbergia* species produce rosewood. Some valued *Dalbergia* timber is known as ebony or “blackwood”.

Much of the current demand for rosewoods is associated with the demand in China for “Hongmu” furniture. However, not all Hongmu timber is necessarily rosewood. A national Hongmu standard (SAQSIQ 2000) of 33 species was issued in 2000 to identify those species whose density, texture and colour meet the requirements set in the Chinese National Hongmu Standard for legal marketing purposes (see Annex 1)<sup>1</sup>. Under the Hongmu standard *D. odorifera* is classified as “scented rosewood”. Fifteen other species of *Dalbergia* are included in the standard but none is classified as rosewood (all rosewoods other than *D. odorifera* in the standard are species of *Pterocarpus*). Eight Hongmu *Dalbergia* are classified as “blackwood”: *D. cultrata*; *D. fusca*; *D. latifolia*; *D. louvelii* (CITES Appendix II<sup>2</sup>); *D. melanoxylon*; *D. nigra* (Appendix I); *D. spruceana*; *D. stevensonii* (Appendix II). Seven are classified as “mahogany”: *D. bariensis*; *D. cearensis*; *D. cochinchinensis* (Appendix II); *D. frutescens*; *D. granadillo* (Appendix II); *D. retusa* (Appendix II); *D. oliveri*. There is also an Industrial Standard of Precious Dark Color Hardwood Furniture in China. This classifies an additional species of *Dalbergia* (*D. greveana* (Appendix II<sup>2</sup>)) as “Rosewood”.

Other *Dalbergia* species are also used for their hard wood. These include (but are not restricted to): Africa: some *Dalbergia* species from Madagascar; Latin America: *D. brasiliensis*, *D. cearensis*, *D. cubilquitzensis*, *D. cuscatlanica*, *D. decipularis*, *D. foliolosa*, *D. funera*, *D. glomerata*, *D. hortensis*, *D. miscolobium*, *D. spruceana*, *D. villosa*, *D. tucurensis*, *D. glabra*, *D. calycina*. Asia: *D. annamensis*, *D. cambodiana*, *D. mammosa*, *D. sissou*<sup>3</sup>, *D. tonkinensis*. Various lists of commercial timber species exist that include *Dalbergias* (see “A Working List of Commercial Timber Tree Species”<sup>4</sup> although note that some species mentioned in the SS and here are not included in this); not all these species necessarily produce timber that resembles that of species already listed in the CITES Appendices.

Some *Dalbergia* species are used for making musical instruments. In particular the African Blackwood *D. melanoxylon* is the most highly-favoured wood for clarinets and oboes. Other species known for their musical qualities include *D. cochinchinensis* (Appendix II), *D. glomerata*, *D. granadillo* (Appendix II), *D. palo-escrito*, *D. retusa* (Appendix II), *D. stevensonii* (Appendix II)<sup>5</sup>, *D. tucurensis* and a number of Malagasy species (Appendix II)<sup>6</sup>. Recorded export of *D. melanoxylon*, a species widespread in sub-Saharan Africa, takes place almost entirely from Mozambique and Tanzania. Demand for musical instrument manufacture has been estimated at 255m<sup>3</sup> per year of semi-processed billets, equivalent to perhaps 1500m<sup>3</sup> of roundwood.

Harvest of different species of *Dalbergia* and similar timbers appears to follow a distinctive pattern in which as the most favoured and accessible timber stocks in a particular area are depleted, attention turns to others. As an example, with the commercial extinction of *D. odorifera* in China and *Pterocarpus santalinus* in India, the trade in *D. cochinchinensis* reportedly grew rapidly and it became the most sought-after Hongmu species globally. As *D. cochinchinensis* has subsequently been depleted the main species now dominating the Hongmu trade in Southeast Asia are reported to be *D. oliveri*, *D. bariensis*, *P. macrocarpus* and *P. pedatus*<sup>7</sup>.

There is generally very little quantitative information on the impact of logging on populations of *Dalbergia* species. Knowledge of the status of many of them is very limited and often out-of-date. In the 1998 IUCN Threatened Trees of the World, the following species were identified as under threat from overexploitation: *D. annamensis*, *D. bariensis*, *D. cambodiana*, *D. mammosa*, *D. oliveri*, *D. latifolia*, *D. odorifera*, *D. tonkinensis*. Of these *D. bariensis*, *D. latifolia*, *D. odorifera* and *D. oliveri* are classified as Hongmu species.

*Dalbergia bariensis* is native to Cambodia; Lao People's Democratic Republic (PDR); Thailand; Viet Nam where it is said to be widely distributed and scattered. At the time of the IUCN assessment (1998) there was said to be a rapid decline in the number of large trees because of overexploitation<sup>8</sup>. Millet and Truong (2011) recorded *D. bariensis* in Tan Phu forest in southern Viet Nam but noted that it was rare, showed limited regeneration and was "close to extinction"<sup>9</sup>. *D. latifolia* occurs in India, Indonesia and Nepal. In the 1998 IUCN assessment the timber was said to be of high commercial value and wild subpopulations widely overexploited including from illegal felling. *D. odorifera* was reportedly only known in 1998 from stands of coppiced individuals on Hainan Island, China. *D. oliveri* has a restricted distribution in Myanmar, Thailand and Viet Nam. Myanmar reported the export of 9000 m<sup>3</sup> of sawnwood to ITTO between 2000 and 2003<sup>9</sup>.

