

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of the genus *Dalbergia* in CITES Appendix II with exception to the species included in Appendix I.

The UNEP-WCMC assessed the *Dalbergia* species of Latin America and concluded: "... all populations of *Dalbergia* spp. from South and Central America appear to meet the criteria for listing in CITES Appendix II" (UNEP-WCMC, 2015). Including the whole genus in Appendix II will be essential for the control of international trade by eliminating the arduous task of enforcement and customs officers of differentiating between the hundreds of *Dalbergia* species listed and not listed in CITES. The inclusion will help ensure that legal trade does not become a direct cause of the extinction of these highly threatened species and will help curb illegal trade.

Considering that CITES Appendix II must include all species, which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival, it is important to include the genus *Dalbergia* in CITES Appendix II.

- a) Resolution Conf. 9.24, Annex 2 a, Criterion A - "It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future".
- b) Resolution Conf. 9.24, Annex 2 a, Criterion B - "It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences".
- c) Resolution 9.24 (Rev. CoP15) Annex 2b Criterion A – "The specimens of the species in the form in which they are traded resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2 (a), or in Appendix I, so that enforcement officers who encounter specimens of CITES-listed species are unlikely to be able to distinguish between them".

Domestic and international experience has indicated that enforcement and customs officers who encountered specimens of *Dalbergia* products are unlikely to be able to reliably distinguish between the various species of *Dalbergia*.

B. Proponent

Guatemala,

C. Supporting statement

1. Taxonomy

- | | |
|------------|-----------------------------------|
| 1.1 Class: | Magnoliopsida |
| 1.2 Order: | Fabales |
| 1.3 Family | Leguminosae (Fabaceae) Juss. 1789 |

1.4 Genus, species or subspecies, including author and year: *Dalbergia* L.f. (Grandtner, 2005)¹.

1.5 Scientific synonyms: According to GRIN (2014) the following genera are accepted as synonyms for *Dalbergia*
Amerimnon P. Browne
Coroya Pierre
Ecastaphyllum P. Browne
Miscolobium Vogel
Triptolemea Mart.

1.6 Common names²: English: Rosewood, Palisander.
Spanish: Palo de Rosa, Rosul, Granadillo, Ébano, Corazón Bonito, Cocobolo, Palisandro.
French: Palissandre; bois de rose.

1.7 Code numbers:

2. Overview

Species of the genus *Dalbergia* belong to the family Leguminosae (Fabaceae) Juss.. The genus includes trees, shrubs and vines, approximately 250 species in the tropics (Mabberley, 2008) and 304 species worldwide (The Plant List, 2013) (see annex 1).

These species are in high demand in the international tropical hardwood trade for the manufacture of furniture. However, the wild populations of several species have experienced a major decline due to legal and illegal overexploitation. CITES regulates 61 species of *Dalbergia*: *D. abrahamii*, *D. andapensis*, *D. aurea*, *D. baronii*, *D. bathiei*, *D. bojeri*, *D. brachystachya*, *D. bracteolata*, *D. calycina*, *D. campenonii*, *D. capuronii*, *D. catipenonii*, *D. chapelieri*, *D. chlorocarpa*, *D. cochinchinensis*, *D. cubilquitzensis*, *D. darienensis*, *D. davidii*, *D. delphinensis*, *D. emirnensis*, *D. erubescens*, *D. gautieri*, *D. glaberrima*, *D. glaucocarpa*, *D. glomerata*, *D. granadillo*, *D. greveana*, *D. hildebrandtii*, *D. hirticalyx*, *D. humbertii*, *D. hutibertii*, *D. lemurica*, *D. louvelii*, *D. madagascariensis*, *D. malacophylla*, *D. manongarivensis*, *D. maritima*, *D. masoalensis*, *D. mollis*, *D. monticola*, *D. neoperrieri*, *D. nigra*, *D. normandii*, *D. occulta*, *D. orientalis*, *D. peltieri*, *D. pervillei*, *D. pseudobaronii*, *D. pseudoviguieri*, *D. purpurascens*, *D. retusa*, *D. stevensonii*, *D. suaresensis*, *D. trichocarpa*, *D. tricolor*, *D. tsaratananensis*, *D. tsiandalana*, *D. tucurensis*, *D. urschii*, *D. viguieri*, *D. xerophila*.

While some identification guides for a few *Dalbergia* species exist, distinction between and identification of individual species is very difficult for non-professionals and sometimes even for experts, making it a problem for enforcement and customs officers to comply correctly with inspection and identification of CITES listed *Dalbergia* tree and product shipments.

However, *Dalbergia* species at genus level can be distinguished from other “rosewood” timber genus.

The genus *Dalbergia* is native to the tropical regions of Central and South America, Africa, Madagascar and southern Asia. The distribution of this genus is fragmented and many species populations are in decline mainly due to the loss of forest coverage by human induced disturbances (e.g. non-sustainable agricultural practices, population growth, fires, legal and illegal logging). Several timber tree species of *Dalbergia* produce fine timbers of high economic value, generally known as “rosewood”, so renowned for its fragrances and colours, used in musical instruments and expensive furniture

¹ Taxonomic circumscription of the genus is subject to much debate.

² The genus *Dalbergia* has a larger number of trade and vernacular names, depending on the species and the region on which the species occur.

(e.g. *D. cochinchinensis*, *D. latifolia*, *D. melanoxydon*, *D. nigra*, *D. odorifera* and *D. sissoo*). However, the term rosewood has also been variously ascribed to the genera *Jacaranda*, *Guibourtia*, *Machaerium* and *Pterocarpus*.

Only the heartwood yield quality timber, but the trees have a low regeneration and they are slow in forming heartwood; even large logs often lose much of their volume when the valueless sapwood is removed. The cutting of exploitable individuals in the wild is the main cause of the absence of certain diameter classes and low density of populations.

Rosewood species are currently in high demand by consumers and logs and sawn wood are the main products in trade in most of the producing countries. As a result of an ongoing demand in the Asian market, rosewood has become seriously endangered by their abusive logging and destruction of their habitat which is leading to the decline of wild populations inside and outside protected areas.

This document suggests that the genus *Dalbergia* meets the criteria for listing in CITES Appendix II in compliance with Article II, paragraph 2(a) of the Convention and resolutions Conf. 9.24 (Rev. CoP16) Annex 2 a, Criteria A and B, and Annex 2 b Criterion A.

It is established or it is possible to deduct that regulation of trade in the species of the genus is required to ensure that the harvest of their specimens from the wild is not reducing the population to a level at which their survival might be threatened.

3. Species characteristics

3.1 Distribution

The genus *Dalbergia* has a pantropical distribution with high species diversity in Asia (ca. 119 species), in Africa (ca. 116 species) and in Central and South America (ca. 80 species) (Vatanparast *et al.*, 2013); according to Vaglica (2014), the genus *Dalbergia* is spread worldwide to 102 countries; (see figure 1 and Annex 2).

