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Report on species/country combinations selected for review by the Plants Committee following CoP17

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Report on species/country combinations selected for review by the Plants Committee following CoP17

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Executive Summary

This report provides accounts for taxa that were selected in the CITES Review of Significant Trade (RST) process following CoP17, at PC23. It aims to assist the Plants Committee in categorising species based on the effects of international trade on selected species/country combinations and to highlight problems concerning the implementation of Article IV.

The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) was asked by the CITES Secretariat to compile reviews for eight plant species/country combinations that were selected within the RST following CoP17. All range States were consulted by the CITES Secretariat and asked to provide information on the scientific basis by which it had been established that exports were non-detrimental and compliant with Article IV, including details of the population status and threats to the relevant species within their country, as well as trade information, legal protection, and detailed of management and monitoring actions.

Species-country combinations were divided into three provisional categorisations (*'action is needed'*, *'unknown status'* and *'less concern'*), in accordance with paragraph 1e of Resolution Conf. 12.8 (Rev. CoP17) for review by the Plants Committee.

For the eight species-country combinations included in the RST following CoP17:

- five were provisionally categorised as **'Action is needed'** on the basis that available information suggests that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a), are not being implemented;
- three were provisionally categorised as **'Less concern'** on the basis that the available information appears to indicate that these provisions are being met. The category 'Less concern' was also used where wild-sourced trade (codes W, R, U and source unreported) was not anticipated.

Full details of the categorisations for the eight species/country combinations under review are provided in Table 1 (p. 3).

Table 1: Recommended categorisations for species/country combinations that were selected within the Review of Significant Trade following CoP17 based on the effects of international trade and problems concerning the implementation of Article IV.

Species	Range State	IUCN	Summary	Recommendation
Fabales				
Leguminosae				
<i>Dalbergia cochinchinensis</i>	Selection		Selected in the RST based on high volume trade 2011-2015 for a globally threatened species for Lao PDR and Cambodia; Viet Nam was included to obtain information for the region as a whole.	
	Global status	VU	Listed as Vulnerable by the IUCN, but the assessment dates from 1998 and needs to be updated. One report considered the species to meet the requirements for 'Critically Endangered' as a result of declines caused by illegal logging and habitat loss. Global population estimates are not available, but the species is estimated to have declined by 80% over the last 150 years.	
	Cambodia		Widely distributed in Cambodia, and recorded from the provinces of Kampong Thom, Kampong Speu, Preah Vihear, Ratanakiri, Pursat, Siem Reap, Kratie, Koh Kong, Stung Treng, and Modulriki. Population size unknown, but thought to have dramatically declined, with mature individuals considered 'very rare' outside of strictly protected areas. Cambodia responded to the consultation relating to the RST. A ban on the trade and circulation of <i>D. cochinchinensis</i> was imposed in 2013 and no export permits have been issued since the species was listed in Appendix II. Cambodia submitted annual reports in all years 2007-2016. However, importer reported data (predominantly Viet Nam) indicated that 8245 m ³ timber originating in Cambodia was imported since 2013. Illegal trade in the species was reported to persist in Cambodia (as both a source and transit country). On the basis that no legal exports are occurring due to the national ban, the provisions of Article IV are not applicable; therefore categorised as Less concern. However, illegal trade and export of timber has an impact on the survival of the species in the wild, and remains a concern not related to the implementation of Article IV, therefore it may be relevant to consider referral to the Standing Committee.	Less concern
Lao People's Democratic Republic			Found in the southern provinces of Champasak, Attapeu and Sekong and the central provinces of Bolikhamsai and Khammouane. Population size unknown, but field surveys in 2012 in two provinces found no mature individuals and all trees with a DBH of > 15cm to have been logged, even within strictly protected areas. Lao, PDR submitted annual reports in all years 2007-2016. Exports 2007-2016 were predominantly wild-sourced timber for commercial purposes (20 548 m ³ as reported by Lao, PDR and 73 478.17 m ³ as reported by countries of import). Whilst Lao, PDR did not report exports of wild-sourced timber in 2015 and 2016, wild-sourced trade was reported by importers and a permit analysis identified cases of trade reported as artificially propagated by Lao, PDR which was reported as wild-sourced by importers. Lao, PDR did not respond to the consultation relating to the RST. Harvesting of domestic trees was prohibited in 2008, and the exploitation, trade and export of all <i>D. cochinchinensis</i> wood was banned in 2011. The species is currently subject to an SC recommendation to suspend commercial trade from Lao, PDR on the basis of compliance and enforcement (Article XIII) which came into force in 2016; Lao, PDR had failed to present scientifically-based non-detriment findings and to develop a National Management plan for the species. Reports suggest that Lao, PDR is a hub for illegal trade in the species. The basis for non-detriment findings for recent exports has not been provided, and any international trade is likely to impact on the species' survival in the country; therefore categorised as Action is needed. Illegal trade and export of timber remains a concern not related to the implementation of Article IV.	Action is needed

Species	Range State	IUCN	Summary	Recommendation
<i>Dalbergia cochinchinensis</i> (cont).	Viet Nam		Recorded in the centre and southern half of the country, in the provinces/municipalities of Da Nang, Quang Nam, Kon Tum, Gia Lai, Dak Lak, Lam Dong, Binh Duong, Dong Nai, Ba Ria-Vung Tau and Kien Giang. Population size unknown but considered to be declining as a result of illegal felling and forest clearance. Surveys in conservation areas in 2010 found a low number of individuals per ha. Viet Nam submitted annual reports in all years 2007-2016. Exports 2007-2016 were predominantly wild-sourced (283 m ³) and pre-Convention (420 m ³) timber for commercial purposes (as reported by Viet Nam) and 151 m ³ pre-Convention timber (as reported by countries of import); no trade was reported since 2014. Around a quarter of re-exports from Viet Nam originated in Cambodia and were considered illegal according to Cambodia. Viet Nam responded to the consultation relating to the RST. Commercial exploitation of <i>D. cochinchinensis</i> is prohibited but Viet Nam is considered to be a major hub for illegal trade to Chinese markets. On the basis that legal exports are no longer occurring, the provisions of Article IV are not applicable; therefore categorised as Less concern. However, illegal trade and export of timber has an impact on the survival of the species in the wild, and remains a concern not related to the implementation of Article IV, therefore it may be relevant to consider referral to the Standing Committee.	Less concern
<i>Dalbergia retusa</i> (Cocobolo)	Selection		Selected in the RST based on high volume trade 2011-2015 for a globally threatened species.	
	Global status	VU	Listed as Vulnerable by the IUCN based on a 1998 assessment (annotated as needing updating). No global population estimate is available, and opinion on its relative abundance is conflicting. Considered to be declining as a result of overexploitation for timber and forest clearance for agriculture and cattle ranching. Described as the most prominent <i>Dalbergia</i> species in trade from the Americas, used in musical instruments, furniture, and handicrafts.	
	Nicaragua		Found across Nicaragua from the Pacific to the Atlantic coast. Distribution projections based on climate data identified two potential hot spots for the species in the departments of Boaco, Chontales, and the Region Autónoma del Atlántico Sur (although no actual distribution data appears to be available). Population size is unknown, but large trees were considered to be declining. The remaining population is considered under high pressure from logging. A low proportion of trees were reported to reach a diameter of 50 cm outside of protected areas and a low proportion of individuals in small size classes was noted, indicating poor regeneration and possible negative impacts of harvest. Annual reports were submitted by Nicaragua in all years 2008-2016 (since the species listing). No quotas have been published. Exports 2008-2016 were predominantly in wild-sourced timber exported for commercial purposes (23 084 m ³ as reported by Nicaragua, and 5486 m ³ as reported by importers). Nicaragua responded to the consultation relating to the RST. The majority of timber exported 2013-2017 originated from the South Caribbean Coast Autonomous Region. Annual harvest quotas are calculated using an annual increment of 0.35 cm/DBH/year, exports are only permitted from areas with approved management plans, and minimum diameter requirements are in place, However management plans were not provided and it is unclear if any inventories have taken place, or whether any monitoring system for harvested populations exists. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally threatened species, therefore categorised as Action is needed.	Action is needed

Species	Range State	IUCN	Summary	Recommendation
<i>Dalbergia retusa</i> (Cocobolo) (cont.)	Panama		Found in dry or humid forests in the provinces of Coclé, Colón, Darién, Los Santos and Panamá. Population size is unknown, but categorised as nationally 'endangered' with low regeneration rates reported, although may still be common in places. Panama submitted annual reports for the period 2008-2014, but reports for 2015 and 2016 have not yet been received. No quotas have been published. Exports 2008-2016 were predominantly in wild-sourced timber exported for commercial purposes (15 665 m ³ as reported by Panama in 2013 and 2014, and 22 969 m ³ as reported by importers 2013-2016). Illegal logging (particularly in the Darién province) and forest clearance are considered to be the principal threats. Panama did not respond to the consultation relating to the RST. Panama banned the harvesting and export of <i>D. retusa</i> in 2014, however trade originating from Panama was reported by importers in 2015 and 2016, raising concerns relating to management effectiveness. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally threatened species, therefore categorised as Action is needed.	Action is needed
<i>Pericopsis elata</i> (Afromosia)	Selection		Selected in the RST based on being an 'Endangered' species, meeting the criteria for 'high volume trade' 2011-2015 for a globally threatened species, and showing a 'sharp increase' in trade for Republic of Congo in 2015.	
	Global status	EN	Distribution is disjunct and restricted to specific regions of range States across west and central Africa. Globally Endangered with declining population densities. The primary threat is unsustainable exploitation, as well as habitat degradation and seed predation; natural regeneration is also considered poor. Stocks in west Africa are heavily depleted. Further declines were anticipated unless sustainable management measures are adopted and fully implemented.	
	Cameroon		Restricted to the east and south, but occurring over 5 million ha. Population density estimated at 0.53 stem/ha indicating that it is not yet threatened according to a published threshold of 0.05 stems/ha for a threatened species. A low proportion of individuals in small size classes was noted, indicating poor regeneration. Annual reports were submitted by Cameroon for most years 2007-2016, but not yet for 2010 and 2012, and reports for flora have not yet been provided for 2009-2012. Cameroon published quotas for sawn wood in 2007-2009 and 2014-2015 of around 15 000 m ³ ; the quota increased in 2016 to 24 445 m ³ before being reduced to 10 045 m ³ in 2017. Exports were within quota. Trade 2007-2016 predominantly consisted of wild-sourced timber for commercial purposes, comprising 48 270 m ³ as reported by Cameroon and 54 561 m ³ as reported by importers. According to national legislation, management plans must be implemented based on inventories, and a minimum logging cycle of 30 years exists. Cameroon responded to the consultation relating to the RST. A harvest quota is set based on logging inventories, the minimum exploitable diameter is 90 cm (the highest in the Congo basin), and 22% of the distribution is within national parks or an ecological reserve. The impact of the harvest was considered low. Available information indicates that a non-detriment finding in accordance with the provisions of Article IV is in place, therefore categorised as Less concern. Non-submission of annual reports for flora was a problem identified that is unrelated to the implementation of Article IV.	Less concern

Species	Range State	IUCN	Summary	Recommendation
<i>Pericopsis elata</i> (Afromosia) (cont.)	Democratic Republic of the Congo		Restricted to the north along the Congo River, over an area of 33 million ha, with a patchy distribution. The largest remaining stocks of <i>P. elata</i> occur in DRC. Population density estimated at 0.16 stem/ha, indicating that it is not yet threatened according to published threshold of 0.05 stems/ha for a threatened species. Logging, and in particular illegal logging remain a significant threat in DRC. Annual reports were submitted by DRC for all years 2007-2016. Trade 2007-2016 predominantly consisted of wild-sourced timber for commercial purposes, comprising 189 149.47 m ³ as reported by DRC and 84 672.16 m ³ as reported by importers. Quotas were high and variable 2007-2016. A quota of 50 000 m ³ was in place 2007-2011, which was reduced to around 25 000m ³ in 2012-2015, and then was increased to >50 000 m ³ in 2016. The Secretariat noted concerns relating to the quota increase. DRC responded to the consultation relating to the RST. The minimum exploitable diameter (MED) is set at 60 cm, although individual concessions have their own MEDs that were reported to be set by non-detriment findings (with a range of 70-130 cm). There are some concerns relating to implementation of management plans in the field, and it was acknowledged by DRC that monitoring and control was hampered by technical and financial constraints, and lack of institutional capacity. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally Endangered species, therefore categorised as Action is needed.	Action is needed
	Republic of Congo		Restricted to the northwest. Distribution is estimated at 7.79 million ha. Population density estimated in two Forest Management Units (FMUs) in 2015 at 0.13 stem/ha in Tala Tala (reduced from 0.23 stem/ha in 2010) and 0.1 stem/ha in Sefyd, with low or unconfirmed abundance in the rest of its distribution. This indicates it is not yet threatened according to published threshold of 0.05 stems/ha for a threatened species. Annual reports submitted by Congo for all years 2007-2016. A quota of 6309 m ³ was published 2015-2017; this appeared to be exceeded in 2015 by 1000 m ³ as reported by Congo, and >500 m ³ as reported by importers. Trade 2007-2016 predominantly consisted of timber for commercial purposes, comprising 21 860.88 m ³ as reported by Congo (no source code) and 16 555.17 m ³ as reported by importers (wild-sourced). Congo did not respond to the consultation relating to the RST. Management plans for FMUs are a requirement, and a management plan for the main concession (Tala Tala) is under review by the forestry administration. Whilst the abundance of the species in Tala Tala may indicate the species is not yet threatened, densities appear to have declined and recruitment is low. The CITES-ITTO programme recommended that the minimum exploitable diameter be increased from 60 cm to 70 cm to improve regeneration, however it is unclear if this measure was adopted, and there may be concerns relating to quota management. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally Endangered species, therefore categorised as Action is needed.	Action is needed

Introduction

The Review of Significant Trade (hereafter abbreviated to RST) was established to ensure that the provisions of the Convention (specifically Article IV, relating to non-detriment findings) are properly applied for Appendix II species in order to ensure that international trade in CITES-listed species is maintained within biologically sustainable levels. The procedure for the RST is set out in Resolution Conf. 12.8 (Rev. CoP17). The resolution “Directs the Animals and Plants Committees, in cooperation with the Secretariat and experts, and in consultation with range States, to review the biological, trade and other relevant information on Appendix-II species subject to significant levels of trade, to identify problems and solutions concerning the implementation of Article IV, paragraphs 2 (a), 3 and 6 (a).”

Paragraph 1 (d) ii) directs the Secretariat to compile, or appoint consultants to compile, a report about the biology and management of trade in the species, including any relevant information from the range State. The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) was asked by the CITES Secretariat to compile reviews for species/country combinations that were selected within the RST following CoP17. This report provides an overview of conservation and trade status of eight plant species-country combinations, provisionally classifying each into one of three categories defined in paragraph 1 (e) of Resolution Conf. 12.8 (Rev. CoP17) for review by the Plants Committee:

- **‘action is needed’** shall include species/country combinations for which the available information suggests that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a), are not being implemented;
- **‘unknown status’** shall include species/country combinations for which the Secretariat (or consultants) could not determine whether or not these provisions are being implemented; and
- **‘less concern’** shall include species/country combinations for which the available information appears to indicate that these provisions are being met.

The recommendations for the eight species-country combinations assessed can be found in Table 1 (p.3).

Methods

Each taxon/country review provides the following information: history of the CITES Review of Significant Trade process; species characteristics, current distribution, conservation status, population trends and threats, recent trade (including CITES trade data and any available data on illegal trade), and management of the taxa in each range State, including any relevant legislation. The national legislation category as defined under the CITES National Legislation Project (CoP17 Doc. 22 Annex 3 (Rev.1)) for each range State is noted, based on the most recent update available (December 2017) at the time of writing. Where there are multiple range States reviewed for a particular species, an overview of global distribution, conservation status, threats, trade and management is also provided.

CITES trade data are provided for the period 2007-2016. Data were downloaded from the CITES Trade Database (trade.cites.org) on 27 February 2018. Unless otherwise specified, trade tables include all direct trade (i.e. excluding re-export data) in the taxa under review and include all sources, terms and units reported in trade. Trade volumes are provided as reported by both exporters and importers. Re-export data are noted separately, where appropriate. A list of CITES annual reports received from each range State included in the process, along with the date each became a Party to CITES, is provided in Table 2.

