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Mr. John Scanlon
Secretary General
CITES
International Environment House
Chemin des Anémones
Chatelaine, Geneva
CH-1219

23 November, 2012

Dear Mr. Scanlon,

Re: Proposals to Amend the CITES Appendices relating to timber species

Thank you for your letter dated 16 November, 2012 which invites the view of IUCN on proposals to amend the CITES Appendices for timber species, for the upcoming CITES CoP16 meeting.

IUCN and TRAFFIC are currently underway in producing the "Analyses of the Proposals to Amend the CITES Appendices" which will provide a science-based, technical review of each proposal to amend the Appendices for CITES CoP16, including those relating to timber species. We are working with our experts to complete the Analyses document by 24 December, so our review of the timber proposals will be ready in time for your deadline of 13 January as outlined in the letter.

We look forward to providing a science-based, independent review of the proposals and being in further contact with you about this. If there is anything else that you need in this regard, please let us know.

Yours sincerely,

Julia Marton-Lefèvre
Director General, IUCN

Inclusion of *Yucca queretaroensis* in Appendix II

Proponent: Mexico

Summary: *Yucca queretaroensis* is a cold-hardy succulent plant endemic to Mexico where it occurs in the Sierra Madre Oriental in the states of Guanajuato, Querétaro and Hidalgo, specifically in the region known as the "Queretano-Hidalguense Semi-desert", occupying an estimated area of 600 km^2. It has a fragmented distribution, with subpopulations consisting of up to 20 individuals, separated by natural geological barriers such as canyons and steep hillsides. Some populations are relatively inaccessible and part of the habitat of the species is included in protected areas although it is not clear how effective protection is. Other populations are relatively accessible. The overall population is estimated at around 60 000 individuals and regeneration is reportedly limited, being mostly through offsets. Seed is apparently not set every year. The species has not been assessed against the Global IUCN Red List categories and criteria. A recent assessment in Mexico suggests that it could be classified as "at risk of extinction".

Yucca queretaroensis is considered a particularly attractive species of *Yucca* and is harvested principally as an ornamental plant for both local and international markets. Its relative cold-hardiness is likely to make it of particular interest to collectors in Europe and parts of North America. It is traded mainly as a living plant although trade in seeds also occurs. Locally, its flowers are also used in traditional festivals and the species was historically used in roof-making. *Y. queretaroensis* is in international trade, both as large, wild-collected plants and as artificially propagated specimens. Currently at least 300-500 wild-collected plants are believed to be imported into Europe each year, with larger numbers imported in the past. Artificially propagated plants have recently become available in Europe in some quantity. Mature plants command relatively high prices. The species resembles other *Yucca* species in trade, including *Yucca rostrata* and *Y. linearifolia*, neither of which is included in the Appendices, nor proposed for inclusion.

The species is listed under the category "subject to special protection" on the Mexican national red list (Sujeta a protección especial, Pr, Norma Oficial Mexicana NOM-059-SEMARNAT-2010). A more recent assessment suggests the species could be classified in the higher category of "at risk of extinction".

Analysis: *Yucca queretaroensis* has a relatively restricted distribution in Mexico. Its wild population is thought to number in the tens of thousands, although it apparently shows limited regeneration in the wild. It is sought-after as a horticultural plant and mature, wild-collected specimens enter international trade in some number, with at least 300-500 reported to be imported annually into Europe. If the estimate of the wild population is reliable and given its relatively limited regeneration capacity, the species may meet the criteria for inclusion in Appendix II in that regulation of trade may be 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 (Paragraph B of Annex 2 a to *Resolution Conf. 9.25 (Rev. CoP15)*). The species resembles other *Yucca* species in trade so that identification of specimens in trade might be problematic.

Supporting Statement (SS)	Additional information
Range	
Mexico	
IUCN Global Category	
	Not currently listed

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

The Norma Oficial Mexicana NOM-059-SEMARNAT-2010 (the Mexican National Red List) classifies the species as being "Subject to special protection" (Pr), but the most recent evaluation of its conservation status indicates it could be classified in a higher category of 'at risk of extinction'	*Garcia-Mendoza (2003) reports fragmentation and destruction of the habitat of* Y. queretaroensis.
The wild population of *Yucca queretaroensis* is small (approximately 60 300 individuals in total) and populations are fragmented. It has high habitat specificity and is considered to be biologically rare.	*Piña (1990) notes that the tropical deciduous forest between las Adjuntas and las Moras in the municipality of Zimapan, Hidalgo, where the species grows, is very degraded.*
The species is endemic to central Mexico, distributed in the Sierra Madre Oriental in the states of Guanajuato, Querétaro and Hidalgo, specifically in the region known as the 'Queretano-hidalguense Semi-desert', occupying an estimated area of 607.64 km^2. *Y. queretaroensis* has a fragmented distribution, with subpopulations consisting of up to 20 individuals, separated by natural geological barriers such as canyons and steep hillsides.	*Magallán-Hernández* et al. *(2011) document in detail the localities of* Y. queretaroensis *subpopulations. Although many subpopulations are found on steep slopes, other subpopulations are noted to be situated in areas of moderate gradients, near to roads or inhabited areas, in areas reported as collection sites for medicinal plants and/or easily accessible areas.*
There are two principal areas, one in the municipality of Xichú (in Guanajuato) and the other, where the largest number of subpopulations occurs, in the municipalities of Pinal de amoles, San Joaquin and Cadereyta de Montes (in Querétaro) and Pecula and Zimapàn (in Hidalgo).	
Population analyses using two parameters, plant height and number of leaves per rosette, were conducted of two populations, in Xichu, Guanajuato and Rancho Quemado, Queretaro. Low numbers of tall plants were found at Rancho Quemado, with no individuals recorded over 270 cm. The tallest individuals with most leaves were found at Xichu.	
Wild populations of *Y. queretaroensis* present high vulnerability to extrinsic and intrinsic factors. Extrinsic factors relate predominantly to the extraction of mature individuals for international trade, reducing sexual recruitment of wild populations. In	

Supporting Statement (SS)	Additional information
terms of intrinsic factors, the species has low sexual reproductive success rate, a low regeneration rate, long generation length, specialised habitat and specialised pollination. Reproduction is principally asexual, through the production of ramets at the base of the parent plant. It also reproduces sexually, but unlike other species of the genus *Yucca*, this does not occur annually. Few observations of fruiting plants have been made in the wild. Its fertility rate is less than 10% of its reproductive capacity potential per individual. The habitat of *Y. queretaroensis* is in a good conservation condition as human population densities are low, and there is no tendency towards urbanisation or drastic transformation of the landscape in the region. However, steep gradients limit the formation of deep soils and potential erosion levels range from high (50 to 200 tonnes/ha/yr) to severe (200 to 500 tonnes/ha/yr).	
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Y. queretaroensis is harvested principally as an ornamental plant and is available in both local and international markets. It is traded mainly as a living plant, but trade of seeds also occurs. Locally, its flowers are also used in traditional festivals and it was historically used in roof-making.	
Use and export are regulated by the Environment and Natural Resources Secretary (SEMARNAT), but there are records of exports permitted by the Secretary of Agriculture, Farming, Rural Development, Fishing and Food (SAGARPA).	*The proposal states that there are records of exports permitted by SAGARPA. It has since been verified that phytosanitary certificates were issued by SAGARPA for* Y. queretaroensis *but these do not validate export (CONABIO* in litt., *2012).*
At the 18th meeting of the Plants Committee in 2009, a presentation on "Trade in Agavaceae" was given documenting the growing interest in the cultivation of these species internationally (principally in Europe) and the possible unsustainable trade in species as a result, with large wild specimens of *Y. queretaroensis*, available in international markets since 2006.	*The demand in Europe for* Y. queretaroensis *has risen rapidly in recent years and continues to rise. This is due to the ornamental value of the plant, its rarity and low horticultural requirements.* Y. queretaroensis *is also cold tolerant and has high humidity tolerance, making it suitable for European climates, although in colder areas of central Europe (such as Austria, the Netherlands and Germany) a winter shelter is necessary (Weissbeck* in litt., *2012). Boeuf (2007) noted that, even though the species can tolerate cold and ice, it is better to maintain it in an artificial climate.*
In response to the "Trade in Agavaceae" study, the Scientific Authority of Mexico (CONABIO) undertook official consultation in August 2012 (OF. DEAI-239/2012) with CITES Authorities in North America and Europe, requesting information on the trade of *Y. queretaroensis* in their countries. 47 countries in Europe were contacted, as	*In accordance with the demand of the market, more wild collected plants from Mexico are being imported. Plants are imported bare-rooted in sea containers. They have high regeneration abilities and losses are rare. It is estimated that around 300-500 plants per year are imported into Europe by the main importer, although larger*

Supporting Statement (SS)	Additional information
well as Canada and the United States. 12 countries in Europe replied - eight reported no known trade, and four recorded trade in *Y. queretaroensis* (Germany, Italy, the Netherlands and the UK). Canada reported no known trade and the United States recorded the presence of trade. From this information it was concluded that the principal specimens in trade are seeds, medium-sized plants (approximately 70 cm tall, with stem) and large plants (greater than 70 cm tall, with stem), and the majority of these were of wild and unknown origin. The level of international trade could not be clearly quantified.	*numbers have apparently been imported in the past (Weissbeck* in litt., *2012)*
By means of online surveys and consultations, 19 companies trading internationally in *Yucca queretaroensis* were identified. These companies appear to be involved in two different types of international trade of this species, namely 1) seeds and small seedlings (rosettes of few leaves) without stems that seem to be germinated from seeds (13 companies based in Germany, US, Japan, Netherlands and the UK) and 2) large-size adult plants (80-160 cm in height) with developed stems (6 companies in Germany, France, Belgium, the Netherlands and Portugal). The latter range in price from USD500 to over USD2000 per plant. In many cases the origin of the seeds/plants is unknown, in other cases it is specified that they were artificially propagated.	*Seeds of* Y. queretaroensis *were first offered following a collection in 2009 from a small group of plants located at the gorges near Zimapan, Hidalgo. The majority of seedlings and small plants (with rosettes of a few leaves) offered in Europe are from that collection. (A few years before, seeds were also available in Europe, but it was later revealed that these were seeds of* Y. filifera*). The appearance of seeds on the market is observed to have only slightly weakened the demand for wild collected plants (Weissbeck* in litt., *2012).* *Magallán-Hernández* et al. *(2011) note that trade in the species appears to be unsupervised and the effects of harvest are not documented. They note that the species is available for sale as seed and living plant in Europe, although it is not easily found, and large plants are sold for very high prices in comparison with other Yucca species.* *A further web search confirmed the availability of* Y. queretaroensis *from online stores in Europe – with advert descriptions highlighting the extreme rarity of the species and the fact that it has only been available in Europe since 2006. Sales of seeds, small plants and large plants were observed.* *The main European consumer markets for* Y. queretaroensis *are the Netherlands, Germany, Spain, Portugal, Italy and the UK. It is thought that only the high unit price (per cm) limits an even higher volume of imports to Europe. However, each private collection usually has only one to two, or occasionally three to five plants (Weissbeck* in litt., *2012).* *Magallan-Hernandez* et al. *(2012a) report consultation with the US Fish and Wildlife Service who note that few established nurseries in the US advertise sale of* Y. queretaroensis *on the internet and trade is limited to small private collectors and enthusiasts.* *Magallan-Hernandez* et al. *(2012a) document attempts to contact sellers of* Y. queretaroensis. *A response was not received from companies based in Europe that were identified as selling large specimens of* Y. queretaroensis *online. Magallan-Hernandez* et al. *(2012a) note that the large-size of the plants offered by these nurseries does not align well with the slow growth rate of the species and highlighted the need for further investigation to determine the origin of these specimens. They also highlight the need to quantify the volume of trade through regulation of international trade.*

Supporting Statement (SS)	Additional information
	Magallan-Hernandez et al. *(2012a) undertook surveys with people from Rancho Quemado and Xichu, two locations where* Y. queretaroensis *grows locally. 38% of the survey participants in Rancho Quemado and 51% in Xichu reported knowing a use(s) of* Y. queretaroensis. *7% of the participants in Rancho Quemado reported experience of commercialisation of the plant, through the sale of leaves (for themselves or their parents) and the extraction of fibres from the stem. All indicated this was over 20 years ago. No survey participants in Xichu reported experience of commercialisation of the plant.* *The same survey participants were asked if they have knowledge of* Y. queretaroensis *being extracted from the wild recently. Three survey participants out of a total of 104 said yes they had heard of extraction taking place, one of which reported the collector was from Pheonix, Arizona (Magallan-Hernandez* et al., *2012a and summarised in Magallan-Hernandez* et al., *2012b). These findings do not align with the observed presence of suspected wild collected individuals on the market. However, this could be linked to a decline in the local cultural importance of* Yucca queretaroensis*, previously used as roofing material, due to the availability of new building materials, as reported by Magallan-Hernandez* et al. *(2012a).*
Inclusion in Appendix II to improve control of other listed species **A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I**	
Y. queretaroensis can be confused with other species of the same genus and other morphologically similar species of different genera, such as *Yucca linearifolia, Y. rostrata, Y. thompsoniana, Dasylirion quadrangulatum, Agave striata* and *Agave aff. striata.* These species can, however, be differentiated from *Y. queretaroensis* with training and the proposal includes an identification guide to facilitate enforcement if/when the species is listed in Appendix II.	*There are currently three species of Agavaceae listed in the CITES Appendices:* Agave parviflora *(Appendix I),* Agave victoriae-reginae *and* Nolina interrata *(Appendix II)*. Y. queretaroensis *can also be confused with* Dasylirion longissimum var. treleasei*, and* Yucca linearifolia *(Weissbeck* in litt.*, 2012).*

Supporting Statement (SS)	Additional information
Other information	
	Threats
Steep gradients limit the formation of deep soils and potential erosion levels range from high (50 to 200 tonnes/ha/yr) to severe (200 to 500 tonnes/ha/yr). Habitat loss also occurs from grazing. There is no monitoring programme in place to monitor the wild populations of *Y. queretaroensis* or the viability or consequences of wild extraction.	*Garcia-Mendoza (2003) reports fragmentation and destruction of the habitat of* Y. queretaroensis *and Piña (1990) notes that the tropical deciduous forest between las Adjuntas and las Moras in the municipality of Zimapan, Hidalgo, where the species grows, is very degraded.* *Magallan-Hernandez* et al. *(2011) note that the potential construction of mines could negatively impact the population found at Camino Azogues-San Francisco Gatos.* *Magallan-Hernandez* et al. *(2012a) report evidence of human disturbance, collection of parts of the plants, animal trampling and forest fires affecting some populations of* Y. queretaroensis*, along with soil erosion.*
	Conservation, management and legislation
Y. queretaroensis is listed under NOM-059-SEMARNAT-2010 as Subject to special protection (Pr). Its use is therefore controlled under the General Wildlife Law (Ley General de Vida Silvestre) (LGVS, 2000, Art. 1). Part of the habitat of *Y. queretaroensis* is found within two protected areas, delineated by the National Commission of Protected Natural Areas (CONANP); the Biosphere Reserve of la Sierra Gorda de Guanajuato (covering a total of ~2369 km^2) and the Biosphere Reserve of la Sierra Gorda de Querétaro (~3836 km^2). *Y. queretaroensis* is included in the management plan of the Regional Botanic Garden of Cadereyta (Querétaro) and this garden holds nine mature individuals within its collection. It is also represented in the living collections of "El Charco del Ingenio" Botanic Garden (San Miguel de Allende, Guanajuato) and the Botanic Garden of the National Autonomous University of Mexico (UNAM, Mexico City), each with three mature individuals. There are some nurseries in the United States and the Netherlands which have begun reproducing the species from seed and by micropropagation in recent years.	*BGCI's online database of ex situ plant collections records two additional gardens as holding* Y. queretaroensis *in their collection (PlantSearch, 2012). Both are in Europe and are likely for display purposes only and their value for conservation, for example through involvement in reintroduction programmes, would likely be limited due to their distance from the natural habitat of the species.* *Magallan-Hernandez* et al*. (2012a) note that local governance of the species would be beneficial to its conservation, but that the decline in the local cultural importance of* Y. queretaroensis*, means that education about the ecosystem importance of* Y. queretaroensis *and the risks facing the species, such as low growth rate, low reproduction rate from seed and its national and international ornamental value, are needed for local governance to be successful.* *Magallan-Hernandez* et al. *(2012a) note that monitoring to avoid the extraction of seeds is also necessary as well as extraction of whole plants, due to the low reproductive rate from seed noted for this species in the wild.*

Supporting Statement (SS)	Additional information
Captive Breeding/Artificial Propagation	
There are no controlled artificial propagation programmes for this species, but it is held in the collections of three botanic gardens affiliated with the Mexican Association of Botanic Gardens (AMJB).	*Magallan-Hernandez* et al. *(2011) note that there is not much information available about the propagation of* Y. queretaroensis*, but it is known that in Europe it is commonly sought after as an ornamental plant and efforts to propagate the species have been made in recent years.* *Weissbeck (2008) provides documentation of propagation trials of* Y. queretaroensis *undertaken in Europe. He noted that* Y. queretaroensis *acclimatised well to the humidity and frosts of central Europe, as was the case for* Y. linearifolia*, which had previously been imported to Europe and has many similarities with* Y. queretaroensis*. Weissbeck documents the first propagation attempts made in Holland in 2006 with promising results and the first individuals planted survived 3 years without damage from humid winters and temperatures below zero. Weissbeck (2008) also documented fast growth of roots, reproduction of new individuals from broken roots and the ability for regeneration following the loss of the full head of leaves.* *Propagation of* Y. queretaroensis *using in-vitro methods is theoretically possible, however, to date no in-vitro plants have been offered on the European market so it is assumed that in-vitro propagation is occurring (Weissbeck* in litt., *2012).* *Propagation through rhizome division is possible and has delivered good results in experiments, but this type of propagation is not profitable for trade because it yields too few plants at a high cost and there are high loss rates (Weissbeck* in litt., *2012).* *Since 2009/2010 seeds of* Y. queretaroensis *have been available in some southern European countries. This kind of propagation is currently the most cost-effective and profitable and is therefore the most common. As seeds have only been available in Europe since 2009, it is not possible to provide detailed information on growth rates from seed, but initial results indicate that two to three year old plants reach a height of 15-25 cm in height with 20-50 leaves and will not yet have a developed stem. Imported plants on the market with a minimum stem height of approximately 40-60 cm show a growth rate of approximately 1-3 cm per year when in good horticultural conditions. Between 1000 and 2500 plants are reported to have been raised for sale on the European market to date (Weissbeck* in litt., *2012). This indicates that the demand for larger specimens cannot yet be satisfied from artificially propagated individuals as propagation has only commenced recently.* *Magallan-Hernandez* et al. *(2012a) recommended that nurseries need to be set up in Mexico to propagate the species as a control measure.*

Supporting Statement (SS)	Additional information
Other comments	
In 2011, the Scientific Authority of Mexico (CONABIO), in collaboration with the Regional Botanic Garden of Cadereyta, undertook the project 'Evaluation of the state of conservation, use of and threats to *Yucca queretaroensis* Piña (Agavaceae) and its inclusion in the Appendices of CITES', which concluded that it was necessary to include the species in Appendix II. *Y. queretaroensis* plays an important ecological function, contributing to the formation and retention of soil thanks to a system of deep fibrous roots. It is a host species and provides habitat for birds and insects at different life cycle stages.	Y. queretaroensis *is not the only species of the Yucca extracted from its habitat for use as an ornamental plant,* Y. thompsoniana *and* Y. elata *are also subject to this (Garcia-Mendoza* in litt., *2012). The species resembles* Yucca linearifolia, *which is sometimes apparently supplied instead. The two can apparently be distinguished by the cross-section of the leaf: in* Y. queretaroensis *this is square, in* Y. linearifolia *it is flat, so that the latter can be bent without forming cracks, unlike the former (www.tropicalcentre.com). It also resembles* Y. rostrata (*www.yuccado.com*).

Reviewers: A. Garcia-Mendoza, W. Hodgson, A. Reuter, S. Weissbeck.

Inclusion of *Operculicarya decaryi* in Appendix II

Proponent: Madagascar

Summary: *Operculicarya decaryi* sometimes known as jabihy is a deciduous thick-stemmed (pachycaul) tree endemic to Madagascar which can grow up to nine metres tall. It is one of eight species in the genus *Operculicarya*, seven of which are endemic to Madagascar, with the eighth (*O. gummifera*) occurring in Madagascar and the Comoros. It is widespread in thorny scrub and degraded semi-deciduous forest at low altitude in southern Madagascar, within an overall area of some 90 000 km^2 and an area of occupancy of at least 3000 km^2, with at least 30 subpopulations within this area. The species can be locally abundant, with an estimate of over 30 000 individuals within one sub-population. The species is present in at least three protected areas (Cap Sainte Marie Special Reserve and Andohahela and Tsimananpetsotsa National Parks).*O. decaryi* is cultivated as an ornamental plant due to its bonsai form, particularly in China. Wild collection has reportedly taken place. Exports from Madagascar, apparently mostly of small plants is recorded as having taken place. Some 3400 plants were recorded by the CITES Management Authority of Madagascar as exported in the period 2003-2006, most (around 2700) in 2006. Exports have not been reported since then. The species is reported to be straightforward to propagate. In China recent trade is said to be largely or entirely in cultivated plants. The species has reportedly been in cultivation in China for some time, so that large, mature plants may be available from artificially propagated material. Current legal controls in Madagascar on collection and export are unclear.

O. decaryi was proposed for inclusion in Appendix II at CoP15 in 2010, but the proposal was withdrawn at the CoP. Two species of *Operculicarya* also endemic to Madagascar (*O. hyphaenoides* and *O. pachypus*) were included in Appendix II at CoP15. Since then importers have reported a small amount of trade in *O pachypus* (50 wild specimens in 2010 and 50 in 2011) but none in *O. hyphaenoides*. Madagascar has reported export of 350 *O. pachypus* and 275 *O. hyphaenoides*, but these are likely to have been on the basis of permits issued rather than actual exported recorded.

Analysis: *Operculicarya decaryi* is a widespread and evidently at least locally abundant tree in southern Madagascar. It has been exported in some number for the horticultural plant trade in the relatively recent past. No exports have been reported since 2006. The species is widely available as an artificially propagated plant. It is extremely unlikely that regulation of trade is necessary to prevent the species becoming eligible for inclusion in Appendix I in the near future, or that harvest for trade is reducing the population to a level at which its survival might be threatened by other influences. The species would therefore not appear to meet the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
	Range
Madagascar.	
	IUCN Global Category
	Not currently listed.