Global distribution of *Dalbergia* species

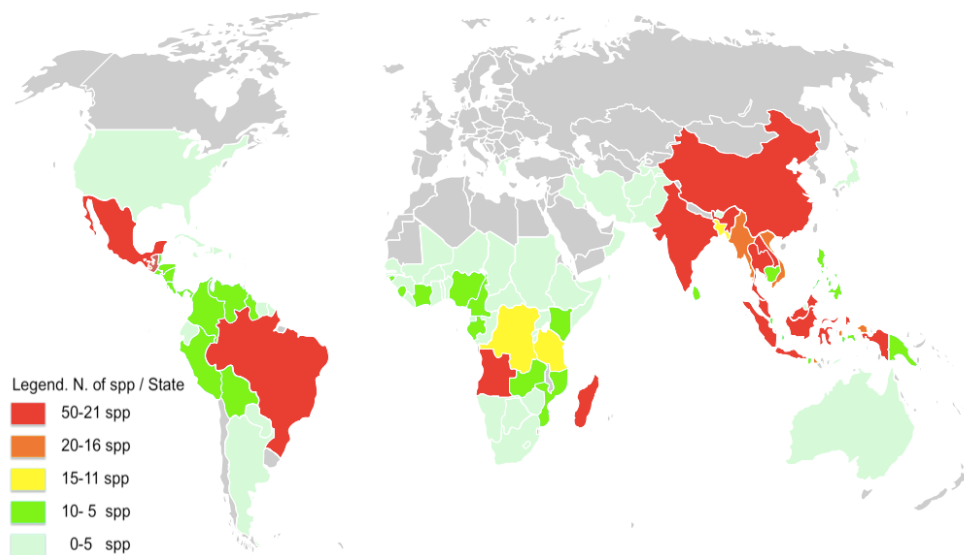


Figure 1. Global distribution of *Dalbergia* species (Source: Vaglica, 2014).

3.2 Habitat

The genus *Dalbergia* occurs in different types of ecosystems such as humid evergreen rainforest, semi deciduous rainforest, riparian forest, dry tropical forest, Miombo woodland, dry and subarid forests, savannahs, thickets and pastureland. Species are found in areas with completely different characteristics, such as totally flat areas with dry rocky sites, areas with possibility of flooding during the rainy season(s), fertile and deep sandy clay or calcareous soils along streams (Standley & Steyermark, 1946; Carvalho, 1997; Stevens *et al.*, 2001; Linares & Sousa, 2007; Lemmens, 2008). Species can be found at altitudes from sea level up to 1.700 m.

3.3 Biological characteristics

The plants of the genus *Dalbergia* are small to medium sized trees, shrubs, or woody climbers and lianas with alternate, imparipinnate and compound leaves (Saha *et al.*, 2013); stipules often small and falling early; leaflets are alternate, rarely sub opposite, and glabrous (Saha *et al.*, 2013).

Flowers small (2 to 20mm): corolla small, rarely fragrant, usually white, light yellow or purple, with light green spot at the center of the vexillum (FAUSAC- FNPV, 2015). Inflorescences are terminal or axillar, racemes or panicles, usually numerous flowered; bracts and bracteoles usually small, rarely persistent, sometimes scorpioid or corymbiform.

The fruit is a pod/legume oblong, ligulate, winged, elliptic, or strap-shaped, rarely half-moon-shaped (Carvalho, 1997; Shu, 2010). Fruits with intact seeds are wind-dispersed (Bawa & Webb, 1984). The fruit has in most of the species between 1 to 3 seeds, with some exceptions as *D. retusa* which has from one to five seeds in the fruit (FAUSAC-FNPV, 2015).

Trees bloom between December and July in Central America after 4 to 5 years, with a second flush in August and September (e.g. *D. retusa*), while in Madagascar trees bloom from September to March. *Dalbergia* trees are slow growing. It has been estimated that trees in Africa reach a size large enough to yield a fair amount of heartwood only after 70–100 years (Lemmens, 2008). In South East Asia, heartwood of trees reaches an average of 13 cm in diameter after 20 years (CITES COP 16 Prop. 60).

Honeybees, beetles and butterflies are the typical pollination agents for the genus that requires cross-pollination (Vasudeva & Sareen, 2009). Bumblebees and wasps are also frequent visitors of the flowers; aphids have been found damaging the flowers structures (FAUSAC-FNPV, 2015).

Information on the breeding system of the genus *Dalbergia* is not available; however, some aspects of the reproductive biology show common features: high levels of seed abortion have been observed in *D. retusa* (Bawa & Webb, 1984); pollen is dispersed by bees in *D. glomerata*, *D. stevensonii* and *D. retusa* (Frankie *et al.*, 2002), and seed dispersed by wind and water in *D. retusa* and *D. stevensonii* (Marín & Flores, 2003).

Natural regeneration of some species (such as *D. retusa*) is scarce, however saplings and juveniles are numerous in areas periodically exposed to fire (Madrigal, 1993; Marín & Flores, 2003). In Guatemala only *D. retusa* seeds germinate in areas affected by fire (FAUSAC-FNPV, 2015).

A very important and common regeneration strategy for *Dalbergia* species in tropical dry forests is sprouting or coppicing. The ability to coppice is used for management systems (including plantation) of some *Dalbergia* species. Examples for well coppicing species are *D. sissoo*, *D. stevensonii* and *D. cochinchinensis*.

3.4 Morphological characteristics of the wood

The wood of the genus *Dalbergia* has a texture and specific colours that makes it highly desirable: red in color (*D. tucurensis* and *D. glabra*), dark brown (*D. calycina*), brown to dark brown with reddish stripes (*D. stevensonii*) dark brown to purplish black (*D. melanoxydon*) (Lemmens, 2008; FAUSAC-FNPV, 2015). According to

Condit & Pérez (2002), the colour may change and darkens relatively quickly in the light to become ebony black. The trees that produce rosewood are also much alike: they are medium size, reaching 20-30 m tall, with irregular-shaped trunk, 1-2 m in diameter (NAS/NRC, 1979). Field studies of FAUSAC-FNPV (2015) showed in Guatemala that the biggest trunks reached 0.90 m in DBH (diameter at breast height) for *D. tucurensis*, 1.00 m in *D. calycina*, 0.77 m for *D. retusa* and 0.83 m for *D. stevensonii*.

Only the heartwood yield quality timber: it is very hard, heavy and strong. Thus in manufactured objects the wood is stable, durable and holds its shape. The heartwood is surrounded by clearly differentiated white sapwood; the sapwood, which is as dense as the heartwood, will vary in amount depending on the species, the age of the tree and the conditions of its habitat (FAUSAC-FNPV, 2015). The trees are slow in forming heartwood and even large logs often lose much of their volume when the valueless sapwood is removed (NAS/NRC, 1979). Wastage may be as high as 70 - 80% as only the finest straight grain logs are used in making bars for marimbas and xylophones (Kline, 1980). However, the amount of figure and contrasting colour varies widely from tree to tree.