Table 2: Overview of annual report submissions by range States under review, 2007-2016.

Country	Entry into force of CITES	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cambodia	02/10/1997	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cameroon	03/09/1981	✓	✓	×	×	×	×	✓	✓	✓	✓
Congo	01/05/1983	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DRC	18/10/1976	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lao, PDR	30/05/2004	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nicaragua	04/11/1977	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Panama	15/11/1978	✓	✓	✓	✓	✓	✓	✓	✓	×	×
Viet Nam	20/04/1994	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

All available Implementation reports to CITES¹ from each range State (from 2007 onwards, where available) were consulted for any information on confiscations/seizures. Cameroon reported significant seizures of *Pericopsis elata*, although no further details were provided.

The CITES Management Authorities for each range State were contacted by the Secretariat in September 2017, and UNEP-WCMC contacted range States that had not provided a response in March 2018. Authorities were asked to provide information relevant to the formation of non-detriment findings, including distribution, conservation status, trade and management of each taxon. Where possible, national experts were also contacted to provide additional country-specific information. Responses were received from five range States (Cambodia, Cameroon, Democratic Republic of Congo, Nicaragua and Viet Nam), but no response was received from Congo, Lao People's Democratic Republic or Panama by the time of report submission (May 2018). A compilation of range State responses is provided in PC24 Doc. 13.2 Annex 1.

¹ Accessed from <https://cites.org/eng/resources/reports/biennial.php> on 13 April 2018.

Species reviews

Dalbergia cochinchinensis: Cambodia, Lao People's Democratic Republic, Viet Nam

A. Summary

RST Selection Selected in the RST based on high volume trade 2011-2015 for a globally threatened species for Lao PDR and Cambodia; Viet Nam was included to obtain information for the region as a whole.

Global status

Listed as Vulnerable by the IUCN, but the assessment dates from 1998 and needs to be updated. One report considered the species to meet the requirements for 'Critically Endangered' as a result of declines caused by illegal logging and habitat loss. Global population estimates are not available, but the species is estimated to have declined by 80% over the last 150 years.

CAMBODIA: Widely distributed in Cambodia, and recorded from the provinces of Kampong Thom, Kampong Speu, Preah Vihear, Ratanakiri, Pursat, Siem Reap, Kratie, Koh Kong, Stung Treng, and Modulriki. Population size unknown, but thought to have dramatically declined, with mature individuals considered 'very rare' outside of strictly protected areas. Cambodia responded to the consultation relating to the RST. A ban on the trade and circulation of *D. cochinchinensis* was imposed in 2013 and no export permits have been issued since the species was listed in Appendix II. Cambodia submitted annual reports in all years 2007-2016. However, importer reported data (predominantly Viet Nam) indicated that 8245 m³ timber originating in Cambodia was imported since 2013. Illegal trade in the species was reported to persist in Cambodia (as both a source and transit country). On the basis that no legal exports are occurring due to the national ban, the provisions of Article IV are not applicable; therefore categorised as Less concern. However, illegal trade and export of timber has an impact on the survival of the species in the wild, and remains a concern not related to the implementation of Article IV, therefore it may be relevant to consider referral to the Standing Committee.

RECOMMENDATION:
Less concern

<p>LAO, PDR:</p>	<p>Found in the southern provinces of Champasak, Attapeu and Sekong and the central provinces of Bolikhamsai and Khammouane. Population size unknown, but field surveys in 2012 in two provinces found no mature individuals and all trees with a DBH of > 15cm to have been logged, even within strictly protected areas. Lao, PDR submitted annual reports in all years 2007-2016. Exports 2007-2016 were predominantly wild-sourced timber for commercial purposes (20 548 m³ as reported by Lao, PDR and 73 478.17 m³ as reported by countries of import). Whilst Lao, PDR did not report exports of wild-sourced timber in 2015 and 2016, wild-sourced trade was reported by importers and a permit analysis identified cases of trade reported as artificially propagated by Lao, PDR which was reported as wild-sourced by importers. Lao, PDR did not respond to the consultation relating to the RST. Harvesting of domestic trees was prohibited in 2008, and the exploitation, trade and export of all <i>D. cochinchinensis</i> wood was banned in 2011. The species is currently subject to an SC recommendation to suspend commercial trade from Lao, PDR on the basis of compliance and enforcement (Article XIII) which came into force in 2016; Lao, PDR had failed to present scientifically-based non-detriment findings and to develop a National Management plan for the species. Reports suggest that Lao, PDR is a hub for illegal trade in the species. The basis for non-detriment findings for recent exports has not been provided, and any international trade is likely to impact on the species' survival in the country; therefore categorised as Action is needed. Illegal trade and export of timber remains a concern not related to the implementation of Article IV.</p>	<p>RECOMMENDATION:</p> <p>Action is needed</p>
<p>VIET NAM:</p>	<p>Recorded in the centre and southern half of the country, in the provinces/municipalities of Da Nang, Quang Nam, Kon Tum, Gia Lai, Dak Lak, Lam Dong, Binh Duong, Dong Nai, Ba Ria-Vung Tau and Kien Giang. Population size unknown but considered to be declining as a result of illegal felling and forest clearance. Surveys in conservation areas in 2010 found a low number of individuals per ha. Viet Nam submitted annual reports in all years 2007-2016. Exports 2007-2016 were predominantly wild-sourced (283 m³) and pre-Convention (420 m³) timber for commercial purposes (as reported by Viet Nam) and 151 m³ pre-Convention timber (as reported by countries of import); no trade was reported since 2014. Around a quarter of re-exports from Viet Nam originated in Cambodia and were considered illegal according to Cambodia. Viet Nam responded to the consultation relating to the RST. Commercial exploitation of <i>D. cochinchinensis</i> is prohibited but Viet Nam is considered to be a major hub for illegal trade to Chinese markets. On the basis that legal exports are no longer occurring, the provisions of Article IV are not applicable; therefore categorised as Less concern. However, illegal trade and export of timber has an impact on the survival of the species in the wild, and remains a</p>	<p>RECOMMENDATION:</p> <p>Less concern</p>

concern not related to the implementation of Article IV, therefore it may be relevant to consider referral to the Standing Committee.

RST Background

Dalbergia cochinchinensis from Cambodia, Lao, PDR and Viet Nam were selected as priority species-country combinations for review under the RST at PC23, July 2017 (PC23 Com. 5 (Rev. by Sec.), PC23 Summary Record). *D. cochinchinensis* was identified as a species that met a high volume trade threshold for globally threatened species, on the basis of trade data for the period 2011-2015; whilst Lao PDR and Cambodia were selected on this basis, Viet Nam was also included to obtain information on the region as a whole (PC23 Com. 5 (Rev. by Sec.)). The output in PC23 Doc 15.3 Annex 2 noted that a trade suspension was in place for Lao, PDR.

B. Species characteristics

Taxonomic note: *Dalbergia cambodiana* is considered a synonym of *D. cochinchinensis* by several authors (Niyomdham, 1997; Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC 2012). In response to concern by range States that *D. cochinchinensis* was being traded under the name *D. cambodiana*, CITES Notif. 2014/061 [no longer valid] confirmed that Parties should treat *D. cambodiana* as a synonym of *D. cochinchinensis*, hence trade in both species would be subject to the provisions of CITES. Following CITES CoP17, the genus *Dalbergia* was listed in Appendix II on 2nd January 2017 (with the exception of species already listed in Appendix I); *D. cambodiana* was also split from *D. cochinchinensis* as both species were recognised as accepted names according to “The Plant List” (CoP17 Prop. 55 Annex 1).

Biology: *Dalbergia cochinchinensis* is a species of large evergreen tree belonging to the Leguminosae family (Van Sam *et al.*, 2004; Cambodia Tree Seed Project, 2003). It grows sparsely in deciduous and semi-deciduous forests at altitudes ranging from 0-1200 m (Cambodia Tree Seed Project, 2003), but is mainly concentrated at 400-500 m (Chính *et al.*, 1996). It is considered an intermediate pioneer species and is characterised by rapid growth during its young stages and slower growth during its older stages (So, 2000). It can reach up to 35 m in height and a DBH of up to 90 cm (Hartvig *et al.*, 2017), and is able to regenerate after coppicing (Van Sam *et al.*, 2004). *D. cochinchinensis* prefers fertile and deep sandy clay or calcareous soil along streams (Khorn, 2002, in: CTSP, 2003). It blooms from March to August and fruits from September to December (Van Sam *et al.* 2004). The heartwood is a brown-red colour and has prominent veins (Hien and Phong, 2012), making it one of the most sought-after of the rosewoods (EIA, 2014). Natural regeneration is often poor (CoP16 Prop. 6o).

The heartwood of *D. cochinchinensis* is similar to that of *D. oliveri* (sometimes also known as *D. bariensis*), but can be differentiated by a number of morphological features as well as characteristics of the wood at specific moisture contents (CoP16 Prop. 6o). The two species can also be successfully distinguished using DNA barcoding (Hartvig *et al.*, 2015).

Distribution: *D. cochinchinensis* is widely distributed in lowland mixed deciduous and dry evergreen forest on the Indochina peninsula of southeast Asia (Niyomdham, 1997). The species has been found growing sparsely in central, eastern, and north-eastern Thailand, central and southern Viet Nam, several provinces in Cambodia, and a few provinces in central and southern Lao, PDR (Van Sam *et al.* 2004; Hartvig *et al.*, 2017; CoP16 Prop. 6o). Populations are considered to be fragmented into subpopulations, each containing only a few individuals (Moritsuka *et al.*, 2017).

Population status and trends: *D. cochinchinensis* was categorised as Vulnerable by the IUCN in a 1998 assessment (annotated as needing updating); however, in 2011 the species was considered to

meet the Red List criteria for Critically Endangered as a result of illegal cutting and habitat destruction (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012). The global population of *D. cochinchinensis* has not been systematically surveyed, although it is likely to have been severely diminished as a result of heavy illegal logging (Winfield *et al.*, 2016; Moritsuka *et al.*, 2017; IUCN and TRAFFIC, 2012; CoP16 Prop. 6o). The species is estimated to have undergone an 80% decline over the last 150 years, with current declines projected to continue unless considerable conservation action is taken (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012). Large trees capable of producing flowers/fruits were reported to be 'rarely seen' (Moritsuka *et al.*, 2017) and some sources considered *D. cochinchinensis* to be commercially extinct (EIA, 2014; CoP17 Inf. 79).

The largest remaining standing stocks of the species are thought to be in Thailand, where in 2005 there were estimated to be 300 000 trees remaining in natural stands (CoP16 Prop. 6o). This fell to 80 000 to 100 000 trees in 2011 (CoP16 Prop. 6o). There have been no systematic surveys of *D. cochinchinensis* in Viet Nam, Lao, PDR or Cambodia and the population in these countries is unknown.

Threats: *D. cochinchinensis* is considered to be primarily under threat as a result of overexploitation for its highly-priced heartwood (Asian Regional Workshop, 1998; EIA, 2014; CoP16 Prop. 6o; IUCN and TRAFFIC, 2012), which is used in premium-grade furniture, musical instruments, and handicrafts (Van Sam *et al.*, 2004). In particular, rapid growth in demand has been reported from China, where the species is prized as a source of 'Hongmu' (red wood) (CoP 17 Inf. 19; EIA, 2014; Treanor, 2015). *D. cochinchinensis* was reported to be the most targeted species of rosewood in Chinese imports of Hongmu between 2000 and 2009 (EIA, 2014).

Export of *D. cochinchinensis* is prohibited in all range States (see 'Management' section), however illegal logging to meet high levels of demand is considered to pose a major threat to the survival of the species (CoP16 Prop. 6o). Populations are also threatened as a result of forest clearance for rubber plantations, acacia, rice and other crops, and development purposes (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012; CITES Management Authority (MA) of Viet Nam *in litt.* to CITES Secretariat, 2017).

Overview of trade and management: *D. cochinchinensis* was listed in CITES Appendix II on 12th June 2013 and was then included in the Appendix II genus listing for *Dalbergia* on 2nd January 2017. As such, CITES trade data is only available for the period 2013-2016. According to data in the CITES trade database, direct global trade in *D. cochinchinensis* 2013-2016 mainly comprised wild-sourced timber exported for commercial purposes, with 20 831.3 m³ reported by exporters and 77 097.3 m³ reported by importers.

The export of *D. cochinchinensis* is prohibited in Cambodia (The Royal Government of Cambodia, 2003), Lao, PDR (Prime Minister's Office of Lao People's Democratic Republic, 2008), and Viet Nam (Government of Viet Nam, 2006). In Thailand, logging of natural forest trees was prohibited nationwide in 1989 (Government of Thailand, 1989), and the Thai forest act lists *D. cochinchinensis* as a restricted timber species (meaning it can only be harvested from private land and exported after the issuance of a logging and export permit) (NEPCon 2017). However, illegal trade and harvesting have remained a problem in all range States as demand for rosewood products (particularly from China) has risen (EIA, 2014, 2016b; CoP16 Prop. 6o; CoP17 Inf. 79). The price of *D. cochinchinensis* wood was reported to have risen rapidly since 2005 and has remained high (Treanor, 2015; EIA, 2016b). In 2012, the market price was reported to be USD 15 000 /m³; 15 times higher than the market price reported in 2005 (Wenbin and Xiufang, 2013). In 2008, *D. cochinchinensis* from Cambodia was reported to sell in Victoria, Canada, for USD 14 000 - 20 000 /m³ (Carmichael, 2008, in: So *et al.*, 2010), whereas in 2012 the EIA reported a price of up to USD 50 000 /m³ for unprocessed Thai rosewood in China (EIA, 2012c).

C. Country reviews

Cambodia

Distribution: Knowledge of distribution in Cambodia is limited. *D. cochinchinensis* has been recorded in the provinces of Kampong Thom (Top *et al.*, 2009; Saret, 2002, in: Narong and Sobon, 2014), Kampong Speu (Theilade *in litt.* to UNEP-WCMC, 2018), Ratanakiri, Pursat, Otdor Meanchey, Siem Reap, Preah Vihear, Kratie, Koh Kong, Stung Treng and Modulriki (Saret 2002 in Narong and Sobon, 2014; Khorn, 2002, in: CTSP, 2003; Hartvig *in litt.*, 2012, in: IUCN and Traffic, 2012). The largest and most continuous populations are thought to be in Otdor Meanchey, parts of Siem Reap, and Preah Vihear (Hartvig *in litt.*, 2012, in: IUCN and Traffic, 2012).

Population status and trends: The size of Cambodia's *D. cochinchinensis* population is unknown; however, although no systematic population estimates exist, the population was considered to be "severely depleted" (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012). Mature individuals were reported to be 'very rare' outside of strictly protected areas (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012), and the species was considered to be "critically endangered" in a 2012 report by Cambodia's Forestry Administration (Institute of Forest and Wildlife Research and Development, 2012). The largest remaining population was reported to be a seed source in Siem Reap (Theilade *in litt.* to UNEP-WCMC, 2018). This was considered to be fairly well protected, although some trees were reported to have been felled and the remainder had a DBH of 20-25 cm (Theilade *in litt.* to UNEP-WCMC, 2018). The second largest population was reported to be in Leap Kuy Community Forest in Kampong Speu Province; it consists of 200 trees found in a natural forest covering 107 ha (Theilade *in litt.* to UNEP-WCMC, 2018). Other known populations include Damrey Chak Thlor Community Forest in Kampong Speu (15 000 ha), O Soam Community Forest in Kampong Thom (50-100 trees of 10-15 cm DBH), and Tbeng Lech Community Forest in Siem Reap (c. 10 trees, though the largest tree was illegally cut in 2017) (Theilade *in litt.* to UNEP-WCMC, 2018).