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

Supporting Statement (SS)	Additional information
A) Trade regulation needed to prevent future inclusion in Appendix I	
The species has low growth rates and a regeneration rate of 24%.	
Around 150 individuals were recorded in the North of Toliara (Andoharano Forest) in 2005. 440 individuals were recorded in Tongobory in 2006. At the start of January 2012, 79 individuals were recounted at Andatabo Toliara, an area of known wild collection. In this area, *O. decaryi* is becoming increasingly rare.	*Rakouth* et al. *(2006) reported densities of 220-400 per ha at study sites with one sub-population calculated to comprise over 30 000 individuals.*
The status according to IUCN criteria is reported to have changed from vulnerable to endangered. This means a reduction of ≥ 50% in 10 years of Area of Occupancy, Extent of Occurrence and habitat quality.	*The conservation status is not published on the IUCN Red List. The Endangered assessment in the proposal was assigned using GIS data, which were used to calculate Area of Occupancy and Extent of Occurrence and to predict future decline (PC20 Inf. 4, 2012). No date is provided for the first of these assessments.*
Collection for export and destruction of habitat leads to a gradual decline in the population, which is predicted in the future to decline by 77%. Collectors are forced to go further because the old collection areas near cities no longer have individuals present.	*The future decline predicted in the proposal is over an unspecified time period. The evidence upon which the decline is predicted is not detailed in the proposal.*
Operculicarya decaryi is the most widespread species of the five species in the *Operculicarya* genus.	*Randrianasolo and Lowry (2006) report that* O. decaryi *is more widespread than other members of the genus, except* O. gummifera*. It is reported to extend throughout much of southern Madagascar, from Toliara east to Ambovombe.* *Hearn* in litt. *(2012) considers the range of* O. decaryi *to be restricted. He notes the desirability of field-collected specimens and reports that collection is widespread*
O. decaryi has a large geographic distribution in the dry thorny thicket of South Western and Southern Madagascar. The Area of Occupancy is 423 km^2 and the Extent of Occurrence is 86 994.7 km^2.	*Randrianasolo and Lowry (2006) assign* O. decaryi *a preliminary status of Least Concern (LC) and report that* O. decaryi *has an Extent of Occurrence slightly lower than provided in the proposal (c. 71 600 km^2) but an Area of Occupancy much larger than that reported in the proposal (3000 km^2). Around 30 subpopulations are reported.*
The species continues to decline due to various threats and pressures. The dry thorny thicket of the South West occupies an area of 18 355 km^2 (of which 5% is found within protected areas). This type of land cover has reduced by 30% since the 1970s. These areas are fragile and easily fragmented and degradation has resulted in open degraded areas.	
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	

Supporting Statement (SS)	Additional information
O. decaryi is very sought after as an ornamental plant for its bonsai form. The species is often collected in the wild and an absence of individuals of a juvenile or adult state, of commercially exploitable size, can be observed at collection areas.	O. decaryi *is a natural bonsai and grows a thick fat stem quickly. The knobbly trunk is sought after by collectors. The roots swell to form unique contorted and twisted designs and the leaves are also very small, ideal for the bonsai form (Anon, B).*
	Yuan in litt. *(2012) reports that* O. decaryi *is very commonly traded in China. Trade is primarily of mature plants and sometimes seedlings. The species has been traded in China for a long time, early trade was likely from wild plants and more recent trade is of cultivated material. Wang and Chen* in litt. *(2012) also report the presence of* O. decaryi *in trade in China.*
It is exported as a living plant. Reported exports of living plants are as follows: 2003 (56), 2004 (200), 2005 (495) and 2006 (2647).	*Exports are in the form of small plants (supporting statement of proposal CoP15 Prop. 22).*
Collectors tend to take many plants. Exportation could lead to the absence of natural regeneration and the decline or even disappearance of populations in areas of collection which in the long term would constitute a serious threat to the species.	*No trade was reported subsequent to 2006.*
No illegal trade in the species has been recorded to date. The species is rarely sold in national markets.	*Two species of* Operculicarya *also endemic to Madagascar (*O. hyphaenoides *and* O. pachypus*) were included in Appendix II at CoP15. Since then importers have reported a small amount of trade in* O pachypus *(50 wild specimens in 2010 and 50 in 2011) but none in* O. hyphaenoides*. Madagascar has reported export of 350* O. pachypus *and 275* O. hyphaenoides, *but this is likely to have been on the basis of permits issued rather than actual export recorded.*
The proposal reports 18 web sources of *O. decaryi*, selling mature plants, seedlings or seeds, mainly of unknown origin (one source sold propagated material). Price per plant ranged from USD14.95 – 400.00 and per seed USD0.39 – 0.86.	*A nine-day web survey to investigate web trade for* O. decaryi *was conducted in 2011 (Augugliaro* in litt., *2012). Thirty-eight plants and twenty-seven packages of seeds of* O. decaryi *were found sold from the UK, USA, Germany, and Hungary. For nineteen sources it was possible to track both seller and buyer countries. Between the sales 84% were realized inside in the seller's country and 16% were realized in a foreign country. Furthermore, another forty-one plants and twenty-four packages of seeds were offered from Asia, the EU, and USA. Data from the web survey showed that some specimens of* O. decaryi *offered on the web are probably of wild origin (Augugliaro* in litt., *2012). The price of one specimen was USD1200 (Augugliaro* in litt., *2012).*
	Plants of O. decaryi *are currently offered for sale on various websites in the UK, USA and China. Although large specimens are sold for high prices there is also trade in seedlings for lower prices. Six websites were identified selling small plants for less than USD25.00, with the lowest price per individual at USD7.00. A web seller based in China was identified to have sold 21 mature plants for USD100.00 since November 2011.*

Supporting Statement (SS)	Additional information
	A two day review of web sellers based in Japan selling O. decaryi *was conducted (04-05 December 2012). Two websites selling* O. decaryi *plants were identified (although these directed to the same source) and one website selling seeds was identified (TRAFFIC Japan, 2012).*

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I

O. decaryi slightly resembles *O. pachypus.* This second species has a limited distribution around Toliara and is found on limestone. The branches of the two species are zigzag, but those of *O. pachypus* have tips in the form of sharp spines.	O. decaryi *is often confused with* O. pahypus*, but "in addition to its distinctive habit, several additional features separate* O. decaryi *from other members of the genus whose leaves have a winged rachis, including leaflets that are totally glabrous below, and branches that are straight (rather than zig-zag in orientation, as in* O. pachypus*)" (Randrianasolo and Lowry, 2006).* O. hyphaenoides *and* O. pachypus *were included in Appendix II in 2010. Since then importers have reported a small amount of trade in* O. pachypus *(50 wild specimens in 2010 and 50 in 2011) but none in* O. hyphaenoides*. Madagascar has reported export of 350* O. pachypus *and 275* O. hyphaenoides*, but these are likely to have been on the basis of permits issued rather than actual export recorded. The other five species of* Operculicarya *(four endemic to Madagascar, one also on the Comoros) are not included in the Appendices.*

Other information

Supporting Statement (SS)	Additional information
Threats	
Habitat destruction: small but widespread operations for the production of fuel wood and charcoal are the biggest threats to the habitat. Selective logging for timber is also a significant threat, especially because the dry thorny thicket has a low growth and regeneration rate. The extension of land for maize cultivation and fires linked to grazing animals also constitute serious threats in the region. In Andatabo the species grows on calcareous soils that are currently used for making bricks.	
Conservation, management and legislation	
Collection and export are only regulated at a national level. Para 7.1 of the SS states: collection and export [of this species] are not subject to any controls. Para 8.1 of the SS states: National management measures are detailed in the proposal: The number of specimens authorised for export is based on the supply of the species in horticultural centres. A single harvest authorization per species per operator is provided, to serve as parental stock. Operators should undertake ex situ reproduction. Permits and exportation authorizations are supplied only for individuals reproduced artificially.	*The level of national legislation afforded to this species is unclear as the proposal notes that harvest and export are not subject to regulation and later that they are subject to national authorization procedures. Information as to whether national management measures have been enforced or how successfully is not provided. Expert reviewers were asked to provide additional information about national legislation and its effectiveness but none of the comments received clarified this.*
Certain populations of *O. decaryi* are found within protected areas; Andohahela National Park, Tsimanapetsotsa National Park and la Réserve Spéciale de Cap Sainte Marie. The State policy to increase the coverage of protected areas and delineate new areas such as Amoron'i Mania, Ekodida, could contribute to the conservation of this species and its habitat.	*Randrianasolo and Lowry (2006) report presence of the plant in Andohahela, but also in Beza Mahafaly protected areas.* *According to PlantSearch, an online database of botanic garden collections maintained by Botanic Gardens Conservation International (BGCI), 36 gardens record holding* O.decaryi *in their collection. The majority of these gardens are within Europe and the USA.* *In addition,* O. decaryi *is also held in the collection of Phyto-logic Paradise Gardens in Madagascar. The original specimen has been in the garden for more than 10 years. The garden are attempting multiplication through cuttings without success yet but attempts only commenced a couple of months prior to this consultation (undertaken in November 2012) (Cooke* in litt., *2012). Parc Botanique et Zoologique de Tsimbazaza in Madagascar holds one individual of* O. decaryi *in their collection. The plant was collected as a wild seedling and the species is not involved in a propagation*

Supporting Statement (SS)	Additional information
	programme.
Captive Breeding/Artificial Propagation	
	Bihrmann in litt. *(2012) reports that* O. decaryi *is a rather slow growing species. Small seedlings do form the caudex, although it is rather slim.* Operculicarya *species have been praised by growers, collectors and exhibitors for decades and are highly desirable because of their ease in cultivation. Eslamieh and Stead (2010) experimented with various crosses with other* Operculicarya *species* *Reproduction is possible from seed and cuttings. It can be propagated using pieces of the tuberous roots (Anon A, undated.) Seed grown plants produce better looking roots, growing from seed offers the possibility of selective breeding and can produce certain desired characteristics (Anon, B). Hearn* in litt. *(2012) reports that in his experience the rooted cuttings and other forms of vegetative propagation are less desirable than seedlings or field collected plants as the formation of the caudex is hampered under vegetative propagation.* *The species is dioecious (as all other of the genus) so at least two plants (male and female) are necessary to obtain seeds in cultivation. Propagation from cuttings is fairly straightforward (Eggli* in litt., *2012).*
Other comments	
This species was already the subject of a trade study with the aim of its inclusion in Appendix II at CoP15. Biological and ecological data obtained were updated and supplemented for the preparation of this new proposal. Under an agreement between the CITES Secretariat and the European Union, *O. decaryi* will continue to be the object of research for the year 2012 to supplement existing data. This species has an important role in the daily life of the local population as it is used in traditional medicine. The leaves have medicinal value and are used to help the recovery of women after giving birth.	*Chemicals within the plant are toxic (Colombo* et al., *2009).* O. decaryi *is fed on by* Lemur catta *(Jolly* et al., *2006).*

Reviewers: C. Augugliaro, A. Cattabriga, U. Eggli, D. Hearn, D. Newton.

Inclusion of the genus *Diospyros* (populations of Madagascar) in Appendix II, and limited to logs, sawn wood and veneer sheets by an annotation

Proponent: Madagascar

Summary: *Diospyros* is a very large and widespread, chiefly tropical, genus of trees and shrubs in the ebony family or Ebenaceae. Over 500 species have been described in total, although the taxonomy of the genus is in need of revision. Estimates for the number of valid species in Madagascar range from 84 to around 240. Currently 103 species names of Malagasy *Diospyros* are included in CITES Appendix III, based on a list submitted by Madagascar in 2011 (see Notification 2011/039); 84 names are listed in the annex to the proposal. All Malagasy *Diospyros* are believed endemic to the country, with the exception of *D. ferrea*, a very widespread species that also occurs in Africa, Asia, Australia and the Pacific (and which is not included in the current Appendix-III listing). *Diospyros* spp. are distributed throughout Madagascar and are found in a very wide range of habitats, including evergreen wet forests, coastal forests, deciduous dry forests, tapia woods, thickets and savannah scrub.

Some members of the genus yield black, dense, durable wood, known as ebony, used for carpentry and cabinet-making and also in demand for musical instruments. In Madagascar, as elsewhere, timber-bearing ebony trees have been harvested for many years both for domestic use and for export. In recent years levels of harvest and export have evidently increased greatly. Around 40% of the currently named Malagasy species are said to yield wood of commercial value. Some 20 species are reportedly traded in significant quantity, of which the most important are said to be *Diospyros gracilipes, D. perrieri* and *D. platycalyx*. *Diospyros gracilipes* occurs in the humid forests of the east and the Sambirano region of the north and is considered one of the most valuable woods in Madagascar, fetching high prices even when traded in smaller sizes. *D. perrieri* is the main producer of ebony wood in western Madagascar*; D. platycalyx,* also from western Madagascar, is reported to be heavily exploited within its range.

Little is known about population sizes and distributions of most of the Malagasy *Diospyros* species. None is currently included in the IUCN Red List. At CoP15 a decision was adopted directing Madagascar and the Plants Committee to review and gather further information on species (including tree species) that might benefit from inclusion in the Appendices. Information on the taxonomy, distribution and conservation status of *Diospyros* spp. was presented to the nineteenth meeting of the Plants Committee in April 2011; this included preliminary assessments of some species using the IUCN Red List Categories and Criteria. This suggested that *D. gracilipes* was vulnerable and *D. perrieri* endangered. It was reported that almost all large trees of the latter had disappeared from within its range. Various other species were also assessed as threatened owing to logging pressure. No assessment of *Diospyros platycalyx* was made. There is little information available on growth rates or regeneration potential of Malagasy *Diospyros*, but growth of ebony-producing trees is in general believed to be slow, with many years needed to produce the dense, dark wood that is most highly sought-after. Generation times are likely to be measured in decades.

Few data are available on the trade in ebonies from Madagascar. It is believed that large amounts were exported in 2008 and 2009, much of it obtained illegally, either from within protected areas or without appropriate permits. Most information concerning hardwood export from Madagascar relates to rosewood *Dalbergia* spp. (see proposal CoP16 Prop. 63), with indications that rosewood is exported in much larger quantities than ebony.

In addition to selective logging, Malagasy forests are subject to numerous other pressures including clearance for shifting cultivation, uncontrolled burning, urbanisation and mining. In 2000 relatively unaltered forest covered around 10% of Madagascar with deforestation rates estimated at 200-300 000 ha per year. The coastal forests in particular are known to be highly fragmented and are believed to have been reduced in extent by around 25% between the 1970s

and the mid-2000s.

Madagascar introduced a temporary ban on export of precious woods in 2010, envisaged to be for between 2-5 years. As of late 2012 this reportedly remained in place, although logging of ebonies has apparently continued, including within protected areas.

Analysis: Information on populations of any *Diospyros* species in Madagascar is scarce. Some species are known to have restricted distributions and are not known to be present in protected areas. Almost all large trees of one valuable ebony-wood producing species, *Diospyros perrieri,* are said to have disappeared from the western part of Madagascar, to which it is restricted. It is reported that despite introducing legislation to ban the export of precious woods in 2010 logging of ebonies has continued, apparently including within protected areas. There are no data on volumes of ebony in trade, and it is not possible to relate even anecdotal accounts of ebony in trade to particular species. There is thus little evidence to determine whether any of the species meet the criteria in Annex 2a of *Resolution Conf. 9.24 (Rev. CoP15)*. However, given the apparently high rates of exploitation of ebony-producing trees as well as the large scale deforestation occurring in Madagascar and the generally long generation times of ebony-producing trees it is possible that some meet these criteria in that regulation of trade in them is required to ensure that the harvest of specimens from the wild is not reducing their populations to a level at which their survival might be threatened by continued harvesting or other influences.

Experts are currently unable to accurately identify any given log of Malagasy ebony to the species level and thus, if it is considered that one or more species of *Diospyros* meet the criteria in Annex 2 a then other species would meet the criteria in Annex 2 b A of *Resolution Conf. 9.24 (Rev. CoP15*). Given the current taxonomic uncertainty of the genus *Diospyros* listing of all populations of Madagascan species of the genus *Diospyros* would likely facilitate implementation.

Supporting Statement (SS)	Additional information
Taxonomy	
The genus is under taxonomic evaluation and preliminary results indicate a total number of 120 to 240 species in Madagascar. There are 84 accepted species in the genus *Diospyros* as listed in the Annex of the proposal (based on the Catalogue of Vascular Plants of Madagascar).	*Schatz (2001) states there are around 100 endemic species recorded and an additional 25 species yet to be described. Subsequently the Catalogue of Vascular Plants of Madagascar states there are 87 accepted species of* Diospyros *of which 86 are endemic and 1 is indigenous non-endemic and an estimated further 130 undescribed endemic species, a total 217 species (Madagascar Catalogue, 2012).*
Range	
Madagascar (this proposal only covers populations of Madagascar).	
IUCN Global Category	
	No Malagasy species of Diospyros *is currently listed.*

Supporting Statement (SS)	Additional information
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Malagasy Ebony is used for the manufacture of luxury objects, cutlery, brush making, marquetry, canes, lutherie, musical wind instruments and piano keys.	*The precious wood of these species is used to make inlays, cabinets, parts for musical instruments (fingerboards on violins, piano keys), cutlery and handles. In recent years Madagascar has experienced very high levels of logging of Ebonies following regime change in March 2009, particularly in the north-eastern rainforests (Jenkins* et al*., 2012).*
37-40% of described species are large harvestable trees.	*Madagascar ebony has been exploited for centuries, but subject to intense levels of uncontrolled and illegal international trade in recent years (DBEV and WWF, 2010a).*
	Volumes of timber export have been declining due to the increasing scarcity of these species. In 2009 36 700 tonnes of precious wood was exported, 249 tonnes (0.7%) were ebony and the remainder was rosewood. Logging occurs in various sites including the Marojejy and Masoala National Parks in north-east Madagascar (Randriamalala and Liu, 2010).
Twenty-two species of ebony wood are the most marketed outside Madagascar. More than 90% of exported goods are in the form of logs and sawn wood. The international market for Ebony has promoted the illicit exploitation of this species. There is a high demand for the quality of wood and mature trees are selectively targeted.	*The Prota (Plant resources of tropical Africa) database at www.prota.org identifies* Diospyros gracilipes, Diospyros perrieri *and* Diospyros platycalyx *as the most important Ebony species. ONE (2005) cited in DBEV and WWF (2010b) also identifies the following species as traded internationally:* Diospyros aculeata, Diospyros ambilensis, Diospyros antsiranensis, Diospyros bernieri, Diospyros bernieriana, Diospyros calophylla, Diospyros haplostylis, Diospyros intricata, Diospyros laevis, Diospyros magnifolia, Diospyros myrtifolia, Diospyros pervilleana, Diospyros pruinosa, Diospyros sakalavarum, Diospyros sclerophylla, Diospyros sphaerosepala, Diospyros tampinensis, Diospyros toxicaria, Diospyros tropophylla.
	*One species occurring in Madagascar (*D. ferrea*) is widespread in Africa, Asia, Australia and the Pacific (www.congotreesrbge.org.uk). All others are believed endemic.*
The structure of the population of the species of *Diospyros* presents a disturbance marked by the absence of certain diameter classes both inside and outside protected areas. Individual seed trees with a DBH greater than 20 cm represented by large trees are increasingly rare. It takes at least 80 years for these species to reach the size of exploitability. The natural regeneration rate is generally low (0 to 12%).	*Trees are harvested before reaching the age of reproduction (DBEV and WWF, 2010b). Individuals of* Diospyros *which have a diameter at breast height (DBH) greater than 50 cm are the main targets of loggers (DBEV and WWF, 2010a).*
	At PC19 a document presented the assessments of some species using the

Supporting Statement (SS)

The number of exploitable individuals is reduced and they exist only in protected areas or in areas of production. The gradual decline of populations of Madagascar ebony has been found, for example almost all the large trees of *Diospyros perrieri* disappeared in the western part of Madagascar.

Of the 84 species of *Diospyros* 13 have been assessed as threatened using the IUCN criteria.

However, there are species with a wide geographical distribution as *D. gracilipes, D. haplostylis* and others have a restricted distribution such as *D. perrieri* and *D. tampinensis.*

Diospyros species show a wide variability of density ranging from 10 to 900 individuals per hectare. In addition, the biovolume and basal area are generally low. This indicates that the majority of individuals are not usable (see Table below).

Table: Density of some species of Diospyros in Madagascar

Species	**Density (Individual/ha)**	**Basal area (m^2/ha)**	**Biovolume (m^3/ha)**
D. aculeata	70-280	0.4-7.2	1-93.5
D. bernieri	900	3.1	63.9
D. calophylla	450	1.9	7.7
D. gracilipes	500	3.6	12
D. haplostylis	500	4.9	23.3
D. perrieri	10	0.9	2.9
D. sakalavarum	50	0.6	1.6
D. toxicaria	30	0.1	0.2

Additional information

IUCN categories and criteria (see PC19 Doc 14.3). WWF and the Département de Biologie et Ecologie Végétales (CITES Scientific Authority for Plants) have conducted surveys at two sites in south east Madagascar (Mahabo Mananivo and Manombo), two sites in the north west (Tsaramandroso and Ankarafantsika) and four sites in the west (Kirindy, Beroboka, Andranomena and Ampataka) (DBEV and WWF, 2010a). Ten species of Diospyros were surveyed in the two sites of South East Madagascar, eight species in the Northwest and six species in the west. The survey's findings and preliminary threat categories are presented below for selected species.

Diospyros aculeata subsp. meridionalis- *endangered due to over illegal logging, population decline, uncontrolled fire (PC 19 Doc 14.3).*

Diospyros ambilensis- *At Mahabo Mananivo the density of this species was low at 10 per ha. Diospyros ambilensis has a low basal area (0.05 m^2 per ha) and biovolume (0.13 m^3 per ha) at both sites of Mahabo Mananivo and Manombo. This can be explained by the scarcity/absence of large individuals in the sites due to selective removal logging (DBEV and WWF, 2010a). Surveys found only one individual with a diameter of between 5-10cm and regeneration of the species was absent at the two sites in south east Madagascar (DBEV and WWF, 2010a).*

Diospyros bernieri – *near threatened due to over exploitation (PC 19 Doc 14.3).*

Diospyros calophylla- *vulnerable due to habitat degradation and over exploitation (PC 19 Doc 14.3).*

Diospyros clusiifolia – *vulnerable (PC 19 Doc 14.3).*

Diospyros cupulifera- *Surveys in Tsaramandroso (north west Madagascar) found* Diospyros cupulifera *to be present at one out of three sites surveyed, and to be present at a density of 60 individuals per ha. Basal area was 0.4 per m^2, and biovolume of 0.69 m^3 per ha, and regeneration was fair at the one site where it was present (DBEV and WWF, 2010a). Density in the west was 50-120 individuals per ha, and the species was found at two out of four sites, with a basal area of 0.01-0.86 m^2 per ha and biovolume of 2.18-3.49m^3 per ha. This species has a very low rate of regeneration in both study sites. Individuals with a diameter between 5-10 cm are absent (DBEV and WWF, 2010a).*

Diospyros ferrea*- The species has a good regeneration rate at Mahabo Mananivo in the south east and a density of 250-810 individuals per ha, though had a low basal area (0.03-0.95m^2 per ha) and biovolume (0.1-2.55 m^3 per ha) in Mahabo due to the scarcity or absence of large trees in the sites after selective logging (DBEV and WWF,*

Supporting Statement (SS)	Additional information
	2010a). The density in Tsaramandroso was lower at 10-40 individuals per ha, and the species was found at two out of three sites. The basal area in Tsaramandroso was 0.18-0.49 per m^2, and biovolume of 0.29-1.56m^3 per ha, and at one site there was no regeneration, whilst regeneration was fair at the other (DBEV and WWF, 2010a). **Diospyros fuscovelutina -** *vulnerable due to illegal logging (PC 19 Doc 14.3).* **Diospyros gracilipes**- v*ulnerable due to exploitation and likely decline (PC 19 Doc 14.3).The area of occupancy is estimated to be 513 km^2, and it is thought there are 46 subpopulations; of which 35 are outside of protected areas (DBEV* et al., *2011). From surveys in the south east it was determined the species had a density of 10-140 individuals per ha, and a low basal area (0.05-0.07m^2 per ha) and biovolume (0.11-0.14 m^3 per ha) due to the scarcity or absence of large individuals in the sites. No individuals with a diameter greater than 10 cm were found; individuals of this size are the most sought after by harvesters (DBEV and WWF, 2010a).* Diospyros gracilipes *is one of the most requested species of Diospyros on the Chinese and European markets (DBEV and WWF, 2010b).* **Diospyros greveana**- *This species is found in only one site in the west out of four (where it was found not to regenerate which could be explained by the use of this species as lumber) at a density of 10 individuals per ha, and basal area of 0.05 m^2 per ha and biovolume of 0.11 m^3 per ha. Individuals of certain sizes (0-2.5cm, 2.5-5cm and >10cm) were absent (DBEV and WWF, 2010a). The species was found at one out of three sites in the north west at a density of 30 individuals per ha and with a basal area of 0.18 per m^2, and biovolume of 0.36 m^3 per ha. Regeneration was fair at this one site (DBEV and WWF, 2010a).* **Diospyros haplostylis -** *vulnerable due to exploitation (PC 19 Doc 14.3).* **Diospyros intricata** - *At Mahabo Mananivo (south east) the density of this species was 20 per ha, and the basal area (0.01m^2 per ha) and biovolume (0.03 m^3 per ha) were low. This can be explained by the scarcity or absence of large individuals in the sites after the selective removal and illegal exploitation. The species had no regeneration at these sites and only four individuals were present with a diameter between 2.5-5 cm (DBEV and WWF, 2010a).* **Diospyros laevis** -*The density at Mahabo was 10 per ha, whilst at Manombo it was 20-130 per ha. Diospyros laevis has a low basal area (0.13 m^2 per ha) and biovolume (0.49 m^3 per ha) in Mahabo and Manombo. This can be explained by the scarcity or absence of large individuals in the sites (DBEV and WWF, 2010a). Regeneration was absent in both Mahabo and Manombo.*

Supporting Statement (SS)	Additional information
	Diospyros lanceolata - *endangered due to illegal logging (PC 19 Doc 14.3).* **Diospyros latispathulata-** *Density at sites in the west was 20-50 individuals per ha, and was found at two out of four sites. Basal area was 0.09-0.13 m^2 and biovolume was 0.11-0.14 m^3 per ha*). *Regeneration was absent or very low at all sites, and no individuals between 0-2.5 cm diameter were found (DBEV and WWF, 2010a).* **Diospyros masoalensis -** *vulnerable due to illegal logging (PC 19 Doc 14.3).* **Diospyros montigena-** *At Manombo the density of this species was 20-30 per ha and had a low basal area (0.03 m^2 per ha) and biovolume (0.12 m^3 per ha). This can be explained by the scarcity or absence of large individuals in the sites. Regeneration ranged from absent to fair (DBEV and WWF, 2010a).* **Diospyros microrhombus** – *Density in Manombo (south east) was 90-100 individuals per ha and the species had a low basal area of 0.04 m^2 per ha and biovolume of 0.09 m^3 per ha. This can be explained by the scarcity or absence of large individuals in the sites. Regeneration ranged from absent to fair, but no individuals with a diameter bigger than 10 cm were found (DBEV and WWF, 2010a).* **Diospyros myriophylla-** Diospyros myriophylla *density at sites in the west of Madagascar was 20-60 individuals per ha, and the species was found at three of the four sites surveyed. The basal area was 0.08-5.18 m^2 and the biovolume of 0.15-6.38 m^3 per ha. Regeneration rates varied from poor to good, at the site with the lowest regeneration rate (Ampataka) it is thought the reason for this is due to its close proximity to the road (DBEV and WWF, 2010a).* **Diospyros nigricans**- *The density of* Diospyros nigricans *in the south east was 80-300 individuals per ha, and the basal area was low at 0.25-0.42 m^2 per ha, and the biovolume at 0.93-1.64 m^3 per ha. This can be explained by the scarcity or absence of large individuals in the sites. Regeneration varied from absent to good (DBEV and WWF, 2010a).* **Diospyros occlusa-** *vulnerable due to illegal* logging *(PC 19 Doc 14.3).* **Diospyros perrieri**- endangered *due to its restricted distribution (PC 19 Doc 14.3). Diospyros perrieri is one of the most requested species of* Diospyros *on the Chinese and European markets (DBEV and WWF, 2010b).* **Diospyros sakalavarum**- Diospyros sakalavarum *density in the west of Madagascar*