3.5 Role of the species in its ecosystem

The *Dalbergia* flowers represent an important food source for honeybees, beetles, wasps, bumble bees, butterflies and other insects (Vasudeva & Sareen, 2009; FAUSAC-FNPV, 2015). *D. retusa* is a highly attractive bee plant in Costa Rica, where up to 60 species of bees visit the flowers (Frankie *et al.*, 2002). *D. stevensonii* in Belize is a dominant component of the southern forest types (Cho & Quiroz, 2005). Mature trees are sites of wasps and bees colonies; beehives have been found in the principal trunks (FAUSAC-FNPV, 2015). Ant colonies are frequently found associated with *D. stevensonii*, especially because the use of leaves as source of food (FAUSAC-FNPV, 2015). Leaves also represent a source food for mammals, such as *Potos flavus*; birds are often seen on the crown of the trees (FAUSAC-FNPV, 2015).

Numerous epiphytes such as orchids, bromeliads, fungi, lichens, ferns, aroids and peperomias live on the branches and in the main trunks of the trees (FAUSAC-FNPV, 2015). Climbing plants are also associated to the genus *Dalbergia*.

The roots of *Dalbergia* species form nodules in symbiosis with nitrogen-fixing soil bacteria (it has been demonstrated to have aescynomenoid type of root nodules): as a result of this nitrogen-fixing symbiosis, *Dalbergia* species play an important role in the natural forest ecosystem, enhancing soil fertility (Rasolomampianina *et al.*, 2005; Sprent, 2009) and this is a requirement for biodiversity preservation (Rasolomampianina *et al.*, 2005).

Logging is likely to disturb the habitat of all the species associates, with the related consequences of road and trail building to transport the logs (Newman, 2004). The protection of the species from further unsustainable logging would allow remaining trees to continue their ecological functions.

4. Status and trend

The IUCN Red List has assessed the genus *Dalbergia* and has classified 83 of the 304 known species of *Dalbergia* (IUCN, 2016): 1 species as **Critically Endangered** (*D. intibucana*); 29 species as **Endangered** (*D. abrahamii*, *D. andapensis*, *D. annamensis*, *D. bariensis*, *D. bathiei*, *D. bojeri*, *D. brachystachya*, *D. cambodiana*, *D. capuronii*, *D. congesta*, *D. davidii*, *D. delphinensis*, *D. erubescens*, *D. glaucocarpa*, *D. gloveri*, *D. hirticalyx*, *D. humberti*, *D. intibucana*, *D. louvelii*, *D. mammosa*, *D. maritima*, *D. normandii*, *D. oliveri*, *D. peishaensis*, *D. setifera*, *D. suarensis*, *D. tsaratanensis*, *D. tsiandalana*, *D. urschii*, *D. xerophila*); 26 species as **Vulnerable** (*D. acariiantha*, *D. aurea*, *D. balansae*, *D. baronii*, *D. catipenoni*, *D. chlorocarpa*, *D. cochichinensis*, *D. glaberrima*, *D. hildebrandtii*, *D. latifolia*, *D. lemurica*, *D. madagascarensis*, *D. monticola*, *D. neoperrieri*, *D. nigra*, *D. odorifera*, *D. orientalis*, *D. pseudobaronii*, *D. purpurascens*, *D. retusa*, *D. simposonii*, *D. tonkinensis*, *D. tricolor*, *D. vacciniifolia*, *D. viguieri*); 3 species as **Near Threatened** (*D. chapelieri*, *D. cultrate*, *D. eremicola*); 5 species as **Lower Risk/Near Threatened** (*D. bracteolata*, *D. emirnensis*, *D. greveana*, *D. mollis*, *D. pervillei*); 12 species as **Least Concern** (*D. arbutifolia*, *D. assamica*, *D. calycina*, *D. cana*, *D. louisii*, *D. monetaria*, *D. oligophylla*, *D. ovata*, *D. parviflora*, *D.*

peltieri, *D. reniformis*, *D. rimosa*); 1 species as **Lower Risk/Least Concern** (*D. thrichocarpa*); 6 species as **Data Deficient** (*D. boniana*, *D. ealaensis*, *D. entadoides*, *D. funera*, *D. menoeides*, *D. sambesiaca*).

4.1 Habitat trend

In Central America the typical habitat has been destroyed and is under continuing pressure particularly from increasing agriculture, cattle ranching, palm plantations, population growth and overexploitation (FAUSAC-FPNV, 2015). The tropical dry forests of Central America, the main habitat for *D. retusa*, have been subject to human influences such as hunting and modification of the vegetation cover for as long as 11,000 years (Murphy & Lugo, 1995). Less than 0.1% of the original dry forest has conservation status in Pacific Mesoamerica (Maass, 1995).

Deforestation has been commonly observed throughout the habitat range of *D. cochinchinensis*, the natural stands of the species are found scattered only in 30 protected areas thus the habitat is fragmented (CITES COP 16 Prop. 60). In Madagascar in addition to the damage caused by abusive logging of the *Dalbergia* species, the destruction of the habitat is worsened by various anthropological activities (slash-and-burn agriculture, extension of crop fields) (CITES COP 16 Prop. 63). In some areas, in eastern and southern Africa *Dalbergia melanoxylon* is found in the Miombo woodlands which has been highly degraded as a result of human use (Deweese *et al.*, 2011).

4.2 Population size

In Madagascar, the results obtained on the density and dendrometric features of some *Dalbergia* species show a wide variety of individuals ranging between 10 and 320 individuals per hectare. Moreover, the biovolume and the basal area are low. This indicates that most individuals are not yet exploitable (DBEV, 2010). In an inventory of *Dalbergia melanoxylon* in Nachingwea, southern Tanzania, the species accounted for 4% of tree stems of the sampling area (Opulukwa *et al.*, 2002). The density in southern Tanzania corresponds well with the density found in the two forest types in which *D. melanoxylon* occurs in Mozambique with 3% and 5% respectively (Jenkins *et al.*, 2002).

In Thailand, it was estimated that the country had just 80,000-100,000 *D. cochinchinensis* trees (approximately 63,500 m³) left in the forests in 2011. The population size of rosewood in Vietnam has been declining about 50-60% during the past 5-10 years (CITES COP 16 Prop. 60).

According to FAUSAC-FNPV (2015), in Guatemala a few (only four) populations of *D. stevensonii* have been found at the moment at the so called "Franja Transversal del Norte, FTN" (Alta Verapaz and Izabal), with a range from 44 to 800 trees (only 5% of trees have a diameter between 60 and 100 cm DBH). In the Department of Santa Rosa one population of *D. calycina* was identified, around 100 trees (18% of the trees have a diameter between 40 and 80 cm DBH) and scattered trees have been found in all the Department.

Dalbergia retusa was widely distributed at the coastal planes in the South Pacific regions of Guatemala (Standley & Steyermark, 1946). However, only one population of this species has been found in Suchitepéquez (48 trees), and few scattered trees have been found in Santa Rosa and Escuintla. This species shows a high percentage of trees (69%) in the lowest diameter classes range (0-20 cm DBH) indicating recent regeneration, and only 21 % belong to the range 20-40 cm DBH, confirming a high level of over exploitation in the country.