Some figures are also available from studies that were conducted on a local scale. A study by the Cambodia Seed Project in 2003, recording the number of *D. cochinchinensis* trees for seed sources in Cambodian natural forests, found there was a low average of 1.34 trees per ha in natural forests in the Sre Nauy Commune, Siem Reap (Cambodia Seed Project, 2003, in: Winfield *et al.*, 2016); whereas in 2007 a survey in the lowland forests of the Stoeung Treng province reported that log poaching had led to the local extinction of the species (Francke *et al.*, 2007, in: So *et al.*, 2010). Five 14-day botanical surveys in Samkos (central and eastern Cardamoms) conducted since 2015 found a single *D. cochinchinensis* individual, a root sucker which had survived felling and the removal of the root of the mother tree (Theilade *in litt.* to UNEP-WCMC, 2018). In the southern Cardamoms, rangers reported that all *D. cochinchinensis* trees "had been felled for the rosewood trade" (Theilade *in litt.* to UNEP-WCMC, 2018).

Scientists contacted by the EIA involved in field and genetic studies on the species in 2016 noted that the number of *D. cochinchinensis* trees in the country was "dramatically decreasing" and that "field guides in Cambodia reported in 2015 that many of the populations sampled from 2010-2012 no longer exist due to deforestation and logging" (EIA, 2016a).

Threats: Logging and the conversion of forest to other land uses (particularly in the north-western provinces of Otdor Meanchey, Preah Vihear, and (parts of) Siem Reap) are considered to be the principal threats (Strange *et al.*, 2007; So *et al.*, 2010; IUCN and TRAFFIC, 2012; Phuc *et al.*, 2016, EIA, 2017).

Despite a ban on the export of logs (see ‘Management’), exports of *D. cochinchinensis* to countries such as Viet Nam have reportedly continued since this date (Phuc *et al.*, 2016). Cambodia is considered to play a major role as both a source and transit country in the illegal rosewood trade (EIA, 2017; Phuc *et al.* 2016), particularly at its border with Thailand which is close to the largest remaining stands (EIA, 2014; Theilade *in litt.* to UNEP-WCMC, 2018), and its border with Lao, PDR (Treanor, 2015). In 2012, it was noted that there appeared to be little enforcement of existing restrictions (Newman *in litt.*, 2012, in: IUCN and TRAFFIC, 2012). Despite community patrols in Leap Kuy Community Forest in Kampong Speu Province, illegal logging for trade was reported to persist (Theilade *in litt.* to UNEP-WCMC, 2018). Theilade (*in litt.* to UNEP-WCMC, 2018) additionally reported that, during surveys in Thma Bang, rosewood harvest teams were encountered on a daily basis. Locals were also reported to travel for 1-2 days to dig up roots of already felled trees (Theilade *in litt.* to UNEP-WCMC, 2018).

Clearance for rubber plantations, acacia, rice and other crops was also noted as an important threat in Cambodia (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012; FAO, 2015).

Trade: CITES annual reports were submitted for all years by Cambodia for the period 2013-2016. Cambodia has never published any export quotas for the species.

Direct trade in *D. cochinchinensis* from Cambodia 2013-2016 almost entirely comprised pre-Convention (4826.4 m³) and wild-sourced (3219.2 m³) timber imported by Viet Nam for commercial purposes, reported by Viet Nam only (Table 1). The majority of the trade was reported in 2014, comprising 4141.6 m³ of pre-convention timber and 2670 m³ of wild-sourced timber. No direct exports of *D. cochinchinensis* from Cambodia were reported in 2016. Cambodia did not report any direct exports of *D. cochinchinensis* timber 2013-2016.

Table 1: Direct exports of *Dalbergia cochinchinensis* from Cambodia, 2013-2016. Where appropriate, quantities have been rounded to one decimal place.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	Total			
timber	m ³	T	O	Exporter								
				Importer	684.8	4141.6			4826.4			
			W	Exporter								
				Importer	279.5	2670	269.7		3219.2			
			-	Exporter								
				Importer			200		200			
			-	T	O	Exporter						
						Importer		87.6			87.6	
					W	Exporter						
						Importer		200			200	
live	-	G	A	Exporter	2				2			
				Importer								

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK. Downloaded 27/02/2018.

Indirect trade in *D. cochinchinensis* originating in Cambodia 2013-2016 comprised pre-convention timber re-exported in 2013 and 2014 (3279 m³) and wild-sourced timber re-exported in 2014 (2171 m³), all of which was re-exported by Viet Nam to China for commercial purposes.

Cambodia stated that it had not issued any CITES export permits for *D. cochinchinensis* since its listing in CITES Appendix II on 12 June 2013 (Notif. No. 2017/023, CITES Management Authority (MA) of Cambodia *in litt.* to CITES Secretariat, 2017), although it noted that the CITES Trade Database included “trade that was premised on the acceptance of fraudulent CITES permits of *Dalbergia cochinchinensis* in Vietnam” (CITES MA of Cambodia *in litt.* to CITES Secretariat, 2017). On the request of the Cambodian MA, Notif. No. 2017/023 was issued on 21 March 2017 to inform Parties that they should consider any permits purported to have been issued by MA of Cambodia for *D. cochinchinensis* to be invalid.

The volume of sawnwood of *D. cochinchinensis* imported into Viet Nam from Cambodia fell from 8700 m³ (valued at USD 15.5 million) in 2013 to 416 m³ in 2015 (valued at USD 1.2million) (Phuc *et al.*, 2016).

Management: Cambodia became a Party to CITES on 4th July 1997, with entry into force on 2nd October 1997.

A ban on the export of logs was issued by the Government of Cambodia in 1996 (Phuc *et al.*, 2016). In 2002, Forestry Law no.35 prohibited the harvesting of “rare tree species” in the country, including *D. cochinchinensis* (The Royal Government of Cambodia, 2003). Trade and circulation of all rosewood (including *D. cochinchinensis*) was banned on 23rd February 2013 (CITES MA of Cambodia *in litt.* to CITES Secretariat, 2017), and in 2016 an embargo was put in place on all timber exports to Viet Nam (EIA, 2017). The species is additionally listed as Priority 4 in the list of ‘endangered or rare species’ of trees in Cambodia (EIA, 2016a), although it is unclear if this affords the species any further protection.

In response to the consultation, the CITES MA of Cambodia reported that it had requested that the CITES MA of Viet Nam seize and/or take appropriate legal action associated with the use of fraudulent CITES export permits for the species (CITES MA of Cambodia *in litt.* to CITES Secretariat, 2017). In December 2015, the CITES MA of Cambodia reiterated to the General Department of Viet Nam Customs that it had not issued export permits for *D. cochinchinensis* since its listing in 2013, and requested the CITES Secretariat organise a meeting with Viet Nam to determine the reason for the absence of legal action regarding the counterfeit export permits and illegal trade; it also sought an independent investigation by INTERPOL of the relevant circumstances of the case (CITES MA of Cambodia *in litt.* to CITES Secretariat, 2017).

Conservation of the species has been promoted as part of tree planting programmes (Institute of Forest and Wildlife Research and Development, 2012), and *D. cochinchinensis* exists in plantations in Mundul Kiri, Preah Sihanouk and Siem Riep (Cambodia Forestry Administration, 2007, in: So *et al.* 2010). A survey of tree nurseries in Cambodia conducted 2013-2014 found that *D. cochinchinensis* was the most abundant native species found in nurseries in Cambodia in terms of the number of seedlings (Theilade *in litt.* to UNEP-WCMC, 2018). 1.2-1.4 million seedlings were reported to be produced annually, and an estimated 60-70% of these were sold and planted by private households and landowners, monks, and at pagodas, petrol stations and restaurants (Theilade *in litt.* to UNEP-WCMC, 2018).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Cambodia as legislation that is believed generally to meet all four requirements for effective implementation of CITES (CITES, 2017).

Lao, PDR

Distribution: *D. cochinchinensis* has been reported to occur in the southern provinces of Champasak, Attapeu, Salavan and Sekong and the central provinces of Bolikhamsai, Khammouane and Savannakhet (Van Sam *et al.*, 2004; Natuhara *et al.*, 2012; Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012; CoP16 Prop. 60).

Population status and trends: No systematic assessments of the *D. cochinchinensis* population are available. Field surveys in 2012 in Bolikhamsai and Khammouane provinces found no mature individuals, and all trees with a DBH of over 15 cm had been logged, even within strictly protected areas (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012). In 2003, there were 98 registered *D. cochinchinensis* seed trees in the Bolikhamsai province and 10 registered seed trees in the Savannakhet province, all in natural forests (Luoma-aho *et al.*, 2004).

Threats: *D. cochinchinensis* in Lao, PDR was considered to be severely threatened as a result of overexploitation and illegal cutting, particularly for Chinese markets (Hartvig *in litt.*, 2012, in: IUCN and Traffic, 2012; EIA, 2014; Treanor, 2015). The country was considered to be a hub through which *D. cochinchinensis* originating in both Lao, PDR and other range States (particularly Thailand) could be illegally smuggled onwards to Viet Nam and China (EIA, 2016a; Treanor, 2015). Illegal imports into China of ‘rosewood’ [species or genus unknown] from Lao, PDR were reported to have increased substantially between 2002 and 2014 and grown most rapidly between 2010 and 2014 (Treanor, 2015); before declining in 2015 as a result of a Chinese government anti-corruption campaign and a trend toward lighter, less expensive softwood furniture (Treanor, 2015). There are concerns that legitimate *D. cochinchinensis* harvests (resulting from, for example, forest conversion projects for hydropower and infrastructure) have been used as methods to launder significant volumes of illegal timber (EIA, 2014).

The species is also threatened by forest clearance for the purpose of rubber plantations, acacia, rice and other development purposes (Hartvig *in litt.* 2012, in: IUCN and TRAFFIC, 2012).

Trade: CITES annual reports were submitted for all years by Lao, PDR for the period 2013-2016. Lao PDR has never published any export quotas for the species.

Direct trade in *D. cochinchinensis* from Lao, PDR 2013-2016 predominantly consisted of wild-sourced timber exported for commercial purposes; 20 548 m³ as reported by Lao, PDR and 73 478.2 m³ as reported by countries of import (Table 2). Viet Nam and China were key importers of wild-sourced timber, accounting for 60% and 40% wild-sourced trade respectively, as reported by Lao, PDR. Lao, PDR typically reported lower quantities of timber in trade than trading partners, approximately 53 000 m³ less exported 2013-2016 (Table 2). Lao, PDR reported exports of wild-sourced timber 2013-2014 and exports of artificially-propagated timber 2015-2016; a permit analysis indicates that at least some trade reported as artificially-propagated by Lao, PDR in 2015-2016 was reported by importers as wild-sourced.

Table 2: Direct exports of *Dalbergia cochinchinensis* from Lao, People’s Democratic Republic, 2013-2016. Where appropriate, quantities have been rounded to one decimal place.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	Total			
timber	kg	T	W	Exporter								
				Importer				<0.1	<0.1			
	m ³	T	A	Exporter		242	5788	3014.7	9044.7			
				Importer		40		40				
				O	Exporter							
					Importer		122.1		122.1			
				W	Exporter		3214	17334		20548		
					Importer		1744	56189.2	9525.3	6019.7	73478.2	
				-	-	-	Exporter					
							Importer			20	16.7	36.7
	-	-	-	Exporter			40		40			
				Importer								
	-	T	W	Exporter								
				Importer		46		46				
vener	m ³	T	W	Exporter		50		50				
				Importer		50		50				

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Indirect trade in *D. cochinchinensis* originating in Lao, PDR 2007-2016 predominantly comprised wild-sourced (13 641.8 m³) and pre-convention (3412.3 m³) timber exported from Viet Nam to China for commercial purposes, as reported by Viet Nam. The majority of indirect trade occurred in 2014.

Lao, PDR was the principal exporter of *D. cochinchinensis* from June 2013 to December 2014, listed as the origin for 83.1% of all reported imports (EIA 2016a).

Management: Lao, PDR became a Party to CITES on 1st March 2004, with entry into force on 30th May 2004.

According to CoP16 Prop. 60, harvesting of domestic *D. cochinchinensis* trees was prohibited in 2008 by Prime Cabinet du Président de la République Order No17/PM (Prime Minister's Office of Lao People's Democratic Republic, 2008), whereas the exploitation, trade and export of all *D. cochinchinensis* wood was banned in 2011 (Prime Ministerial Order No 010/PM; Cop 16 Prop 60). Despite this, EIA investigators reported to have recorded instances where genuine CITES permits were issued for log exports in 2014 (EIA, 2014). The 2011 ban was also thought to have been regularly circumvented using exemptions and non-transparent quotas (EIA, 2014); for example, the Forestry Law No. 6/NA (National Assembly of Lao, PDR, 2007) was reported to allow senior officials in the central government to permit the export of "prohibited species" and issue special quotas of logs (EIA, 2012b). Lack of enforcement, particularly in relation to environmental laws, is also considered to be an issue (Saunders, 2014). Concerns have been raised about the involvement of government officials in illegal logging and trading activity (EIA, 2014; Treanor, 2015). Confiscated *D. cochinchinensis* wood was reported to be sold at inflated prices at government and military auctions, principally to Vietnamese and Chinese businesses (Treanor, 2015).

At SC76 (Johannesburg, 2017), the Standing Committee recommended a suspension of commercial trade in *D. cochinchinensis* from Lao, PDR (except finished products, including carvings and furniture). This suspension came into force on 23rd September 2016 (CITES Notif. No. 2017/012), and remains in place until Lao, PDR (i) makes scientifically based non-detriment findings for trade in the species in the country to the satisfaction of the Secretariat and the Chair of the Plants Committee, ii) develops a National Management Plan for the species and commences its implementation; and iii) provides a copy of the National Management Plan to the Secretariat.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao, PDR as legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES (CITES, 2017).

The CITES Authorities in Lao, PDR were consulted as part of this review, but no response was received.

Viet Nam

Distribution: Primarily distributed in central and southern Viet Nam. Recorded in the provinces of Quang Nam, Kon Tum (Dak To, An Khe, and Sa Thay Districts), Gia Lai, Dak Lak, Lam Dong, Binh Duong, Dong Nai, Ba Ria-Vung Tau and Kien Giang, and the city of Da Nang (Chinh *et al.*, 1996; CITES MA of Viet Nam *in litt.* to CITES Secretariat, 2017).

Population status and trends: Viet Nam does not currently hold any official nationwide data on the population of *D. cochinchinensis* (CITES MA of Viet Nam *in litt.* to CITES Secretariat, 2017). However, the forest planning institute estimated the population of *D. cochinchinensis* in five conservation areas in Vietnam in 2010 (Ea So conservation area, Yok Don National Park, Chu Mom Ray National Park, Kon Ka Kinh National Park, and Cat Tien National Park) (CITES MA of Viet Nam *in litt.* to CITES Secretariat, 2017). The average number of trees per ha ranged from 1-10, which was considered low (EIA, 2014, CoP16 Prop. 60). An additional investigation was conducted in the Tan Phu Protection Forest in 2017, which found 891 individuals with a DBH of > 10 cm (CITES MA of Viet Nam *in litt.* to CITES Secretariat, 2017). The population of 'rosewood' in Viet Nam was estimated to have declined by

50-60% over the past 5-10 years (Hartvig *in litt.*, 2012, in: IUCN and TRAFFIC, 2012), however the individual species to which this figure referred was unclear. *D. cochinchinensis* was assessed as 'endangered' in the 2007 Viet Nam Red List (Dang and Nguyen, 2007). Only a limited number of individuals were reported to remain in forest fragments in the south (Hien and Phong, 2012), and the majority of the remaining population was noted to be limited to protected areas (CITES MA of Viet Nam *in litt.* to CITES Secretariat, 2017).

Threats: *D. cochinchinensis* is threatened by illegal exploitation and habitat clearance for infrastructure development (IUCN and TRAFFIC, 2012; EIA, 2012a). There have been reports of illegal felling within protected areas, particularly in Quang Binh province (EIA, 2012a).

Trade: CITES annual reports were submitted for all years by Viet Nam for the period 2013-2016. Viet Nam has never published any export quotas for the species.

Direct trade in *D. cochinchinensis* from Viet Nam was reported in 2013 and 2014 only, consisting of low quantities of wild-sourced (283.4 m³) and pre-convention (420.1 m³) timber exported for commercial purposes to China and Hong Kong, Special Administrative Region (SAR), as reported by Viet Nam (Table 3). Viet Nam consistently reported higher levels of trade than importers and reported peak levels of trade in 2014 (Table 3). No indirect trade in *D. cochinchinensis* originating in Viet Nam was reported 2007-2016.