Supporting Statement (SS)	Additional information
	was 20-120 individuals per ha, and the species was found to be present at two out of four sites. The basal area of Diospyros sakalavarum *was 0.07-3.81 m^2 per ha and the biovolume 0.09-5.93 m^3 per ha*). *The regeneration rate ranged from poor to fair. This species is widely used by local people for firewood and made into furniture (DBEV and WWF, 2010a). Classed as Least Concern using the IUCN Red List Categories and Criteria though noted fragmented habitat and forest degradation as threats (PC 19 Doc 14.3) (IUCN, 2012).* **Diospyros toxicaria-** *vulnerable due to exploitation and habitat degradation (PC 19 Doc 14.3).* **Diospyros tropophylla**- *At sites in the north west the density ranged from 140-250 individuals per ha, and the species was found at two out of three sites. The basal area at these sites was 3.06-4.78 per m^2 per ha, and the biovolume was 12.27-19.79 m^3 per ha. Regeneration was fair at both sites (DBEV and WWF, 2010a).* Diospyros tropophylla *density in the west of the country ranged from 20-770 individuals per ha, and was found at all four out of four sites. Basal area ranged from 0.04-7.59 m^2 per ha and biovolume from 0.06-9.82 m^3 per ha. Regeneration ranged from absent at two sites to very good at another. There was a lack of individuals greater than 10 cm due to selective logging for furniture (DBEV and WWF, 2010a).* **Diospyros urschii-** Diospyros urschii *has a low basal area (0.02-0.96 m^2 per ha) and biovolume (0.07-2.34 m^3 per ha*) *in the south east. Density was 10-340 individuals per ha and regeneration rates were either absent or fair (DBEV and WWF, 2010a).* *WWF (2012) carried out inventories in Andranopasy (south-west) and Andranomenakely (north-east) and found that* Diospyros.aff pervillei, D. cf calophylla, *and* D. perrieri *had no regenerations, whilst* Diospyros haplostylis *has no regeneration in Ampasimenakely, it has a good regeneration in Andranopasy.* *Is has been estimated that in 2008 and 2009 is at least 52 000 tonnes of precious wood (*Dalbergia *and* Diospyros *species) were exported from, Madagascar, estimated as from 100 000 trees of rosewood and ebony (DBEV and WWF, 2010b).* *Volumes of timber export have been declining due to the increasing scarcity of these species. Randriamalala and Liu, (2010) estimated that in 2009 36 700 tonnes of precious wood was exported, 249 tonnes (0.7%) were ebony and the remainder was rosewood. Logging occurs in various sites including the Marojejy and Masoala National Parks in north-east Madagascar.* *Ebony wood is widely available for sale.*

Supporting Statement (SS)	Additional information
Inclusion in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I	
	It is currently not possible to identify exactly which species any given log of Malagasy ebony might be. Indeed, there is a very high likelihood that it may be an as yet un-described species, given that there are at least a half dozen new species in the NE around the Bay of Antongil/Masoala to Marojejy that reach exploitable size. (Schatz in litt., *2012).*
Other information	
Threats	
The main pressures are registered clearing, bushfires, the slash and burn shifting cultivation and exploitative abuses especially for local trade and international. Today, the primary vegetation covers only 9.9% of the Malagasy territory. The rate of deforestation is estimated at 200-300 000 hectares per year. Some species grow in the coastal forests that are currently in a state of advanced fragmentation. This type of forest has been reduced by 22.5% since the 1970s.	*The use of fire is common for clearing forests. Logs are often transported by boat in thousands or on rafts using buoyancy trees of other species (e.g.* Dombeya *spp). On average five high buoyancy trees are required to float one log, as well as tens of thousands of vines for binding the rafts (Randriamalala and Liu 2010).*
Illegal logging is taking place in protected areas. The main threats are abusive and illegal logging and exploitation, destruction of habitat for land clearance, extension of urban areas and bush fires.	*The wood from* Diospyros *species is heavily exploited domestically for firewood, fence posts: people also use* Diospyros *medicinally (DBEV and WWF, 2010a).*
Conservation, management and legislation	
104 species were listed in CITES Appendix III in 2011.	
Decree 2010-141, March 24, 2010 prohibits the cutting, exploitation and trade which is enforced at national level.	*Barrett* et al. *(2010) note that the ban was for the subsequent 2 to 5 years. Ramahaleo* in litt*. (2012) confirmed that the ban is still in place at present.*
Legislative regulations fail to stop the illicit exploitation and the situation has worsened in the recent years as hundreds of containers continue to be exported confirming the failure of control. There is a lack of legislation on the species and a lack of integration between social, technical and scientific people, as well as the violation of procedures and misuse of power.	*Despite the ban it is reported that that further shipments of wood have left Madagascar's ports since then, while logging within parks apparently continues. In July, UNESCO put the Rainforests of Atsinanana, the site most affected by the illegal logging, on its World Heritage in Danger List. (Global Witness, EIA 2010).*
There is no ongoing monitoring of the population for species of *Diospyros* in areas where the range is known. Due to overexploitation some species of Diospyros are known in less than 2-5 localities and many are not present in protected areas such as: D*. baroniana, D. filipes, D. implexicalyx, D. nidiformis, D. perglauca,*	*Additional restricted distribution species not known to be present in protected areas include:* D. anosivolensis, D. coursiana, D. dicorypheoides, D. greveana, D. hazomainty, D. ketsensis, D. louvelii, D. mangorensis, D. mcphersonii, D. obducta, D. parifolia, D. subtrinervis*, and* D. tetrapoda *(Schatz* in litt., *2012).*

Supporting Statement (SS)	Additional information
D. subfalciformis, D. tampinensis, D. tetraceros and D. *thouarsii.* 10 – 25% of the total population of all species occur primarily outside protected areas. Currently, the policy of the Government of Madagascar is to increase the surface area of the protected areas which will effectively contribute to the conservation of species of *Diospyros*.	*The US House of Representatives passed Bill H.R. 839 condemning the illegal extraction of Madagascar's national resources and called on importing countries to halt the demand for illegally sourced precious woods from Madagascar and for consumers to check the origin. In 2008 the Lacey Act was enforced on Gibson Guitars for importing illegal Malagasy Ebony via its European Trading Partner Theodor Nagel GmbH & Co KG. Analyses show that previous importers have since halted the importing of timber (Global Witness, EIA 2010). The US Fish & Wildlife Service's investigation into Gibson Guitars has apparently had a positive impact on the demand for precious wood in the USA and Europe.* *In July 2010 the European Parliament passed the Timber Import Regulation prohibiting the import of illegal timber and timber products into the EU market.*
Captive Breeding/Artificial Propagation	
No study of artificial reproduction exists.	
Other comments	
Ministry of Environment and Forests (MOEF) note the importance of the establishment of a traceability system based on a database of the DNA of precious woods. The 36th session of the of the World Heritage Committee which was held in Saint Petersburg from June 24 to July 06, 2012, saw the adoption of recommendations on precious woods (in particular the implementation of the existing legislation on the prohibition of the illegal trade, as stated the Decree 2010-141) and taking action of States Parties to the Convention so that the wood illegally cut in Madagascar is prohibited and cannot enter into their national markets.	*Ebony fruits are an important element in the diets of threatened lemur species (Andrews and Birkinshaw, 1998).*

Reviewers: C. Berkinshaw, C. Hin Keong, J. de Koning, D. Newton, J. Nunez-Mino, S. Oldfield, G. Schatz, L. Wilme.

Amend the Annotation for Brazilian Rosewood *Aniba Rosaeodora* #12 to "*Logs, sawn wood, veneer sheets, plywood and extracts"*

Proponent: Brazil

Summary: *Aniba rosaeodora* is a tree species occurring in Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela. It was included in Appendix II in 2010 largely because of concerns regarding harvest for export of the oil and associated products. The listing has annotation #12 "*Logs, sawn wood, veneer sheets, plywood and essential oil (excluding finished products packaged and ready for retail trade)*."

At the Twentieth meeting of the Plants Committee (March 2012), a working group on annotations discussed definitions of terms used in annotations #2, #7, #11 and #12 which cover various parts and derivatives of various plant species included in the Appendices. The term "essential oil" only occurs in annotation #12, which only applies to *Aniba rosaodora.* The working group proposed subsuming the term "essential oil" into a wider definition of "extract. However, as noted in document CoP16 Doc. 75, the definition for "extract" originally put forward by the working group included the caveat: "*Finished products containing such extracts as ingredients are not considered to be included in this definition."* The working group could not reach agreement on whether this should be included in the definition or not, and referred the matter to the Standing Committee. On the basis of Standing Committee deliberations, the definition proposed for adoption at CoP16 does not include this exclusionary language and is as follows:

> Extract: Any substance or product obtained directly from plant material by physical or chemical means regardless of the manufacturing process. An extract may be solid (crystals, resin, fine or coarse particles), semi-solid (gums, waxes), or liquid (solutions, tinctures, oil and essential oils).

This definition is proposed for adoption under Agenda item 75 (Development and application of annotations) as paragraph 10 of document CoP16 Doc. 75.

If this definition and the current proposal were adopted, the listing for *Aniba rosaeodora* would use a defined term ("Extracts") rather than an undefined term ("Essential oils").

As reported in document CoP16 Doc. 75, paragraph 11, the working group understood that Brazil would submit a proposal for consideration at CoP16 to revise the annotation for *Aniba rosaeodora;* they also understood that Brazil intended to include the exclusionary language in the proposal. However, Brazil indicated in an email sent to the Chair of the Plants Committee in May 2012 that they considered finished products containing such extracts as ingredients, and also fragrances, not to be included in the definition of extracts proposed for adoption. They have therefore not included this exclusionary language in the proposed amendment.

Analysis: The proposed amendment would be in line with the adoption of a definition of "Extract" as proposed in paragraph 10 of document CoP16 Doc. 75. The proposed new version of annotation #12 does not include the wording "*(*excluding finished products packaged and ready for retail trade)" currently present in the annotation. The general understanding of the new definition proposed for adoption is that it does include finished products. That is, if the proposed amendment were adopted, finished products would no longer be exempted from the provisions of the Convention. This would not appear to be the intent of the proponents. Retaining this language, so that the amended annotation read: "logs, sawn wood, veneer sheets, plywoods and extracts (excluding finished products packaged and ready for retail trade)" would resolve this.

Inclusion of *Dalbergia cochinchinensis* in Appendix II

Proponent: Thailand and Viet Nam

Summary: *Dalbergia cochinchinensis* is a slow growing species of rosewood found growing sparsely in open semi-deciduous forests in Cambodia, Lao People's Democratic Republic (Lao PDR), Thailand and southern Viet Nam. *Dalbergia cochinchinensis* has become rare and the species is disappearing from most of its natural habitat, the last remaining stronghold of the species is in Thailand in a protected area near the border with Cambodia. The total population size has not been systemically surveyed. In Thailand, *D. cochinchinensis* is found scattered in 30 protected areas (560 km^2) and the number of trees is estimated to have declined from perhaps as much as 70%, from around 300 000 in 2005 to 80 000-100 000 trees in 2011. There has not been a comprehensive survey in Viet Nam, but the population size of rosewood (species not specified) is thought to have declined by half or more during the past 5-10 years. A specific survey of *D. cochinchinensis* in five protected areas in Viet Nam conducted in 2010 showed a low density of 1-10 tree/hectare. No information is available on trends for the species in Cambodia or Lao PDR, but mature individuals are very rarely seen, even within protected areas. *Dalbergia cochinchinensis* is classified globally by IUCN as Vulnerable, although this assessment was published in 1998 and is regarded as in need of updating.

The wood is highly desirable in cabinet-making; the primary parts in the international trade are logs and sawn wood but wooden furniture and handicraft finished products are also found. Much of the trade is thought to be destined for China. Harvesting of this species is either restricted or banned across all of its range. It appears that illegal trade is increasing rapidly. The species is also affected by habitat loss. Trial plantations have been established; however, the slow-growth rate of the species means such plantations have limited commercial appeal.

The proposal is for the inclusion of *D. cochinchinensis* in Appendix II with Annotation #5 (logs, sawn wood and veneer sheets).

Analysis: *Dalbergia cochinchinensis* is a rosewood tree from Southeast Asia that yields a highly sought after timber, demand for which has grown very markedly in recent years, particularly in China. This demand is met entirely by harvest, often illegal, from wild populations. Although inventory data are lacking in most of the range there are indications of declines in range states; at least one (Thailand) decline in the past six years would already appear to meet the criteria for Appendix I. The species would therefore appear likely to meet the criteria for inclusion in Appendix II Annex 2 a, paragraph A of *Resolution Conf. 9.24 (Rev. CoP15)*: 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.

Supporting Statement (SS)	Additional information
Taxonomy	
Synonym: *Dalbergia cambodiana*.	Dalbergia cambodiana *is considered to be a separate valid species by IUCN*. D. cambodiana *is a synonym of* D. cochinchinensis *according to the latest revision of the genus in Indo-China (Nyiomdham, 1997), and this has also been confirmed by molecular barcoding analyses (results not published, Hartvig* in litt., *2012).*

Supporting Statement (SS)	Additional information
Range	
Cambodia, Lao PDR, Thailand and Viet Nam.	
IUCN Global Category	
	Vulnerable A1cd (Assessed 1998, Criteria Version 2.3) (needs updating).

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

The population size of *D. cochinchinensis* has never been systemically surveyed. However, the wild population of *D. cochinchinensis* is likely to be severely diminished as a result of heavy illegal logging to meet a recent elevated demand for the wood in Asian markets.	*In 2011 the species was considered to meet the IUCN Red List criteria for Critically Endangered (A2+3+4 cd) as illegal cutting and habitat destruction together had led to a population decline of an estimated 80% through the last 150 years (3 generation), and this rate of decline was projected to continue unless radical conservation actions were taken (Hartvig* in litt., *2012).*
The species has a slow growth rate. Natural regeneration is often poor. The species is pollinated by insects. It is an often self-pollinated crop, resulting in a limited genetic variation observed within each natural population. However, based on DNA analysis, there is a great deal of genetic variation between populations.	*Although no information is available on population trends in Cambodia, Lao PDR and Viet Nam there are observed declines in all three countries (Hartvig* in litt., *2012). Natural populations of* D. cochinchinensis *are disappearing and only limited numbers are found in the remaining forest fragments of Southern Viet Nam (Hien and Phong, 2012).*
The species has been found growing sparsely in open semi-deciduous forests in Cambodia, Lao PDR, Thailand and Southern Viet Nam. Due to its vulnerability to extinction from over-exploitation of the natural population, *D. cochinchinensis* has become rare and the species is disappearing from most of its natural habitat.	*Rosewood has been overharvested and is now only found in remote areas and some economic land concessions have been granted close to the remote areas (Cambodia Daily, 2012).*
It is now restricted to a few localities in the range state, especially in Thailand where its distribution is diminishing. At the moment, the only remaining rich source of the species is in a protected area near the Thai border with Cambodia.	
Thailand 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 cubic meters) in 2011.	***Thailand*** *The Thai government estimates that only 100 000 trees remain in the wild, scattered along protected areas on the border of Cambodia and Viet Nam (EIA, 2012c).*
The habitat area has been continuously reduced due to both deforestation for agriculture and recent illegal logging. Currently, the natural stands of the species are found scattered only in 30 protected areas of 557.76 km^2. The habitat is thus fragmented.	

Supporting Statement (SS)	Additional information
Viet Nam There has been no comprehensive survey of rose wood in Viet Nam. The population size of rosewood in Viet Nam has been declining about 50-60% during the past 5-10 years. Whilst in Viet Nam, a specific survey in five protected areas conducted in 2010 showed a low density of 1-10 tree/hectare. No information is available on trends for the species in Cambodia or Lao PDR.	***Viet Nam*** *The SS does not specify which species of rosewood the 50-60% decline refers to.* ***Cambodia*** *In Cambodia populations can be found in many provinces, but mature individuals are very rare outside strictly protected areas. Due to conversion of forest land, logging and illegal log-poaching, Cambodian populations face severe depletion (Hartvig* in litt., *2012).* ***Lao PDR*** *In Lao PDR, the species is becoming very rare because of overexploitation and illegal cutting, even from protected populations (Hartvig* in litt., *2012).*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
The wood, which is highly desirable for premium wooden furniture, has recently become one of the most expensive kinds of wood in the world. The wood has recently been 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 primary parts in the international trade are logs and sawn wood but wooden furniture and handy craft finished products are also found in international trade. The wood is not as popular with local people due to a local belief that restricts utilization by ordinary people. However, a belief in an overseas market that furniture made from the Rosewood is good for the health of the owner has created a great demand for the wood. Illegal logging to meet high demand (with the price of USD1500 to 2000/cubic meter) from overseas markets posts a major threat to the survival of the species.	*The results of the FAO Forest Resource Assessment (2010) showed that range states have no large forest stocks of* D. cochinchinensis *to sustain the current levels of trade. The scarcity of suitable quality wood and the expanding size of the market have prompted traders to seek substitute* (Dalbergia) *species from other regions. China's import of Rosewood (species or genus unknown) sourced from Lao PDR and Viet Nam has increased substantially since 2005. In 2011 approximately 500 000 cubic metres were imported into China, based on China customs data. Import levels of roundwood for USA and the European Union are estimated to be 20 000 cubic metres each, mostly in the form of musical instruments (Jenkins* et al., *2012).* *Actual data on export and import levels are limited. According to Global Timber (2012), imports into China are increasing every year, mostly from Cambodia and Viet Nam.* *There are many companies and websites selling* D. cochinchinensis *timber for prices ranging up to USD3900 - USD6000 or even USD50 000 per* m^3 *(UNEP-WCMC, 2008; EIA, 2012c). One unnamed company exported 1200* m^3 *of* D. cochinchinensis *logs to*

Supporting Statement (SS)	Additional information
Evidence suggests that the species is threatened with extinction, a major rosewood trader complained in April 2011 that "the species is finished ... there are only about five years left in the trade."	*Yantai City in China in January 2011 (EIA, 2012c).* *A recent EIA report (2012b) published the findings of an enquiry on the illegal trade in Lao PDR and Viet Nam, with a company based in Haiphong (Viet Nam), offering up to 50 000 m^3 of* D. cochinchinensis *and* D. oliveri *for export.* *About 70% of Viet Nam's 450 export companies are specialising in exports of indoor furniture made of* D. cochinchinensis *(and other valuable timber species) mainly to Asian countries such as China, Hong Kong, Taiwan POC and Singapore (Forest Trends, 2010). Furniture sellers have commented that prices of rosewood increased by 30-40% in 2012 compared to 2011. The number of companies trading rosewood from Thailand in China increased by 30-40% in 2012 with annual rosewood prices increasing by 15-40% (EIA, 2012a). The wood is also used for making chop sticks, tea-containers and acoustic instruments, all available on the internet (EIA, 2012a).*
Thailand Due to a National Logging Ban in Thailand, illegal logging is now practically the only way to obtain the timber of *D. cochinchinensis* in the country, especially since the auction of released exhibits (seized timbers) was stopped in 2007 when the international demand started to surge rapidly. Speculation by overseas traders that the wood will soon be unavailable has led to extremely high price which is a great driving force for illegal trade.	***Thailand*** *In 2009, Thailand's Department of National Parks seized 1222 rosewood logs in 134 cases, in 2010 2739 logs were seized in 223 separate cases and in 2011 4850 logs were seized in 560 cases (EIA, 2012a).* *In 2006 the Lao embassy and forest police confiscated 1664 high grade logs, identified as* Dalbergia cochinchinensis, *believed to belong to a transitional illegal logging network preparing to export the timber. The Customs invoice showed that the logs had been transported to the depot by a Thai freight company destined for export to China by a Lao firm but no export permit had been issued. It is likely that the seized timber had been smuggled in and illegally felled from a Thai forest (TRAFFIC, 2012).*
The illegal trade in Thailand doubled each year between 2009 and 2011 with a rise in the number of cases from 134 to 687; number of specimens from 1222 to 5956 and volume from 184 to 596 m^3. In addition, 6780 logs from 786 cases were seized in the first 9 months of 2012.	*It is not clear from the SS, if the figures quoted for the illegal trade are just of Thai* D. cochinchinensis *or rosewood in general.*
Approximately 178 609 pieces of wood were confiscated in over 3000 illegal logging cases during the past 6 years in Thailand. These specimens had a market price of approximately USD3 billion. This volume of seized logs (0.63 million m^3) can be roughly converted to being the equivalent of at least 600 000 trees measuring 50 cm in DBH removed from the wild. The auctioning of seized timber in Thailand stopped in 2007, when international demand started to rapidly increase.	*According to the SS, confiscations are estimated to be equivalent to 600 000 trees. This figure suggests the original population estimate in 2005 (300 000 trees) may have been in error, some of the confiscated wood may have originated from stockpiles of Thai* D. cochinchinensis*, that confiscations included trees harvested outside of Thailand, that the confiscation calculation of 0.63million m^3, may have been in error, that other timber species are included or a combination of any number of these factors.*

Supporting Statement (SS)	Additional information
Viet Nam The species has been exposed to high rates of exploitation of the prime timber. There were 74 illegal logging cases of Rosewood in 2010.	***Viet Nam*** *In 2011 Viet Nam exported 123 000 m^3 of rosewood logs (Vietnamese* Dalbergia *species) to China which was illegally felled from protected areas, especially in Quang Binh province, with reports of Chinese buyers being backed up by criminal gangs from Viet Nam. However, the majority of Vietnamese rosewood exports originate from Lao PDR, Thailand and Cambodia. Lao PDR exported 80 000 m^3 to China in 2011 despite harvest bans. The bulk is exported through Viet Nam with companies boasting of circumventing restrictions (EIA, 2012c).* ***Cambodia*** *The most serious threat to this species in Cambodia is illegal logging and trade. It appears that little effort is made to control the logging. There is evidence that officials who should be preventing the logging are themselves benefitting from the trade (Newman* in litt., *2012). They are also making high profits and logging will not cease due to the value of the timber* *Cross border illegal logging has increased in protected areas in the last few years and it is evident that populations have been severely reduced by illegal logging and deforestation. Mature trees are very rarely seen, even within protected areas. Large numbers of logs have been confiscated by Forest Administration district officers in protected areas and undoubtedly larger amounts do make it across the border. According to the Forest Administration officers, the logs are exported to Viet Nam and China where the demand is huge. (Hartvig* in litt., *2012).* *Logging of* Dalbergia *species was very active in Cambodian Forests in 2010. Piles of marked logs (*Dalbergia *but species not specified) were observed by the road from Promaoy Commune, Veal Veang District in Phnum Samkoh Wildlife Sanctuary on the road from Promaoy to Koh Kong in May 2010. Logging here and in the Cardamom Mountains Protected Area seemed to be going ahead completely unhindered by the authorities. (Newman* in litt., *2012).* *In Cambodia about 30 containers (each holding 20 m^3) of* D. cambodiana *and* D. bariensis *are exported abroad per month illegally (UNEP-WCMC, 2008; TRAFFIC, 2012).* *A report in the 'Cambodia Daily' (2012) based on official Chinese import documents revealed 36 000 m^3 of rosewood logs (species unknown) have been recorded entering China from Cambodia between January 2007 and August 2012. In 2011, 9800 m^3 of rosewood logs were imported into Shanghai in 3 shipments and 4300 m^3 in 2012. A further 10 000 m^3 of logs and 15 000 m^3 sawn wood of various timber types have entered China from Cambodia since 2005. The Chinese Customs applies a specific*

Supporting Statement (SS)	Additional information
	import code for the rosewood imports. This continues despite the Cambodia's Forestry Law (2002) which prohibits logging of rare tree species. The rosewood is said to be destined for markets in Viet Nam and China. The value of rosewood imports since 2007 was registered by China Customs as USD61 million and considerably more in the retail market. Many companies can be found on the Chinese trading website 'Alibaba' selling the wood for as high as USD35 000 per cubic meter. ***Lao PDR*** *Field surveys carried out in Bolikhamsay and Khammouane provinces Lao PDR in November 2012 (by Ida Hartvig and National Herbarium of Lao PDR) have confirmed that natural populations of* D. cochinchinensis *in Lao PDR are under severe and continuing threat from illegal logging. No mature individuals were found and all trees with a DBH over 15 cm had been logged. This trend was observed for all surveyed populations, even within strictly protected areas such as Phu Khao Khuay National Park. According to locals and staff of the National Park felling had been ordered by Chinese businessmen, carried out by locals and timber exported to China directly after logging. The majority of this occurred in 2007 when all valuable trees were removed and there is photographic evidence of more recent logging (Hartvig* in litt., *2012).*
Inclusion in Appendix II to improve control of other listed species **A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I**	
The wood of *D. oliveri* (sometime known as *D. bariensis*) is similar to that of *D. cochinchinensis*. The two closely related species can be differentiated from each other by bark colour and general appearance; wood colour; characteristics of specific gravity and hardness at specified moisture content; and presence of solitary pores and multiple pores with metatrachal parenchyma.	*There are an estimated 250* Dalbergia *species (Lewis* et al., *2005). Ten other* Dalbergia *species are already listed in CITES Appendices – all on Appendix III, apart from* D. nigra *which is listed in Appendix I. As a consequence issue is already being addressed by Parties to some extent.* *The genus is in need of global revision.* D. oliveri *and* D. cochinchinensis *are not closely related but the heartwood is similar and the trees are easily discriminated by bark, leaf, flower and fruit characteristics as well as by molecular markers (Niyomdham,* et al., *1997; Hartvig, 2011*; *Hartvig* in litt., *2012).*
Other information **Threats**	
Over-exploitation for the extremely highly-priced timber of *D. cochinchinensis* is the major threat to the species throughout its range. Habitat loss is an additional threat. For example, in Thailand deforestation for economic crop production threatens the	*In Cambodia and Lao PDR, habitat loss poses a great threat for* D. cochinchinensis *populations. Large areas of forest are being cleared for the purpose of rubber plantations, acacia, rice and for other agricultural or development purposes. This is*

Supporting Statement (SS)	Additional information
species.	*true for most of Cambodia, but particularly for the north-western provinces of Otdor Meanchey, (parts of) Siem Reap and Preah Vihear, that until recently were very remote and difficult to access. These provinces have the largest and most continuous populations of* D. cochinchinensis *across its distribution area, but that may no longer be true in the future if deforestation continues (Hartvig* in litt., *2012).* *Data in the table below are derived from FAO (2010) showing the forest extent in range states, deforestation and forests in protected areas.*