According to FAUSAC-FNPV (2015), in Guatemala, for *Dalbergia tucurensis* only scattered trees have been found in Alta Verapaz and Quiché, of which only 12 % of trees belong to the range of 60-100 cm DBH.

4.3 Population structure

In Madagascar the population structure of the *Dalbergia* species presents a disruption caused by the absence of certain diameter classes inside and outside the protected areas (CITES COP 16 Prop. 63). An inventory of *Dalbergia melanoxylon* in Nachingwea, southern Tanzania, revealed the patchy distribution of the species. The

highest amount of trees was found in the two smallest diameter classes up to 20 cm and the lowest in the class bigger than 40 cm, showing the influence of past harvests (Opulukwa *et al.*, 2002).

According to FAUSAC-FNPV (2015), only trees with a diameter class between 20 and 60 cm have been found of *Dalbergia spp.* in the wild, mainly localised in two regions of Guatemala: Alta Verapaz and Peten. The biovolume (m^3/ha) and the basal area (m^2/ha) are low, and this indicates that most individuals are not exploitable.

4.4 Population trends

Opulukwa *et al.* (2002) noted in a study on a region in southern Tanzania that it was now very hard to find *Dalbergia melanoxylon* trees of a harvestable size (commonly as from a DBH of 24 cm), with reductions in the number and volume of trees due to excessive exploitation. In Madagascar there is a decrease in the number of exploitable individuals in the production areas (CITES COP 16 Prop. 63).

In Thailand, it was estimated that the country had 300,000 natural stands in 2005, but greatly reduced to just 80,000-100,000 trees (approximately 63,500 m^3) in 2011. Evidence suggests that the species is threatened with extinction as EIA reported that a major Rosewood trader complained in April 2011 that “*the species is finished ... there are only about five years left in the trade.*” In Vietnam, the species has been exposed to high rates of exploitation of the prime timber (CITES COP 16 Prop. 60).

According to FAUSAC-FPNV (2015), the combination of forest cover loss and cutting has resulted in a decline of the populations of the species of the genus *Dalbergia* in Guatemala. The wild populations of *Dalbergia spp.* (namely *D. retusa*, *D. tucurensis* and *D. stevensonii*) are likely to be severely diminished as a result of heavy logging and land-change effects during the period 1991-2012.

4.5 Geographic trends

In general, the rate and extent of deforestation in the range States is very high. FAO (2005) reported that the annual rates of forest cover change between -0.4% (Colombia) and -4.6% (El Salvador) for the range States between 1990 and 2000. Between the period 2006-2010, in Guatemala there was a loss in forest covers of 500,210 hectares with a deforestation rate estimated at 1% per year. The main areas affected by deforestation for illegal logging were Verapaz, Petén, Quiché and the central regions Chimaltenango, Guatemala and Santa Rosa which includes the distribution areas of *D. stevensonii*, *D. retusa*, *D. tucurensis* and *D. calycina* (INAB, CONAP, UVG & URL, 2012).

Mexico lost an average of 274,450 ha or 0.39% per year between 1990 and 2010 or a 7.8% total loss of forest cover while in Brazil, the change in forest cover between 1990 and 2010 was a loss of 2,765,850 ha or 0.48% per year, in total a loss of 9.6% of the forest cover (Butler, 2016)

In Asia, deforestation has been commonly observed throughout the habitat range of *D. cochinchinensis*. In Thailand, the habitat area has been continuously reduced due to both deforestation for agriculture and illegal logging. The natural stands of the species are found scattered only in 30 protected areas of 557.76 km^2 . The habitat is thus fragmented (CITES COP 16 Prop. 60). In Malaysia, the change in forest cover between 1990 and 2010 was a loss of 96,000 ha or 0.43% per year, in total a loss of 8.6% of the forest cover (Butler, 2016).

In Africa, Miombo woodlands stretch across southern Africa in a belt from Angola and the Democratic Republic of Congo in the west to Mozambique in the east. In some areas, Miombo has been highly degraded as a result of human use (Deweese *et al.*, 2011). This is also the biome predominant in the countries (Mozambique and Tanzania) from where most of the *Dalbergia melanoxylon* timber is exported (Lemmens, 2008). In Madagascar in addition to the damage caused by abusive logging of the *Dalbergia* species, the destruction of the habitat is worsened by various anthropological activities (slash-and-burn agriculture, extension of crop fields) (CITES COP 16 Prop. 63).

5. Threats

The genus *Dalbergia* is known to be in decline as a result in the extraction of the species for its valuable timber. These woods have a long tradition of use in musical instruments, like marimbas and guitars, wood carvings and currently subject to high demand for luxury furniture trade (Lemmens, 2008, Jenkins *et al.*, 2012). Many species have become endangered or vulnerable due to the overexploitation for its valuable wood like *D. annamensis*, *D. bariensis*, *D. cambodiana*, *D. mammosa*, *D. oliveri* (Nghia, 1998), *D. latifolia* (Asian Regional Workshop, 1998), *D. odorifera* (WCMC, 1998), *D. tonkinensis* (Ban, 1998), as well as the 61 *Dalbergia* species listed in CITES.

The habitat of the genus in Guatemala is known to be affected by a range of threats, and the principal processes that affect forests are: shifting agriculture (palm oil - *Elaeis* spp., coffee - *Coffea* spp. and rubber plantations - *Hevea* spp.), forest fires, use of fuel wood and the illegal extraction and over-exploitation of species with high market values (both nationally and internationally), which represent up to the 95% of deforestation rate, and the extraction of timber by rural communities for local use (Vivero *et al.*, 2005; IARNA-URL, 2009).

In Mexico and Costa Rica, cattle farming and road construction are opening up areas and making accessible for logging sites where *D. calycina* occurs (Groom, 2012).

6. Utilization and trade

6.1 National utilization

Timber species of *Dalbergia* of South America (e.g. *D. brasiliensis*, *D. cearensis*, *D. cubilquitzensis*, *D. cuscatlanica*, *D. decipularis*, *D. foliolosa*, *D. funera*, *D. glomerata*, *D. hortensis*, *D. miscolobium*, *D. spruceana*, *D. villosa*) provide some of the most highly prized woods for the manufacture of fine furniture, marquetry and veneers, also used in cabinetwork, musical instruments and sculptures for local markets and handicrafts (Harris, 2004; Grandtner & Chrevette, 2013; ILDIS, 2014; INAB-SEINEF, 2015).

In Africa it is sometimes used for rafters and poles in construction, and for implements such as walking sticks, hammers, drumsticks, arrow tips, pestles, cups, plates and combs. The wood is also used for charcoal production and as firewood, although the flame is very hot and may damage cooking pots. In Senegal the stem and root bark is used in traditional medicine to treat diarrhoea in combination with baobab or tamarind fruits. The smoke of burnt roots is inhaled for treatment of headache, bronchitis and colds. In Sudan, patients suffering from rheumatism are exposed to the smoke of burnt stems. In East Africa, a root decoction is used to prevent miscarriage, as an anthelmintic and aphrodisiac, and to treat gonorrhoea, stomach-ache and abdominal pain. A bark decoction or bark powder is used to clean wounds and a leaf decoction to relieve pain in the joints. Leaf sap is taken to treat inflammations in mouth and throat. Bark decoctions and leaf sap are also ingredients of mixtures used to treat various complaints (Lemmens, 2008).