Viet Nam is a key re-exporter of *D. cochinchinensis*, reporting the re-export of 34 082 m³ timber 2013-2015, of which approximately three-quarters originated in Lao, PDR and almost all the remainder in Cambodia. All re-exports were destined for China (98%) and Hong Kong, SAR. Viet Nam did not report re-exports of *D. cochinchinensis* in 2016.

Table 3: Direct exports of *Dalbergia cochinchinensis* from Viet Nam, 2013-2016. All exports were for commercial purposes and reported by volume (m³) of trade.

Term	Source	Reported by	2013	2014	2015	2016	Total
timber	O	Exporter	271.1	149			420.1
		Importer		151.6			151.6
	W	Exporter		283.3			283.3
		Importer					
carvings	O	Exporter		3.1			3.1
		Importer					

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Viet Nam stated that there has been no legal export of any wild or artificially propagated specimen of *D. cochinchinensis* since 2012 (Viet Nam MA *in litt.* to CITES Secretariat, 2017).

Management: Viet Nam became a Party to CITES on 20th January 1994, with entry into force on 20th May 1994.

In 2006, Decree 32/2006/ND-CP on the management of endangered, precious, and rare wild plants and animals (Government of Viet Nam, 2006) listed *D. cochinchinensis* under Annex II-B (endangered, rare, precious plants that should be refrained from being exploited for commercial purposes). This prohibited the exploitation, dispatch or storage of *D. cochinchinensis* wood and restricted export to finished products. Decree 187/2013/ND-CP subsequently prohibited the export of log and sawn wood of wild origin (i.e. that harvested from Vietnamese natural forests) from the country (including *D. cochinchinensis*) (Government of Viet Nam, 2013). In addition, in 2016, announcement 191/TB-VPCP announced the closure of natural forests nationwide (Government of Viet Nam, 2016).

Despite this legislation, the country is considered to be a major transit hub for the illegal rosewood trade (EIA, 2014; Treanor, 2015), principally via its sea ports where illegal goods travel to Hong Kong, SAR, and by road via the country's north-eastern border with China. In 2011, Viet Nam exported 123 000 m³ of rosewood logs (species unknown) to China that was illegally felled in protected areas (IUCN and TRAFFIC, 2012). Most exports of rosewood from Viet Nam however, originate from Lao, PDR, Thailand and Cambodia (IUCN and TRAFFIC, 2012; Treanor, 2015). Multiple seizures of illegally traded specimens have been made, although no total estimate was provided in the Viet Nam CITES MA response to the CITES Secretariat.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Viet Nam as legislation that is believed generally to meet all four requirements for effective implementation of CITES (CITES, 2017).

D. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Levels of illegal trade in *D. cochinchinensis* are considered to be high, with 1619 cases involving 1116 m³ of timber recorded between October 2012 and September 2013, and 2767 cases involving 1858.6 m³ between October 2013 and September 2014 (CoP17 Prop. 53). Viet Nam is considered to be a major transit hub for illegal *D. cochinchinensis* exports from Lao, PDR, Thailand and Cambodia to China, both via its ports and the country's north-eastern border (EIA, 2014).

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Dalbergia retusa: Nicaragua, Panama

A. Summary

RST Selection Selected in the RST based on high volume trade 2011-2015 for a globally threatened species.

Global status Listed as Vulnerable by the IUCN based on a 1998 assessment (annotated as needing updating). No global population estimate is available, and opinion on its relative abundance is conflicting. Considered to be declining as a result of overexploitation for timber and forest clearance for agriculture and cattle ranching. Described as the most prominent *Dalbergia* species in trade from the Americas, used in musical instruments, furniture, and handicrafts.

NICARAGUA: Found across Nicaragua from the Pacific to the Atlantic coast. Distribution projections based on climate data identified two potential hot spots for the species in the departments of Boaco, Chontales, and the Region Autónoma del Atlántico Sur (although no actual distribution data appears to be available). Population size is unknown, but large trees were considered to be declining. The remaining population is considered under high pressure from logging. A low proportion of trees were reported to reach a diameter of 50 cm outside of protected areas and a low proportion of individuals in small size classes was noted, indicating poor regeneration and possible negative impacts of harvest. Annual reports were submitted by Nicaragua in all years 2008-2016 (since the species listing). No quotas have been published. Exports 2008-2016 were predominantly in wild-sourced timber exported for commercial purposes (23 084 m³ as reported by Nicaragua, and 5486 m³ as reported by importers). Nicaragua responded to the consultation relating to the RST. The majority of timber exported 2013-2017 originated from the South Caribbean Coast Autonomous Region. Annual harvest quotas are calculated using an annual increment of 0.35 cm/DBH/year, exports are only permitted from areas with approved management plans, and minimum diameter requirements are in place. However management plans were not provided and it is unclear if any inventories have taken place, or whether any monitoring system for harvested populations exists. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally threatened species, therefore categorised as Action is needed.

RECOMMENDATION:

Action is needed

<p>PANAMA: Found in dry or humid forests in the provinces of Coclé, Colón, Darién, Los Santos and Panamá. Population size is unknown, but categorised as nationally ‘endangered’ with low regeneration rates reported, although may still be common in places. Panama submitted annual reports for the period 2008-2014, but reports for 2015 and 2016 have not yet been received. No quotas have been published. Exports 2008-2016 were predominantly in wild-sourced timber exported for commercial purposes (15 665 m³ as reported by Panama in 2013 and 2014, and 22 969 m³ as reported by importers 2013-2016). Illegal logging (particularly in the Darién province) and forest clearance are considered to be the principal threats. Panama did not respond to the consultation relating to the RST. Panama banned the harvesting and export of <i>D. retusa</i> in 2014, however trade originating from Panama was reported by importers in 2015 and 2016, raising concerns relating to management effectiveness. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally threatened species, therefore categorised as Action is needed.</p>	<p>RECOMMENDATION: Action is needed</p>
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RST Background

Dalbergia retusa from Nicaragua and Panama were selected as priority species-country combinations for review under the RST at PC23, July 2017 (PC23 Com. 5 (Rev. by Sec.), PC23 Summary Record). *D. retusa* was identified as a species that met a high volume trade threshold for globally threatened species, on the basis of trade data for the period 2011-2015 (PC23 Doc. 15.3 Annex 2).

B. Species characteristics

Biology:

D. retusa, known as cocobolo or Nicaraguan rosewood, is a small to medium-sized tree species belonging to the Leguminosae family (Marin and Flores, 2003). It is generally a subcanopy tropical dry forest species that grows well in open areas (Marin and Flores, 2003). It has been recorded in natural forests, secondary forests, plantations and areas degraded by agriculture (FNPV, 2016b), at altitudes of 50 to 300 m (Marin and Flores, 2003) and up to 800 m in Nicaragua (Stevens *et al.*, 2001). Natural regeneration has been reported to be scarce (Marin and Flores, 2003; Runk *et al.*, 2004; FNPV, 2016b), although saplings and juveniles can be found in areas periodically exposed to fire (Marin and Flores, 2003). *D. retusa* usually reaches a height of 15 to 25 m and a DBH of 40-70 cm (Marin and Flores, 2003; FNPV, 2016a). The species has a slow growth rate; in Guatemala, it was reported to reach an average diameter of 15.93 cm after 20 years (FNPV, 2016b). Flowering occurs twice annually, from January to May and August to September, once the tree is 4 - 5 years old (Marin and Flores, 2003).

The heartwood of *D. retusa* is dense and durable (Chizmar *et al.*, 2009; Meyrat, 2018), and has a dark-reddish brown colour typical of the ‘rosewoods’ (Chizmar *et al.*, 2009; Meyrat, 2018). *D. retusa* timber is thought to be ‘virtually indistinguishable’ from that of *D. granadillo* (IUCN and TRAFFIC, 2012; Espinoza *et al.*, 2015), and they are often traded under the same common name of Cocobolo (Gasson *et al.*, 2010). *D. granadillo* can be found in Mexico and El Salvador (IUCN and TRAFFIC, 2012), and has not been assessed by the IUCN.

Distribution: *D. retusa* was reported to occur in Mexico and in the meso-American Pacific region from Guatemala to Panama (Americas Regional Workshop, 1998; Marin and Flores, 2003; Grandtner and Chevrette, 2013); some authors also reported its occurrence in Colombia (Zamora Villalobos, 2010; Grandtner and Chevrette, 2013), although the species assessment in PC19 Inf. 3 concluded that “no natural populations” occurred there. At the “Workshop on evaluating the timber species of the genus *Dalbergia* in Mexico in the context of NOM-059-SEMARNAT-2010”, organised by the CITES SA of Mexico in 2015, experts determined that *D. retusa* did not occur naturally in Mexico, and online records for the species (e.g. Tropicos) represented introduced specimens (PC22 Doc. 22.4). Its range was considered to be highly fragmented as a result of overexploitation and land conversion (Meyrat, 2018).

Population status and trends: *D. retusa* was categorised as Vulnerable by the IUCN, based on a 1998 assessment (annotated as needing updating) (Americas Regional Workshop, 1998). No global estimates of its population size exist, and estimates of its abundance are contradictory. In 1979 it was described as “scarce” after all accessible stands of the genus were considered to have been logged (National Research Council, 1979), and Cordero and Boshier (2003) considered it to be “highly threatened”. However, in Southon (1994) the species is reported to be “not threatened”, and Grebner *et al.* (2013) describe it as a “common tree species” in the Atlantic forests of Central America.

Despite these contradictions, global populations of *D. retusa* are considered to have been in long term decline as a result of logging activity and the conversion of tropical dry forests to agriculture and pasture for cattle (Runk *et al.*, 2004; Americas Regional Workshop, 1998; González-Rivas *et al.*, 2006; IUCN and TRAFFIC, 2012). Reported difficulties from traders in sourcing *D. retusa* wood have led the EIA to consider that, in some areas, the species may be commercially extinct (EIA, 2013).

Threats: The principal threats were considered to be the exploitation of *D. retusa* for its timber (Americas Regional Workshop, 1998; Runk *et al.*, 2004; González-Rivas *et al.*, 2006; IUCN and TRAFFIC, 2012; EIA, 2013), and forest clearance as a result of agricultural expansion (Americas Regional Workshop, 1998; IUCN and TRAFFIC, 2012). *D. retusa* wood is used in musical instruments, furniture and handicrafts (Cordero and Boshier, 2003; PC22 Doc. 17.2, Jenkins *et al.*, 2012; Meyrat, 2018), and most international trade is in sawn wood and manufactured items (EIA, 2013). The species was considered to be the most prominent *Dalbergia* species in trade from the Americas, and was the second most traded CITES-listed *Dalbergia* species between 2010 and 2014 (Winfield *et al.*, 2016). Exploitation was considered to be ‘intense’, with stock completely exhausted from places where *D. retusa* was formerly widespread (Americas Regional Workshop, 1998).

One of the largest drivers of growth was considered to have been the expansion of the Chinese Hongmu (“red wood”) market (Treanor, 2015; EIA, 2016). Exports of ‘rosewood’ from central America into this market were reported to have increased rapidly since 2009 (EIA, 2012; IUCN and TRAFFIC, 2012; Cop17 Inf.79). Larsen (2017, pers. comm. in: McFarland, 2018) reported that the species could be sold for as much as USD 10 000 per m³.

Wastage of wood in manufacture has been reported to be high, as the sapwood is of low value (CoP14. Prop. 31). Most internationally traded timber is now thought to come from plantations, however some sources believe it unlikely that their current scale could have produced commercial quantities of the species (IUCN and TRAFFIC, 2012). Illegal felling has frequently been reported to be a problem (Jenkins *et al.*, 2012; EIA, 2014; French, 2016; CITES Management Authority (MA) of Nicaragua *in litt.* to CITES Secretariat, 2017).

The tropical dry forests where *D. retusa* is typically found are among the most endangered tropical ecosystems. Studies using MODIS data from 2004 estimated that in North and Central America 66% of

their potential range had been lost, whereas in South America 60% of their potential extent had been lost (Portillo-Quintero and Sánchez-Azofeifa, 2010).

Overview of trade and management: *D. retusa* was listed in CITES Appendix III by Guatemala on 12th February 2008 and by Panama on 22nd December 2011. *D. retusa* was later listed in CITES Appendix II on 12th June 2013 and was included in the Appendix II genus listing for *Dalbergia* on 2nd January 2017. As such, CITES Trade Data is only available for the period 2008-2016. According to data in the CITES trade database, direct global trade in *D. retusa* 2008-2016 primarily consisted of wild-sourced timber traded for commercial purposes; 40 507 m³ reported by exporters and 29 630 m³ reported by importers. Importers also reported 120 000 kg of pre-Convention timber in trade during the same period.

C. Country reviews

Nicaragua

Distribution: *D. retusa* was reported to occur across Nicaragua, from the Pacific to the Atlantic coast (Stevens *et al.*, 2001; PC20 Doc. 19.1), principally in areas outside of forests (PC20 Doc 19.1). A distribution map based on climate data and data compiled by the National Forestry Inventory (produced using MaxEnt) identified a potential range of 7 888 705 ha [of which the species' presence was considered moderate or high in 2 432 632 ha], with hotspots in the departments of Boaco and Chontales, and also in the South Caribbean Coast Autonomous Region (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). Meyrat (2018) stated that the species was especially abundant in deciduous forests and scrub savannah in the dry areas of Villaneuva, El Sauce, San Juan de Limay, Pueblo Nuevo, Somoto, Estelí, Rivas, Carazo, Boaco and Morrito, and in the semi-deciduous forest of El Almendro. Figure 1 provides a map of the potential distribution of *D. retusa* in Nicaragua provided by the CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017); no information on actual distribution in the country was provided.

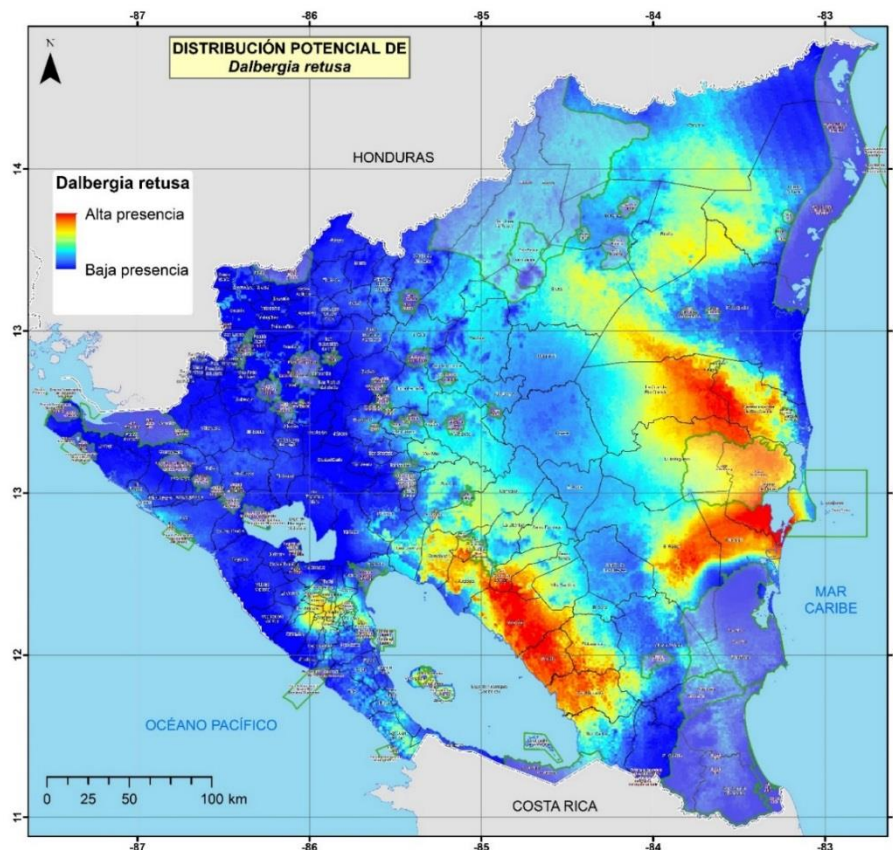


Figure 1. Map of the potential distribution of *Dalbergia retusa* in Nicaragua (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). Red indicates high presence, blue indicates low presence.