Some species of *Dalbergia* are widely cultivated both within and outside their native range, occurring in plantations and used in agroforestry systems. Some, such as *D. latifolia* and *D. sissoo* have been regarded as invasive species outside their natural range<sup>10, 11</sup>. Some are shrubs or lianas with no international commercial use (e.g. *D. monetaria*<sup>12</sup>, *D. hostilis*).

Use and trade of non-timber producing *Dalbergia* has not been assessed for this analysis. There may be some species in trade where the products in trade do not resemble those of species already included in the Appendices or proposed as meeting the criteria for inclusion in Appendix II in their own right rather than as lookalike species. However, there are no indications of large-scale international trade in such products<sup>13</sup>.

Of the non-*Dalbergia* Hongmu species, *P. santalinus* is listed in Appendix II and *P. erinaceus* is the subject of Proposal 57 to be included in Appendix II.

The wood of some *Dalbergia* species has a characteristic colour and texture. Many species have the same wood anatomy<sup>14</sup> making identification by eye or using traditional anatomical methods only possible to genus level, if at all. However, in combination with chemical methods, such as mass spectrometry, DNA sequencing and profiling, near infrared spectroscopy and stable isotope analysis identification can consistently identify and distinguish between species<sup>15, 16, 17</sup>. Inexpensive and accessible tools are not available to enforcement officers at this time.

The intention of the proposal is to include all parts and derivatives of the species, live or dead and therefore no annotation is proposed for inclusion with the listing.

**Analysis:** The genus *Dalbergia* is a large and widespread one, comprising plants of many different forms. Some species produce high quality and sought-after timber, some of which is traded as "rosewood".

There is little available information on the status of, or impacts of harvest for trade on, non-CITES listed species of *Dalbergia* that produce rosewood, although there are indications of decline in some species, notably in Asia and Central and South America. There is insufficient readily available information to determine whether any of these meets the criteria for inclusion in Appendix II in Annex 2a of *Res. Conf. 9.24 (Rev. CoP16)*.

However, given the difficulty in distinguishing between different rosewood-producing species of *Dalbergia* in the principal form in which they are traded (timber) it would appear that such species would meet the criteria for inclusion in Appendix II in Annex 2b (lookalike criteria) owing to the resemblance of their timber in trade to that of species already listed in the Appendices. Determining which species should be treated as lookalikes may require some additional work; various lists of *Dalbergia* species timber in trade exist but these would need to be analysed as to which rosewoods resemble each other.

One species of African *Dalbergia* African Blackwood (*D. melanoxylon*) produces timber that is in trade principally in a form (semi-processed billets for the production of musical instruments) that is reasonably easily distinguished from other *Dalbergia* spp. in trade and other timber species included in the Appendices. There is insufficient information to determine whether this species meets the criteria for inclusion in Appendix II in Annex 2a of *Res. Conf. 9.24 (Rev. CoP16)*. It does not appear to meet the criteria in Annex 2b. No mainland African species of *Dalbergia* is known to produce rosewood that is in trade.

Many *Dalbergia* species are not known to be in trade, nor do they resemble species that are in trade. These do not meet the criteria for inclusion in Appendix II.

No annotation is proposed with this listing which would result in all parts and derivatives being included, if adopted. Current listings are annotated to include “Logs, sawn wood and veneer sheets” (#5) and plywood for those with annotation (#6). Some of those species which are currently listed are used for the manufacture of musical instruments, although musical instruments are excluded from the listings. Species that would be listed were this proposal adopted would include musical instruments where they are used for this purpose. A proposal to amend the annotation for *D. cochinchinensis* (Proposal 53) intends to widen the scope of products covered to include secondary processed products, particularly furniture as it appears that traders are crudely processing timber in the source country and then exporting it as furniture to circumvent the control. A genus level listing with no annotation would include un-processed, semi-processed and finished furniture.

## References:

Information not referenced in the Summary section is from the Supporting Statement.