In South East Asia *D. cochinchinensis* wood is used to make furniture, carvings, wood turnery, fine-art articles, musical instruments and sewing machines. The wood from the stumps and roots can also be used for making handicrafts. Root, bark and sap can be part of traditional medicine. The distinctive heartwood makes beautiful patterns after sawing (CITES COP 16 Prop. 60).

6.2 Legal trade

Rosewood species are exported as raw logs or finished products, furniture and handicrafts. In Madagascar, over 90% of exported products were logs and sawn wood (CITES COP 16 Prop. 63). Heartwood from old trees is valued for having the richest colouration (Zadro, 1975). The burls, highly figured cambium outgrowths, are particularly valued by some timber traders.

Trade in timber products of *Dalbergia* has increased exponentially in the past few years as seen by log imports to Asian markets for the Hongmu (Red Wood) trade that is based on 33 species of tropical hardwood trees of

which 16 species are *Dalbergia* (EIA, 2016) (Figure 2). Of these 16 *Dalbergia* species, 7 come from Asia (*D. odorifera*, *D. cultrata*, *D. fusca*, *D. latifolia*, *D. bariensis*, *D. cochinchinensis*, *D. oliveri*), 2 from Africa (*D. melanoxylon*, *D. louvelli*) and 7 from Latin America (*D. nigra*, *D. spruceana*, *D. stevensonii*, *D. cearensis*, *D. frutescens*, *D. granadillo*, *D. retusa*) (EIA, 2016). Only *D. cochinchinensis*, *D. louvelli*, *D. nigra*, *D. stevensonii*, *D. granadillo* and *D. retusa* are regulated by CITES.

Far more *Dalbergia* species are presently traded than those CITES-listed. However, information on trade flows is not easily available.

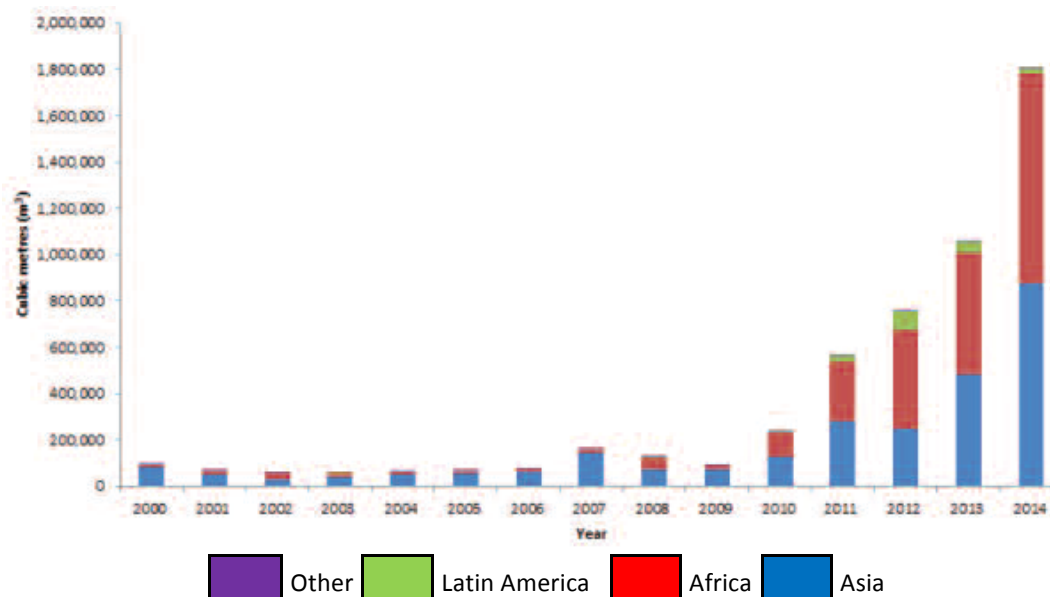


Figure 2. China hongmu log imports by region of origin (Source: EIA, 2016).

According to the CITES Trade Database , a total of 28,288.45 m³ of *Dalbergia* wood products and 140 t were traded between 2005 and 2014 (UNEP-WCMC, 2016a); the number of *Dalbergia* species in trade increased from 1 to 6 (due to the fact that new species were listed in the CITES Appendices), the number of records of trade also increased from a minimum of 64 in 2006 to a maximum of 220 in 2013 (Figure 3) and the number of importing countries fluctuated from a minimum of 20 to a maximum of 35 importing countries in 2013.

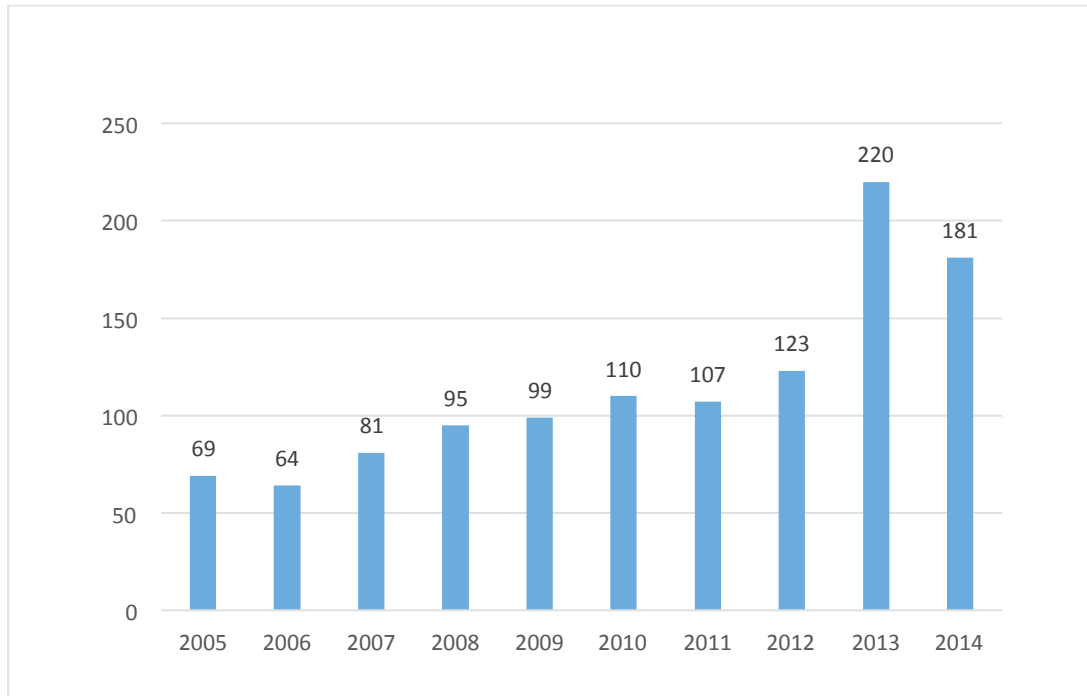


Figure 3. Annual transactions of *Dalbergia* spp. products: year range 2005-2014 (Source: UNEP-WCMC, 2016a).