Population status and trends: Total population size is unknown. *D. retusa* was not included in Nicaragua’s 2008 Forest Inventory (CITES MA Nicaragua *in litt.* to UNEP-WCMC, 2018). Based on Figure 1 above, the abundance of *D. retusa* in the country appears to vary. Stevens *et al.* (2001) and Lezama-Lopez and Grijalva (1999; in CoP16 Prop. 61) described the species as “frequent”, and the CITES Working Group on Bigleaf Mahogany and Other Neotropical Timber Species considered that the species had “a good presence in open areas mainly outside of forests” (CoP16 Prop. 61). However, González-Rivas *et al.* (2006) found *D. retusa* to be one of the rarest species in their survey of tropical dry deciduous forest in Chacocente Wildlife Reserve in 1994 and 2000 [department of Carazo, Pacific coast].

Data provided by the CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017) from 40 commercial permits in natural broadleaf forest showed an average of 1.51 individuals/ha and an average basal area of 0.40 m²/ha, with “substantial reductions” in the average number of individuals/ha noted in diameter classes of 80 cm and over) (see Figure 2). The relative abundance of size classes was considered by the CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017) to follow to typical ‘J’ shape of deciduous forest tree species, but the density of trees with a DBH > 70 cm was considered to be a limiting factor for sustainable management.

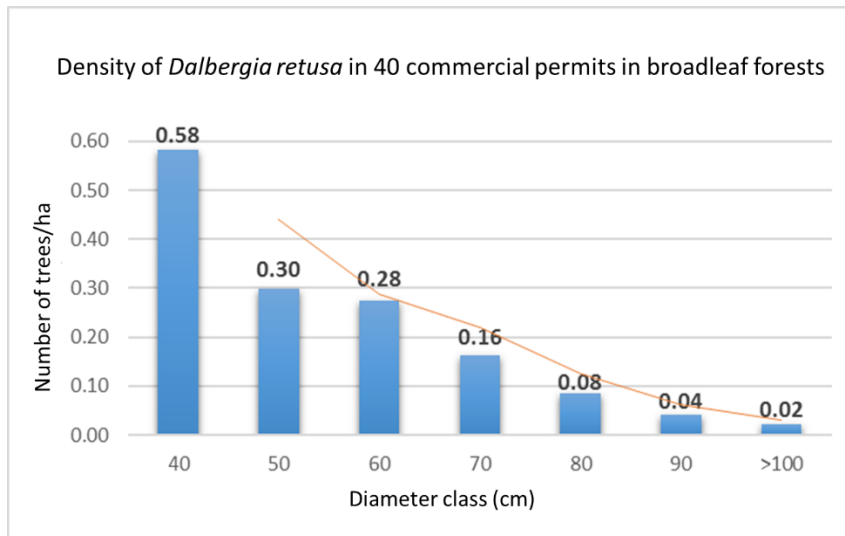


Figure 2. Density of *Dalbergia retusa* in 40 commercial permits located within broadleaf forests (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). Figures on top of bars refer to the number of trees/ha.

Data provided by the CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017) on 26 agrosilvicultural permits in areas outside of forests reported an average of 0.82 *Dalbergia retusa* trees/ha and an average basal area of 0.10 m²/ha, with “substantial reductions” in the average number of individuals/ha noted in diameter classes of over 50 cm (see Figure 3). The lack of trees with a DBH > 50 cm was considered to be a limiting factor for sustainable management and regeneration was also noted to be low (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). It is unclear whether the majority of *D. retusa* logging within Nicaragua occurs in areas within or outside of forests.

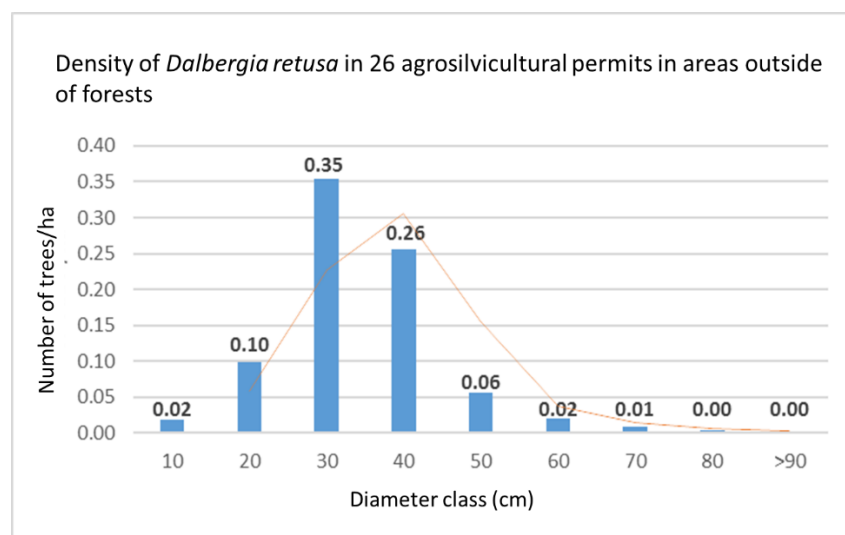


Figure 3. Density of *Dalbergia retusa* in 26 agrosilvicultural permits located in areas outside of forests (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). Figures on top of bars refer to the number of trees/ha.

In addition to the figures provided by the CITES MA of Nicaragua, the CITES Working Group on Bigleaf Mahogany and Other Neotropical Timber Species reported that *D. retusa* was distributed across Nicaragua in areas outside of forests at a density of 0.064 trees per hectare (CoP16 Prop. 61). However, the methodology used to estimate this figure is unclear.

No country specific estimates of population trends could be located. Participants at a 2005 workshop on timber tree species subject to international trade considered the species to be in a ‘critical state’, though they noted a lack of concrete data (IUCN and TRAFFIC, 2007).

Threats: Current populations of *D. retusa* in natural forests were considered to be under “high pressure” from harvest (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). Illegal logging of commercially valuable hardwood species in Nicaragua was considered to be a common problem (González-Rivas *et al.*, 2006). From 2012 to 2017 there were reported to have been 34 seizures of illegal *D. retusa* specimens (a total of 735.9 m³); however, levels of seizures were considered to be declining as the process of applying for export permits has been made faster and easier (CITES MA Nicaragua *in litt.* to CITES Secretariat, 2017).

From 2000 to 2010 Nicaragua’s annual rate of deforestation was reported to be 1.7%, however this rate was reduced to zero between 2010 and 2015 (FAO, 2015). In 2015, forests were reported to cover one quarter of Nicaragua’s land area, of which nearly 40% were primary forests (FAO, 2015). Portillo-Quintero and Sanchez-Azofeifa (2010) estimated that 77% of the country’s potential tropical dry forest extent had been converted to other land uses by 2004.

Trade: CITES annual reports were submitted for all years by Nicaragua for the period 2008-2016. Nicaragua has never published any export quotas for the species.

Direct trade in *D. retusa* from Nicaragua 2008-2016 was nearly entirely comprised of wild-sourced timber exported for commercial purposes, as reported by Nicaragua (23 084.7 m³) and countries of import (5486.6 m³; Table 1). The majority of the trade was reported in 2010 by Nicaragua (16 308.2 m³), and was exported to Switzerland and Hong Kong, SAR; this trade was not reported by importers. The remainder of timber exports 2011-2016 were primarily exported to China; the quantity of timber exported to China increased over the period, from 66.13 m³ in 2011 to 1327.05 m³ in 2016. No trade was reported prior to 2010.

Table 1: Direct exports of *Dalbergia retusa* from Nicaragua, 2008-2016. Quantities have been rounded to one decimal place, where appropriate.

Term	Unit	Purpose	Source	Reported by	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
timber	kg	T	I	Exporter												
				Importer									20.0		20.0	
	m ³	T	A	Exporter												
				Importer										19.0		19.0
				W	Exporter			16308.2	94.4	129.3	1616.2	1215.9	2328.3	1392.4	23084.7	
				Importer							204.1	1823.7	2038.1	1420.7	5486.6	
				-	Exporter										10.4	10.4
				Importer												
	-	P	I	Exporter												
				Importer										6.0		6.0
		T	W	Exporter												
				Importer										1.0		1.0
vener	m ³	T	W	Exporter								6.8		6.8		
				Importer												

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK. Downloaded 27/02/2018.

Indirect trade in *D. retusa* originating in Nicaragua 2008-2016 predominantly comprised 65 787 pieces of wild-sourced timber for commercial purposes, mainly re-exported via Costa Rica to China and the United States in 2014 and 2015; this trade was reported by Costa Rica only.

The CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017) provided information on the volume of timber exported 2012-2016; these generally corresponded, although a slightly higher volume was reported within the CITES annual report for 2016 (1392.41 kg) than provided by the CITES MA of Nicaragua (1190.68 kg) (*in litt.* to CITES Secretariat, 2017).

Management: Nicaragua became a Party to CITES on 6th August 1977, with entry into force on 4th November 1977.

Nicaragua's main piece of national forestry legislation is Forestry Law 462 and its Regulation 73-2003, which set general requirements for forestry exploitation including the need for a management plan for areas above 10 ha of natural forest (Presidente de la Republica de Nicaragua, 2003). According to this legislation, NDFs are only conducted in authorised areas, which are required to have a valid logging permit issued by INAFOR (Instituto Nacional Forestal) and an approved management plan (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). INAFOR issues all permits except those relating to protected areas (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). The requirements and procedure for the approval of management plans are set out in Article 21 of Law No. 462. These are valid for one year (PC20 Doc. 19.1).

The amount of timber that can be extracted from authorised areas is known as the annual permissible harvesting volume (VCAP), which is issued annually for *D. retusa* by INAFOR (CITES MA Nicaragua *in litt.* to CITES Secretariat, 2017). The VCAP is based on the Nicaraguan technical standard for the sustainable management of broadleaf and conifer forests (number NTON 18 001 – 01 y NTON 18 001 – 12) as well as administrative resolution No. 11-2015, which establishes the administrative provisions for the sustainable management of broadleaf forests, conifer forests, and agroforestry systems (Government of Nicaragua, 2013; Ministry of the Environment Nicaragua, 2002; Instituto Nacional Forestal, 2015). Quotas are set by considering:

- Forest cover type
- The total volume and commercial volume of timber in each zone
- The species authorised in each municipality
- The volume authorised in each municipality
- Logging intensity (calculated as $(\text{Recovered basal area} / \text{Available basal area}) \times 100$), using an annual increment for dry tropical forest of 0.35 cm/DBH/year.
- The length of the logging cycle by forest type (15 years for broadleaf forests)
- Estimations of the available volume for silviculture (calculated as $(\text{available volume} = \text{logging intensity} \times \text{available basal area})$)

The technical standard (NTON 18 001-12) also includes the provisions that the minimum cutting diameter is 40 cm DBH, and no more than 40% of the basal area of each species may be extracted in forests with slopes of between 1 and 35%. On steeper slopes, no more than 25% may be extracted.

The volume of *D. retusa* authorised, extracted, transported and exported from Nicaragua 2012-2017 is provided in Table 2. The volume extracted represents a total volume from 30 agrosilvicultural plans and 40 Annual Operating Plans. According to the CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017), the majority of timber originates from the South Caribbean Coast Autonomous Region (Región Autónoma de la Costa Caribe Sur, or RACCS) (Table 3), corresponding to an area of “high presence” of *D. retusa* in Figure 1.

Table 2: Volume of *D. retusa* authorised, extracted, transported and exported from Nicaragua 2012-2017

Volume (m ³)	2012	2013	2014	2015	2016	2017
Annual permissible harvesting volume (VCAP)	10,054.28	11,059.81	12,339.99	11,843.81	12,383.81	11,023.80
Authorised	9,452.96	10,821.41	11,755.41	6,226.94	1,132.15	525.06
Transported	S/D	861.15	2,739.17	5,364.60	1,482.57	1,301.02
Extracted	S/D	S/D	2,879.69	5,049.66	1,038.39	140.76
Exported	189.09	159.88	525.86	2,255.13	1,307.8	1,726.7

Source: CITES MA of Nicaragua *in litt.* to UNEP-WCMC, 2018

Table 3: Volume of *D. retusa* approved and transported by each individual municipality over the period of 2013-2017

Department-Subregion	Approved Volume	Volume Transported 2013	Volume Transported 2014	Volume Transported 2015	Volume Transported 2016	Volume Transported 2017	Volume Exported
Departamento Boaco	11.18	0.00	0.00	6.68	0.00	0.00	0.00
Departamento Carazo	65.74	0.00	13.13	34.17	0.00	0.00	19.18
Departamento Chontales	564.24	4.76	201.03	80.66	119.82	102.11	261.73
Departamento Granada	3.15	0.00	0.00	0.00	0.00	3.14	0.00
Departamento Jinotega	56.46	0.00	0.00	0.00	19.39	35.02	10.28
Departamento Las Minas Prinzapolka	247.38	0.00	0.00	43.90	0.00	0.00	28.29
Departamento Las Segovias	113.64	0.00	28.14	45.62	8.12	0.00	20.99
Departamento Madriz	117.50	3.27	58.43	22.76	0.00	5.23	29.14
Departamento Matagalpa	43.63	0.00	39.45	0.00	0.00	0.00	19.84
Departamento Puerto Cabezas Y Waspm	892.77	0.00	0.00	72.85	0.00	0.00	47.18
Departamento RACCS	15,758.86	845.67	2,227.04	4,663.25	1,214.93	1,064.22	5,847.65
Departamento RACCS Zelaya Central	573.06	0.00	134.96	266.35	83.27	0.00	217.22
Departamento Río San Juan	308.48	0.00	11.84	68.80	17.25	91.30	63.38
Departamento Rivas	117.74	7.45	25.16	59.54	19.79	0.00	61.22
Total general	18,873.81	861.15	2,739.17	5,364.60	1,482.57	1,301.02	6,626.11

Source: CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017

Departamento Leon had an approved volume of zero, and did not transport any *D. retusa* during this period (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017).

The CITES MA of Nicaragua (*in litt.* to CITES Secretariat, 2017) also provided information on the transportation and export of wood and forest products and the procedure for implementation of forest traceability, including administrative resolution No. 11-2015 and administrative resolution No. 33-2013 (Instituto Nacional Forestal, 2015). Among other documents, logging permits from INAFOR must be presented as part of the application for an export permit. Logs must be marked with the producer's mark as well as the number of the logging permit (CITES MA of Nicaragua *in litt.* to CITES Secretariat, 2017). All exporters of forest species must be registered with the CITES Management Authority of Nicaragua (Ministerio del Ambiente y Recursos Naturales – MARENA).

Mixed plantations of *Dalbergia retusa* have been reported from Masaya, Nagarote, Nandaime, el Sauce and Quezalguaque (Meyrat, 2018).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Nicaragua as legislation that is believed generally to meet all four requirements for effective implementation of CITES (CITES, 2017).

Panama

Distribution: Found at low elevations on the drier half of the isthmus (Condit *et al.*, 2011; Perez and Condit, n.d.). Condit *et al.* 2011 shows records of the species from the provinces of Coclé, Colón, Los Santos, Panamá and Panamá Oeste, and the indigenous region of Ngäbe-Buglé. There are also several records of the species from the Darién province (Runk *et al.*, 2004; Dalle and Potvin, 2004; Jenkins *et al.*, 2012).

Population status and trends: Population size is unknown, and there has been no systematic survey of trends. A long history of commercial and artisanal harvest, alongside a limited distribution, was considered to have made the species scarce (Runk *et al.*, 2004; Dalle and Potvin, 2004); however Condit *et al.* (2011) considered it to be common where dry forests remain. *D. retusa* is listed as nationally endangered in Resolution N° DM-0657-2016 (Ministry of the Environment of Panama, 2016). Natural regeneration was considered to be low (Runk *et al.*, 2004).