Country	*% forest land area*	*forest area 1990 (1000 ha)*	*forest area 2010 (1000 ha)*	*Annual change rate 2005-2010 (1000 ha yr)*	*Forests in protected areas (1000 ha)*
Lao PDR	*68*	*17314*	*15751*	*-78*	*-*
Thailand	*37*	*19549*	*18972*	*15*	*9426 (50%)*
Viet Nam	*44*	*9363*	*13797*	*144*	*-*
Cambodia	*57*	*12944*	*10094*	*-127*	*3092 (31%)*

Conservation, management and legislation

There are currently no international measures implementing control of movement of *D. cochinchinensis* timber across international borders, however, collaboration on the control of cross border illegal trade among the range States was recently initiated	*A workshop held in Chiang Mai, Thailand in November 2011 proposed that the species be listed as globally Critically Endangered based on rate of decline. The rationale for this noted that "the level of forest clearing and exploitation in Viet Nam and Thailand has lead to a severe reduction in population size and dispersal of the species and it now only occurs in protected areas. In Cambodia and Lao PDR, there are still significant populations, but they are severely threatened by illegal cutting and forest clearing" (Hartvig* in litt., *2012). Ida Hartvig Larsen, a participant in the workshop, is undertaking a PhD that aims to develop a strategy for sustainable use and management of* Dalbergia *in Cambodia and adjacent countries in the context of REDD. She has commented on this from a further survey in Lao PDR in 2012 where she doubts these significant populations exist (Hartvig* in litt., *2012).*
Cambodia Harvesting this species is banned by Cambodian Forestry Law 2002 No.35.	***Cambodia*** *In Cambodia a network of conservation stands has been protected by Royal Decree to preserve genetic variation within the species. There is a restoration programme for the species at Sre Noy, Siem Reap. (Hartvig* et al., *2011). In Cambodia the vast intact forest area in the Central Lowlands known as Prey Long has been proposed as Protected Forest in 2011. This prime habitat for* D. cochinchinensis *is however classified as production forest and is under immediate threat from industrial logging, economic land concessions and illegal logging (Strange* et al., *2007).*

Supporting Statement (SS)	Additional information
Lao PDR The Prime Ministerial Order No-17/PM of 2008 explicitly prohibits harvesting all domestic *Dalbergia* species. In addition, Prime Minister's Order No 010/PM of 2011 bans the exploitation, trading and export of *D. cochinchinensis* wood.	***Lao PDR*** *According to Lao Forestry Law, logging is only allowed in "production forest areas" that have approved management plans in place and export of roundwood, sawnwood and semi-finished products is prohibited as is harvesting of the species. The Lao Forestry Law bans the export of roundwood, however, companies find a way around this by converting it into sawn wood for which a special logging quota can be obtained which allows the harvest and export of the wood regardless of legislation (DFID, Forest Trends, 2010).*
Thailand *D. cochinchinensis* is listed as Category A (general restrict): restricted timber No. 53 by Thai Forest Act, B.E. 2484. As a result, no harvest of the species from forest without permit or concession is legal in Thailand. However, logging from private property can still be performed. In addition, Thailand has prohibited logging of natural forest trees nationwide since 1989. Export permit from the Ministry of Commerce for the logs has also been required.	***Thailand*** *Customs and the Royal Forestry Department are monitoring imports of timber to check for the presence of rosewood (EU FLEGT, 2012).*
Viet Nam In Viet Nam, *D. cochinchinensis* was listed as group IIA protected species under Forest Law in 2006. Later, it has been placed in danger of extinction at level EN A1a, c, d in 2007. As a result, it is prohibited to exploit, dispatch or store the wood, according to Vietnamese government decision 32/2006/ND-CP.	***Viet Nam*** *It was assessed as Endangered A1 acd by Dang and Nguyen in 2007 (Hien and Phong, 2012). There are not thought to be equivalent national red list assessments for Cambodia, Lao P.D.R. and Thailand.* *There is a specific conservation site for the species in Dak Ha KonThum province.*
<u>Captive Breeding/Artificial Propagation</u>	
For a long time, it has been known that the natural stands of *D. cochinchinensis* grow slowly. The species has, thus, not been of interest for commercial planting programs (has only trial plantations). Many trial plantations of the species have been established in Thailand since 1989. Thailand has selected 570 parental stocks in 18 provinces since 1987 for sourcing seed and there are now at least 20 000 trees growing in plantations. Since 2002, Cambodia has selected 121 parental stocks within 50 hectares of a conserved area in Seam Reap and Lao PDR has protected 108 hectares in three natural forests for this purpose. Viet Nam has established two *ex situ* collections of 2600 trees since 1990. A number of plots in trial plantations in Lao PDR and Thailand have shown that *D. cochinchinensis* can potentially grow as fast as teak under favourable conditions, however, give a low heartwood yield. There is no information on the extent of artificial propagation outside the countries of origin.	*The Forestry Administration of Cambodia has established a 500 ha plantation of* D. cochinchinensis *in July 2012, close to the protected seed source area at Sre Noy, Siem Reap. A similar plantation is underway close to Prasat Preah Vihear, province of Preah Vihear (Hartvig* in litt., *2012).* *In Viet Nam two* ex situ *stands with 2600 trees have been established since 1990 and 10 ha were planted for conservation and seed supply (APFORGEN).* *This species occurs in four botanical gardens in Viet Nam, Thailand, Singapore and USA (BGCI Plantsearch, 2012).*

Supporting Statement (SS)	Additional information
Listing *D. cochinchinensis* in the CITES Appendix II would enhance the success of commercial plantation, which is of future economic benefit to rural people. A number of molecular genetic studies have also been executed to develop a network of *in situ* gene banks as well as sustainable seed gardens for future planting. All range states started planting programs for the species, some with assistances from international agencies.	
Other comments	
Thailand is directly sending this draft proposal to authorities of all range States of this species, five international organizations as well as the Netherlands, requesting comments. A comment from Vietnamese CITES Management Authority, which was received by 25 September 2012, is incorporated in this document. Moreover, ITTO and IUFRO expressed their support to this proposal.	*The PhD project undertaken by Ida Hartvig is testing the use of DNA fingerprinting methods to determine the species and geographic origin of traded timber of* Dalbergia *spp. in Cambodia and neighboring countries. Once research is completed, it is hoped that a tool suitable for use in global certification schemes and/or FLEGT programmes can be developed.* *Hartvig* in litt. *(2012) suggested that* D. oliveri *should also be considered for inclusion in Appendix II. Although not yet as desired as* D. cochinchinensis*, the species is also illegally logged in Cambodia, Lao PDR and Viet Nam (Thailand unknown), and this poses a severe threat to its further survival. Hartvig expects than when* D. cochinchinensis *stands have been completely exploited for high value trees (as has already happened in many areas), the focus will change to* D. oliveri*. The wood has the same qualities as* D. cochinchiensis *and at least in Cambodia, is used for the same purposes (luxury furniture, fine handicraft etc) (Hartvig* in litt., *2012).*

Reviewers: I. Hartvig, C. Hin Keong, J. de Koning, M. Newman, J. Nunez-Mino and I. Theilade.

Inclusion of *Dalbergia retusa* and *Dalbergia granadillo* in Appendix II

Proponent: Belize

Summary: *Dalbergia* is a large and very widespread genus of trees, shrubs and lianas; many of the species yield valuable timber traded under a variety of different names, most frequently as rosewood. *Dalbergia retusa* (Black Rosewood, Nicaraguan Rosewood, cocobolo) is a tree occurring in tropical dry forest habitats in Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama. It may also occur in Colombia and Belize (taxonomic clarification is required to determine if trees referred to as '*Dalbergia* spp.' and/or 'rosewood' in the Chiquibul Forest Reserve, Belize are in fact *D. retusa*). *Dalbergia granadillo* is a similar species, occurring in El Salvador and Mexico.

The range of *D. retusa* is said to be highly fragmented because of overexploitation and land conversion. Like other rosewood-bearing trees the species is slow growing. Natural regeneration is generally low, but may be enhanced in clearings and open areas including areas periodically exposed to fire. The species has been extensively felled to harvest the beautiful, dense and durable wood, which is prized for a wide range of uses. The heartwood is surrounded by white sapwood and the density varies with age and habitat conditions. The poorly formed stems yield the most uniquely figured and highly prized wood which is hard, heavy and lustrous in colour with high oil content and a high natural polish. Little information is available on current abundance and there are conflicting accounts of the conservation status of the species, even within particular countries. It has been reported to be threatened in Costa Rica, Guatemala, Mexico, Nicaragua and Panama, but its conservation status has also been described as good in both Costa Rica and Nicaragua. There is also inconsistent information regarding the current origin of cocobolo wood in trade. The species is known to have been the subject of heavy exploitation in the past, particularly in Costa Rica and Panama. There are recent unconfirmed reports of uncontrolled harvest in the Darien region of Panama and illegal shipments of cocobolo, apparently destined for China, were seized in Guatemala in 2011. However, it has also been said that much of the recent cocobolo in trade originates on private fincas (farms) where 80 to 100 year old trees have been able to mature. In the past two decades small-scale plantations are reported to have been established in Costa Rica and Guatemala, and there has been some re-planting in reserves in Panama. It seems unlikely that any of these efforts have yet produced commercial quantities of cocobolo.

Much less is known of *D. granadillo*. Its timber is said to be virtually indistinguishable from that of *D. retusa* and it has been assessed as nationally endangered in Mexico.

A proposal to include these species in CITES Appendix II at CoP14 was withdrawn with an agreement among range and import States to take further measures to increase knowledge and regional information sharing on the trade and population status and trends. Guatemala included its population of *D. retusa* in Appendix III in 2008 and Panama included its population in 2011. No annotation is specified for either species in the current proposal.

Analysis: Information on the conservation status of *Dalbergia retusa* is conflicting. The species is known to be in demand internationally for its timber, and the market for rosewoods in general has grown very rapidly in Asia, particularly China, in recent years. Populations are said to have declined historically as a result of overharvest and land conversion for agriculture and pasture. Little is known about the current level of harvest for international trade or the impact of such harvest on the species, although there are indications of uncontrolled harvest of wild populations in at least one range State, and of illegal trade in another (Guatemala). There is overall insufficient information to determine whether the species meets the criteria for inclusion in Appendix II set out in Annex 2 a of *Resolution Conf. 9.24 (Rev. CoP15).*

Dalbergia granadillo has a more restricted distribution. Its wood is considered to be indistinguishable from that of *D. retusa* and is traded under the same name. If *D. retusa* were to be listed in Appendix II, implementation of such a listing would be greatly facilitated by the inclusion of *D. granadillo* in Appendix II.

Supporting Statement (SS)	Additional information
Range	
Dalbergia retusa: Mexico, Panama, Costa Rica, El Salvador, Honduras, Nicaragua, Guatemala, and possibly Belize. Also reported from north-western Colombia, though conflicting studies suggest this species does not occur in Colombia. *Dalbergia granadillo:* El Salvador and Mexico.	D. retusa*: UNEP-WCMC Species Database (2012) includes Belize.*
IUCN Global Category	
	D. retusa *is included in the IUCN Red List as Vulnerable A1acd based on a 1998 assessment (ver. 2.3).* D.granadillo *is not currently listed.*
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
Dalbergia retusa Much of the habitat that should be available to *D. retusa* has been destroyed or heavily exploited (See figures in "threats" for forest loss). Some areas where the species was formerly widespread now hold populations which are almost completely exhausted. Cocobolo is so rare that very little of it reaches the world market; it has been heavily exploited and is now mainly harvested from private fincas (farms) where 80 to 100 year old trees have been able to mature.	*Found in tropical dry forests, evergreen forests, live oak forests and also in disturbed areas and plantations. No country has information regarding population size, coverage or density or inventories in natural forests for* D. retusa *or* D. granadillo *(PC19 Doc. 16.1 (Rev. 1), 2011).*
Colombia: Its occurrence in Colombia questioned.	
Costa Rica: *D. retusa* occupies 13 698 km^2 distributed in northern Pacific from 0 – 300 m. Its available habitat has been reduced by 61.5%. Populations are fragmented but localized. 6.2% of its habitat occurs within State protected areas. State of conservation is reported as good, although elsewhere in the SS it notes that areas where the species was formerly widespread now contain populations almost completely exhausted. There is good regeneration (tree has regrowth after cutting or burning).	*Costa Rica: classified as Endangered by Estrada* et al*, (2005). Restricted to the Pacific Coast and is not found in the northern zone of Los Chile (CoP14 Prop. 31 IUCN/TRAFFIC Analyses). No detailed information on coverage.*
El Salvador: Distribution is restricted to the north-western region; no data are	*El Salvador: Rare.*

Supporting Statement (SS)	Additional information
available regarding size, cover, density, vertical or horizontal structure or regeneration status. Reported as vulnerable.	
Guatemala: No records of population status. Its status is unknown but data on population will be available shortly. Included in Category 2 of the List of Threatened Species of Guatemala (which refers to species with distribution range restricted to one type of habitat).	*Guatemala: Endangered in Guatemala's Red List of Trees in (Vivero et al., 2006).*
Honduras: Reported from western areas of the country. No data on status of populations. Included it in the list of "Species of Special Concern in Honduras" in the category vulnerable A1 cd+2cd according to IUCN categories.	*Honduras: No detailed information on coverage.*
Mexico: Occurs in southwest and southeast Mexico, there are records of the distribution of the species in Chiapas and Oaxaca, but no data on population status. In Mexico, a research project is being developed which will assist in determining the commercial and conservation status of the genus *Dalbergia*; there is no record of harvest inside Natural Protected Areas.	*Mexico Endangered (CoP14 Prop. 31 IUCN/TRAFFIC Analyses). No detailed information on coverage.*
Nicaragua: Frequent from the Pacific to the Atlantic coasts (Stevens *et al*., 2001). Good presence in open areas the species is distributed across the country mainly outside of forests at a density of 0.064 trees per hectare. Regeneration is abundant and the species has no health problems or plagues. Sustainable silvicultural criteria are applied to harvest.	*Nicaragua: Considered to be in a critical state (CoP14 Prop. 31 IUCN/TRAFFIC Analyses).*
Panama: It is only found in the drier, southern parts of the isthmus, but is never common. Intensive commercial harvest of the timber for at least 100 years, combined with artisanal harvest and in addition to its restricted distribution is thought to have made it a scarce resource in Panama.	*Panama: Endangered (CoP14 Prop. 31 IUCN/TRAFFIC Analyses).*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Dalbergia retusa is heavily exploited and in international trade mainly for its heartwood, which is considered to be beautiful. It is also extremely strong and durable. It is used for various purposes including marine uses, making woodwind instruments and decorating items. Most internationally traded timber now comes from plantations, although historically large volumes of the wood were extracted from the wild.	*There is also very little information on the volume of international trade although cocobolo is available from numerous sources online and is currently subject to high demand in China. Seizures of illegally trafficked timber in Guatemala suggest there is an organised 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" (Jenkins* et al.*, 2012).* *The main exported product is sawn wood. Guatemala reported that it exported almost*

Supporting Statement (SS)	Additional information
At the time of writing very little trade data specifically relating to *D. retusa* was available. The USA reports that in 2008, one shipment of 15 cubic meters of wild Guatemalan-origin *Dalbergia retusa* sawn wood was imported into the United States from Guatemala.	*20 m^3 in* D. retusa *in 2008. For* D. granadillo *Mexico has reported that there have been no exported specimens in the past 5 years.* D. granadillo *is less sought after than* D. retusa *and is cheaper. A websearch for traders wanting to buy* D. retusa *resulted in 19 importers, of which half were from China (Jenkins* et al., *2012).*
ITTO (2004) does not report any export trade in Dalbergia retusa, although five of the range States (Colombia, Guatemala, Honduras, Mexico, Panama) are ITTO members. Similarly, ITTO does not report any import trade despite the evidence of trade in the species in the United States, which is an ITTO member, but not a range State.	*Direct Trade during 2001 – 2010 'importers quantity recorded' was 24 m^3 (UNEP-WCMC CITES Database).*
A search on eBay in USA for cocobolo in 2006 showed 944 wood items for sale. The USA reports that in 2008, one shipment of 15 m^3 of wild Guatemalan-origin *Dalbergia retusa* sawn wood was imported into USA from Guatemala. Illegal trade in *D. retusa* has increased considerably throughout its known range. Several shipments in Guatemala have been seized in 2011 of around 200 m^3. The shipments were destined for China. The increase in the imports of timber generally referred to as 'rosewood' by China from the range States, has raised serious concerns within the region.	*There is very little information on the volume of international trade but Cocobolo wood and finished products are available through many websites. There are approximately 200 items listed as 'cocobolo' on eBay in the UK (Oct 2012) comprising musical instruments, collectables, furniture and crafts. A search on eBay in the USA shows 1775 items, which includes lumber, an increase from 944 in 2006.*

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I

The timber of *Dalbergia granadillo* (range States El Salvador and Mexico) is not distinguishable from that of *D. granadillo*. Although it has the common name "granadillo", it is often traded under the name "cocobolo". Inclusion of this species in CITES Appendix II is therefore proposed for look-alike reasons. *D. retusa* wood is denser and stronger than Brazilian rosewood *Dalbergia nigra.*	*There are an estimated 250* Dalbergia *species (Lewis* et al., *2005).* *21* Dalbergia *species occur in the region (CoP14 Prop. 31 Annex 1).* *The decline in Madagascan* Dalbergia *species has led to a decline of export of these species to China over the past two years which has led to a huge rise in imports from Central America from negligible volumes in 2009 to 29 310 m^3 in 2011. As a result, Belize banned the harvesting and export of rosewood in March 2012, Nicaragua and Guatemala announced a crackdown on trafficking in 2011 (EIA, 2012).* D. retusa *(from FSC sources) is recommended as an alternative to the CITES*

Supporting Statement (SS)	Additional information
	Appendix I listed D. nigra *by the Mesoamerican and Caribbean Forest and Trade Network (CoP14 Prop. 31).*

Other information

The tropical dry forests of Central America have been subject to human influences such as hunting, harvesting and grazing in the understory, land conversion for agriculture and pasture and land clearance through burning. It is considered to be the most endangered major tropical ecosystem, with less than 2% remaining intact.

FAO report 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. The change in forest cover in the range states is summarised in the table below (FAO). In Costa Rica, *D. retusa* occupies 13 697.7 km^2 but its available habitat has been reduced by 61.5%, indicating that the species is exploited and rare, of which 6.2% occur within State protected areas.

Country	Forest cover change 1990-2000	
	Annual ('000 ha)	Annual rate (%)
Colombia	-190	-0.4
Costa Rica	-16	-0.8
El Salvador	-7	-4.6
Guatemala	-54	-1.7
Mexico	-631	-1.1
Honduras	-59	-1.0
Nicaragua	-117	-3.0
Panama	-52	-1.6
Belize	*-36*	*-2.3*

Threats

Dry forests in central America are generally under threat and the fact that Costa Rica has lost 61.5% of its habitat for these species is significant (Gill in litt., *2012).*

Supporting Statement (SS)	Additional information
Given the increasing importance of tourism in the region, the prominence of carvings in the tourist trade, the continuing demand for the wood for a range of uses internationally and the high level of wastage, the total trade may represent utilisation of a great many trees.	
Conservation, management and legislation	
Costa Rica Included under Decree 27388 from 1998.	*Costa Rica and Guatemala have management plans for* D. retusa *for a period of 10 to 40 years with minimum cutting diameters from 40 to 60 cm to ensure sustainable harvesting of timber (CITES, 2011).*
El Salvador Plans of Territorial Regulation are being developed which regulate change of land use. Included in Law of Wildlife Conservation.	*El Salvador is preparing similar measures to those of Guatemala (CITES, 2011).*
Guatemala Included in Category 2 of the List of Threatened Species of Guatemala and in Appendix III of CITES Guatemala reports the Decree 4-89 "Law of Protected Areas", Regulations specific for threatened species. The only territorial regulations are the master plans of natural protected areas. Change of land use is forbidden.	*Guatemala has zoning and land use regulations on harvesting* D. retusa *in accordance with the management categories of the national system of protected wild areas. Guatemala reported on a validated methodology for undertaking the consolidated national inventory of CITES-listed timber species (CITES, 2011).*
Honduras Resolution GG-MP-104-2007 establishes a ban for this species. A Territorial Regulation Law (Decree 180-2003) is in place. Some municipalities have territorial regulation plans.	
In México a research project is being developed which will assist in determining the commercial and conservation status of the genus *Dalbergia*. There is no record of harvest inside Natural Protected Areas. Mexico has the Agrarian Law, Federal Law of Administrative Procedure, General Law of Sustainable Forestry Development and its regulation, General Law of Ecological Equilibrium and the Protection of Environment and its regulations in the matter of environmental impact and Natural Protected Areas, General Wildlife Law, Federal Law of Rights, Official Mexican Norm NOM-059-SEMARNAT-2010 that lists species at risk. Forestry Law determines that land use changes are only issued by exception. In some cases there are regulation plans at the municipal level which determine land use.	*In Mexico* D. granadillo *is listed as a species at risk, Category P – Endangered (Semarnat, 2010).*
Nicaragua, for its harvest, all sustainable silvicultural criteria are applied. Nicaragua has the Forestry Law 462 and its regulation 73-2003; There are no Plans of Territorial Regulation for the species, there are general plans which establish adequate use of the land.	
Panamá listed their populations of *Dalbergia retusa* in CITES Appendix III.	

Supporting Statement (SS)	Additional information
Captive Breeding/Artificial Propagation	
Dalbergia trees are slow growing, but due to the value of their timber, NAS (1979) recommend that efforts be made to extend their cultivation. During trials in a dry tropical region in Costa Rica, they exhibited good growth in height and good productivity when compared to six other native slow growth species that were also planted in pure and mixed plantations. The Forest Stewardship Council lists two organisations that maintainplantations including *D. retusa* holding their certificate in forest management in Costa Rica and Nicaragua. Most of the cocobolo available today is not cut from the natural rainforest, but from privately owned fincas with trees planted 80 to 100 years ago. Seedlings of *D. retusa* are being planted in local reserves in Gamboa, Panama. It has been planted for lumber in Costa Rica. *Dalbergia retusa* was included in plantation trials of native precious wood species in Costa Rica, which started in 1992 and is noted as a choice for reforestation in the central Pacific zone of Costa Rica. In managed plantations, trees may reach 13 cm diameter breast height and 8 m in height after 17 years and have been found to grow at a rate of 1.1 m/year. Seeds of *D. retusa* are available from the CATIE forest seed bank and commercial suppliers. Guatemala reports a plantation of 58 ha between 1998-2004. It was included in a 10 year reforestation programme in 2003 for 4000 ha of former pastures in Nicaragua.	
Other comments	
	The Working Group on the Bigleaf Mahogany and Other Neotropical Timber Species (CoP16 Doc.69) has tested the criteria for D. retusa and D. granadillo. *They note that information for* D. retusa *fulfils the trade criterion, the main trade is not reflected in the trade data as most trade is in finished products that are not covered by the Appendix III annotations. There is also evidence of illegal trade. Data required to assess Annex 2a, Criterion B is still lacking. Some of the major exporting countries do not provide data on the conservation status of their populations. In Costa Rica populations are well protected in designated protected areas but non protected population are highly fragmented. In Guatemala the population occurs throughout 10 – 20 % of the country and is listed as a threatened species. Information is lacking on the progress in the implementation of the Action Plan such as information on Forest Inventories of natural populations, harvest zoning, size, coverage and density of population, vertical and*

Supporting Statement (SS)	Additional information
	horizontal structure occupied by the species and the percentage of volume exported originating from plantations. In light of this Criterion B of Annex 2a may apply. Only two of the range states – Guatemala and Panama have included D. retusa *in Appendix III.* D. granadillo *was included in the action plan owing to its similarity to* D. retusa *and therefore any decision relating to this species is determined by the decision made for* D. retusa.

Reviewers: D. Gill, C. Hin Keong, J. de Koning, J. Nunez-Mino, S. Oldfield, G. Pinelo, N. Zamora.

Inclusion of *Dalbergia stevensonii* in Appendix II

Proponent: Belize

Summary: *Dalbergia stevensonii* is a species of rosewood known to occur in Belize, Guatemala and Mexico. It inhabits tropical broadleaf forests and has a restricted distribution, mainly concentrated in the Toledo district of southern Belize. In 2012 it was reported that commercially viable standing stock of *D. stevensonii* in Toledo had been assessed at approximately 140 000 m^3, believed to represent a decrease of around 13 % over three years. There is no information regarding the population size in any other range State. As well as logging, the species is reported to be affected by habitat loss. The human population of the Toledo district is increasing and previously remote areas are becoming accessible owing to road construction. The species has not been assessed by IUCN. Like other rosewood-producing trees it is believed to be slow growing, with a generation time measured in decades.

D. stevensonii appears to be of limited availability in trade, although it is very much sought after as a tonewood for musical instruments and increasingly over the past few years for furniture and cabinet-making in Asia, especially China. Export from Belize has taken place since the early 20th Century. Legislation was changed in 1996 to allow the export of raw timber (roundwood), causing exports to increase, and records from 1999 to January 2012 indicate around 26 000 m^3 rosewood exported from Belize in that period, the majority thought to be *D. stevensonii* with perhaps a small percentage other *Dalbergia* species. A moratorium on harvesting and export was declared in March 2012. A further 1378 m^3 was legally exported in the period February-July 2012 after the rosewood moratorium was declared. The date of the last legally permitted export was 24 August 2012. China is reported to have imported over 6000 m^2 of rosewood (species not specified) from Belize in the period 2010-2102, over half of this in 2012. In 2012 it was reported that illegal felling of the tree in forest reserves in Belize continued. Information on harvest of and trade in *D. stevensonii* in other range States is scarce, although there is a record of 254 m^3 of timber extracted in Guatemala and exported in 2004.

The species was proposed for inclusion in Appendix II at CITES CoP14. The proposal was withdrawn and a recommendation made for range and import states to take further measures to increase knowledge and regional information sharing on trade in the species and its population status and trends. Guatemala included *Dalbergia stevensonii* is Appendix III in 2008. No annotation is specified in the proposal.