According to UNEP-WCMC (2015), European importers reported trade in sawn timber of *D. nigra*, *D. retusa*, and *D. stevensonii* from South and Central America. The main exporter countries were Guatemala (*D. stevensonii*), Belize (*D. stevensonii*) and Brazil (*D. nigra*) for commercial purpose, and *D. retusa* from Costa Rica for personal purpose. Between 2004 and 2013 exports from South and Central America to the rest of the world were reported in *D. granadillo*, *D. nigra*, *D. retusa*, *D. stevensonii* and *Dalbergia* spp., except for 2005 and 2006. Commercial trade was predominantly in timber with some additional commercial trade in veneers and carvings of *D. nigra* (UNEP-WCMC, 2015).

According to The National Forest Institute of Guatemala (INAB, 2015), for the year 2014, *Dalbergia* timber products (logs, tables, sawn wood and furniture) of *D. calycina*, *D. cubilquitzensis*, *D. stevensonii* and *Dalbergia* spp. have been commercialized and exported outside the country.

Consulted the CITES Trade Database (UNEP-WCMC, 2016b) Guatemala reported the export of 463.79 m³ of sawn wood of *Dalbergia* spp. during the period 2011-2014. All exports were done under source code "W" (wild) and with "T" purpose (commercial).

Dalbergia melanoxylon is principally viable for commercial timber extraction only in southeast Tanzania and northern Mozambique (Jenkins *et al.*, 2012). Based on official records of Mozambican timber exports, the total consumption of timber (not only *D. melanoxylon*) domestically and for export was 727,000 m³ of logs equivalent in 2012 (FAEF, 2013). Timber imports to China from Mozambique increased around seven-fold in the last 10 years, the figures given by Chang & Peng (2015) for imported *Dalbergia melanoxylon* timber (round wood equivalents) into China are more than 5,000 m³ in 2004 and more than 33,000 m³ in 2013.

6.3 Parts and derivatives in trade

In Guatemala, logs and sawn wood of *Dalbergia* timber tree species are the main products in the international trade, but wooden furniture, firewood, tables and finished items manufactured (doors, frames, board) and handicrafts are also found in the national and international trade (CONAP, 2015; INAB, 2015; UNEP-WCMC, 2016b).

With an exception for *D. nigra*, the CITES trade database shows that almost all the exports in CITES listed *Dalbergia* species reported by range states for the period 2000-2015 are identified as logs, timber and sawn wood (UNEP-WCMC, 2016c).

Woodcarvings of *D. nigra* an Appendix I species from Brazil are traded internationally (UNEP-WCMC, 2016a).

D. melanoxylon is a favourite wood for musical instruments, especially wind-instruments such as clarinets, oboes, flutes and bagpipes, because of its dark colour, stability and clearness of tone. Jenkins *et al.*, (2012) reported a stable demand for this industry of 255 m³ per year. Usually the wood for this purpose is exported semi-processed as billets. In 1999 it was estimated that 250,000 pieces of carving were exported with a value of US\$970,000. In the past Senegal, Kenya and Malawi produced considerable amounts of African blackwood, especially for the carving industry, but stands have been depleted considerably and carvers often changed to other woods or used African blackwood from Tanzania (in Kenya) or Mozambique (in Malawi) (Lemmens, 2008). Destructive use in Kitui, Kwale and Makueni has included digging up the roots to make tall thin carvings. Most carvers now buy their *Dalbergia melanoxylon* wood from traders who cross the border from Tanzania.

6.4 Illegal trade

The trade in Hongmu *Dalbergia* species has increased manifold in the past few years causing an increase in illegal trade. All Hongmu source countries in the Mekong region have strict log export bans and trade in a number of the more threatened species is completely prohibited. Despite these provisions, illegal cross-border log and sawn timber trade is evident across the Mekong (EIA, 2016). The same occurs in West Africa, where most countries have adopted total bans on harvesting and export and in Latin America, despite several moratoriums on exports and recent CITES listings, the illegal trade in Hongmu species is still rampant (EIA, 2016).

Illegal logging is a prevalent problem in Central America. For instance, it was estimated in 2003 that up to 85% of the total harvest in broadleaf forests in Honduras was illegal. There is very little information on the volume of international trade although cocobolo wood is available from numerous sources online (Jenkins *et al.*, 2012). Extensive illegal trade in rosewoods has been reported, raising concerns that it has accelerated in recent years (Jenkins *et al.*, 2012). Seizures of illegally trafficked timber in Guatemala suggest that there is an organized smuggling ring capable of exporting large quantities. The demand for *D. retusa* from the Darien Region of Panama has been described as “out of control” with “hundreds of settlers looting” the species (Jenkins *et al.*, 2012).

During the period 2011-2014, 38 shipments and vehicles, with a total amount of 906.244 m³ of *Dalbergia* timber (mainly trunks, flitches and tables) of *D. stevensonii*, *D. retusa* and *Dalbergia spp.* (reported as rosul) of illegal origin were confiscated in Guatemala (almost two times the CITES timber reported as legally exported for the same period). With the exception of two shipments destined to Honduras and El Salvador, all the other shipments were destined to Asia.

Dalbergia stevensonii was once locally common in Belize, then faced with rapidly declining stocks, Belize prohibited all raw rosewood exports in 1992 but lifted the ban in 1996. Local estimates in 2010 suggested a loss of 90 per cent of historical rosewood stands and in 2012, Belize enacted a moratorium on the harvest and export of rosewood species. Despite this progressive move, the illegal harvest of the species has continued (EIA, 2016). *D. granadillo* started to be logged in all the sierras of Michoacán, Mexico in 2012 where it is sold for US\$2,500/m³. An environment authority said that a ship container is sold to Asian buyers for US\$50,000 (PROCESO, 2014).

In Mexico the seizures of *D. granadillo* sawn wood destined for the Asian market increased twofold from 318.077 m³ in 2012 to 727.703 m³ in 2014 (PROFEPA, 2014).

In recent years Madagascar has experienced very high levels of illegal logging of ebonies and rosewoods from its rainforest national parks, particularly since a coup d'état in March 2009. This illegal logging has been described

as the most severe threat to Madagascar's north-eastern rain forests. The vast quantities being felled have been valued at several hundred million US dollars' worth extracted during 2009. There are estimates of 100 – 200 trees being felled daily with a collective value of up to US\$460,000/day. Most of the rosewood being extracted is destined for Asian markets, for luxury furniture. Foreign traders and local traders dubbed 'timber barons' dominate the illegal logging with the vast majority (Jenkins *et al.*, 2012). Illegal Precious Wood trade appears from this brief look (anecdotally) to have been accelerating in the last few years, particularly for rosewood species. It may be the case that the very recent escalation in illegal rosewood extraction from Central America is due to Madagascar clamping down on the illegal rosewood trade from 2010 and therefore this supply drying up for the Asian market. Areas where rosewood used to occur closer to China have been all but exhausted of rosewood, with estimates from traders that the species has just five years left. This rosewood trade appears to have been accelerating in the last few years, particularly 'species hopping' and 'source area shifting' is a trend that has been known about and commented upon for many years (Jenkins *et al.*, 2012).