Threats: Illegal trade in *D. retusa* was considered to be a major threat, the scale being largely undocumented and driven by demand from China (Jenkins *et al.*, 2012; Treanor, 2015). The problem was thought to be particularly acute in the Darién region of eastern Panama (French, 2016), however illegal logging has also been reported from other protected areas such as Soberanía National Park, near the banks of the Panama Canal in the Provinces of Panamá and Colón (McFarland, 2018). The Panamanian press reported that high volumes of rosewood were confiscated by the country's environmental authority in 2012 (300 000 kg), 2013 (900 000 kg) and 2014 (4 million kg) (French 2016), although demand for rosewood in general from China was thought to have decreased in more recent years as a result of economic slowdown and government policy (ITTO and Chinese Academy of Forestry, 2017). Prices for illegally logged *D. retusa* from Panama were reported to be as high as USD 10 000 per m³ (Larsen, 2017, pers. comm., in: McFarland, 2018).

Trade: CITES annual reports have been submitted by Panama for the period 2008–2014, annual reports for 2015–2016 have not yet been received. Panama has never published any export quotas for the species.

Direct trade in *D. retusa* from Panama 2008–2016 predominantly consisted of wild-sourced timber for commercial purposes, with 15 665.9 m³ reported by Panama in 2013 and 2014, and 22 969.2 m³ reported by China 2013–2016 (Table 4). China also imported 100 000 kg of pre-Convention timber in 2012, this trade was not reported by Panama. No trade was reported prior to 2012. No indirect trade in *D. retusa* originating in Panama was reported 2008–2016.

Table 4: Direct exports of *Dalbergia retusa* from Panama, 2008-2016. Quantities have been rounded to one decimal place, where appropriate. Panama have not submitted annual reports for 2015-2016.

Term	Unit	Purpose	Source	Reported by	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
carvings	-	-	W	Exporter					3.0			-	-	3.0	
				Importer											
timber	kg	T	O	Exporter								-	-	-	
				Importer											
	m ³	T	O	Exporter					100000.0						100000.0
				Importer											
	-	-	-	-	Exporter				<0.1				-	-	<0.1
					Importer					<0.1	51.2	21.0			
	-	-	-	W	Exporter					6433.8	9232.1		-	-	15665.9
					Importer					1704.7	16457.0	1506.7	3300.8		
	-	-	-	-	Exporter								-	-	-
					Importer										
-	-	-	W	Exporter					200.0				-	-	200.0
				Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Management: Panama became a Party to CITES on 17th August 1978, with entry into force on 15th November 1978.

Dalbergia retusa is listed as nationally endangered in Resolution N° DM-0657-2016 (Ministry of the Environment of Panama, 2016). In 2014, Panama created a specific process for the issuing of harvesting and transport permits for the species through Resolution AG-0602-2014 (National Authority of the Environment (ANAM) of Panama, 2014). The resolution suspended the issue of forestry permits for *D. retusa* and *D. dariensis*, and banned the commercial sale of all parts of the trees except seeds and seedlings, handicrafts made from their timber, or timber confiscated by the Ministry of the Environment before the issuance of the resolution. Plantations formally enrolled with the National Environment Authority (ANAM) may still apply for new permits, following the procedure outlined in the resolution.

The CITES Authorities in Panama were consulted as part of this review, but no response was received.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Panama as legislation that is believed generally to meet all four requirements for effective implementation of CITES (CITES, 2017).

D. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Illegal logging is considered to be a problem in several range States (Jenkins *et al.*, 2012; González-Rivas *et al.*, 2006; French, 2016). The dry tropical forest in which *D. retusa* is typically found is one of the most endangered tropical ecosystems; in 2004, over 72% of the potential extent of dry forest in North and Central America was estimated to have been converted to other land uses (Portillo-Quintero and Sánchez-Azofeifa, 2010).

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Pericopsis elata: Cameroon, Democratic Republic of Congo, Republic of Congo

A. Summary

<p>RST Selection</p> <p>Global status</p>	<p>Selected in the RST based on being an 'Endangered' species, meeting the criteria for 'high volume trade' 2011-2015 for a globally threatened species, and showing a 'sharp increase' in trade for Congo in 2015.</p> <p>Distribution is disjunct and restricted to specific regions of range States across west and central Africa. Globally Endangered with declining population densities. The primary threat is unsustainable exploitation, as well as habitat degradation and seed predation; natural regeneration is also considered poor. Stocks in west Africa are heavily depleted. Further declines were anticipated unless sustainable management measures are adopted and fully implemented.</p>
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<p>Cameroon:</p>	<p>Restricted to the east and south, but occurring over 5 million ha. Population density estimated at 0.53 stem/ha indicating that it is not yet threatened according to a published threshold of 0.05 stems/ha for a threatened species. A low proportion of individuals in small size classes was noted, indicating poor regeneration. Annual reports were submitted by Cameroon for most years 2007-2016, but not yet for 2010 and 2012, and reports for flora have not yet been provided for 2009-2012. Cameroon published quotas for sawn wood in 2007-2009 and 2014-2015 of around 15 000 m³; the quota increased in 2016 to 24 445 m³ before being reduced to 10 045 m³ in 2017. Exports were within quotas. Trade 2007-2016 predominantly consisted of wild-sourced timber for commercial purposes, comprising 48 270 m³ as reported by Cameroon and 54 561m³ as reported by importers. According to national legislation, management plans must be implemented based on inventories, and a minimum logging cycle of 30 years exists. Cameroon responded to the consultation relating to the RST. A harvest quota is set based on logging inventories, the minimum exploitable diameter is 90 cm, (the highest in the Congo basin), and 22% of the distribution is within national parks or an ecological reserve. The impact of the harvest was considered low. Available information indicates that a non-detriment finding in accordance with the provisions of Article IV is in place, therefore categorised as Less concern. Non-submission of annual reports for flora was a problem identified that is unrelated to the implementation of Article IV.</p>	<p>RECOMMENDATION:</p> <p>Less concern</p>
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<p>Democratic Republic of Congo:</p>	<p>Restricted to the north along the Congo River, over an area of 33 million ha, with a patchy distribution. The largest remaining stocks of <i>P. elata</i> occur in DRC. Population density estimated at 0.16 stem/ha, indicating that it is not yet threatened according to published threshold of 0.05 stems/ha for a threatened species. Logging, and in particular illegal logging remain a significant threat in DRC. Annual reports were submitted by DRC for all years 2007-2016. Trade 2007-2016 predominantly consisted of wild-sourced timber for commercial purposes, comprising 189 149.47 m³ as reported by DRC and 84 672.16 m³ as reported by importers. Quotas were high and variable 2007-2016. A quota of 50 000 m³ was in place 2007-2011, which was reduced to around 25 000m³ in 2012-2015, and then was increased to >50 000 m³ in 2016. The Secretariat noted concerns relating to the quota increase. DRC responded to the consultation relating to the RST. The minimum exploitable diameter (MED) is set at 60 cm, although individual concessions have their own MEDs that were reported to be set by non-detriment findings (with a range of 70-130 cm)). There are some concerns relating to implementation of management plans in the field, and it was acknowledged by DRC that monitoring and control was hampered by technical and financial constraints, and lack of institutional capacity. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally Endangered species, therefore categorised as Action is needed.</p>	<p>RECOMMENDATION: Action is needed</p>
<p>Republic of Congo:</p>	<p>Restricted to the northwest. Distribution is estimated at 7.79 million ha. Population density estimated in two Forest Management Units (FMUs) in 2015 at 0.13 stem/ha in Tala Tala (reduced from 0.23 stem/ha in 2010) and 0.1 stem/ha in Sefyd, with low or unconfirmed abundance in the rest of its distribution. This indicates it is not yet threatened according to published threshold of 0.05 stems/ha for a threatened species. Annual reports submitted by Congo for all years 2007-2016. A quota of 6309 m³ was published 2015-2017; this appeared to be exceeded in 2015 by 1000 m³ as reported by Congo, and >500 m³ as reported by importers. Trade 2007-2016 predominantly consisted of timber for commercial purposes, comprising 21 860.88 m³ as reported by Congo (no source code) and 16 555.17 m³ as reported by importers (wild-sourced). Congo did not respond to the consultation relating to the RST. Management plans for FMUs are a requirement, and a management plan for the main concession (Tala Tala) is under review by the forestry administration. Whilst the abundance of the species in Tala Tala may indicate the species is not yet threatened, densities appear to have declined and recruitment is low. The CITES-ITTO programme recommended that the minimum exploitable diameter be increased from 60 cm to 70 cm to improve</p>	<p>RECOMMENDATION: Action is needed</p>

regeneration, however it is unclear if this measure was adopted, and there may be concerns relating to quota management. The basis for a robust non-detriment finding is not clear, and international trade may be impacting this globally Endangered species, therefore categorised as Action is needed.

RST Background

P. elata from Cameroon, the Republic of Congo (hereafter referred to as Congo) and Democratic Republic of Congo (hereafter referred to as DRC) were selected as priority species-country combinations for review under the RST at PC23, July 2017 (PC23 Com. 5 (Rev. by Sec.), PC23 Summary Record). *P. elata* was identified as a species that met the selection criteria for an endangered species, as well as meeting a high volume trade threshold for globally threatened species, and showing a sharp increase in trade for Congo in 2015, on the basis of trade data for the period 2011-2015, (PC23 Doc. 15.3 Annex 2). The RST working group acknowledged the significant progress made by range states of *P. elata* in improving their management of this species (PC23 Com. 5 (Rev. by Sec.)).

In 2002, the Plants Committee was directed to review *P. elata* under RST post CoP12 (Decision 12.74, PC12 Executive Summary). At PC14 (February, 2004), Cameroon, Central African Republic (CAR), Congo and DRC were categorised as 'possible concern' and recommendations were adopted (PC14 Doc. 9.2.2 Annex 3, PC14 WG 3.2 Doc. 1, PC14 Summary Record). Côte d'Ivoire, Ghana and Nigeria were categorised as 'least concern' and were eliminated from the review (PC14 Summary Record). At SC53 (June, 2005) Cameroon and DRC had responded to consultation; recommendations to be undertaken by the end of 2005 were detailed for all four countries (SC53 Doc. 25 Annex 1). The Standing Committee directed the Secretariat to issue a recommendation to suspend trade in *P. elata* from the CAR and Congo if they failed to respond by the end of 2005 (SC53 Summary Record); a notification to suspend trade was subsequently published (No. 2006/008). At SC54 (October, 2006), the SC withdrew its recommendation to suspend trade in *P. elata* from the CAR (based on the response by the country that there was virtually no trade in the species) and from Congo (based on information on management of the species and proposed quota), and Cameroon was also removed from the RST based on information provided (SC54 Doc. 42). DRC had not responded to the recommendation to establish a regional management strategy for *P. elata*; it was reported that under the terms of a joint project with the International Tropical Timber Organization, the Secretariat intended to establish such a strategy and that DRC would be invited to participate (SC54 Doc. 42).

P. elata was re-selected at PC17 (April, 2008) post CoP14 on the basis of trade data provided in document PC17 Doc. 8.5 and noting the substantial recent increase in reported trade (PC17 Summary Record). Cameroon, CAR, Congo, Côte d'Ivoire, DRC, Ghana and Nigeria were included in the review (PC18 Summary Record). Côte d'Ivoire was categorised as 'urgent concern', Cameroon, Congo and DRC as 'possible concern' and the remaining range States as 'least concern' at PC19 (PC19 Doc. 12.3 Annex 3). Recommendations were addressed to Côte d'Ivoire, Congo and DRC, including establishing a zero quota for Côte d'Ivoire and a conservative harvest and export quota for Congo and DRC (PC19 Summary Record). In June 2012, Congo submitted an inventory report and NDF for *P. elata* (produced under the CITES-ITTO cooperation programme) and published an export quota of 863 561 m³ of logs and sawn wood for 2012; Congo was subsequently removed from the RST process (SC62 Doc. 27.1). DRC communicated to the CITES Secretariat an export quota of 50 000 m³ in February 2011, but did not communicate a harvest quota; a project developing an NDF for *P. elata* under the CITES-ITTO programme was reported to be starting in July 2012 (SC62 Doc. 27.1). DRC was subsequently given an

extended deadline of 31 May 2014 to submit a final report on its NDF and it was agreed that the export quota would be 25 000 m³ for 2012, until the results of the aforementioned project were available (SC62 Summary Record). Côte d'Ivoire did not respond to the PC recommendations, and a notification to suspend trade from the country was subsequently issued (Notif. No. 2012/057). The trade suspension for *P. elata* from Côte d'Ivoire remains in place (Notif. No. 2018/006). At SC65 (July, 2014) DRC was deemed to have complied with PC recommendations and was removed from the RST process, although the need for continuing engagement with DRC over *P. elata* was stressed (SC65 Summary Record).

B. Species characteristics

Biology: *P. elata* is a gregarious (African Regional Workshop, 1998) or semi-gregarious (FAO Forestry Department, 1986; PC15 Inf.2) pioneer species that occurs in semi-deciduous forests in tropical humid climates, possibly restricted to drier parts (African Regional Workshop, 1998), with a preference for clay soils (FAO Forestry Department, 1986; Swaine and Whitmore, 1988; Omotoko, *et al.* 2015). The species is considered to be tolerant to a range of water regimes from well drained to seasonally water-logged. It is generally restricted to the 1000-1500 mm rainfall zone (PC15 Inf.2; Bourland *et al.*, 2012). *P. elata* is a long-lived species (Fayolle *et al.*, 2015). Bourland *et al.* (2012) reported it to be a tall species, usually 40-50 m high, although it can reach a maximum of 60 m. Old-grown trees were reported to have a diameter at breast height (DBH) of approximately 125 cm (Umunay *et al.*, 2017) to 130 cm (Bourland *et al.*, 2012) and a circumference of 5 m at breast height (FAO Forestry Department, 1986). *P. elata* was reported to grow at annual diameter increments of between 3.9-8.0 mm/year according to Bourland *et al.* (2012); 4 mm/year (Betti, 2008; Fouda Ndjodo *et al.*, 2017), but in the right conditions it was stated that growth may occur at a rate of up to 1 cm in diameter per year (PC15 Inf.2).

P. elata has a smooth brownish/grey to grey bark that peels readily, revealing bright red-brown patches (FAO Forestry Department, 1986). The sapwood is narrow, generally between 1-1.5 cm according to Ngueguim *et al.* (2012), with a slightly lighter colour than the yellowish-brown heartwood (when freshly cut) (Kukachka, 1960). Distinct tree rings have been observed on every stem disc of *P. elata* (de Ridder *et al.*, 2014). The trunk is commonly twisted and irregular, particularly in young trees (Betti, 2008; Ngueguim *et al.*, 2012). Specimens with diameters above 100 cm often display hollowing or rotting in their heart (Vivien and Faure, 1985, in: Ngueguim *et al.*, 2012).

P. elata reproduces by producing ripe, indehiscent pods at the beginning of the dry season (August – November) (Hawthorne, 1995). Pods contain 1-3 flat seeds each, and are thought to be wind-dispersed in strong winds (Hawthorne, 1995). Years of abundant seed generation have been recorded but in many fruiting years germination is said to be poor (Howland, 1979). A seven year study of fruit production conducted by Gilbert and Wagemans in 1944 that showed irregular flowering and fruiting intensity; in two of the years no fruit was produced and in others it was variable, with three trees producing between 12 000 and 22 000 fruits (Gilbert and Wagemans, 1944 in: Howland, 1979). It was reported that seedlings do not survive in thick shade and do best with exposure to the sun in the morning, avoiding shade from noon at a depth of 1.5 cm (Anglaaere, 2008). Germination in full sun was considered to be around 5% (Anglaaere, 2008).

Generally, regeneration is considered to be low throughout *P. elata*'s distribution, being insufficient to replace harvested populations (FAO Forestry Department, 1986; Hawthorne, 1995; African Regional Workshop, 1998; Micheneau *et al.*, 2011). As a pioneer species, it is stimulated to germinate by canopy gaps (Swaine and Whitmore, 1988). Regeneration is most successful in heavily impacted forests where large canopy openings and soil disturbance are present (Boyemba, 2011, in: Umunay *et al.*, 2017). Research on nursery grown seedlings conducted by Umunay *et al.* (2017) demonstrated that seedlings in large canopy gaps (50 m x 50 m) grew taller and were more likely to survive.

In a non-detriment finding (NDF) study for timber species, it was considered that there are still numerous gaps in knowledge, and uncertainty surrounding *P. elata* (such as regeneration of the species, natural mortality and average growth rates by diameter classes) and this limits the ability to produce scientifically sound evaluations of its population (Royal Museum for Central Africa, 2014).