Analysis: *Dalbergia stevensonii* is a rosewood tree from Central America that yields a highly valuable timber, in demand for the manufacture of musical instruments and furniture; the latter particularly in Asia where demand for rosewood in general has grown very significantly in recent years. It is thought that the main population is in southern Belize, where the harvest of trees has reportedly increased markedly in recent years, and from where exports to Asia are known to take place. In early 2012 a moratorium on felling and export was imposed in Belize, although illegal felling is still believed to take place and enforcement capacity within the country is limited. All recorded export is believed to be in timber from the wild. Given the exceptionally high demand for rosewood internationally, and the apparently limited distribution of species, it would appear likely that it meets the criteria for inclusion in Appendix II in that regulation of trade in it is required to ensure that the harvest of specimens from the wild is not reducing its population to a level at which its survival might be threatened by continued harvesting or other influences.

Supporting Statement (SS)	Additional information
Range	
Belize, Guatemala, Mexico, possibly Honduras (specimen may actually be referring to British Honduras now called Belize).	D. stevensonii *does not occur in Honduras as there is no suitable habitat / forest type (Pinelo,* in litt., *2012).*
IUCN Global Category	
	Not currently listed.
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
Dalbergia stevensonii has a restricted distribution, mainly concentrated in the Toledo district of southern Belize. No information is available as to whether it was previously more or less widespread. It has been reported to be endemic in Belize and although it has been found in other countries since, this suggests that it has never been common elsewhere.	*It is restricted in distribution to Belize, Guatemala (Peten, Alta Verapaz and El Quiche) and Mexico (Chiapas). Within Belize, the species is mainly known from the south of the country, primarily within Toledo District, with scattered records from elsewhere (FFI, 2007; Gillett and Ferriss, 2005). Its presence in Panama is yet to be confirmed but is unlikely.*
Information is lacking on the population size of *D. stevensonii*, though it is likely to be small. In 1979, the genus *Dalbergia* was described as scarce as all accessible stands of the genus having long since been logged out.	*Little is known about the biology and status of* D. stevensonii. *It is however known that it is slow growing and requires ample seed for survival (Jenkins* et al., *2012).*
Changes in population size can be inferred from changes in habitat availability. High rates of deforestation in the range States imply that the population is likely to be decreasing (see Threats section) and selective logging will worsen the problem for valuable species such as *D. stevensonii*.	*The population surveyed in the forested areas in Toledo in 2007 showed 224 trees (a density of 5.07trees/ha) with DBH over 10cm and 326 seedlings (density of 8.33 seedlings / ha). The average density of commercial sized trees (DBH ≥ 25cm) was 1.85 trees/ha (83 trees) and an average of only 0.52 trees/ha with DBH ≥ 45 cm. (Gill* in litt., *2012).*
Anecdotal evidence from suppliers suggests that it is rare: “this premier wood for orchestral marimbas is rare and expensive”, “Limited quantities … can, however, be obtained at high prices from importers” “generally believed to be fairly scarce”, “difficult to obtain”. Reports of timber extraction and habitat loss indicate that populations of *D. stevensonii* are declining.	
Information on the breeding system of *D. stevensonii* is not available. However, some aspects of the reproductive biology of other species in the same genus have been studied. These studies show some common features for the genus: mass flowering but relatively few mature fruits have been observed, and high levels of seed abortion. Pollen is dispersed by bees and seeds dispersed by wind and/or water. It is likely that the above characteristics are shared by *D. stevensonii*.	

Supporting Statement (SS)	Additional information
Belize *Dalbergia stevensonii* may once have been locally common, it was described in 1962 as awaiting utilisation in 'large volumes' in Belize. Although confined to a small area, in Belize *D. stevensonii* had previously been reported to occur in fairly large patches within its habitat. A report in 2012, concludes that current commercial stocking of *D. stevensonii* in Toledo is approximately 142 091 m^3, after a reduction of around13 % over 3 years during 2010-2012. Since 2007, harvesting of *D. stevensonii* from the Toledo district has been steadily increasing. Given the sheer volumes of timber that have been exported, it is highly likely that selective logging of *D. stevensonii* in the Toledo district will have contributed to a decrease in population size. A high number of large, mature, seed-bearing trees have been removed. Guatemala, Honduras and Mexico do not have data on the status of their populations. No information is available on trends for the species in Guatemala or Mexico. In Honduras and Guatemala there is no data of potential area of distribution; in Mexico, based on data from the SNIB, REMIB and National Forestry Inventory of 2008 a map was created of potential distribution.	

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

The species is threatened by high levels of logging (legal and illegal). It is very much sought after, particularly as a tonewood for musical instruments, and increasingly by the Asian market for furniture and cabinet-making. There are no comprehensive reports of the levels of local or international trade in the species. The restricted growth area of the species limits the amount of trade and there is some difficulty in fulfilling demand. In spite of its rarity, there is a high level of wastage of up to 80%. Increased accessibility to its habitat and declining stocks of other rosewoods has led to growing pressure to turn to this species to meet demand. Over-harvesting may well have already seriously impeded regeneration of the species in the wild and this in turn will have an effect on genetic diversity. **Belize** Records of trade in the early 20th century indicate that during 1925-1933 361 tons	*The low regeneration is indicative of the removal of mature, large seed-bearing trees and failed attempts at propagation suggests it is unlikely that populations in Belize will be able to recover to meet the current demand without further significantly reducing wild populations (Gill* in litt., *2012).* *The average market value is USD77 471 m^3 (instrument blanks) and USD11 004 m^3 (sawn wood) (Jenkins* et al., *2012).* *The increase in the imports of timber generally referred to as 'rosewood' by China from the range States, has raised serious concerns within the region (see supporting statement for proposal CoP16 Prop. 61).* ***Belize*** *Between 2008 and 2011, 20 m^3 of sawn wood was reported by importing countries*

Supporting Statement (SS)

were exported from Belize to the USA and Europe.

Maximum timber extraction from the forests of Columbia River Forest Reserve occurred between 1925 and 1960, and most *D. stevensonii* had been extracted when inventories were undertaken in 1978.

Records of trade from 1999 to January 2012 indicate 25 705 m^3 rosewood was exported from Belize, the majority of this is thought to be *D. stevensonii* with perhaps a small percentage being other *Dalbergia* species. Belize reports a total export of 1378 m^3 from February to July 2012 after the rosewood moratorium was issued (see below). China reported importing 6213 m^3 of rosewood (species unknown) from Belize between 2010 and 2012, importing 3400 m^3 in 2012 alone.

Legislation was changed in 1996 to allow the export of raw lumber. Since this time, there has been a steady rise in harvesting of the species, fuelled primarily by demand from the Asian market.

Since 2007, harvesting of *D. stevensonii* from the Toledo district of Belize has been steadily increasing reaching a peak in February 2012. Given the sheer volumes of timber that have been exported, it is highly likely that selective logging of *D. stevensonii* in the Toledo district will have contributed to a decrease in population size over the last 5 years. A high number of large, mature, seed-bearing trees have been removed.

In the last five years, by far the greatest threat to the species in Belize has come from very high levels of selective logging. A moratorium on harvesting and export was issued in March 2012. If harvesting had continued at the current rate without a moratorium, *D. stevensonii* would have been wiped out (commercially) from Belize by 2033.

Further indication of the increasing value of the species came in 2011 when the Belize Forest Department received a request for permission to uproot and export stumps of logged trees but this was declined.

Illegal logging in Belize occurs even within protected areas, when permits or licences are obtained often the volume of timber is greater than the allowance and lumber is often transported without the official Forest Department stamp.

Additional information

(China and Germany) as being exported from Belize (UNEP-WCMC CITES Database). All was reportedly from wild sources. In addition, 26 kg of sawn wood of Belizean origin (no source code) was re-exported from the USA to Slovakia in 2010.

Data on D. stevensonii *production and export provided by the Belize Forest Department (FFI, 2007):*

	Rosewood production		Rosewood Exported
YEAR	No of Logs	Tonnage Volume (m^3)	Volume (m^3)
2005	3428	373.62 194.31	72.37
2006	1282	122.43 63.68	71.38

The discrepancy between production and exports for 2006 is probably due to factors such as late submission of inspection reports, incomplete data entry, illegal harvesting and import of rosewood from Guatemala (FFI, 2007).

Overall the timber does not appear to be readily available internationally but where companies do offer D. stevensonii *on the international market its origin is reported to be from Belize. Illegal felling and cross border trade are problems. The moratorium came into place in March 2012 following widespread clearance for the Asian market (Jenkins* et al., *2012).*

The Ya'axché Conservation Trust observed the felling of an exceptionally large number of mature trees being extracted from community lands in Belize likely destined for export. A survey in Belize 2007 showed a low density (0.52 trees per ha) of mature trees. The Ya'axché Conservation Trust also observed increasing number of non-mature individuals being extracted over time, an indication that larger individuals were starting to disappear. Illegal logging in forest reserves has been observed by the Ya'axché Conservation Trust's ranger (Gill in litt,, *2012).*

There are concerns for the current level of illegal extraction in Toledo and it is possible that this species will completely disappear from community lands in the near future (Jenkins et al., *2012).*

Supporting Statement (SS)	Additional information
Guatemala In 2004, 254 m^3 *D. stevensonii* timber was extracted from outside protected areas in Guatemala and exported to Japan, El Salvador, USA, Germany, Belize and Netherlands, valued at USD381 390.	***Guatemala*** *Importing countries (China, European countries, Japan and the USA) reported importing 182 m^3 of sawn wood from Guatemala between 2008 and 2011, all from wild sources. In addition, the USA, Germany and Spain reported re-exporting 470 078 m^3 and 30 632 kg of sawn wood/logs during the same period, originally from Guatemala and from wild sources (or 'o' code- Pre-Convention species).*
A total of 12 shipments of 67 m^3 of wild Guatemalan sawn wood were imported into USA from Guatemala between 2008 and 2011. In addition, 1372 kg of Guatemalan-origin logs were imported into the USA from Germany. Between 2007 and 2012 rosewood (logs reported as 'rosewood'/ 'padauk' but species unknown) imports by China were1754 m^3.	*Guatemala reported the export of over 250 m^3 in 2004 valued at USD380 000 to a range of countries including Japan, USA, Germany and the Netherlands (Jenkins* et al., *2012).* *In February 2012 seizures of illegally trafficked timber in Guatemala suggest there is an organised smuggling ring to transport large quantities of the wood, authorities seized three shipping containers in November and December 2011 each containing 58.28 m^3 of Dalbergia species (Jenkins* et al., *2012).* *There is only one major exporter of finished rosewood products that has Export Processing Zone status and can thus import rosewood from Guatemala for re-export. However, the species also supports a significant local wood-carving industry, largely for the tourist market, so further exports of finished carvings are likely to be occurring (FFI, 2007).*
Honduras Between 2007 and 2012 rosewood (species unknown) imports by China were negligible.	***Honduras*** *There are no reports of exports from Honduras in the CITES trade database. Between 2007 and 2012 rosewood (species not specified) imports by China from Honduras were 45 m^3 (see supporting statement for proposal CoP16 Prop. 61). As there is no record of this in the CITES trade database, it seems likely that the species of rosewood imported were not* D. stevensonii.
Mexico Between 2007 and 2012 rosewood (species unknown) imports by China amounted to 10 662 m^3.	***Mexico*** *There are no reports of exports from Mexico in the CITES trade database.*
General ITTO does not report any export or import trade in *D. stevensonii* from their member States (Guatemala and México) and commented that "We haven't seen any official export reports on these species from our members in the region (Guatemala, Honduras, Mexico, Panama) for the past decade. This can mean zero or insignificant levels of exports are occurring (or that "unofficial" exports are occurring that aren't	

Supporting Statement (SS)	Additional information
captured by official statistics.)" Belize is not a member of the ITTO. In September 2012, 62 items for Honduras Rosewood were available on Ebay. *Dalbergia stevensonii* is recommended as an acceptable, even superior substitute for Brazilian Rosewood (*D. nigra*) in the manufactureof guitars and is used as a substitute following listing of *D. nigra* in CITES Appendix I (1992*)* despite its limited availability, increasing pressure on this species.	

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I

Dalbergia nigra was included in CITES Appendix I in 1992.	

Other information

Threats

Belize Deforestation is impacting the species throughout its range. Forest cover in Belize in 1927 was reported to be 87%. This has declined to 79% according to a report published in 1994 and 63% in 2010. The deforestation rate between 1980 and 2010 is expected to be under 25 000 acres (100 km^2) annually. Southern Belize has escaped major deforestation for a long time due to its inaccessibility and distance from population centres. However, the area is now subject to a high rate of settlement by colonists practicing agriculture. The extremely high rate of human population growth and increased accessibility to southern areas is putting additional pressure on *Dalbergia* habitats in Belize. Core populations of the species exist in Toledo in Belize, one of the poorest districts in the country with little funding to manage protected areas and enforce environmental regulations Village farms are expanding at a very fast rate in the Maya Mountain North Forest Reserve and towards Bladen Nature Reserve, both areas known to contain *D. stevensonii*. **Guatemala** Forest cover in Guatemala was reported to be 26.3% of land area in 2000 and the annual deforestation rate in 1999-2000 was 54 000 ha (540 km^2) (-1.7%). Cattle	***Belize*** *Much of the logging on or around community lands was done via petty permits / short term licences which are notoriously difficult to monitor and manage. In 2011-12 there seems to have been a free-for-all to extract as much rosewood as possible and monitoring this seems to have been beyond the capacity of the Forestry Department (Gill* in litt., *2012).* *Another cause for decline of this species is devastation from hurricanes. In 2001 populations were damaged in northern Toledo District by Hurricane Iris. Following this the Forest Department granted permits for 'salvage logging' of damaged trees with no restrictions on size or number (FFI, 2007).* ***Guatemala*** *Significant threats at the Maya Biosphere Reserve (where* D. stevensonii *occurs) include building of airstrips to transport drugs, development of huge cattle ranches and organized crime groups moving their illegal logging network toward the reserve to*

Supporting Statement (SS)	Additional information
ranching and slash and burn agriculture methods are destroying the forest of Petén in Guatemala. Based on trends observed between 1986-1995 using remote sensing imagery, it was predicted that only 2% of the Petén's forest would survive by 2010. **Mexico** Forest cover in Mexico was 28.9% of land area in 2000 and the annual deforestation rate in 1999-2000 was 631 000 ha (-1.1%). It is highest in Chiapas, with 70 000 ha being lost each year.	*supply Asian markets with prime tropical hardwoods (Allen, 2012).*
Conservation, management and legislation	
Belize *Dalbergia stevensonii* is listed in the First Schedule of the Belize Forests Act 2003, which specifies that no person shall convert the wood without first having obtained a licence. Additionally, a licence is required to cut or otherwise injure any tree within forest reserves, national land and private land to which the Act has been applied. The export of raw lumber was prohibited until 1992 when only finished or semi-finished products could be exported. In 1996 legislation changed to allow export of raw lumber. Since this time, there has been a steady rise in harvesting of the species. A moratorium on cutting and export was issued in March 2012. Exports were permitted for a limited time period after the moratorium was issued in order to move large quantities of raw lumber that would have otherwise gone to waste. Exports of raw *D. stevensonii* lumber from Belize ceased altogether in August 2012. The date of the last legally permitted export was 24 August 2012. The logging season reopened on 15 October 2012 and no permits have been authorised by the Chief Forest Officer. The moratorium overrides any existing long-term forest licenses or concessions that previously included permission to cut *D. stevensonii.* The species occurs in several protected areas in Belize. The eastern side of Bladen Nature Reserve has a high level of protection but there is increasing concern for illegal extraction on the western side of the reserve, owing to cross border incursions from Guatemala. The species is managed in community lands complicated by land tenure issues. Only two of these communities have forest management plans in place and as a result, in the last 12 months vast quantities of *D. stevensonii* were extracted from many of these areas with no consideration given to sustainable	

Supporting Statement (SS)	Additional information
management. Disappearance of the species from community lands is putting increased pressure on populations in protected areas and on private land.	
Guatemala *Dalbergia stevensonii* was listed on CITES Appendix III by Guatemala in 2008. The listing applies only to lumber coming from Guatemala.	***Guatemala*** *It has been assessed in the Guatemala National Red List as Endangered A2cd;B2ab(ii,iii) and proposed Global Category as Vulnerable A2cd, which notes the export of sawn wood as a major threat (Vivero* et al., *2006).*
Dalbergia stevensonii is listed in Category 3 of CONAP (*Consejo Nacional de Áreas Protegidas*) to prevent the species from becoming in danger of extinction.	*In 2011 Guatemala announced a crackdown on 'eco-trafficking' to enforce stricter security measures at airports but not seaports, the main method of trade.*
It is included in Category 2 of the List of Threatened Species of Guatemala. There is no ban on harvesting the species, and management is carried out through specific regulations if the populations are in or outside the Guatemalan System of Protected Areas. The northern forests of the Petén have been protected by the Maya Biosphere reserve since 1995.	
Honduras It is listed as a 'Species of Special Concern in Honduras (IUCN VU A1cd+2cd). Honduras reported the Resolution GG-MP-104- 2007, which establishes a ban for this species.	***Honduras*** *Honduras has a ban on exporting (PC19 Doc. 16.1 (Rev. 1), 2011).*
Mexico This species range occurs in the Montes Azules Biosphere Reserve, Mexico. In Mexico the species has no established measures of bans total or temporal or any similar measures. Research is being developed in Mexico to assess the population and conservation status of the species.	***Mexico*** *It is not listed in the Mexican Red List of Threatened Species.*
General There are no suppliers of *D. stevensonii* with FSC certification listed on the Forest Stewardship Council database.	*The majority of exports are destined for the Chinese market. Imports and exports are banned in the USA under the Lacey Act.*

Supporting Statement (SS)	Additional information
Captive Breeding/Artificial Propagation	
Dalbergia stevensonii does not appear to be widely grown in plantations although it may be suitable for commercial growth. The stumps of the trees sprout freely, quickly producing heartwood, and that with careful attention and selective thinning valuable timber should be obtainable in a fairly short time. There are no known plantations in Belize. In Guatemala, there is no available data on area planted nor of volume harvested from plantations, these are of pure stands and mixed and in Mexico no plantations carry the species. Following hurricane Iris in 2001 in Belize a tree planting scheme was established by the Ya'axche Conservation Trust but has had little success raising from seeds which are becoming more difficult to acquire and becoming very rare.	D. stevensonii *is not easy to cultivate which has implications for the sustainable management and exploitation of the species (FFI, 2007). There is potential for regrowth from stumps although this would take many years to be commercially viable again and will also lead to reduced genetic diversity (Gill* in litt., *2012).* D. stevensonii *is known to be slow growing and requires ample seed for survival due to high seed abortion rates. It is not known to be growing commercially in plantations although it has been used in at least one tree planting scheme in Belize. (Jenkins* et al., *2012).* *In Guatemala the species is reported to exist in single-species and mixed plantations but no data is available on potential harvestable volume (PC19 Doc. 16.1 (Rev. 1), 2011).* *It is not currently recorded in any botanic gardens or* ex situ *propagation (Plantsearch, 2012).*
Other comments	
Dalbergia tilarana can be confused with *D. stevensonii*.	*The proposal mentions El Salvador and Nicaragua but these are not range states for this species. The species can be confused with Dalbergia tucurensis, a closely related species that also grows in Belize but is not protected by logging bans. The two species can be distinguished by density tests (Wiemann and Ruffinatto, 2012). Central American Dalbergia species included in CITES Appendix III in addition to the Guatemalan population of* D. stevensonii *are:* Dalbergia darienensis *(Panama) and* Dalbergia retusa *(Guatemala and Panama).*

Reviewers: D. Gill, C. Hin Keong, J. Nunez-Mino, S. Oldfield, G. Pinelo, G. Scott.

Inclusion of the genus *Dalbergia* (populations of Madagascar) in Appendix II, and limited to logs, sawn wood and veneer sheets by an annotation

Proponent: Madagascar

Summary: *Dalbergia* is a large and very widespread genus of trees, shrubs and lianas; many of the species yield valuable timber traded under a variety of different names, most frequently as rosewood. There are 48 currently recognized species of *Dalbergia* in Madagascar, 47 of which are endemic and some of which produce rosewood. Malagasy *Dalbergia* species occupy a variety of habitats including humid and dry dense forests, semi-deciduous forests, thickets and savannas. Some species, including *D. aurea, D. brachystachya, D. davidii* and *D. histicalyx,* have restricted ranges, while others such as *D. baronii, D. greveana* and *D. trichocarpa* are more widespread. The conservation status of 43 Malagasy *Dalbergia* species was assessed by IUCN in 1998. Three species were reassessed in 2012, with two of these (*D. andapensis* and *D. humbertii*) being classified as Endangered and one, *D. chapelieri,* as Near Threatened. Of those not reassessed, 33 had been classified in 1998 as threatened (Endangered or Vulnerable using the categories valid at the time); these classifications are all recorded as in need of updating. Selective logging was noted as a threat for various species; others were recorded as having very small populations in areas where logging occurs. A further species (*D. peltieri*) was assessed for the first time in 2012 and was considered Least Concern.

Rosewood from Madagascar (and from *Dalbergia* species elsewhere) is highly sought after in international trade. There is a long tradition of export of the wood from Madagascar, but in recent years (since 2007) logging for international trade has risen dramatically, as a result of high demand and correspondingly high prices (notably in China) and political upheavals in Madagascar. Virtually all harvest in recent years has evidently been intended for export, with a very large proportion of exports apparently destined for China. The most valuable species are believed to include *Dalbergia abrahamii, D. bathiei, D. baronii, D. davidii, D. greveana, D. louvelii, D. maritima, D. mollis, D. monticola, D. normandii, D. purpurascens, D. trichocarpa, D. tsiandalana, D. viguieri* and *D. xerophila.* In addition *D. madagascariensis* is exported; this species lacks the typical lustre of rosewoods and is generally referred to in Madagascar as pallisandre. There is little information available on growth rates or regeneration potential of Malagasy *Dalbergia*, but growth of rosewood-producing trees in general is believed to be slow, with many years needed to produce the dense, lustrous wood that is most highly sought-after. Generation times for most species are likely to be measured in decades. A modelling exercise in 2010 concluded on the basis of hypothesized original distributions that eight economically important species (*D. bathiei, D. baronii, D. louvelii, D. mollis, D. monticola, D. purpurascens, D. tsiandalana* and *D. viguieri*) might have undergone long-term range reductions of between 54% and 98%. For two economically important species (*D. davidii* and *D. normandii*) data were insufficient to make any assessment.

The great majority of rosewood export appears to be in roundwood. In 2000-2001, exports were reported to be in the region of 5000 tonnes per year, declining to almost nothing for the period 2002-2006, increasing to nearly 14 000 tonnes in 2008 and to more than 36 000 tonnes in 2009, coinciding with the period of political upheaval. In May 2010 it was reported that, at a conservative estimate, some 1100 containers each carrying just over 100 rosewood logs had been exported since April 2009. More recently it has been claimed that there are as many as half a million rosewood logs stockpiled in Madagascar awaiting export.

It has been reported that the overwhelming majority of Madagascar rosewood exported in the period 2007-2010 was illegally logged within Masoala and Marojejy National Parks (which are part of the Rainforests of the Antsiranana UNESCO World Heritage Site), as well as Mananara-Nord Biosphere Reserve and the vast Makira Conservation Site.

Madagascar introduced a temporary ban on harvest, transport and export of precious woods in 2010, envisaged to be for between 2-5 years. *D. madagascariensis* ("pallisandre") is apparently not covered by this ban. As of late 2012 the ban reportedly remained in place. Despite the ban, logging of rosewoods was reported to be continuing in at least some protected areas (e.g. Masoala National Park) although not in others (e.g. Marojejy National Park).

In 2011, in response to the major increase in illegal logging that began in 2009, Madagascar requested the inclusion of five species of *Dalbergia* in Appendix III of CITES (*D. louvelii, D. monticola, D. normandii, D. purpurascens* and *D. xerophila*). CoP15 adopted a Decision directing Madagascar and the Plants Committee to review and gather further information on species (including tree species) that would benefit from CITES listing. Information on the taxonomy, distribution and conservation status of *Dalbergia* spp. was presented to the nineteenth meeting of the Plants Committee in April 2011 (Document PC19 Doc. 14.3).

Analysis: Information on populations of all *Dalbergia* species in Madagascar is scarce. Rosewood-bearing trees in the genus *Dalbergia* are known to have been subject to intensive, often uncontrolled and illegal, logging in recent years to supply the export market. Indications are that volumes of rosewood logged and exported from Madagascar in the period 2007-2010 were several times those recorded earlier in that decade. There is no information on volumes of individual species of rosewood harvested and traded, or comprehensive inventory data for any species. It is thus extremely difficult to determine whether any one species meets the criteria for inclusion in Appendix II set out Annex 2 a of *Resolution Conf. 9.24 (Rev. CoP15)*. However, some rosewood-bearing *Dalbergia* species are known to have restricted distributions in areas that have been subject to intensive logging in recent years. Given this, the generally long generation time of rosewood-bearing trees and the very large increase in logging and export of rosewood recorded recently, it is likely that some species at least meet these criteria in that regulation of trade in them is required to ensure that the harvest of specimens from the wild is not reducing their populations to a level at which their survival might be threatened by continued harvesting or other influences.

Experts are currently unable to accurately identify any given log of Malagasy rosewood to the species level and thus, if it is considered that one or more than one *Dalbergia* species meets the criteria in Annex 2 a, then other species would meet the criteria in Annex 2 bA of *Resolution Conf. 9.24 (Rev. CoP15*).

Supporting Statement (SS)	Additional information
Taxonomy	
The Catalogue of Vascular Plants of Madagascar lists 48 species.	*Du Puy* et al. *(2002) list 42 endemic species and 1 non endemic (*D. bracteolata*) in Madagascar. Subsequently 5 new species have been described.*
Range	
47 species occur only in Madagascar, *Dalbergia bracteolata* occurs in Kenya; Madagascar; Mozambique; Tanzania.	