Species shifting, as species become commercially extinct, is a common practice. For instance, with the commercial extinction of *D. odorifera* in China and *Pterocarpus santalinus* in India, the trade in *D. cochinchinensis* grew rapidly and it became the most sought-after Hongmu species globally (EIA, 2016). As *D. cochinchinensis* was overexploited the main species now dominating the Hongmu trade in South-East Asia are *D. oliveri*, *D. bariensis*, *Pterocarpus macrocarpus*, and *P. pedatus* (EIA, 2016). In 2014, an estimated 229,796 m³ of *D. oliveri* logs were traded internationally (EIA, 2016). More and more species of *Dalbergia* are entering the trade worldwide as stocks of once abundant species are being depleted.

Hongmu trade is also linked to and drives violence in source and transit countries. In West Africa, Hongmu species are known as "blood timbers" due to connections between illegal Hongmu trade and rebel group uprisings; for example, in the Senegalese Casamance, in Côte d'Ivoire and in northern Nigeria in territories controlled by the Muslim extremist group Boko Haram. In Thailand, more than 150 forest rangers, police, soldiers and illegal loggers have been killed in gunfights during rosewood enforcement operations in recent years (EIA, 2016).

Traffickers exploit any legal loophole to smuggle illegal timber. Traffickers have repeatedly taken advantage of the current gaps in the CITES listings, misdeclaring *Dalbergia retusa* as the unregulated and similar-looking *Dalbergia bariensis* in violation of national moratoriums and CITES listings (EIA, 2016). In Guatemala, the documents accompanying rosewood shipments often recorded the export as recycling material (such as cardboard, junk or scrap metal) or other timber species, such as *Cupressus*, *Dialium* and *Miroxylum*. In Mexico, *D. granadillo* logs are mixed with other species in ship containers to disguise the shipments from authorities since there are no permits to log this protected species (PROCESO, 2014).

6.5 Actual or potential trade impacts

Dalbergia species have a relative low regeneration rate and the absence of certain diameter classes (70-100 cm) and the low density of population of certain diameter classes (20-30, 40-50) further disturbs the health of regeneration. Wastage may be as high as 70- 80% as only the finest straight grain logs are used in making bars for marimbas and xylophones (Kline, 1980). The trees are slow in forming heartwood, so even large logs lose much of their volume when the sapwood is removed (NAS, 1979). The cutting of exploitable individuals in the wild is the main cause of this disturbance; harvesting for exportation could slow natural regeneration and the international trade has therefore promoted cutting of great many *Dalbergia* spp., leading to the decline of populations inside and outside protected areas.

7. Legal instruments

7.1 National

Most range states have different legal instruments for the protection and conservation of the species, their habitat, declaration of protected areas, measures controlling logging, use, import or export.

7.2 International

CITES regulates 61 species of *Dalbergia*: 1 species in Appendix I, 55 species in Appendix II and 5 species in Appendix III:

Species	Appendix		Country	Annotation
	Appendix I	Appendix II		
<i>D. nigra</i>	Brazil			
<i>D. cochichinensis</i>			Thailand #5	
<i>D. abrahamii, D. andapensis, D. aurea, D. baronii, D. bathiei, D. bojeri, D. brachystachya, D. bracteolata, D. campenonii, D. capuronii, D. catipenonii, D. chapelieri, D. chlorocarpa, D. davidii, D. delphinensis, D. emirnenis, D. erubescens, D. gautieri, D. glaberrima, D. glaucocarpa, D. greveana, D. hildebrandtii, D. hirticalyx, D. humbertii, D. hutibertii, D. lemurica, D. louvelii, D. madagascariensis, D. malacophylla, D. manongarivensis, D. marítima, D. masoalensis, D. mollis, D. montícola, D. neoperrieri, D. nigra, D. normandii, D. occulta, D. orientalis, D. peltieri, D. pervillei, D. pseudobaronii, D. pseudoviguieri, D. purpurascens, D. suaresensis, D. trichocarpa, D. tricolor, D. tsaratananensis, D. tsiandalana, D. urschii, D. viguieri, D. xerophila</i>			Madagascar #5	
<i>D. granadillo, D. retusa, D. stevensonii</i>			Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama #6	
<i>D. darienensis</i>				Panama #2
<i>D. calycina, D. cubilquitzensis, D. glomerata</i>				Guatemala #6
<i>D. tucurensis</i>				Nicaragua #6

Annotations: #2 All parts and derivatives except seeds and pollen and finished products packaged and ready for retail trade; #5 logs, sawn wood and veneer sheets; #6 logs, sawn wood, veneer sheets and plywood.

8. Species management

8.1 Management measures

Most range states have different kinds of management measures for either the species, protected areas, logging, use or export.

8.2 Population monitoring

Very few reports have been published on population monitoring although two exist for Guatemala (Inventario Nacional de Especies Forestales Estratégica por la Convención CITES- Fase I y Fase II; FNPV, 2015). FAUSAC-FNPV (2015) is doing an ongoing population monitoring.

8.3 Control measures

8.3.1 National

Most range states have different legal instruments for the protection and conservation of the species, their habitat, declaration of protected areas, logging, use, import or export.

8.3.2 International

CITES regulates 61 species of *Dalbergia*: 1 species in Appendix I, 55 species in Appendix II and 5 species in Appendix III (see section 7.2)

8.4 Artificial propagation

Due to the value of their timber, NAS (1979) recommended that effort be made to extend *Dalbergia* species cultivations.

Guatemala has registers of plantations of: *D. retusa* and *D. stevensonii* (INAB, 2012; FNPV, 2012). *D. retusa* was included in plantation trials of native precious wood species in Costa Rica, which started in 1992 (Fonseca & Chinchilla, 2002; Fonseca *et al.*, 2002). In managed plantations, trees may reach 13 cm DBH and 8 m in height after 17 years (Marín & Flores, 2003 and references therein). *Dalbergia* trees have been found to grow at an average rate of 1.1 m/year in height (Knowles & Leopold, 1997).

Laos and Thailand have trial plots of *D. cochinchinensis* (CITES COP 16 Prop. 60). In Madagascar propagation trials from cuttings and by layering produced satisfactory results for *D. monticola* (CITES COP 16 Prop 63). There are records of artificial propagation of *D. melanoxylon* in plantations in Kenya and Tanzania (Gregory *et al.*, 1999).

8.5 Habitat conservation

Many species of *Dalbergia* exist within natural protected areas in their respective range states.

9. Information on similar species

Many *Dalbergia* species have the same wood anatomy and the process of identification of different species is very difficult because of the hardness of the wood in the process of preparing thin sections for microscopic analysis (FAUSAC-FNPV, 2015; McLure *et al.*, 2015).