Distribution: *P. elata* is found in the Guinean equatorial forests and the Congo Basin of central and west Africa (PC15 Inf.2; Bourland *et al.*, 2012). It is native to Cameroon, Congo, Côte d'Ivoire, DRC, Ghana and Nigeria (African Regional Workshop, 1998; Betti, 2008; Bourland *et al.*, 2012) and the Central African Republic (Betti, 2008). It has a disjunct distribution and is restricted to specific regions of many range States including south-eastern Cameroon, northern Congo, north-eastern DRC and south-western CAR (PC19 Doc. 12.3 Annex 3; Betti, 2008).

Population status and trends: *P. elata* was classified as Endangered by the IUCN in 1998, although the assessment is annotated as needing updating (African Regional Workshop, 1998). The relevant criteria for this assessment were: a reduction in population size based on a decline in the area of occupancy, extent of occurrence and/or quality of habitat, and actual or potential levels of exploitation (based on the 1994 IUCN criteria, version 2.3).

Levels of exploitation were considered to have been unsustainable in all countries within *P. elata*'s distribution, and regeneration was thought insufficient to replace lost subpopulations (African Regional Workshop, 1998). Bourland *et al.* (2012) reported that *P. elata* stocks were “dramatically reduced”, particularly in Ghana, Côte d'Ivoire, Nigeria and the CAR, and may be close to extinction within these countries. In an NDF report on *P. elata*, Betti (2008) considered that populations in Côte d'Ivoire, Ghana and Nigeria were virtually extinct, but that there were still “significant stocks” in the Congo Basin. These populations were considered sheltered in large forests where logging had been more recent (PC14 Doc. 9.2.2 Annex 3; PC15 Inf.2). The species is considered locally abundant in parts of the range (Betti, *in litt.* to UNEP-WCMC, 2018).

Bourland *et al.* (2012) stated that essential biological parameters controlling population dynamics remained unknown; significant information gaps were noted to be present in determining the carrying capacity of *P. elata* populations (Royal Museum for Central Africa, 2014).

Threats: *P. elata* is considered to be primarily threatened by overexploitation through logging (FAO Forestry Department, 1986; African Regional Workshop, 1998; Betti, 2008; Bourland *et al.*, 2012). The species is a valuable commodity as its hardwood has very good technical properties including dimensional stability and good natural durability (Kukachka, 1960; Bourland *et al.*, 2012). Micheneau *et al.* (2011) considered that along with pressures for international exports, habitat degradation and regeneration problems were causes of population declines. Large-scale agricultural activities were also considered to be a major contributor to the degradation of primary forest, causing vulnerability in flora, along with illegal logging, particularly wild sawing (Betti, 2008).

Umunay *et al.* (2017) suggested natural regeneration failure was due to a combination of factors: insufficient canopy openings, competition from lianas and non-commercial pioneer species, seed and seedling predation, and low seed production and dispersal. A low number of adults in undisturbed forests was also suggested to be an influence on the population (Hawthorne, 1995). Bourland *et al.* (2012) also highlighted the damage caused to seeds by insects, as reported by Taylor (1960) and Pieters (1994). The larvae of *Lamprosema lateritalis* are a pest of seedlings and young *P. elata* trees, resulting in a high mortality rate (Anglaaere, 2008) and inhibiting regeneration further (Bourland *et al.*, 2012).

Overview of trade and management: *P. elata* was listed in CITES Appendix II on 11th June 1992. Since 13/09/2007, the CITES Appendix II listing designated logs, sawn wood and veneer sheets. According to data in the CITES Trade Database, global direct trade in *P. elata* 2007-2016 predominantly consisted of wild-sourced timber for commercial purposes; 237 477 m³ reported by exporters and 155 840 m³ reported by importers. Direct export of wild-sourced timber peaked in 2014, following which both exporters and importers reported over a 25% decline in trade 2014-2016.

P. elata is commonly referred to in trade as afrormosia, assamela or African teak (Betti, 2008; Micheneau *et al.*, 2011; Bourland *et al.*, 2012). International trade in *P. elata* is thought to have begun in 1947-8 when specimens were shipped from Ghana to England (Howland, 1979; African Regional Workshop, 1998). Demand increased over time, becoming one of the highest valued tropical timbers on the market at EUR 800-1000 per m³ (in 2012) (Bourland *et al.*, 2012). It is considered a commercial substitute for teak (Kukachka, 1960; Anglaaere, 2008; Bourland *et al.*, 2012). Initially commercial exploitation was concentrated in west Africa, with Ghana and Côte d'Ivoire the major suppliers, where stocks have now been heavily depleted (CoP8 Prop92; PC15 Inf.2). Since the 1990s, the main exporters have been Central African countries, particularly Cameroon and DRC (PC15 Inf.2; Bourland *et al.*, 2012).

In the Congo Basin, national legislation was reported to be in place to implement management plans, including requirements to conduct specific botanical inventories (Bourland *et al.*, 2012). These inventories, along with a minimum logging cycle and a calculation of species recovery rates over the logging cycle are used in part to develop management plans (Bourland *et al.*, 2012). According to Forni (1997), a plant species can be considered threatened when its density is less than 0.05 stems/ha; this threshold has been used to consider the threat level to *P. elata* within Forestry Management Units (FMUs) within range States.

C. Country reviews

Cameroon

Distribution: *P. elata* was reportedly restricted to the east and south of Cameroon in the Dja, Boumba, Ngoko and Sangha river basins in the divisions of Boumba and Ngoko, Haut-Nyong and Kadei (Betti, 2008; Ngueguim *et al.*, 2012; Fouda Ndjodo *et al.*, 2017). Some isolated pockets of *P. elata* were also considered to be present in the south where the species only occurs in dense moist forest, in the vicinities of Djoum, Nom and Ngambe, and Eyumedjock (Fouda Ndjodo *et al.*, 2017; Betti *in litt.* to UNEP-WCMC, 2018). Patches of *P. elata* within Cameroon were considered the result of shifting cultivation that occurred approximately two centuries ago (Bourland *et al.*, 2015).

The CITES Management Authority (MA) of Cameroon reported the species range within the country covered 5 545 425 ha (*in litt.* to CITES Secretariat, 2017). Within the range, there are four protected areas covering a total of 22% of total distribution in the country (PC14 Doc. 9.2.2 Annex 3); Parc National de Boumba-Bek (321 078 ha) Parc National de Nki (238 853 ha), Parc National de Lobeké (217 200 ha) and Réserve Ecologique Intégrale de Messomesso (1 51 797 ha) (PC14 Doc. 9.2.2 Annex 3; Amougou *et al.*, 2009). The CITES Scientific Authority (SA) of Cameroon produced an NDF for the species in 2009, reporting that the distribution encompassed 29 allocated and nine unallocated Forestry Management Units (FMUs) together covering 2 953 474 ha, and three community forests covering 85 486 ha overall (Amougou *et al.*, 2009).

Population status and trends: The density of *P. elata* in the country was estimated as 0.53 stems/ ha (Betti *in litt.* to UNEP-WCMC, 2018), well above the average density of 0.05 stem/ha that was set out as a threshold for threatened species by a Pilot Integrated Management (API) project (Forni,

1997). A national forestry inventory that was conducted at the regional and local level took place in the 1980s, however, the results were described by Amougou *et al.* (2009) as problematic because they were compiled from data obtained by the documents in management plans of timber companies. Betti (2008) noted that forest companies suggested *P. elata* was not threatened in Cameroon overall. Using these thresholds and using figures from the 1980s, Betti (2008) reported that the evergreen forest of the east province was threatened, whilst the majority of the east and the south province were not. Based on a national forest assessment conducted by FAO in 2003-2004, it was estimated the density of *P. elata* density in Cameroon was 0.03 stem/ha, suggesting it was vulnerable within the country, however it was noted that this was due to the fact that the inventory covered zones in which the species did not occur (Amougou *et al.*, 2009). Low regeneration of the species in Cameroon was noted using figures from management plans (Figure 1) with few stems in the class size 20-30 cm DBH (Betti, *in litt.* to UNEP-WCMC, 2018).

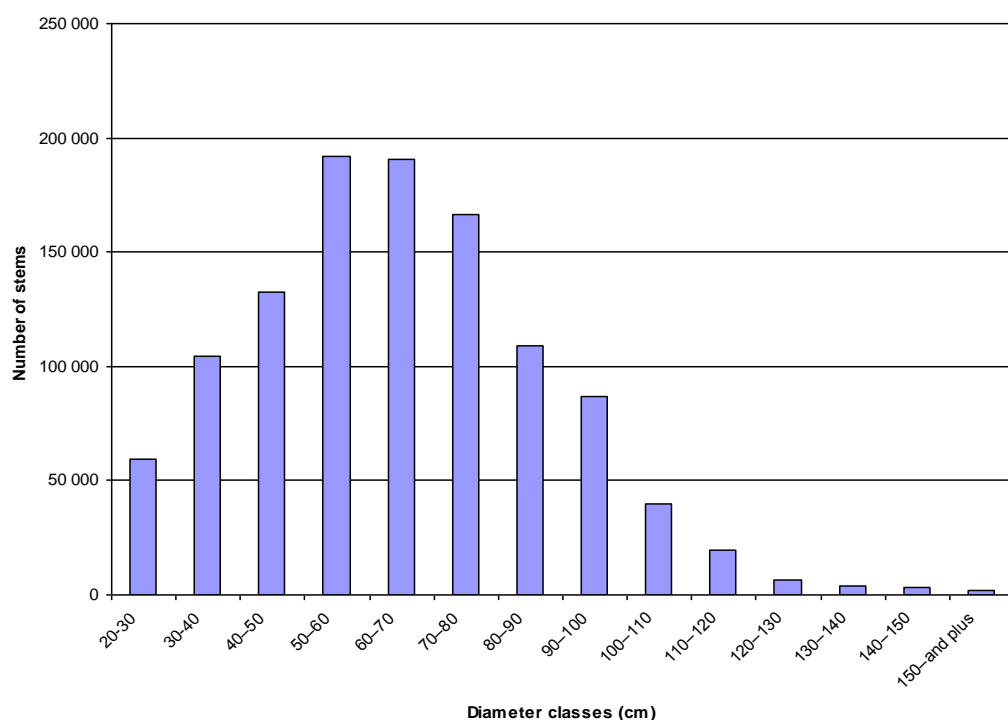


Figure 1. Number of stems and diameter classes for *P. elata* in production forests of Cameroon (Betti, *in litt.* to UNEP-WCMC, 2018)

Threats: Overexploitation was considered a threat to *P. elata* in Cameroon in 2011, arising from illegal logging and a lack of compliance with the minimum logging diameter (PC19 Doc.12.3 Annex 3). It was reported in PC15 Inf.2 that domestic consumption is insignificant and poses no threat to *P. elata*. The low recruitment and lack of natural regeneration means that *P. elata* is vulnerable to further threats in closed-canopy forest (Forni, 1997; Bourland, 2013). Swaine and Whitmore (1988) considered that exploited forests can provide benefits to *P. elata*'s regeneration by opening the canopy, however, evidence suggested that selective logging does not provide the same benefits as traditional shifting cultivation (Bourland *et al.*, 2015). Habitat loss/degradation through agriculture and mining were also considered a threat to the species in Cameroon (Amougou *et al.*, 2009).

Trade: CITES annual reports for flora have been submitted by Cameroon for most years 2007-2016 but not yet for 2009-2012 (although reports for fauna were received for 2009 and 2011). Cameroon published annual export quotas for 'sawn wood' 2007-2009 and for 'logs, sawn wood and veneer sheets'

2015-2017 (Table 1). Exports appeared to exceed the quota in 2015, as reported by Cameroon, however Cameroon's original annual report included information indicating that 4399 m³ of timber exported in 2015 was from the 2014 quota, therefore bringing trade within quota for all years (Table 1).

Table 1: CITES export quotas for wild-sourced *Pericopsis elata* from Cameroon, 2007-2018, and global direct exports as reported by Cameroon and countries of import, 2007-2016. Cameroon has submitted annual reports for flora all years 2007-2016, excluding 2009-2012.

Quota	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sawn wood (m ³)	15200	15200	15200	-	-	-	-	14400	14400*	24445*	10045*
Reported by Cameroon	6937	996	-	-	-	-	6184	6401	17800	9952	-
Reported by importers	6892	3907	4425	5348	5461	5454	4781	5468	6318	6517	-

*Quota also includes logs and veneer sheets.

According to data in the CITES Trade Database, direct trade in *P. elata* from Cameroon predominantly comprised wild-sourced timber for commercial purposes; 48 270 m³ exported by Cameroon and 54 561 m³ reported by importers 2007-2016 (Table 2). The vast majority of wild-sourced timber was exported to Belgium (85% according to Cameroon and 89% according to importers). Direct exports were reported by Cameroon 2007-2008 and 2013-2016, and peaked in 2015; Cameroon have not submitted annual reports for flora for 2009 and 2011. Importers reported relatively consistent levels of wild-sourced timber in trade, with an annual average of 4500 m³ 2007-2016.

Indirect trade in *P. elata* originating in Cameroon predominantly comprised wild-sourced timber for commercial purposes, with 95 226.49 m³ reported by re-exporters and 111.42 m³ reported by importers. Belgium was the primary re-exporter, accounting for >99% of indirect trade, the majority re-exported to Singapore. In addition, 2978 m² of wild-sourced veneer were re-exported via Germany to the United States in 2012, reported by Germany only.

Table 2: Direct exports of *Pericopsis elata* from Cameroon, 2007-2016. Cameroon has submitted all annual reports for flora 2007-2016, with the exception of 2009-2012. Quantities have been rounded to one decimal place, where appropriate.

Term	Unit	Purpose	Source	Reported by	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
live	-	T	W	Exporter			-	-	-	-						
				Importer				27.6								
timber	m ³	S	W	Exporter			-	-	-	-		0.1	0.1		0.1	
				Importer												
		T	A	Exporter			-	-	-	-						
				Importer										82.8		82.8
		W	Exporter	6936.9	995.5	-	-			6183.6	6401.0	17800.4	9952.5	48270.0		
			Importer	6891.5	3907.2	4424.8	5348.3	5450.8	5454.2	4780.8	5468.1	6318.2	6517.1	54561.2		
veneer	m ³	T	W	Exporter			-	-	-	-						
				Importer						10.5						10.5

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Management: Cameroon became a Party to CITES on 5th June 1981, with entry into force on 3rd September 1981.

Betti (2008; *in litt.* to UNEP-WCMC, 2018) reported that Cameroon has the most advanced forest policy in the Congo basin, having been the first country in the sub-region to produce and implement a forest code after the Rio Summit of 1992. Cameroon undertook several forest reforms, introducing a new forest code, Law No. 94/01 of 20 January 1994 to lay down forestry, wildlife and fisheries regulations (Republic of Cameroon, 1994; Karsenty, 2016). The legal architecture for sustainable management in the country is in place, including technical norms for forest operators and concessionaires, guidelines for forest management, a monitoring and evaluation manual, and indicators for sustainable management of tropical forests, although it was noted that implementation of forestry law was more problematic (Betti, *in litt.* to UNEP-WCMC, 2018).

Law No.94/01 divided the Permanent Forest Estate into state forests and communal forests; state forests are divided into production forests, protected forests and reserves, with production forests mainly composed of large concessions (Republic of Cameroon, 1994). Following the law of 1994, the unprocessed export of *P. elata* was banned in 1999 in order to promote local processing (Republic of Cameroon, 1999; Bourland *et al.*, 2012). The ban was lifted subsequently, with *P. elata* exported under a quota system (Karsenty, 2016).

Management plans have been designed to reduce the impact of logging on permanent forest stands by conducting spatiotemporal planning and enhancing silvicultural interventions (Betti, 2008). Decree No.222 (2001) stipulates that forest companies must implement management plans based on specific inventories, a minimum logging cycle of 30 years, and the calculation of commercial species' recovery rates over the cycle (Republic of Cameroon, 2001; Bourland *et al.*, 2012). There is a suggested minimum recovery rate of 50% of the initial stock, requiring reliable information about growth and mortality (Republic of Cameroon, 2001; Bourland *et al.*, 2012). Management plans are signed off by the Ministry of Forestry and Wildlife (MINFOF), the national CITES Management Authority, who also award logging titles based on allocations for the annual allowable cut and provide secure documents to exploit and transport logs or sawn timber (Cerutti *et al.*, 2016; Fouda Ndjodo *et al.*, 2017).