Supporting Statement (SS)	Additional information
IUCN Global Category	
	44 species of Madagascan Dalbergia *spp. are included on the IUCN Red List of Threatened species as Endangered (20 species), Vulnerable (16 species) and Least Concern/Lower Concern/Near Threatened (eight species).* *Of the 44 species, 43 were assessed in 1998 for the first time. The IUCN Red List notes that the 1998 assessments "need updating". In 2012, three species were reassessed (two remained endangered whilst the third was reassessed from Vulnerable to Near Threatened), and a fourth was assessed for the first time.*
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
The proposal lists 48 species of Dalbergia. Seven species of Dalbergia are the most commercialised outside of Madagascar. Some species are confined to restricted areas as is the case *for Dalbergia aurea, D. brachystachya, D. davidii,* and *D. histicalyx*. Others have a wide geographical distribution as D. baronii, D. greveana and D. trichocarpa. The geographical distribution of some species of Dalbergias is given in Appendix 3 of the supporting statement. In general, *Dalbergia* species have a relatively low rate of regeneration and the absence of certain classes of individual's diameter (10-20cm, 20-30cm) disrupts further regeneration. Selective cutting of exploitable individuals is the main cause of this disturbance. The structure of the population of the species of Dalbergia presents a disturbance marked by the absence of certain diameter classes both inside and outside protected areas. Individual seed trees with a DBH greater than 20 cm represented by large trees are increasingly rare. The natural regeneration rate is generally low and growth in thickness is slow (3 mm/yr). Dalbergia species show great variability in density from 10 to 320 individuals per hectare (Table below). In addition, the biovolume and basal area are low. This indicates that the majority of individuals are not usable. In the rain forest of Andohahela the observed density of exploitable Dalbergia is 12	Dalbergia *are very slow growing (Patel* in litt., *2012).* *Loggers have selectively logged rosewood in up to 20 450 ha in the north east region to date (Barrett* et al., *2010).* *Barrett et al. (2010) listed the following ten species as being economically important* D. bathiei, D. baronii, D. davidii, D. louvelii, D. mollis, D. monticola, D. normandii, D. purpurascens, D. tsiandalana *and* D. viguieri. *Based on various deforestation scenarios and hypothesised historical distributions they calculated long-term range reductions for all species except* D. davidii *and* D. normandii *to be between 54% and 98%. There was insufficient information for* D. davidii *and* D. normandii *to make any assessment.* *DBEV and WWF (2010) identified* Dalbergia abrahamii, D.baronii, D. greveana, D. louvelii, D. madagascariensis, D. mollis, D. monticola, D. normandii, D. purpurascens, D. trichocarpa *and* D. xerophila *as being traded internationally.* *Jenkins* et al. *(2012) state that the species which are particularly valued for trade include* D. baronii, D. louvelii. D. maritima, D. greveana *and* D. madagascariensis (*which lacks the typical lustre of rosewood, is generally referred to as pallisandre in Madagascar and is not covered by the 'unconditional' export ban of 2010).* *Eighteen species of threatened and Near Threatened species are recorded as being felled for timber on the IUCN Red List or in the document submitted to the nineteenth meeting of the CITES Plants Committee by the nomenclature specialist and*

Supporting Statement (SS)

individuals per hectare at 400 metres altitude. Densities of 2-5 individuals per hectare are recorded on lower western slopes in the Masoala plots. In 1994, 3 – 8 individuals per hectare were measured in low – medium altitude wet forests of Ranomafana.

Table: Characteristics of some species of *Dalbergia* in Madagascar

Species	Density (ind / ha)	Basal area (m² / ha)	Biovolume (m^3 / ha)
Dalbergia abrahamii	120	1.9	6.6
Dalbergia baronii	10	1.5	5.7
Dalbergia greveana	270	4.2	16.6
	310	4.7	34.7
Dalbergia madagascariensis	250	4.1	16.5
Dalbergia mollis	210	4.8	44
	220	2, 6	24.7
Dalbergia trichocarpa	300	11.1	40.3
Dalbergia louvelii	200	0.3	4
Dalbegia monticola	200	3.2	12.9
Dalbergia normandii	260	4.3	11.4
Dalbergia purpurascens	240	7.1	18.7
	100	7.2	37.3
	320	6	50
Dalbergia xerophila	240	3.7	36.1

Additional information

Madagascar (Document PC19 Doc. 14.3). This documents also presents preliminary assessments using the IUCN Red List categories and criteria (version 3.1) undertaken by the IUCN/SSC Madagascan Plants Specialist Group that have not yet been published. These are included below.

The following species have been identified by one of the sources above as being valuable for trade:

- **Dalbergia abrahamii**- *(Endangered)-A tree known only from a few localities around Autsiranana and the Ankarana Massif. Much of the range is decreasing through forest destruction. Subpopulations are fragmented. The main threat comes from selective felling for timber and charcoal (Du Puy, 1998i). The extent of occurrence (E00) has been calculated at 637 km^2 (DBEV and WWF, 2010), though it is not clear what the basis for the estimate of extent of occurrence is and it is likely to be an underestimate. The same applies for the extent of occurrence calculated for the following species. DBEV and WWF (2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.*

- **D. baronii**- *(Vulnerable) A widespread species confined to the lowland plains of eastern Madagascar. This fine rosewood timber species grows in lowland rainforest, often in marshy areas and near mangroves.* (*Du Puy, 1998a). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Vulnerable.*

- **D. bathiei**- *(Endangered) A tree confined to a few small areas of lowland, evergreen, humid forest, mainly along river margins. This species is a fine rosewood and is traded nationally and locally. As a result of selective exploitation, this species is now very rare (Du Puy, 1998j). The extent of occurrence has been calculated as 11 965km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Critically Endangered.*

- **D. davidii**- *(Endangered) Occurs in an area where* Dalbergia *species are being selectively felled for the export market. Despite its presence in Ankarafantsika Natural Reserve, the species is still under threat from logging (Du Puy, 1998k). The extent of occurrence has been calculated as <100 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Critically Endangered.*

- **D. greveana**- *(Lower Risk/near threatened) Still widespread in western*

Supporting Statement (SS)	Additional information
	Madagascar, but population numbers have declined over the entire range. This species occurs in deciduous, seasonally dry forest and woodland up to 800 m. Trees are sought after and selectively felled for the high-quality wood which forms the bulk of timber wood exports from western Madagascar. Some localities are protected in Ankarafantsika Nature Reserve and in Ankarana Special Reserve (Du Puy, 1998d). The extent of occurrence has been calculated as 423 423 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Least Concern. • **D. louvelii-** *(Endangered) Eastern Madagascar. Populations of this rare rosewood species are now severely fragmented. A species confined to the drastically reduced lowland, humid forest (Du Puy, 1998b). The extent of occurrence has been calculated as 5358 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.* • **D. madagascariensis**- *(Vulnerable) A widespread species found in humid, evergreen forest. The extent of the forest is in decline and trees are selectively felled for the timber (Du Puy, 1998l). The extent of occurrence has been calculated as 195 960 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Least Concern.* • **D. maritima**- *(Endangered) A lowland tree restricted to humid, evergreen, coastal forest. This type of forest has been almost completely destroyed. The remaining forests are seriously threatened by exploitation and clearing. Selective felling for export, fragmented subpopulations and titanium mining activities threaten this endemic species (Du Puy, 1998c).* • **D. mollis**- *(Lower Risk/near threatened). The extent of occurrence has been calculated as 285 208km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Least Concern.* • **D. monticola-** *(Vulnerable) (Appendix III) Extensive distribution along the eastern escarpment of Madagascar, including areas with extensive forest cover. This much sought-after rosewood is selectively felled for export and mature trees are considered rare. Although it was said that many localities received protection in Perinet/Andasibe, Zahamena, and Ranomafana Protected Areas (Du Puy, 1998e). The extent of occurrence has been calculated as 122 991 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Vulnerable or Least Concern.*

Supporting Statement (SS)	Additional information
	• **D. normandii**- *(Endangered) (Appendix III) A very rare species known from only two localities, Antalaha and the Isle Sainte Marie in north-east Madagascar. This tree has been severely exploited for the excellent quality of its rosewood. (Du Puy, 1998f). The extent of occurrence has been calculated as <5000km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.* • **D. purpurascens-** *(Vulnerable) (Appendix III), Widespread in east, west and south-west Madagascar, where it was locally common (in 1998). This species produces a notably attractive high-quality rosewood which is selectively felled, seriously reducing populations. (Du Puy, 1998g). The extent of occurrence has been calculated as 480 363 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Least Concern.* • **D. tsiandalana**- *(Endangered) Very restricted, this poorly known species occurs around Soalala and Mahajanga in western Madagascar. The habitat of this species is very reduced and fragmented. This good-quality rosewood is selectively felled (Du Puy, 1998m). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.* • **D. viguieri**- *(Vulnerable) A poorly known rosewood tree that is restricted to broadleaved transition forest in north-east Madagascar. The species is known from only three rapidly diminishing sites, all of which are fragmented and isolated Du Puy, 1998n). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.* • **D. xerophila-** *(Endangered) (Appendix III). This species has a very restricted distribution in south-east Madagascar. (Du Puy, 1998h). The extent of occurrence has been calculated as 1859 km^2 (DBEV and WWF, 2010). Reported in PC19 Doc. 14.3 as assessed as meeting the IUCN criteria for Endangered.*

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Market demand for the timber of the species is seriously threatening *Dalbergia* spp. in Madagascar.

On the national and international market, precious woods are more expensive especially rosewood (about 6000 euros per ton) which results in illegal exploitation becoming more numerous and occurring even in protected areas.

Between 2000 - 2001 (prior to 2002 political turmoil) rosewood exports amounted to almost 5000 tonnes annually, declining to almost nothing for 5 - 6 years, and then increasing to 2385 in 2007. Exports then increased to almost 14 000 tonnes in 2008 (prior to the current political turmoil) and increased further to more than 36 000 tonnes in 2009. The figures presented for 2007 and 2008 mostly pertain to rosewood seized by the state and sold by auction to a single buyer. The Forestry Administration

Supporting Statement (SS)	Additional information
In 2009 at least 52 000 tonnes of precious wood (approximately 100 000 feet of rosewood and ebony) was harvested; more than 60 000 feet from protected areas. It has been estimated that rosewood from Madagascar is worth 400 000 euros per day on international markets.	*estimated a further reserve of 15 600 tonnes awaiting export in 2009. This does not include containers smuggled out of Madagascar (Randriamalala and Liu, 2010). Foreign exports of Madagascar rosewood occurred at "low" levels (1000 to 5000 tonnes) between 1998 and 2007. Approximately 10 280 tonnes of illegally logged rosewood is believed to remain stockpiled in numerous locations in north-eastern Madagascar, such as the ports of Vohemar and Antalaha as well as private residences in those cities and Sambava, Ampanifena, Ambohitralalana, and others (National Geographic, 2010).* *Prior to September 2009 13 authorized exporters were identified, concentrated in Antalaha, but following the publication of Order No. 38244/2009 in September 2009, this rose to 23 authorized exporters by December 2009 . In 2009 the number of rosewood trees in protected areas was estimated at 3-5 trees per hectare. In 2009 100 000 rosewood trees were felled in the SAVA region and Analanjirofo (Randriamalala and Liu, 2010).* *As logging after March 2009 increased, loggers moved south (Randriamalala, 2012b).* *Exports of rosewood from China to Madagascar rose by 340% in one year reaching 22 000 m^3 in 2010. This is by far the largest threat to the species and rainforests of Madagascar (EIA, 2012). Of exports from Madagascar, 95% go to China and the remaining 5% to USA or Europe (Patel* in litt.*, 2012).* *Barrett* et al. *(2010) reported that a conservative estimate of 1137 containers, each carrying 114 rosewood logs each on average, and with a value in excess of USD227.4 million, had been exported since April 2009.* *Patel* in litt. (*2012) reported that there were 500 000 logs stockpiled. Cutting continues in Masoala National Park and Mananara-Nord at least, but there has been no cutting in Marojejy in last 24 months (Patel* in litt.*, 2012).* *Each 150-kilogram log has an approximate market value of USD1300 (National Geographic, 2010).* *A report by Randriamalala (2012a) based on press clippings, cargo manifests and eye-witness accounts indicates that traders are covertly reducing rosewood stockpiles accumulated during a spate of logging in the aftermath of the 2009 regime change. Rosewood logs are reportedly ferried by small boats to "mother ships" anchored from beaches in northeastern Madagascar.*

Supporting Statement (SS)	Additional information
	It has been claimed that the overwhelming majority of exported Madagascar rosewood is illegally logged within Masoala National Park and Marojejy National Park (which are part of the Rainforests of the Antsiranana UNESCO World Heritage Site), as well as Mananara-Nord Biosphere Reserve and the vast Makira Conservation Site) (Jenkins et al.*, 2012).* *In 2010 UNESCO added the Madagascan World Heritage Site Rainforests to its list of 'World Heritage in Danger', the vast quantities being felled have been valued at several hundred million dollars worth extracted in 2009 (Jenkins* et al.*, 2012).* *Import to Europe and USA have not ceased as several rosewood species are readily available for sale from specialist timber traders on the internet. A brief search on the internet shows various companies selling guitars and other products made of Madagascan Rosewood.* *A wide range of timber sizes has been found by EIA Investigations suggesting indiscriminate felling of rosewood trees of any age and size. Very little, if any rosewood logging is legal (National Geographic, 2010).*

Other information

Threats

In addition to the damage caused by illegal exploitation of *Dalbergia* species, habitat destruction is exacerbated by shifting cultivation and fires.	*Original forest extent was 70-90% land cover, in 2000 it was 16% (Patel* in litt., *2012).* *Illegal logging has emerged as the most severe threat to Madagascar's dwindling north-eastern rainforest. Documented long-term ecological consequences of selective logging in Madagascar include invasion of persistent, dominant non-native plant species, impaired habitat for animals, and a diminution of endemic mammalian species richness (WWF, 2012). Dalbergia species which are not internationally traded for high quality wood are also felled for charcoal and fuel for local use and has caused fragmentation and degradation of vegetation and habitats (Du Puy* et al., *2002).* *According to a WWF study the number of species found in Andranopasy (Southwest Madagascar) is far less than what is expected based on previous inventories in the same area (18 species were inventoried at Mikea forest in 2005). The plausible explanation of this is that their overexploitation resulted in their extirpation from Andranopasy. Most mature individuals in both sites are gone due to illegal logging and the stock of trees with exploitable size is very low in both sites, with almost zero stock for Andranopasy. Ongoing selective logging activities and forest conversions were still being recorded in both sites during the study (WWF, 2012).*

Supporting Statement (SS)	Additional information
Conservation, management and legislation	
The Government of Madagascar plans to increase the size of protected areas as a means to contribute to the conservation of species of *Dalbergia*. Madagascar listed 5 species in Appendix II. Rosewoods occur primarily outside protected areas which contain 10 – 25% of the total population.	*Five species were listed in CITES Appendix III (Madagascar) at the end of 2011:* D. louvelii, D. monticola, D. normandii, D. purpurascens and D. xerophila. *These species were included in CITES after illegal trade increased by 25% in 2009 and approximately 25 000 m^3 of rosewood were exported.* D. madagascariensis *lacks the typical lustre of rosewood and is not covered by the 'unconditional' export ban of 2010 (Jenkins* et al., *2012).* *Rosewoods are virtually exclusively found inside protected areas (Patel* in litt., *2012).* *The Government legalised export in December 2009, then on 24 March 2010 Decree 2010-121 was issued which unconditionally bans all harvest, transport or export of rosewood in Madagascar for the next 2-5 years (Barrett* et al., *2010). It is unclear if this ban is still in place. In May 2010 the Prime Minister issued a service note permitting export of 79 containers which had been impounded for export under Inter-ministerial Order 38409/2009 (Global Witness and Environmental Investigation Agency, 2010).* *The illegal logging peaked during 2009 and 2010 and then slowed due to an unconditional export ban in 2010 with heavier penalties being introduced in 2011. However, the order was lifted in January 2012, re-authorising export which is currently under review due to pressures from foreign traders, tourism and conservation groups. A report in the L'Express de Madagascar (15 March 2012) stated that the decree 2010-141 has been reinstated banning the harvest, transport and export of Rosewood (Jenkins* et al.*, 2012). Illegal logging of this has heavily impacted some reserves such as Betampona Natural Reserve (National Geographic, 2010).* *The precious timber trade was so widespread it appeared legal. In September 2009, 50% of villagers around the Masoala National Park were at any given time away in the forest harvesting. The situation in 2012 has improved, loggers are being imprisoned and trucks with logs confiscated. However, Rosewood containers are still being exported under false customs declarations (Patel* in litt., *2012).* *The Lacey Act prohibits the import of illegal Malagasy wood into the United States.*

Supporting Statement (SS)	Additional information
	Other comments
	Two species listed in the IUCN Red List as occurring in Madagascar are not included in the Annex to the proposal: D. hutibertii *(VN) and* D. catipenonii *(VN).* *Further recommendations that should be implemented include sustainable land use planning strategies, species management policies, chain-of-custody timber tracking and log DNA barcode (Barret* et al., *2010). Research is being carried out to obtain DNA samples for bar coding Dalbergia species (Hassold, S. 2012).* *Due to the lack or poor quality of roads the logs are transported by boat it is estimated that for 100 000 trees logged, at least 500 000 additional trees were felled (e.g.* Dombeya spp*) to make rafts – on average five high buoyancy trees are required to float one log, as well as tens of thousands of vines for binding the rafts were cut (Randriamalala and Liu, 2010).*

Reviewers: M. Barret, C. Birkinshaw, S. Hassold, C. Hin Keong, J. de Koning, J. Nunez-Mino, S. Oldfield, E. Patel, G. Schatz.

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Inclusion of *Senna meridionalis* in Appendix II

Proponent: Madagascar

Summary: *Senna meridionalis* is a deciduous much-branched shrub or shrubby tree, two to five metres tall found only in Madagascar. It is one of 250 or so species of *Senna*, a genus of leguminous plants widespread in the tropics. The species has a relatively extensive distribution over an area of at least 20 000 km^2 in southern and western Madagascar, growing mainly on calcareous soils in arid and semi-arid areas in deciduous forest and thorny scrub. Distribution within this area is fragmented, but the species is at least locally common and is reported from at least two protected areas (Tsimanampetsotsa National Park and Cap Sainte Marie Special Reserve). *Senna meridionalis* has a bonsai-like appearance and is in some demand for the international horticultural trade, chiefly grown by hobbyists. It does not appear to be widely available at present. The plant is reported to have been collected particularly from the Table de Toliara mountain (Andatabo) near Toliara in south-west Madagascar. Malagasy authorities report the export of some 700 in the period 2003–2006, most of these (just under 500) in 2004. No subsequent exports are reported. It may be assumed that some or all of these were wild-collected plants. The species can reportedly be propagated from both seeds and cuttings.

This species was proposed for inclusion in Appendix II of CITES by Madagascar at CoP15. The proposal was withdrawn at the CoP.

Analysis: *Senna meridionalis* has a reasonably widespread distribution in southern Madagascar, where it is at least locally common. It is offered for sale in various parts of the world, but trade appears to be limited. The plants offered for sale range from small individuals grown from cuttings, to larger individuals of unknown origin. Some wild collection is known to have taken place in the early 2000s. No exports have been reported from Madagascar since 2006. Given the distribution of the species and the absence of any reported recent trade from the range State, it seems very unlikely that regulation of trade is necessary to prevent the species becoming eligible for inclusion in Appendix I in the near future, or that harvest for trade is reducing the population to a level at which its survival might be threatened by other influences. The species would therefore not appear to meet the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
Taxonomy	
Synonyms: *Cassia viguierella* var. *Meridionalis* , *Cassia meridionalis*.	
Range	
Madagascar.	
IUCN Global Category	
	Not currently listed.

Supporting Statement (SS)	Additional information
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
	The species normally grows on limestone and has a very slow growth rate (Rakotoarisoa in litt., *2012).*
Around 420 individuals, of which 150 are mature individuals, were counted in Ahaviro Toliara. Recent observations (since January 2012) in Andatabo, an area of collection, found around 73 mature individuals per hectare, with a total population in this two hectare area estimated to be 146 mature individuals.	*The area of Andatabo, for which population numbers are reported in the proposal, is a much degraded site due to human activities, particularly charcoal production. The sites of Soalaro and Itampolo are thought to be more representative of the population as they are less perturbed. Although no formal population assessment of the species was undertaken at this site, it is thought that the population greatly exceeds 500 individuals as the species is widely distributed on the Mahafaly plateau from Itampolo to Andatabo. All sites noted in the proposal (Itampolo, Tsimanampetsotsa, Andatabo and Soalaro) are parts of Mahafaly Plateau and therefore not thought to be fragmented. All sites are collection sites (Rakotoarisoa* in litt., *2012).*
The species has been assessed using the IUCN criteria as endangered.	*The conservation status of* S. meridionalis *is not published on the IUCN Red List. The IUCN status assessment given in the proposal was assigned using GIS data, which were used to calculate Area of Occupancy and Extent of Occurrence and to predict future decline (PC20 Inf. 4, 2012).*
A future decline of 78% is predicted due to extraction from the wild and habitat destruction through anthropogenic activities.	*The future decline predicted in the proposal is over an unspecified time period. The evidence upon which the decline is predicted is not detailed in the proposal.*
The species has a fragmented and restricted distribution. It is found in the xerophitic thicket of the South West of the island, for example Itampolo Tsimanampetsotsa, Soalaro, and Andatabo. The Area of Occupancy of *S. meridionalis* is 126 km^2 and the Extent of Occurrence is 21 532 km^2.	
The dry thorny thicket of the South west, covers an area of approximately 18 355 km^2 (of which 4.5% is found within protected areas). This type of land cover has reduced by 30% since the 1970s.	
Exploitation for export could lead to the absence of natural regeneration, which is already very low (9%) and the decline or even disappearance of populations in collection areas. In the long term this would pose a serious threat to the species.	

Supporting Statement (SS)	Additional information
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
S. meridionalis is sought after in the international market as an ornamental plant. When its stems are cut, this species takes the form of a bonsai. It is collected from the wild and is reported to be becoming rare. An absence of individuals of juvenile to adult size is observed in areas of collection. Andatabo is the principal area of collection for this species. However, this area did not have any conservation measures in place before 2008.	*Yuan* in litt. *(2012) reports that* S. meridionalis *is sold in Hong Kong and Taiwan POC as seedlings, but notes that mature plants may not be available. Wang and Chen* in litt. *(2012) report that the species is available for sale in China.*
S. meridionalis is exported as a living plant. Reported export numbers of living plants are as follows: 2004 (483), 2005 (166) and 2006 (23).	*No trade was reported subsequent to 2006.*
No illegal trade of *S. meridionalis* has been recorded to date. The species is rarely sold in local markets. The harvest and export of this species is not subject to any regulation.	*A nine-day web survey to investigate web trade for* S. meridionalis *was conducted in 2011. The species was observed to not be subject to wide sales; only three plants and one package of seeds were offered from France and the USA (Augugliaro* in litt., *2012).*
The proposal reports four web sources selling mature plants and seeds of *S. meridionalis* of wild or unknown origin. Price per plant ranged from USD20.35 – 150.00 and per seed USD0.51.	*Additional web sites selling* S. meridionalis *within the price range identified in the proposal were identified during the analysis process. These sellers were based in the USA, Thailand and Reunion. Some sales were of root cuttings, for example a seller in the USA offered small rooted cuttings in one-gallon pots for USD25 and it is noted that a caudex-like trunk will form with time. An individual with 2 cm trunk and 29 cm in height, of unknown origin was available from a seller located in Thailand for USD35. Seeds were available for USD3.4 per seed from a seller based in Reunion. The origin of the material is not provided. It notes the rarity of the species and that it is ideal for bonsai.*
Inclusion in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I	
Senna meridionalis is easily identifiable.	

Supporting Statement (SS)	Additional information
Other information	
Threats	
Habitat destruction; the limestone rock found there has been used for making bricks. The habitat of this species has therefore undergone progressive destruction, leading to natural regeneration difficulties.	
Conservation, management and legislation	
Collection and export are only regulated at a national level. Para 7.1 of the SS states: collection and export [of this species] are not subject to any controls. Para 8.1 of the SS states: National management measures are detailed in the proposal: The number of specimens authorised for export is based on the supply of the species in horticultural centres. A single harvest authorization per species per operator is provided, to serve as parental stock. Operators should undertake ex situ reproduction. Permits and exportation authorizations are supplied only for individuals reproduced artificially. Certain populations of this species are found within the National Parks of Andohahela and Tsimanampetsotse, and la Réserve Spéciale de Cap Sainte Marie. Other populations are assumed to be found in the new protected areas of Amoron'ny Onilahy, which would reinforce the conservation of the habitat of *S. meridionalis.*	*The level of national legislation afforded to this species is unclear as the proposal notes that harvest and export are not subject to regulation and later that they are subject to national authorization procedures. Information as to whether national management measures have been enforced or how successfully is not provided. Expert reviewers were asked to provide additional information about national legislation and its effectiveness but none of the comments received clarified this.* *According to PlantSearch, an online database of botanic garden collections maintained by Botanic Gardens Conservation International (BGCI), 7 gardens record holding S*. meridionalis *in their collection. None of these gardens are within Madagascar, potentially limiting their involvement in restoration activities.* *In addition,* S. meridionalis *is also held in the collections of Phyto-Logic Paradise Gardens and Arboretum d'Antsokay in Madagascar. Phyto-Logic Paradise Gardens have not attempted propagation of the species yet (Cooke* in litt., *2012). It is not known whether Arboretum d'Antsokay is propagating the species.*
Captive Breeding/Artificial Propagation	
Even though propagation from seed is easy for this species, harvesters have a tendency to collect from the wild.	S. meridionalis *is reported as being easily grown and in varying light, water and soil conditions (Anon, undated).* *Bihrmann* in litt. *(2012) notes that* S. meridionalis *is rather fast growing. Small seedlings do form the caudex. Propagation is rather easy from seed as well as cuttings. Cuttings do not form the same size caudex.*
Other comments	
This species was already the subject of a study on trade with the aim of its integration in Annex II of CITES in 2010. Biological and ecological data obtained were updated and supplemented for the preparation of this new proposal.	