- <sup>1</sup> Forest Trends (2014) China's Policies for Hongmu Import Surveillance & Control Zhang Yue [http://www.forest-trends.org/documents/files/doc\\_4368.pdf](http://www.forest-trends.org/documents/files/doc_4368.pdf) Viewed on 2<sup>nd</sup> July 2016.
- <sup>2</sup> Under the general Appendix II listing for Malagasy *Dalbergia* spp.
- <sup>3</sup> FAO (year unknown) *Dalbergia sissoo* Roxb <http://www.fao.org/ag/agp/AGPC/doc/qbase/data/pf000385.htm>. Viewed 2<sup>nd</sup> July 2016.
- <sup>4</sup> Mark, J., Newton, A.C., Oldfield, S. and Rivers, M. (2014) The International Timber Trade: A working list of commercial timber tree species. BGCI, Kew, UK. [http://www.bgci.org/files/Global\\_Trees\\_Campaign/Timber\\_list/TimberWorkingList\\_v2DImage.pdf](http://www.bgci.org/files/Global_Trees_Campaign/Timber_list/TimberWorkingList_v2DImage.pdf)
- <sup>5</sup> Global Trees Campaign (2016) <http://globaltrees.org/threatened-trees/tree-values/musical-instruments/> Viewed 2<sup>nd</sup> July 2016.
- <sup>6</sup> Jenkins, A., Bridgland, N., Hembery, R., Malessa, U., Hewitt, J. & Keong, C.H. (2012) Background Paper 1: Precious Woods: Exploitation of the Finest Timber. TRAFFIC. Chatman House Workshop. Tackling the Trade in Illegal Precious Woods. 23-24 April 2012, <http://www.traffic.org/non-traffic-papers/> Viewed on 2<sup>nd</sup> July 2016.
- <sup>7</sup> EIA (2016). The Hongmu Challenge: A briefing for the 66th meeting of the CITES Standing Committee, January 2016.
- <sup>8</sup> Oldfield, S., Lusty, C. & MacKinven, A. (1998) Threatened Trees of the World, IUCN/ WCMC, Cambridge.
- <sup>9</sup> UNEP-WCMC (2014) Non-CITES timber species from South Asia (Leguminosae) potentially warranting further protection. UNEP-WCMC, Cambridge, UK.
- <sup>10</sup> Global Invasive Species Database (GISD) (2016) Species profile: *Dalbergia sissoo*. <http://www.iucngisd.org/gisd/species.php?sc=1186> on 26-05-2016.
- <sup>11</sup> CABI (2016) Datasheet on *Dalbergia sissoo* <http://www.cabi.org/isc/datasheet/17808> Viewed on 2<sup>nd</sup> July 2016.
- <sup>12</sup> Acevedo-Rodríguez, P. (2005) Vines and Climbing Plants of Puerto Rico and the Virgin Islands. *Contributions from the United States National Herbarium* 51: 1-48.
- <sup>13</sup> Lowry, P. (2016) *In litt.* to IUCN/TRAFFIC Analyses Team, Cambridge, UK.
- <sup>14</sup> McClure, P., Chavarria, G.D. & Espinoza, E. (2015). Metabolic chemotypes of CITES protected *Dalbergia* timbers from Africa, Madagascar and Asia. *Rapid Commun. Mass Spectrom*: 29: 1-6.
- <sup>15</sup> CITES (2015) PC22 Doc. 17.6. Implementation of the Convention for *Dalbergia* spp.
- <sup>16</sup> Musah, R.A., Espinoza, E.O., Cody, R.B., Lesiak, A.D., Christensen, E.D., Moore, H.E., Maleknia, S. & Drijfhout, F.P. (2015) A High Throughput Ambient Mass Spectrometric Approach to Species Identification and Classification from Chemical Fingerprint Signatures. *Nature Scientific Reports*. 5:11520.
- <sup>17</sup> Yu, M., Zhang, H., Jin, Q., & Liu, S. (2013) Wood identification of *Dalbergia odorifera* T.Chen based on DNA barcoding sequences. *In* Identification of Timber Species and Origins Regional Workshop for Asia, Pacific and Oceania (20-21 Aug 2013, Beijing, China).

## Annex 1: 33 species listed in Chinese National Standard for Hongmu.

Category	Species
Red sandalwood	<i>Pterocarpus santalinus</i>
Rosewood	<i>Pterocarpus cambodianus</i> , <i>P. dalbergioides</i> , <i>P. erinaceus</i> , <i>P. indicus</i> , <i>P. macrocarpus</i> , <i>P. marsupium</i> , <i>P. pedatus</i>
Scented rosewood	<i>Dalbergia odorifera</i>
Blackwood	<i>Dalbergia cultrata</i> , <i>D. fusca</i> , <i>D. latifolia</i> , <i>D. louvelii</i> , <i>D. melanoxydon</i> , <i>D. nigra</i> , <i>D. spruceana</i> , <i>D. stevensonii</i>
Mahogany	<i>Dalbergia bariensis</i> , <i>D. cearensis</i> , <i>D. cochinchinensis</i> , <i>D. frutescens</i> , <i>D. granadillo</i> , <i>D. oliveri</i> , <i>D. retusa</i>
Ebene	<i>Diospyros ebenum</i> , <i>D. crassiflora</i> , <i>D. pilosanthera</i> , <i>D. poncei</i>
Ebony	<i>Diospyros celebica</i> , <i>D. philippensis</i>
Wenge	<i>Millettia laurentii</i> , <i>M. leucantha</i> , <i>Cassia siamea</i>