The timber of *D. retusa* is likely to be confused with *D. stevensoni* and *D. tucurensis* (Wiedenhoef, 2011). *D. retusa* can be most easily separated from them by its distinct reddish-orange color, but also its comparative lack of paratracheal parenchyma and distinct abundance of diffuse-in-aggregate parenchyma; this requires strong technical knowledge (Wiedenhoef, 2011). *D. tucurensis* and *D. stevensonii* cannot usually be definitively separated (Wiedenhoef, 2011). The two species can be distinguished by means of density that requires accurate weight and volume measures (Wiemann & Ruffinatto, 2012). *D. retusa* wood is denser and stronger than Brazilian rosewood *D. nigra* (SCMRE, 2002). *D. tiralana* can be confused with *D. stevensonii* (Zamora, 2000).

The timber of *D. granadillo* (range States El Salvador and Mexico) is not distinguishable from that of *D. retusa* (Record & Hess, 1943; Richter, 2006). Although it has the common name "granadillo", it is often traded under the name "cocobolo" (Richter, 2006). The inclusion in CITES Appendix II of the whole genus is therefore proposed for look-alike reasons.

Mexico also made recommendations to the CITES Plants Committee for the evaluation of look-alike species from the genus, due to the difficulty that differentiation of CITES-listed and non-listed *Dalbergia* species presents for implementation of the Convention (PC22 Doc. 22.4), a problem also noted by other Parties in the region (PC22 Doc. 17.2; UNEP-WCMC, 2015).

10. Consultations

Country	Reply to consultation	Range state
Argentina	Supports the ³ proposal and states the will to coproponent ³	yes
Australia	Believes that the possibility of full genus listing for Dalbergia could be considered along with other mechanisms to help discourage the trade and sale of illegally harvested timber.	yes
Brazil	Supports the ³ proposal and states the will to coproponent ³	yes
Burkina Faso	Supports the ⁴ proposal and states the will to coproponent ⁴	yes
China	There is no time to finalize the assessment of the proposal and collect updated information on the genus Dalbergia in China before the submission deadline .	yes
Colombia	Supports the proposal	yes
Comoros	Supports the ⁴ proposal and states the will to coproponent ⁴	yes
Côte d'Ivoire	It was not possible to gather sufficient information on the genus Dalbergia to allow a decision on the proposal	yes
USA	Agree that there are identification and trade issues that warrant consideration of all non-listed Dalbergia species for inclusion in Appendix II. Propose several changes to the draft proposal, some of which were already considered in the final version	yes
Philippines	Supports the proposal	yes
Guatemala	Supports the proposal- coproponent	yes
Equatorial Guinea	Supports the proposal	yes
Honduras	Supports the ⁴ proposal and states the will to coproponent ⁴	yes
Iraq	Informs there is no data available for the presence of this genus in Iraq and is glad to cooperate in any concerted effort in this field ⁵	yes
Malaysia	Supports the proposal	yes
Nigeria	Supports the proposal	yes
Perú	Supports the proposal	yes
Singapore	Is going to evaluate the proposal and consider supporting it at COP17	yes
Thailand	There is no time to study the impact of the proposal. It will be studied and maybe it can be supported at the COP.	yes
European Union	Supports the proposal	yes

³ According to the provisional list of proposals for amendment of Appendices I and II, on the Secretariat webpage, the proponents are Argentina, Brazil, Guatemala and Kenya - <https://cites.org/eng/cop/17/prop/index.php>.

⁴ Despite the reply to the consultation, the country is not on the proponents referred on the provisional list of proposals for amendment of Appendices I and II, on the Secretariat webpage.

⁵ Refused by the Secretariat because there is no record of receiving a request for co-sponsoring the proposal before the deadline of 27th May.

11. Additional remarks

Trade in *Dalbergia* species has been increasing for many years and more and more species are being logged and traded internationally, most of these illegally. Several factors are causing major problems for enforcement authorities to comply correctly with the actual CITES listings. For example, the difficulty in differentiating between *Dalbergia* species was discussed in section 9, and many shipments are only identified as *Dalbergia* spp. for which there is no way of knowing if it includes only CITES-listed *Dalbergia* species or illegal non-listed *Dalbergia* species. It has been recognized that enforcement and tracking/reporting of *Dalbergia* species in trade is hampered by the use of common trade names, such as “rosewood” as it can relate to CITES-listed *Dalbergia* species and to many non-listed *Dalbergia* species or species from different CITES or non-listed genera (PC22 Doc 17.6).

It has been recognized as well the problem to identify between *Dalbergia* and other timber look-alike species or improve testing to differentiate between listed and non-listed *Dalbergia* species and look-alike species. For example, the genera *Pterocarpus* spp. and *Machaerium* spp. are closely related to *Dalbergia* while other look-alike genera include *Dicorynia* spp., *Caesalpinia* spp., and *Swartzia* spp. (PC22 Doc 17.6).

These and other problems have been discussed by several experts and working groups, including discussions at the last Plants Committee meeting in Tbilisi, Georgia. The Committee noted document PC22 Doc. 17.6. on the implementation of the Convention for *Dalbergia* spp., presented by the representatives from the European region. The Committee also noted document PC22 Doc. 22.4 and supported its submission for consideration by the Conference of the Parties, including recommendations 9 and 10:

“9. To take note of the advances made by Mexico with respect to the evaluation of timber species of the genus *Dalbergia*, and also of the principal difficulties that the CITES Authorities of Mexico have encountered in the implementation of the listings of *Dalbergia* spp. in Appendix II (para. 3).

10. Considering that to date there is no reliable method (nor one tried out by Customs officials) to identify at an intra-species level the wood from specimens of *Dalbergia*, and that this may cause problems in implementing the listings of *Dalbergia* in Appendix II, to develop recommendations on the appropriateness of listing the thirteen remaining Mexican timber species in Appendix II, and in that context to consider other timber species of *Dalbergia* that might be suitable for the same treatment, in accordance with the rule on listing of look-alike species (in line with Article II, para. 2b. of the Convention).”

During the discussion of these documents a large number of participants supported the need to list the whole genus *Dalbergia* in Appendix II to safeguard many of the *Dalbergia* species which are now in trade and have yet to be listed as well as to simplify the work of enforcement and customs authorities when facing shipments of *Dalbergia* products.

The full genus listing for *Dalbergia* should be considered along with other mechanisms to help discourage the trade and sale of illegally harvested timber. Multiple mechanisms to help address this issue may be used like those referred in PC22 Doc. 17.6 on Implementation of the Convention to *Dalbergia* spp. and namely the following:

- The development of a Timber Identification Directory for CITES-listed species
- Use of the Global Timber Traffic Network (GTTN) database which will include DNA technology as a mechanism for genus identification;
- The development of robust timber legality frameworks within all Parties that encourage the trade in legally harvested timber; and
- Information sharing initiatives at sub regional, regional and an international scale encouraging enforcement agencies to share intelligence on illegal harvest, processing and trafficking of rosewood timber and timber products.

Non-endangered *Dalbergia* species would be subject to increased controls which may increase the bureaucratic burden to the trade in legally harvested timber and timber products but this is a minor inconvenience regarding the benefits resulting from the whole genus listing.

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13. List of Annexes

Annex 1.

Annex 2