Supporting Statement (SS)	Additional information
Under an agreement between the CITES Secretariat and the Scientific Authority Flore-Madagascar, *S. meridionalis* will continue to be the subject of research in 2012 to supplement existing data. In addition to the species' ornamental value, the wood is used for construction and the leaves have medicinal value, used to treat haemorrhoids.	

Reviewers: C. Augugliaro, S. Rakotoarisoa, D. Newton.

Inclusion of *Uncarina stellulifera* in Appendix II

Proponent: Madagascar

Summary: *Uncarina stellulifera* is a succulent shrub, one of around ten species in the genus, all of which occur in Madagascar. It has a relatively wide though evidently patchy distribution in south-west Madagascar, from Morondava southwards, where it grows in dry thorny thicket and dry forest, habitats that are affected by conversion to agriculture, burning and charcoal production. One observation on the ground found a density of around 160 mature individuals per hectare. The species is known to occur in at least three protected areas (Beza-Mahafaly Special Reserve and Kirindy-Mitea and Tsimanampetsotsa National Parks). The species is in cultivation, both as an ornamental plant (apparently on a small scale) in Madagascar and elsewhere. The species is said to be easy to propagate from seeds and to grow relatively rapidly. Some export of plants was reported in the early 2000s, amounting to just under 700 plants in total in the period 2000-2006, with a peak of just over 340 in 2004. It is not clear how many of these were wild collected. Export since 2006 has not been reported and the majority of the limited trade outside Madagascar at present appears to be in seeds. Current legal controls in Madagascar on collection and export are unclear.

Analysis: *Uncarina stellulifera* has a relatively wide distribution in south-west Madagascar. It is in cultivation, and is reportedly easy to propagate. Recent trade outside Madagascar appears to be largely in seeds. Some export of plants, presumed wild-collected has taken place in the past, although there is no indication of ongoing export of wild-collected plants The scale of the reported trade is very small compared with the likely population of the species based on observed densities. It seems very unlikely that regulation of trade is necessary to prevent the species becoming eligible for inclusion in Appendix I in the near future, or that harvest for trade is reducing the population to a level at which its survival might be threatened by other influences. The species would therefore not appear to meet the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
Range	
Madagascar.	
IUCN Global Category	
	Not currently listed.

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

Ground observations in December 2010 in the South West region provided information about the abundance of *U. stellulifera*. It was estimated that within this region there were approximately 160 mature individuals per ha, and the estimated	

Supporting Statement (SS)	Additional information
area occupied by the species in this region was 1.5 hectares, giving a total subpopulation estimate in this region of 240 individuals.	
A future decline of 85% is predicted.	*The future decline predicted in the proposal is over an unspecified time period. The evidence upon which the decline is predicted is not detailed in the proposal.*
Regeneration of *U. stellulifera* is difficult, with a regeneration rate of 43.8%.	
In 2011, the species was assessed as endangered using the IUCN criteria.	*The conservation status of* U. stellulifera *is not published on the IUCN Red List. The IUCN status assessment given in the proposal was assigned using GIS data, which were used to calculate Area of Occupancy and Extent of Occurrence and to predict future decline (PC20 Inf. 5, 2012).* U. stellulifera *is reported as Near Threatened (NT) in the Guide des Plantes Medicinales et Alimentaires, but it is reported that if the plant is not soon brought under some type of conservation measure the species will be moved to one of the threatened categories (MPSG and Missouri Botanical Garden, 2011).*
U. stellulifera has a limited distribution, restricted to the South West of Madagascar. The Area of Occupancy is less than 500 km^2 and the Extent of Occurrence is 9,105 km^2. The zone occupied by the species continues to decrease due to diverse threats and pressures.	*The species is reported to be scattered from Mahafaly Plateau around Itampolo and Tsimanampetsotsa Lake to Morondav, not only from Tsimanampetsotsa Lake to North of Toliara as reported in the proposal (Rakotoarisoa* in litt., *2012).*
The species is found in two main types of habitat, dry thorny thicket and dry forest. The dry thorny thicket of the South and South West of the island covers an area of approximately 18 355 km^2 (of which 4.5% is located within protected areas). This type of land cover has reduced by 29.7% since the 1970s. The dry forest of the West of the island covers an area of 31 970 km^2 (of which 17.1% is within protected areas). This type of forest reduced by 39.7% since the 1970s.	*Observations in Manja (South of Morondava) in March 2012 reported an important population of mature individuals of* U. stellulifera *from Manja to Andranompasy (West towards the beach) (Rakotoarisoa* in litt., *2012).*
In collection areas, commercially exploitable individuals are reported as becoming increasingly rare. Collectors have to go further to find the species as it is no longer found in areas of previous collection, close to inhabited areas. The level of harvest and international trade could lead to the cessation of natural regeneration and the decline or even disappearance of populations in areas of collection which in the long term would constitute a serious threat to the species.	
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Uncarina stellulifera is traded legally internationally as a living plant.	*Yuan* in litt. *(2012) reports that trade of* U. stellulifera *is not common in China and that trade that is there, is of seed.*

Supporting Statement (SS)	Additional information
Reported export numbers of living plants are as follows: 2000 (17), 2001 (2), 2002 (0), 2003 (10), 2004 (343), 2005 (154) and 2006 (136). No illegal trade in *U. stellulifera* has been registered. The species is rarely sold in local markets. A study by the Royal Botanic Gardens Kew found four web sources selling mature plants and seeds of *U. stellulifera* of wild or unknown origin. Price per plant was USD70.00 and per seed ranged from USD0.66 – 2.52.	*No trade was reported subsequent to 2006.* *A further web search found various sites selling seeds of* U. stellulifera. *No seedlings or mature plants were found for sale. Seeds were identified as available from sellers in the USA and Réunion. Packages of up to 50 seeds could be purchased, at a price of USD20.09. Other species of* Uncarina *were noted to be available to buy from online sellers, including species with narrow distributions, such as* U. roeoesliana. *An additional nine-day web survey to investigate web trade for* U. stellulifera *was conducted in Autumn 2012, which identified three packages of seeds sold and eighteen packages of seeds offered from the USA and Réunion. Prices of seeds ranged from USD10 (for 10 seeds) to USD30 (for 50 seeds) (Augugliaro* in litt., *2012).*
Inclusion in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I	
	U. stellulifera *when not in leaf and/or pruned will be difficult to distinguish from other species of the genus (Eggli* in litt., *2012).* U. grandidieri *is proposed for inclusion in Appendix II (CoP16 Prop. 68).*
Other information	
Threats	
Habitat degradation by slash and burn agriculture threatens *U. stellulifera*. The increasing expansion of shifting cultivation of maize and associated fires along with grazing animals constitutes a serious threat to habitat.	
Conservation, management and legislation	
Collection and export are only regulated at a national level. Para 7.1 of the SS states: collection and export [of this species] are not subject to any controls.	*The level of national legislation afforded to this species is unclear as the proposal notes that harvest and export are not subject to regulation and later that they are subject to national authorization procedures. Information as to whether national management measures have been enforced or how successfully is not provided. Expert reviewers were asked to provide additional information about national*

Supporting Statement (SS)	Additional information
Para 8.1 of the SS states: National management measures are detailed in the proposal: The number of specimens authorised for export is based on the supply of the species in horticultural centres. A single harvest authorization per species per operator is provided, to serve as parental stock. Operators should undertake ex situ reproduction. Permits and exportation authorizations are supplied only for individuals reproduced artificially.	*legislation and its effectiveness but none of the comments received clarified this.*
Certain populations of *U. stellulifera* are found within the National Park of Tsimanampetsotsa and la Réserve Spéciale de Bezà-Mahafaly. The State policy to increase the extent of protected areas and define new protected areas could add to the conservation of the species in its natural habitat. The proposal suggests that reintroduction of the species to previous collections zones should be undertaken.	U. stellulifera *is also recorded in the Kirindy Mitea national park (Anon, undated).*
	Captive Breeding/Artificial Propagation
The proposal suggests that e*x situ* propagation is needed to create supplies for export. Propagation from cuttings is successful for *Uncarina* species, but it is also possible from seed.	*The species can be propagated easily from vegetative stem cuttings (Rakotoarisoa* in litt., *2012). Like other* Uncarina *spp., cultivation is easy as long as warmth and space is available. Propagation through seed (easily obtained via cross-pollination) or cuttings is straight-forward, and plants are rapid growers, so horticultural demand should be easy to meet via seed-grown plants (Eggli* in litt., *2012). Bihrmann* in litt. *(2012) reports that* U. stellulifera *grow rather fast. Seeds are common and propagation from cuttings does work but may be slightly difficult.* *According to the online database of Botanic Gardens Conservation International (BGCI), PlantSearch, 17 gardens record holding* U. stellulifera *in their collection. All of these gardens are located in Europe or the United States of America. In addition to this,* U. stellulifera *is also held in the collection of Phyto-Logic Paradise Gardens in Madagascar. The original specimen has been in the garden for more than ten years. This botanic garden is propagating* U. stellulifera *and* U. grandidieri *from cuttings and both species are being planted in gardens within the city of Antananarivo, where the botanic garden is located (Cooke* in litt., *2012). Parc Botanique et Zoologique de Tsimbazaza in Madagascar holds one individual of* U. stellulifera*. The plant was collected as a wild seedling and the garden is not currently propagating the species.*
The local population grow the species in enclosed gardens as an ornamental plant.	*Observations support the presence of the garden as an ornamental plant in a small number of gardens in rural areas and towns in the South of Madagascar. It is thought these plants may also be used for shampoo from the leaves, but this is not confirmed (Rakotoarisoa* in litt., *2012).*

Supporting Statement (SS)	Additional information
Other comments	
Information on this species was presented to the Plants Committee in 2011. Biological and ecological data obtained were updated and supplemented for the preparation of this new proposal. This species has an important role in the daily lives of local people for its uses within traditional medicine. The *Uncarina* genus is also known for its use as a cosmetic plant. The leaves and stems are mainly used for hair care (such as hair regrowth and dandruff treatments). The leaves of *U. stellulifera* are used by cosmetic manufacturers to make shampoo and by local populations as soap. The constant removal of leaves from individuals throughout the year could affect the reproductive capacity of the species.	*Midgley and Illing (2009) hypothesised that the curious, heavily burred fruits of* Uncarina *spp. evolved to be dispersed on the feet of now-extinct elephant birds* Aepyornis. *U. stellulifera is also used in traditional medicine as a love spell (Ravaosolo, 2009).*

Reviewers: C. Augugliaro, A. Cattabriga, U. Eggli, D. Newton, S. Rakotoarisoa.

Inclusion of East African Sandalwood *Osyris lanceolata* in Appendix II

Proponent: Kenya

Summary: East African Sandalwood *Osyris lanceolata* is a semi-parasitic shrub or small tree with wood that yields a commercially important aromatic oil. The species occurs in a range of open habitats, generally in arid and semi-arid environments. It is widespread, occurring mainly in the tropics and some parts of the Mediterranean. It is uncertain whether the recorded distribution for some countries relates to introduced plants.

Subsistence uses of the species in East Africa include timber, fuelwood and herbal medicines. In the past decade, populations in Kenya and United Republic of Tanzania (Tanzania) have been intensively harvested to supply the international trade in sandalwood. Exploitation is reported to have spread to South Sudan and Uganda. Whole trees are uprooted for extraction of the oil that is contained in the trunk, branches and roots. In Tanzania processing factories were established in 2004 and trade in East African Sandalwood was first reported in Kenya in the same year. Increase in use of the species may be associated with a decline in supply of oils and associated products from other sandalwood species (primarily *Santalum* spp., and Red Sanders *Pterocarpus santalinus*, the latter being included in CITES Appendix II). Wood of *Osyris lanceolata* is exported to China and India and semi-processed products to Indonesia, India, South Africa, France, Germany and eastern Asia countries for the cosmetic and pharmaceutical industry.

In Kenya, the species has a wide but scattered distribution and population abundance is apparently low. Very few young plants have been observed in recent field surveys, with most stands aged 20 – 45 years. Studies at various localities reveal poor regeneration potential. Populations have reportedly been declining since 2002, as a result of the heavy exploitation for international trade. The sharp rise in extraction in Kenya is believed to be linked to overexploitation of the resource in Tanzania. In Tanzania, declines have been recorded in various parts of the country including Arusha, Manyara and Kilamanjaro Regions and the Eastern Arc Mountains. There is currently little information on the status of *Osyris lanceolata* in most other parts of its range, although there is no evidence of large-scale exploitation elsewhere. The species has been assessed nationally in both Namibia and South Africa as Least Concern.

Osyris lanceolata was protected in Kenya by Legal Notice No 3176 of 2007 under the Forests Act, 2005. This gave protection to the species for a period of five years to allow for the development of sustainable harvesting mechanisms.

Analysis: *Osyris lanceolata* is a widespread shrub or small tree from the tropics and subtropics, whose original range is unclear but is probably Africa and localised parts of southern Europe. It yields an aromatic oil that is in international demand. Exploitation in East Africa for production of oil and associated products began relatively recently (2004) and has apparently led to population declines in Kenya and Tanzania, with harvest reported now to be spreading to South Sudan and Uganda. However, the species is very widespread and at least locally common outside this region and there is no evidence of large-scale exploitation elsewhere. In view of this, the species would not appear to meet the criteria for inclusion in Appendix II set out in Annex 2 a of *Resolution Conf. 9.24 (Rev. CoP15).*

Supporting Statement (SS)	Additional information
Taxonomy	
Osyris lanceolata Hochst. & Steud. (1832).	*The genus is considered in the proposal to be monotypic but The Plant List (2012) lists two other accepted species names for the genus:* Osyris speciosa *(A.W. Hill) J.C. Manning & Goldblatt, and* Osyris alba *L. The African Plant Database (2012) also lists* Osyris compressa *(P. J. Bergius)*.
13 synonyms listed in the proposal.	*Great variation in leaf size and shape has elicited a considerable synonymy in this species. There are 15 synonyms listed on The Plant List and African Plants Database (2012).*
Range	
Africa: Kenya, United Republic of Tanzania, Uganda, South Sudan, Rwanda, Burundi, Malawi, Mozambique, Ethiopia, Algeria, South Africa, Zambia and Zimbabwe. Also in Europe (Iberian Peninsula and Balearic Islands), Asia (India to China).	*Also Democratic Republic of Congo, Morocco, Namibia, Botswana, Asia (India to SE Asia) (Flora Zambesiaca, 2012).* *According to Orwa* et al. *(2009) the tree is native to Kenya, Tanzania and South Africa and has been planted in Ethiopia, Mozambique, Zimbabwe, Namibia and Botswana.*
IUCN Global Category	
	Not currently listed.

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

	Various assessments have been undertaken for trees of East Africa but do not include this species according to information provided by the East African Plant Red List Authority. O. lanceolata *was assessed as Least Concern against IUCN criteria in 2012 owing to its large extent of occurrence, area of occupancy and wide habitat and altitudinal range (Kalema and Beentje, 2012).* O.lanceolata *was listed as Least Concern in the Red List of South African Plants in 2005 (Foden and Potter, 2005) and as Low Risk/Least Concern in the Southern African Plant Red Data List for Namibia in 2002 (Craven and Loot, 2002).*

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

The main traded products of *O. lanceolata* include aromatic oils extracted from the	*According to Dale and Greenway (1961), Breintenbach (1963), Walker (1966) and*

Supporting Statement (SS)	Additional information
heartwood, timber for handicrafts and sawdust for making incense. Heartwood of the trunk, branches and roots contain the essential oil, with highest concentrations in the roots. The oil is used in perfumery, pharmaceutical, religious and medicinal practices. The East African Sandalwood oil has been found to have comparable properties with the true Sandalwood oil although of different quality.	*Mwang'ingo* in litt. *(2012), the use of* Osysris lanceolata *as a substitute/supplement of Indian sandalwood in Tanzania seems to have started before 1960. Within Tanzania, harvesting was initially concentrated in a few populations yielding good quality material (Mwang'ingo* et al., *2003). Increased use of this species began in the early 1990s following a decline in the global sandalwood supply (exports are banned in India and Australia) leading to a decline in the resource and disappearance of the species in some areas. Sandalwood sourced from Africa is expected to remain a large part of the global resource for the next 5 – 10 years. As international volumes of sandalwood have declined, its price has steadily increased over the past few decades (Mwang'ingo* et al., *2003, cited in Page.* et al., *2012).*
Prior to entering into the international commercial market in 2004, Kenya's population of East African Sandalwood was used locally for timber, fuel or for herbal medicine at subsistence levels. Commercial exploitation started in Tanzania in 2004 and spread to Kenya in 2006 which is now the leading country for exports. Commercial exploitation has spread to South Sudan and Uganda.	
In Tanzania four sandalwood processing factories were established and licensed in 2004, but due to shortage of raw materials, three were closed down and only one in Babati, Manyara region is still operational. This factory sources its raw materials from most parts of East Africa. In 2011, Uganda authorized several shipments of *O. lanceolata,* some transiting through Kenya and others through Tanzania.	*African Sandalwood is harvested from natural populations of* O. lanceolata *in Chad, Sudan, Ethiopia, Uganda, Tanzania and Kenya (Mwang'ingo* in litt., *2012).*
Massive and unsustainable exploitation of this species triggered a ban on its harvesting and trade in Kenya in 2007 (Legal Notice No 3176 of 2007). During the period 2007 – 2011, 276 t of sandalwood material were seized and confiscated in Kenya. The most recent seizure of such materials in Kenya was on 18th September 2012 in Nairobi.	
Markets for specimens of *O. lanceolata* have been recorded in Germany, South Africa, France, India, Middle Eastern countries, United Kingdom, and the United States. There are no clear records on trade of the *O. lanceolata* but it is estimated that 1000 t are annually harvested from Africa, mostly from East Africa. It has been projected that East African Sandalwood is going to contribute significantly to global sandalwood oil trade in the coming 5-10 years. Currently, trade on *O. lanceolata* is exclusively harvested from the wild.	*In Kenya, a study carried out in 2005 revealed that the tree has been overexploited in the areas around Oloitoktok, where the species was formerly common, and the ranches in Kuku, Endonet and Rombo. Due to the overexploitation and resultant scarcity, exploitation then extended to Chyulu and Kibwezi areas. The abundance was reported to increase in Chyulu but it was noted that the only remaining alternative of getting the raw materials is Chyulu national park (Mathenge* et al.*, 2005).* *Subsequently it was reported that Kenya is losing the sandalwood tree to illegal harvesting in Kajiado, Taita, Amboseli and surrounding ranches, Samburu, Koibatek, and Kikuyu Escarpment amongst other areas. In the Chyulu hills the tree still grows in abundance compared to the other areas (Kenya Forests, 2009).* *A study in the Chyulu hills, Kenya (Ochanda, 2011) showed that locals used sandalwood both for commercial purposes and subsistence medicinal purposes for the treatment both for animals and people such as treatment of snake bites. Due to illegal harvesting, most of the mature trees have been removed. Attempts at local nursery propagation have been unsuccessful. Although the tree is dioecious and it*

Supporting Statement (SS)	Additional information
	produces seed three times a year, propagation by seed is challenging as most of the seedlings died in the nursery and after transplanting, (presumably due to the absence of host plants). *In Tanzania, the species has been recorded from the following Districts: Arumeru, Monduli, Kilolo, Ludewa, Makete, Mufindi, Njombe, Same, Babati, Mbeya Rural, Kilosa, Rufiji, Sumbawanga Rural ("Ufipa" in text), Singida Rural, and Lushoto (Tropicos.org).* *In Tanzania, a small factory operating in Tanga was the major consumer of sandalwood obtained from Lushoto, Same and Kilamanjaro but due to unsustainable overharvesting the traditional sources ran out. Harvesting has since shifted to Babati, Kondoa, Handeni-Kiteto, Singida, Mbulu and to a lesser extent Iringa. The stock is nearly extinct in the Eastern Arc Mountains with few remnants harvested, in Lushoto and Mwanga Districts. Baga, Mazumbai and Mkuzu FRs and the surrounding general lands are the key areas where* O. lanceolata *is found, there is illegal harvesting in Lushoto District, Mramba and Minja FRs. Malimbwi* et al. *(2006) reported six legally registered processing industries in Tanzania with annual demand of 6000 t (which seem too high compared to the existing stock or supply)* (*Forestry and Beekeeping Division, 2007).* *In Tanzania, the Ngorongoro Conservation Area Authority reported increased illegal logging in Ngorongoro and Karatu districts, Arusha Region, stating that in the past the trees used to be found in many parts of Arusha, Manyara and Kilamanjaro Regions but many have now disappeared. Buyers pay for truck loads of tree trunks, branches and roots – in 2011 10 t of illegally harvested sandalwood logs were impounded. (Tanzania Daily News, 2012; Arusha Times, 2011).* *In Uganda, the areas of occurrence are mainly close to Kenya in Karamoja and Mbale. This poses a potential problem of easy smuggling of material from either country into the other, depending on where there are 'softer' regulations and control measures. There are unconfirmed reports of some exploitation but this does not seem to be much since the supply is limited. The species often naturally grows in low abundance in its areas of occurrence (Kalema* in litt., *2012).* *It is thought that one large sandalwood processing plant currently operates in Babati with a monthly consumption of about 40 m^3 thus making an annual requirement of about 500 t. The rest of the sandalwood is likely to be exported as raw material (Mwang'ingo* in litt., *2012). Unregistered sandalwood processing plants are reported to be in Dar (Chenga* in litt., *2012).*

Supporting Statement (SS)	Additional information
	Various references state that the demand from India has surged following the decline in Indian and Australian Sandalwood (Machua et al., *2009; Mwang'ingo* et al., *2003). India is the major importer of timber products from Tanzania including all sandalwood exported in the last half of 2005 (Milledge* et al., *2007).*
Inclusion in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I	
Other species that could be considered similar by virtue of the derivatives sought by the market, are the true sandalwoods of the *Santalum* genus mainly *Santalum album* and *S. spicatum.*	*Sandalwood is a common name of many other plant species together with their wood and oils. The genus* Santalum *has about 25 species and* Thesium, *the largest genus in the family Santalaceae, has over 300 species (Mabberley, 2008).* Pterocarpus santalinus *(Red Sandalwood) is the only "Sandalwood" currently listed under CITES, on Appendix II.* *Due to the inter-changeable common names and uses for these various "Sandalwood" species, combined with the facts that these species are often traded as derivatives (oils, wood chips and incense) and are globally distributed, serious enforcement issues are likely to arise if* O. lanceolata *is listed in Appendix II.* *The mixing of Indian sandalwood products with imported African sandalwood has reduced the confidence in sandalwood products originating from India (Page* et al., *2012).*

Supporting Statement (SS)	Additional information
Threats	
O. lanceaolata commonly called East African Sandalwood (or false Sandalwood) has recently entered the international market as a substitute for the traditional sandalwood oil derived from species of *Santalum*. Diminishing populations and strict regulations on Australian sandalwood, *Santalum spicatum* and Indian Sandalwood *Santalum album* have lead to increasing demands for East African Sandalwood. The tree is exploited for its aromatic essential oils found in the heartwood which matures from 15 years (good quality oil has only been obtained from *S. album* and *S. spicatum* of ages 30 years and above). Older trees are targeted and destructive harvesting methods are used where the whole plant is uprooted. Coupled with poor recruitment rates, slow growth and attack by diseases and pests, exploitation is having a detrimental impact on the population. There are reported cases of unsustainable exploitation of *O. lanceolata* from Kenya, Tanzania, Uganda, and South Sudan. In Kenya, highly affected areas include Baringo, Pokot, Taita, Samburu and Chyulu hills. In Kenya, habitats of *O. lanceolata* face threats from conversion for agriculture and mining.	*A taskforce of government institutions was formed to look into the harvesting and trade of sandalwood. In its preliminary survey report it says that poverty in the areas where this species occurs is an underlying factor that might make the fight against the illegal trade difficult to win. Communities around Chyulu National Park earn KShs 4 to KShs 7 for every kilo harvested, which the middleman sells at Kshs 80 per kilo. Successful intervention measures therefore would have to address poverty, and alternative livelihoods (Kenya Forests, 2009).* *Harvesting has now moved into national parks where reasonable resources are still available, compared to small amount that can be collected on public land (Mwang'ingo* in litt*., 2012).*
Conservation, management and legislation	
Kenya and Tanzania have Decrees controlling trade in wild harvested specimens of the species. *O. lanceolata* is protected in Kenya and Tanzania under Presidential decrees. In Kenya, Legal Notice No 3176 of 2007 under the Forests Act (2005) placed East African Sandalwood under Presidential Protection to allow for development of mechanisms for sustainable harvesting of the species. Further, species exploitation is regulated by the Wildlife Act Cap.376, Environment and Management Coordination Act, 1999, and The Constitution of Kenya, 2010. Kenya and Tanzania have initiated programs for carrying out species status assessments that will lead to establishment of certification measures for sustainable harvesting of *O. lanceolata*. Both countries have initiated baseline surveys as a basis for species monitoring. Scientific information generated in Kenya and Tanzania shows that currently significant subpopulations of the species in the two countries exist in protected areas, while most of the specimens harvested have been from non-protected areas.	*The Kenyan Wildlife Service has been instrumental in enforcing the 2007 presidential decree to protect East African Sandalwood from exploitation through illegal trade and has managed to eradicate the illegal harvesting of the plant within protected areas (Karanja, 2012). However, Kenyan forestry agencies have faced difficulties in enforcing the ban on sandalwood exploitation (Kenya Forests, 2010).* *The Presidential Decree was issued on 14th February 2007 effective for five years (State House Kenya, 2007; Kenya Law, 2007). As the Presidential Decree expired in March 2012 there is currently no legal protection for the species in Kenya. The Draft Wildlife Bill for the Republic of Kenya (2011) states this species is nationally listed as a protected Endangered species and also as a wild species for which game farming may be allowed. This is yet to be accepted.* *In Tanzania there are gaps in the legal framework as to banning of harvest and allowing processing (ACP FLEGT, 2012). The existence of a Decree in Tanzania is disputed (Anon* in litt*., 2012).*
Captive Breeding/Artificial Propagation	
There are no established plantations in the species range States. Kenya and Tanzania are, however, actively involved in research and development for improved	*Preliminary investigations on the regeneration potential of the tree showed that the tree regenerates primarily by exposed root suckers.*

Supporting Statement (SS)	Additional information
propagation to enhance establishment of the species in large scale plantations.	*The Drylands Forestry Research Programme led by Kenya Forestry Research Institute (2011) has been focusing on development of technologies for propagation, establishment and management of* O. lanceolata. *Various propagation methods have been tried with varying degrees of success. Seed germination was found to be low, slow and highly variable among seedlots. Propagation through cuttings was hindered by a severe endogenous fungal attack whereas propagation through air layering resulted in over 60% rooting, success. An attempt to propagate East African Sandalwood through tissue culture established a surface sterilization protocol for explant materials. The main problem has been to find a suitable host. Establishment of the species at the nursery required a primary host such as the grain legume* Cajanus cajan*. Indigenous wild fruits such as* Rhus natalensis *and* Carissa spinarum *resulted in higher survival over an 18 months period (Kamweti* et al., *2009; Machua* et al., *2009).* *The Kitui Regional Research Centre has undertaken research on the domestication of high value indigenous tree species including* O. lanceolata*.* *Seeds of the species are being conserved by the Millennium Seed Bank.*
	Other comments
	In October 2008 40 t harvested in Maralal (Samburu district) were seized at Namanga. Kenya Wildlife Service seized a further 20 t in 2009 and made 40 arrests. As transportation became increasingly difficult it is being processed into chips and sawdust by traders which facilitates transport and export in packages similar to cigarette packs, often sent as 'free samples' which are exempt from duty. In Kenya it is well protected but the volume of impounded products is not well recorded so it is not possible to gauge the scale of illegal activities that are undermining its conservation (Gichora, 2011). *Information from the Kenya Plant Health Inspectorate Service indicates that sandalwood from Kenya is sometimes transported in oil tankers to Tanzania which is difficult to monitor (ACP FLEGT, 2012).* *In 2011 over 10 t of illegally harvested sandalwood was impounded (Tanzania Daily News, 2012).*

Reviewers: S. Ball, H. Beentje, J. Chenga, R. Gereau, J. Kalema , J. de Koning, J. Lovett, P. Mwang'ingo, D. Newton, J. Timberlake and A. Timoshyna.

Proposal: To delete annotation to the listing of Aquilaria spp. and Gyrinops spp. in Appendix II, and replace it with a new annotation with new number as follows:

All parts and derivatives, except:
a) seeds and pollen;
b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers;
c) fruits;
d) leaves;
e) mixed oil containing less than 15% of agarwood oil, attached with labels of following words
"Mixed oil containing xx% of agarwood obtained through controlled harvesting and production in collaboration with the CITES Management Authorities of XX (name of the export state) ";
samples of the labels and list of relevant exporters should be communicated to the Secretariat by export states and then inform all parties through a notification;
f) exhausted agarwood powder, including compressed powder in all shapes;
g) finished products packaged and ready for retail trade, this exemption does not apply to beads, prayer beads and carvings.

Proponent: China, Kuwait, Indonesia

Summary: *Aquilaria* and *Gyrinops* are two genera of trees in the family Thymelaeaceae, the former with 15 generally recognised species, the latter with eight, distributed from India to New Guinea. In some trees, a still imprecisely understood combination of wounding, vectors of infection (bacterial infection, fungus) and resinous response induces the formation of a resinous heartwood (agarwood) that is fragrant and highly valued. The primary source of agarwood in reported trade is *Aquilaria malaccensis*. Agarwood is used in perfumes, incense and traditional medicines, and as an essential oil, distilled from the wood. Carvings and beads, including prayer beads, are also produced from the wood. So-called exhausted wood powder – the residue left after the distillation process – is often compressed to make incense sticks and small statues.

All agarwood-producing taxa are currently included in Appendix II; *Aquilaria malaccensis* was listed in 1994, and the rest of the genus *Aquilaria* and *Gyrinops* spp. in 2004. The two genera are currently covered by annotation #4, the relevant parts of which are: “All parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants”.

International agarwood trade is complex, as it is traded in a variety of forms and at various stages of processing, from raw whole pieces to finished products such as perfumes, which may contain only small amounts of agarwood oil. Some processing of agarwood to produce end-products takes place in range States; some takes place elsewhere with resulting products, either sold domestically or re-exported to other consumer countries.

Of the main products in trade, large whole pieces of wood may be traded for further processing or for sale as prestige items; wood chips are traded for burning as 'incense wood', or for further processing; un-exhausted powder is generally a by-product of carving or wood chip production and is traded for further processing; exhausted powder is also traded for further processing; oil may be traded in pure form or in various concentrations for further processing; the various end-products listed above (carvings, beads and prayer beads, medicines, incense sticks, perfumes, tea etc.) are also traded.

At present all these parts and derivatives are covered by the Appendix-II listing.

According to the CITES trade database the key *Aquilaria* commodities originating from the wild reported in export have been wood chips and powder. Wild-origin timber and pieces are also reported as exported in fairly high quantities. Some wild origin oil has been exported, with quantities of oil reported as exports by range States recently showing an upward trend. *Gyrinops* species are recorded in trade in much lower quantities than *Aquilaria;* wood chips are the main commodity reported in trade.

The proponents seek to adopt a new annotation that will apply only to *Aquilaria* spp. and *Gyrinops* spp.. The relevant differences between the proposed annotation and existing annotation #4 are the **exemption of**: fruits; leaves; mixed oil containing less than 15% of agarwood oil (labelled as indicated); exhausted agarwood powder, including compressed powder in all shapes; finished products packaged and ready for retail trade, except for beads, prayer beads and carvings.

Two of the proponents of the present proposal (Indonesia and Kuwait) have also proposed an amendment to *Resolution Conf. 13.7 (Rev. CoP14)* on control in trade of personal and household effects (see document CoP16 Doc. 47) to exempt the following when they are deemed personal or household effects: - Specimens of agarwood – up to 1 kg woodchips, 60 ml oil, and two pieces of beads, (or prayer beads, necklaces, bracelets) per person.

Analyses: Under *Resolution Conf. 11.21 (Rev. CoP15)* regarding Use of Annotations in Appendices I and II, the Parties recommended that two main principles be followed as standard guidance when drafting future annotations for medicinal plants:
i) controls should concentrate on those commodities that first appear in international trade as exports from range States; these may range from crude to processed material; and
ii) controls should include only those commodities that dominate the trade and the demand for the wild resource.

The essential questions are whether any of the products proposed for exemption in the current proposal meet the above criteria or not, and if not whether exempting them would create implementation problems for regulation of the other products in trade that do meet these criteria.

Leaves and **fruits** are a minor part of the trade, and can be non-destructively harvested. It would appear that exempting these from CITES controls will not cause conservation, implementation or enforcement problems.

Oils: Because current CITES reporting does not indicate the percentage purity of oils in trade, it is not possible to determine what proportion of the reported export trade in agarwood oil from range States at present is accounted for by oils less than 15% purity. From an understanding of the trade dynamics it can be inferred that oil at less than 15% concentration is likely to be relatively small and that it is therefore not a product that dominates the initial export trade or the demand for the wild resource. It also seems likely that products containing less than 15% agarwood oil are likely to be finished products packaged for the retail trade, which would in any case be exempted under proposed paragraph g).

It is not clear how easy it would be to distinguish oils of less than 15% purity from more concentrated or pure oils. Realistically, for mixed oils this would have to be based on labelling. The proposal is for a form of labelling similar to that currently used for *Hoodia* spp. (see proposal CoP16 Prop. 52) to distinguish the two. This labelling is not known to have been used in practice, at least in part because the commercial demand for *Hoodia* extract has not materialised to the extent anticipated when the taxon was listed in 2004. It is not clear from the present agarwood proposal whether this labelling is intended to apply to all agarwood mixed-oil products in trade, or only those exported by range States. It is assumed that labelling of this form would not be expected to apply to finished products composed of or containing mixed-oils, as these would be exempted under paragraph g) for which no such labelling is specified.

Powder: A substantial amount of reported export from range States of agarwood has been in the form of powder. These quantities are likely to include un-exhausted powder (i.e. not a byproduct of any distillation process), which would not be exempt from Appendix-II controls. It is not clear how easy the two forms might be to distinguish, although the proponents state that there are consistent differences between the two forms. Exhausted powder is clearly not a product that dominates the demand for the wild resource and is unlikely to dominate the trade, although because at present different kinds of powder are not distinguished in the CITES trade database, it is not possible to determine what proportion of the powder reported in trade is exhausted.

Finished products The kinds of finished products that would be included in the exemption are not specified. The proponent notes in the supporting statement that the exemption does not apply *inter alia* to patent medicines; however the proposal would exclude “g) finished products packaged and ready for retail trade” and does not mention not exempting patent medicines, which would presumably be considered to be “finished products”.

Background Information

Table: All trade in key *Aquilaria* commodities as reported by exporter (excluding re-exports) 1995 onwards.

Aquilaria species	Commodity	Source	Quantity	Unit
	Chips	Wild	7255770	kg
	Chips	Art Prop	410197	kg
	Timber/timber pieces/sawn wood/logs	Wild	323994	kg
	Timber/timber pieces/sawn wood/logs	Wild	300	CUM
	Timber/timber pieces/sawn wood/logs	Art Prop	50424	kg
	Powder	Wild	1353756	kg
	Powder	Art Prop	176188	kg
	Oil	Wild	1307	kg
	Oil	Wild	1269	litres
	Oil	Art Prop	6010	kg
	Oil	Art Prop	46.4	litres
	Derivative/extract	Wild	1030	kg
	Derivative/extract	Art Prop	1852	kg

Table: *Aquilaria* wood equivalent calculations for oil and derivative/extract reported as exports (excluding re-exports), 1995 onwards.

Commodity	Source	Quantity	Unit	Pure Oil wood equivalent (kg) *	15% oil wood equivalent
Oil	Wild	1307	kg	188208	28231
Oil	Wild	1269	litres	182736	27410
Oil	Art Prop	6010	kg	865440	129816
Oil	Art Prop	46.4	litres	6682	1002
Derivative/extract	Wild	1030	kg	148320	22248
Derivative/extract	Art Prop	1852	kg	266688	40003

Antonopoulou *et al.* (2010) suggest a conversion rate of 1kg or 1 litre of pure oil requiring 144 kg* of wood. This would equate to nearly 520 000 kg additional wood (chips) to produce the amount of wild sourced oil and derivatives reported in the table above, assuming all shipments are of pure oil. If all shipments were of oil less than 15%, this would equate to a maximum of around 80 000 kg of wood.

Notable amounts of oil (and extract) have been reported as re-exported (Wild: 15 280 kg and 1044 litres; Artificially Propagated 206 kg) which are significantly higher than quantities reported as exports. These figures lend support to observations (Compton *in litt*., 2012) that significant volumes of oil extraction are carried out in end-processing markets, such as the Middle East.

CoP16 Inf. 3 notes that "powder" can be in two forms:

- Not exhausted Sawdust & Powder - Fine Agarwood substance obtained mostly as by product while working on Agarwood chips or grounded/fine Agarwood. Usually dark in colour with odour.
- Exhausted Powder - The residual Agarwood powder which has been distilled to obtain Agarwood oil and does not contains any essential oil. Usually pale with little odour.

Exhausted powder is often traded as a secondary product for use in forming incense sticks. For high quality end-products, merchants prefer to grind wood chips to make their own powder, so that they can be sure of its purity, rather than importing possibly adulterated supplies from source country or middlemen traders (Compton *in litt.*, 2012).

A TRAFFIC report on agarwood trade in Malaysia estimates that the oil extraction process produces approximately 7 kg of exhausted powder from 15 kg chips (Lim and Awang Anak, 2010). If all the powder reported as exported in CITES trade data were 'exhausted powder' this would have been the equivalent of around 3 million kg of chips, using this calculation. This is far in excess of the amount of powder that would have been produced as exhausted powder from the quantities of oil from wild sources. It would therefore appear that all powder exported is not "exhausted". The proposal only seeks to exclude exhausted powder, which is said to be distinguished from non-exhausted powder by its pale colour and little odour.

Of the 968 kg of carvings exported all but 50 kg exported by Indonesia as wild sourced were reported from Viet Nam declared as artificial propagated. Broad *in litt. (*2012) notes that there is a market in Asia for well-formed pieces of agarwood as high quality, prestige items.

A total of 16 kg of medicine (*Aquilaria* species only) has been reported as re-exported.

Reviewers: S. Broad, J. Compton.

Inclusion of *Cyphostemma laza* in Appendix II

Proponent: Madagascar

Summary: *Cyphostemma laza* is a succulent plant from Madagascar, believed to be the most widespread of around 23 Malagasy species in the large genus *Cyphostemma*. It forms an elongated, thickened trunk or caudex up to 50cm in diameter and 1.2 m in height, from which extend vines up to five metres or so in length. The species typically grows in partially shaded areas in semi-deciduous dry forest and has very wide distribution in Madagascar, being known from locations in the south, south-west, west and north. The species is recorded from at least eight protected areas across its range, and may occur in others. The population density of mature individuals appears to be generally low in areas where it occurs (around 20 per hectare or less). Its habitat in some areas is affected by conversion of habitat for agriculture, deforestation and charcoal production. The species is reported to be collected from the wild for international trade as an ornamental plant. The absence of individuals of a commercially exploitable size at collection sites is reported. It is exported both as plant and as seed. Considerable numbers of plants were reported as exported in the early 2000s, reaching a peak of nearly 8000 in 2006. However, no plants of the species were recorded as exported in 2007 and 2008. Export is not reported for later years. The species is available to purchase from multiple online sellers based in Europe, Asia and the USA. It is reported to be easy to grow and to propagate from seed, although slow-growing, so that plants take a considerable amount of time to develop caudex stems. Plants offered for sale outside Madagascar often have such stems. Current legal controls in Madagascar on collection and export are unclear.

C. laza was proposed for inclusion in Appendix II at CoP15 in 2010. The proposal was withdrawn at the CoP. Two other Malagasy *Cyphostemma* species – *C. elephantopus* and *C. montagnaci* – were included in Appendix II at that time. No trade in either species has subsequently been recorded in the CITES trade database.

Analysis: *Cyphostemma laza* is a very widespread plant in Madagascar. Although it is reported as occurring at generally low or very low density, its overall population is likely to be large or very large. The species is in cultivation and has been collected from the wild and exported in some quantity. It is assumed that most if not all exported plants were wild-collected. However, no export from the range State has been reported since 2006. Although collection for export may well have led to local depletion, it seems unlikely, given its very extensive range, that regulation of trade is necessary to prevent the species becoming eligible for inclusion in Appendix I in the near future, or that harvest for trade is reducing the population to a level at which its survival might be threatened by other influences. The species would therefore not appear to meet the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
	Taxonomy
	Formerly included in the genus Cissus (Anon. A, undated).
	Cissus laza *is reported as a synonym (Bihrmann, undated).*

Supporting Statement (SS)	Additional information
Range	
Madagascar.	
IUCN Global Category	
	Not currently listed.

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

Around 250 individuals were counted in the forest of Andoharano north of Toliara, in the forest of Tongobory Betioky and in the forest of Elomaka Amboasary Sud in 2006. The species has a fairly low density (between 40 and 70 individuals per ha) with a specific low abundance of between 80 and 140 mature individuals.	
Regeneration potential is very low for *C. laza*: 28.6% in Beroboka and 166.7% in Andranomena. Exploitation for export could lead to the absence of natural regeneration and the decline or even disappearance of populations in some collection areas. In the long term this could pose a serious threat to the survival of the species. As the geographic distribution of the species is fragmented, collectors change areas of collection as one area becomes exhausted.	*Hearn* in litt. *(2012) notes that a regeneration potential of 166.7% seems like a high rate. It is unclear how the population decline predicted in the proposal was calculated.*
The species has been assessed as endangered using the IUCN criteria.	C. laza *is not currently listed on the IUCN Red List. The IUCN assessment of endangered given in the proposal was assigned using GIS data, which were used to calculate Area of Occupancy and Extent of Occurrence and to predict future decline (PC20 Inf. 5, 2012).*
A future population decline of 73.3% is predicted due to wild collection for export and habitat destruction.	*The future decline predicted in the proposal is over an unspecified time period. The evidence upon which the decline is predicted is not detailed in the proposal.*
C. laza is found in the West of Madagascar (Morondava and the surrounding area) and the South (Mikea Forest, la Réserve Spéciale Intégrale d'Andohahela and la Réserve Spéciale de Bezà-Mahafaly).The species has an Area of Occupancy of 135 km^2 and an Extent of Occurrence estimated to be 76 156 km^2. The area occupied by the species continues to decline each year due to fires and forest clearance for agricultural expansion.	C. laza *is probably the most widespread species of the genus in Madagascar. (Anon A, undated). The species typically occurs in partially shaded areas in semi-deciduous dry forest. Extent of occurrence has been estimated at 35 000 km^2 and area of occupancy at around 5300 km^2 (530 000 ha). A number of different populations are known. Population densities of between 60 and 730 plants per hectare were recorded at three different sites in field surveys in 2005. Regeneration as indicated by the proportion of young plants was generally poor at these sites. Around 50 young plants a year were reported as collected (Rakouth* et al., *2006).*
C. laza is found in dry thorny thicket and the remaining dry forest of south-western and southern Madagascar. The dry thorny thicket of the South West covers an area	

Supporting Statement (SS)	Additional information
of approximately 18 355 km^2 (of which 4.5% is found within protected areas). This type of land cover has reduced by 29.7% since the 1970s. The dry forest of the West covers an area of 31 970 km^2 (of which 17.1% is found within protected areas). This type of forest has reduced by 39.7% since the 1970s.	*Rakotonasolo* in litt. *(2012) notes that the species is reported to have a large distribution, but from field work observations the number of mature individuals per hectare is low (c. 20/ha). In 2008 a few mature individuals were observed in the dry forest in Beanka (70 km from Maintirano) growing on limestone. It is thought to be likely that this species also grows in Bemaraha National Park, as the same substrate is present as in Beanka.*
The absence of individuals of a commercially exploitable size can be observed at collection sites.	*Hearn* in litt. *(2012) notes that during travel to Madagascar in the early 2000s, himself and colleagues repeatedly looked for* C. laza *and only found a few scattered individuals. The population densities are very low and the overall abundance in its home range appears to be low overall.*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
The species is very sought after in the international market as an ornamental plant. Wild collections supply the international market. It is exported as a living plant.	*Despite the availability of* C. laza*, Eggli* in litt. *(2012) notes that in his experience there is not a substantial horticultural market for mature ex-habitat specimens. Yuan* in litt. *(2012) reports that trade in China exists but it is not common and the majority of trade is of seedlings.*
Reported exports of living plants are as follows: 2003 (419), 2004 (1177), 2005 (2487), 2006 (7814), 2007 (0) and 2008 (0). No illegal trade of *C. laza* has been recorded to date. The species is rarely sold at a national level.	*Rakotonasolo* in litt. *(2012) reports that the caudiciform structure takes a long time to develop so wild collected mature individuals are more popular with collectors.* *Mature individuals can reach very large sizes which may limit their suitability for private collections (Eggli* in litt., *2012).*
The proposal reports six web sources of *C. laza*, selling mature plants, seedlings and seeds of unknown origin. Prices per plant ranged from USD28 – 65 and per seed USD1.18.	*In Europe, individuals with developed caudex bases were available from web sellers in Germany, Hungary, Spain and the Czech Republic for prices ranging between USD21 – 116. The origin of the plants is unknown. In the USA, individuals with a developed caudex base were available from web sellers for prices ranging between USD35 – 50. The origin of the plants is unknown. In China, individuals with a developed caudex base were available from web sellers for prices ranging from USD48 - 75. The origin of the plants is unknown. Seeds were found for sale from sellers based in Bulgaria for USD0.7 per seed and a seller in la Réunion, but seeds were currently out of stock and no price was given.* *A nine-day web survey to investigate web trade for* C. laza *was conducted in 2011. Twenty six plants and twenty nine packages of seeds of* C. laza *were found sold from Thailand, Netherland, Italy, Germany, Hungary, South Africa, UK, USA, France, Germany, Italy, Czech Republic, USA, and Mauritius. Prices of plants ranged from USD6.00 to 175.00 (Augugliaro* in litt., *2012).*

Supporting Statement (SS)	Additional information
	A two day review of web sellers based in Japan selling C. laza *was conducted (04-05 December 2012). Four websites selling* C. laza *plants were identified (although three of these directed to the same source) and one website selling seeds was identified (TRAFFIC Japan, 2012).* *Various websites provide cultivation advice for* C. laza *in different climates, indicating an interest in cultivating the species in that region; Mediterranean (Anon B, undated), Denmark (Bihrmann, undated), the USA (Anon C, undated).* *Large specimens of Madagascan succulent plants, including 100* C. laza *individuals washed up on shore in August 2005 from a shipment from Pronatex Soavony on route to France. These plants had an export permit (Anon D, 2005).*
Inclusion in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I	
	There are multiple species of Cyphostemma that resemble C. laza*, including* C. montagnacii*,* C. macrocarpum *and* C. roseiglandulosum *(Hearn* in litt.*, 2012).*
Other information	
Threats	
Forests are disappearing rapidly and becoming fragmented due to charcoal production, expansion of agriculture and maize production, bushfires for the generation of new pasture for livestock.	
Conservation, management and legislation	
Collection and export are only regulated at a national level. Para 7.1 of the SS states: collection and export [of this species] are not subject to any controls. Para 8.1 of the SS states: National management measures are detailed in the proposal: The number of specimens authorised for export is based on the supply of the species in horticultural centres. A single harvest authorization per species per operator is provided, to serve as parental stock. Operators should undertake ex situ	*The level of national legislation afforded to this species is unclear as the proposal notes that harvest and export are not subject to regulation and later that they are subject to national authorization procedures. Information as to whether national management measures have been enforced or how successfully is not provided. Expert reviewers were asked to provide additional information about national legislation and its effectiveness but none of the comments received clarified this.*

Supporting Statement (SS)	Additional information
reproduction. Permits and exportation authorizations are supplied only for individuals reproduced artificially.	
Some populations of *C. laza* occur in protected areas (Andranomena, Kirindy, Kirindy Mitea, Tsimanapetsotsa, Beza Mahafaly, Andohahela), representing a long term habitat for this species. Recently delineated protected areas could also contain this species, such as Amoron'ny Onlahy, Ekodida and could contribute to the sustainability of this species and the conservation of its habitat.	*It is thought that this species likely also occurs in Bemaraha National Park (Rakotonasolo* in litt., *2012).* C. laza *is also reported as present in Reserve Speciale d'Ankarana (Oldfield (comp.), 1997).*
To ensure the survival of the species, permits and licences should be strictly limited to artificially propagated species.	
Captive Breeding/Artificial Propagation	
Artificial propagation by seed is easy but slow. Propagation by cuttings is possible.	*Cultivation is reported to be fairly easy, by seed or cutting (Corman, 2008). Rakotonasolo* in litt. *(2012) also reports that* C. laza *is very easy to grow, but says that it takes a long time to develop the caudiciform structure. Bihrmann* in litt. *(2012) also reports that the species is slow growing. Small seedlings do form the caudex. Fruiting is common, but they are not numerous. Eggli* in litt. *(2012) also reports that the species is of easy cultivation, though much space is needed to get flowering and thus a possibility for fruit set.* *An online source offering propagation information about* C. laza *reports that propagation is usually from seeds which must be prepared, aged and scarified and even then germination is uncertain (Anon A, undated).This is not supported by reviewer comments.* *Hearn* in litt. *(2012) notes that the caudex forms from cuttings.* *The species is reported as not rare in cultivation. The largest specimens in Europe are in the 'Jardin Exotique' in Monaco, and also in 'Les Cedres', St. Jean Cap Ferrat, southern France. The trunks of these specimens are 6-7m tall and about 1m in basal diameter (Rauh, 1995).* *According to PlantSearch, an online database of botanic garden collections maintained by Botanic Gardens Conservation International (BGCI), 25 gardens record holding* C. laza *in their collection. None of these gardens are within Madagascar, potentially limiting their involvement in restoration activities.* *In addition, Phyto-logic Paradise Gardens in Madagascar hold one specimen of the plant, although have not attempted propagation yet (Cooke* in litt., *2012). The Parc*

Supporting Statement (SS)	Additional information
	Botanique et Zoologique de Tsimbazaza (PBZT) hold two mature individuals of C. laza*.*
Other comments	
C. laza was proposed for integration in Appendix II of CITES at CoP15 in 2010. Biological and ecological data obtained were updated and supplemented for the preparation of this new proposal. Under an agreement between the CITES Secretariat and the European Union, *C. laza* has been the object of research for the year 2012 to supplement existing data. The fruits of certain species of *Cyphostemma* are eaten by fruit bats and birds.	*The species is reported to be used locally by soothsayers for its narcoleptic qualities in Andohahela national park (Anon B, undated).*

Reviewers: C. Augugliaro, A. Cattabriga, U. Eggli, D. Hearn, D. Newton, F. Rakotonasolo.

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