P. elata has been harvested under logging concessions as well as communal forests and community forests (Fouda Ndjodo *et al.*, 2017). Concessions can include one or more forest management units (FMUs) (Fouda Ndjodo *et al.*, 2017). In 2016 there were 91 logging concessions, composed of 106 FMUs in Cameroon (Cerutti *et al.*, 2016) with 27 FMUs and two communal forests in the *P. elata* distribution zone (Fouda Ndjodo *et al.*, 2017). Currently, there are 29 FMUs and 3 community forests (Betti, *in litt.* to UNEP-WCMC, 2018). Concessions are set for a specified volume of timber and for an initial three years, during which time the forest company has to produce a management plan for the whole concession, a five year management plan for the FMU and an operation plan for the first year of activity (PC19 Doc. 12.3 Annex 3). At the end of this period the agreement can be signed for a renewable 15 year period (PC19 Doc. 12.3 Annex 3; Fouda Ndjodo *et al.*, 2017). The five-year FMU management plan consists of five main sections: description of the natural environment, cartography, inventory of development, land use and rights of use, and calculation of forest stock potential (Fouda Ndjodo *et al.*, 2017).

Activities have been carried out as part of the ITTO-CITES programme for implementing CITES listings of tropical timber species over the last decade (CITES MA of Cameroon *in litt.* to CITES Secretariat, 2017), which assists national authorities to meet the scientific, administrative and legal requirements for managing and regulating trade in *P. elata*. The CITES MA of Cameroon (*in litt.* to CITES Secretariat, 2017) reported that activities carried out include the application of *P. elata* legislation and management in production forests, the pilot implementation of a DNA traceability system of *P. elata* in forest concessions and sawmills, and support for the National Agency for Support to Forest Development

(ANAFOR), Cameroon's national forestry development agency and CITES Scientific Authority, to optimise the management of the *P. elata* database (Fouda Ndjodo *et al.*, 2017). The information gained through the programme has been used in the formulation of an NDF for the species (CITES MA of Cameroon *in litt.* to CITES Secretariat, 2017). Cameroon has altered its approach to conducting an NDF by introducing a harvest quota from the annual harvest potential from logging inventories (CITES MA of Cameroon *in litt.* to CITES Secretariat, 2017). The quota is determined by an analysis of a set of technical and scientific parameters of forest management and industrial transformation using historical data from FMUs (CITES MA of Cameroon *in litt.* to CITES Secretariat, 2017).

The NDF is issued by the CITES Scientific Authority (ANAFOR) and is revised every three years with new quotas set from this (Fouda Ndjodo *et al.*, 2017). The next revision of the NDF will take place in 2019 to be actioned in 2020 (Fouda Ndjodo *et al.*, 2017).

The current management model for *P. elata* in Cameroon is said to involve all points in the value chain from first processing after logging to enhance traceability (Fouda Ndjodo *et al.*, 2017). An IT based system is used to make the calculations considering the main management parameters, including updated cubage tariff, harvest quota, debit quota, mill-level debit quota and national debit quota (Fouda Ndjodo *et al.*, 2017).

The minimum exploitable diameter (MED) was set at 80 cm in 1974 (Decree No.74/357), but this was increased to 100 cm by the forest administration, making it the largest MED for *P. elata* in the Congo basin (PC15 Inf.2; Bourland *et al.*, 2012; Laure *et al.*, 2014). The Association Technique Internationale des Boix Tropicaux (ATIBT, 2002, in: PC15 Inf.2) recommended that the MED be reduced to 80 cm to relieve pressure on the smaller diameter classes, which were reportedly being cut indiscriminately due to the lack of trees over 100 cm DBH. Whilst this was not implemented (Fouda Ndjodo *et al.*, 2017), a recommendation resulting from the ITTO-CITES project to reduce the MED to 90 cm was adopted through Rule 0511/D/MINFOF/SG/DF/BSJ, in June 2010. The current MED, as set by the forest administration, was reported to remain the highest MED in the Congo basin (Fouda Ndjodo *et al.*, 2017). The impact of legal harvest on the population was considered low on the basis of this size restriction (Doucet and Bourland, 2014).

More than half of the area of distribution of the species was considered "protected", which included National Parks, one Reserve, Community Forests, as well as FMUs and "natural areas (non permanent domain)" (Betti, *in litt.* to UNEP-WCMC, 2018).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Cameroon as legislation that is believed to meet all four requirements for effective implementation of CITES (CITES, 2017).

Democratic Republic of Congo

Distribution: *P. elata* was considered to be distributed across an area of approximately 33.65 million ha, straddling the Congo River in Province de l'Equateur and Province Orientale (Congolesse Institute for Nature Conservation, 2014). It was reported to occur in forests of the Tshopo, Mongala and Tshuapa Provinces, and to a lesser extent in the Equator and South Ubangi, with an estimated extent of occurrence of 40 million ha (Management Authority (MA) of DRC, *in litt.* to UNEP-WCMC, 2018). The species was considered to be restricted to two strips each of a width of approximately 100-150 km either side of the Congo River (Betti, *in litt.* to UNEP-WCMC, 2018). The distribution in DRC was described as patchy (PC15 Inf.2). It was recorded within three protected areas (Yangambi Man and Biosphere Reserve, 235 000 ha; Rubitele Forest Reserve, 908 000 ha; and Maïko National Park, 1 083 000 ha) (MA of DRC, *in litt.* to UNEP-WCMC, 2018). The extent of distribution area

located within protected areas was reported to be 7% in DRC (Doucet *et. al.*, unpublished in: Betti, *in litt.* to UNEP-WCMC, 2018), although the species was also reported to occur in undesignated marshy zones (Betti, *in litt.* to UNEP-WCMC, 2018).

Population status and trends: DRC was reported to have the largest remaining stocks of *P. elata* (PC14 Doc. 9.2.2 Annex 3; MA of DRC, *in litt.* to UNEP-WCMC, 2018; Betti *in litt.* to UNEP-WCMC, 2018.) The average density was calculated as 0.16 stems/ha coming from inventories of nine FMUs, which was noted to be above the threshold of 0.05 stems/ha [as defined by Forni (1997)] (Betti *in litt.* to UNEP-WCMC, 2018.) The distribution of *P. elata* stems in DRC according to various size classes indicated that there was good generation of the species in the country (Figure 2).

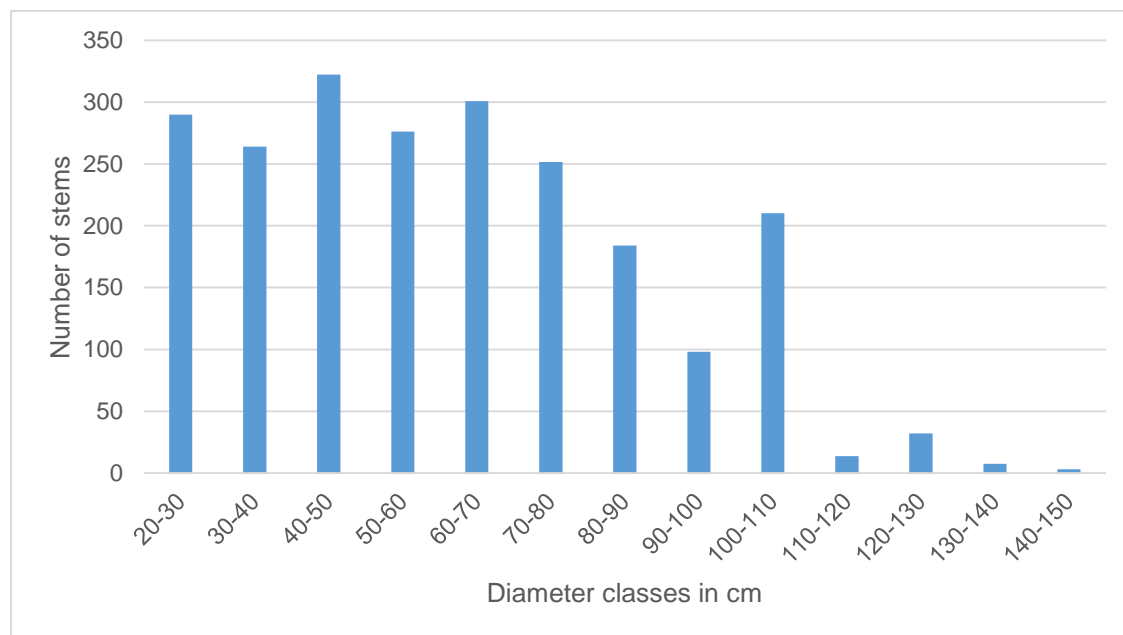


Figure 2 Number of stems and diameter classes for *P. elata* in production forests in DRC (Betti, *in litt.* to UNEP-WCMC, 2018)

Threats: The exploitation and trade of *P. elata* for export is considered to be the greatest threat to the species (PC15 Inf.2) and has occurred with little control, with high levels of illegal logging and suggestions of inadequate law enforcement (Nellemann *et al.*, 2014). Poor natural regeneration and the various causes of degradation and deforestation, primarily shifting cultivation, were recognised as serious threats to the population that reportedly affected 100 000 ha/year (MA of DRC, *in litt.* to UNEP-WCMC, 2018). At the national level the deforestation rate was 1.25% for the period from 2010 to 2014, with large disparities between provinces (MA of DRC, *in litt.* to UNEP-WCMC, 2018). Local use of *P. elata* for charcoal production and carpentry, as well as use of the bark for medicinal purposes, was reported (Mianda-Bungi, 2003, in: PC14 Doc.9.2.2 Annex 3), however the significance of this to the sustainability of stocks was undetermined (PC15 Inf.2). It was also reported that significant volumes of timber are still illegally harvested and marketed in DRC without the correct procedures for planning, management and monitoring, and some of the volume of *P. elata* in international trade was considered to have been produced by these casual harvest practices, which may be locally detrimental to the species (Betti, *in litt.* to UNEP-WCMC, 2018).

Trade: CITES annual reports have been submitted by DRC for all years 2007-2016. DRC published annual export quotas for the period 2007-2018 (Table 3). The 2016 quota was initially published as 49 749 m³, but was later increased to 56 201 m³. The Secretariat noted that they had concerns about the

increase in the export quota and would be taking the matter up through one of the existing CITES procedures, in accordance with paragraph 18 of the Annex to Res. Conf. 14.7 (Rev. CoP15). The quota declined to 41 108 m³ in 2017, and then increased again to 50 013 m³ in 2018 (Table 3). It appears that the 2013 quota was exceeded by 237 m³, as reported by DRC, and the 2014 quota was exceeded by 65 m³ and 3527 m³, as reported by DRC and importers respectively.

According to data in the CITES Trade Database, direct exports of *P. elata* from DRC predominantly comprised wild-sourced timber for commercial purposes; 189 147 m³ as reported by DRC and 84 658 m³ (Table 4). DRC reported exports of more than 25 000 m³ annually between 2010 and 2014, following which a 67% decline was observed in 2015. Trade in timber reported by importers only exceeded 10 000 m³ on two occasions; in 2013 (17 547 m³) and 2014 (28 547 m³). Approximately half of direct exports from DRC were destined for China, with Belgium the next biggest importer.

Indirect trade in *P. elata* originating in DRC primarily consisted of wild-sourced veneer for commercial purposes; 189 692 m² reported by re-exporters and 105 534 m² reported by importers. Germany and Turkey were the main re-exporters of wild-sourced veneer originating in DRC, the majority re-exported to Italy and the United States. Re-exporters reported peak levels in 2016, representing a 30-fold increase in comparison to 2015.

Table 3: CITES export quotas for live wild-sourced *Pericopsis elata* from DRC, 2007-2018, and global direct exports as reported by the DRC and countries of import, 2007-2016. DRC has submitted annual reports for 2007-2016.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
logs, sawn wood, veneer sheets (m ³)	50000	50000	50000	50000	50000	25000	25000	25000	23240	56201*	41108	50013
Reported by DRC	19704	18703	12317	25468	24520	23878	25237	25065	8302	5955	-	-
Reported by importer	7857	4936	1234	6326	5598	6324	17547	28547	2437	3866	-	-

*The Secretariat has concerns about the increase in the export quota from 49 749 m³ to 56 201 m³ and will be taking this matter up through one of the existing CITES procedures.

Table 4: Direct exports of *Pericopsis elata* from DRC, 2007-2016. Quantities have been rounded to one decimal place, where appropriate.

Term	Unit	Purpose	Source	Reported by	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
timber	m ³	E	W	Exporter										2.4	2.4	
				Importer											13.2	13.2
		T	W	Exporter	19704.0	18703.4	12316.9	25467.9	24519.8	23878.3	25236.5	25065.4	8302.0	5953.1	189147.1	
				Importer	7857.0	4936.4	1234.2	6325.8	5597.5	6324.1	17547.0	28547.2	2436.8	3852.8	84658.9	
-	T	W	Exporter													
			Importer		140.4		21.4		136.4							298.1
veneer	m ³	T	I	Exporter												
				Importer			30.0									30.0
		W	Exporter													
			Importer			5.2	5.2									10.4

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Management: DRC became a Party to CITES on 20th July 1976, with entry into force on 18th October 1976.

The first legislation introduced in DRC relating to the forestry sector was a Royal Decree of 1949, followed in 1979 by a new Forest Code, amended in 1989 (PC19 Doc.12.3 Annex 3). This was superseded by the Forest Code of August 2002 (Law No. 011/2002) which introduced principles of community-based forestry and management planning and revenue-sharing with local communities (PC14 Doc. 9.2.2 Annex 3). Two further Laws (No. 14/003 and No. 15/026) govern the forestry sector, however it was reported that the implementing texts of these laws were not currently developed (MA of DRC, *in litt.* to UNEP-WCMC, 2018).

P. elata can only be logged with an annual cutting permit (L'autorisation de coupe industrielle de bois d'oeuvre spéciale) (Cabinet du Président de la République Démocratique du Congo, 2007). Whilst an Minimum Exploitable Diameter (MED) of 80 cm was set by Ministère de l'Environnement, Conservation de la Nature, Eaux et Forêts (MECNEF), this was lowered to 60 cm (PC15 Inf.2), and remains in place (MA of DRC, *in litt.* to UNEP-WCMC, 2018). However, studies under the framework of the ITTO-CITES programme recommended that the harvesting requirement should be increased from 60 back to 80 cm to ensure sustainability (Cosma and Makonga, 2014 in: Betti, *in litt.* to UNEP-WCMC, 2018).

To be eligible for trade, *P. elata* must be exploited in rigorously respected sustainability conditions, however as of 2018, only three of the 23 concessions within the distribution area were reported to have active management plans, two of which came into effect in 2015 and one in 2016, and five have management plans currently being analysed for approval by the Directorate for Forestry Inventories and Amenities (DIAF) (MA of DRC, *in litt.* to UNEP-WCMC, 2018). Six other concessions are at an advanced stage in the management process and have a management inventory report which has been submitted and/or approved (MA of DRC, *in litt.* to UNEP-WCMC, 2018). As stated in Law No.011/2002, development plans are required for all forestry activities including the exploitation and management of *P. elata* (Congoles Institute for Nature Conservation, 2014). Development plans are contracts between the State, the forest owner and the concessionaire responsible for the management of the concession and are required for all forest activity (Betti, *in litt.* to UNEP-WCMC, 2018). They must describe the concession and environment, indicate decisions for lumber including a rotation duration, list managed species, minimum diameters, schedule harvests spatially and temporally, set management measures and draft a socio-economic action plan (Betti *in litt.* to UNEP-WCMC, 2018). Whilst the management plan's approval is pending, any exploitation must be carried out conforming to the provisional management plan, which sets out the maximum area of exploitable land annually, which must not exceed 1/25th of the usable area (MA of DRC, *in litt.* to UNEP-WCMC, 2018).

The DIAF have published a number of operational guides to help meet the criteria required in the development plan (Congoles Institute for Nature Conservation, 2014). Concessionaires were required to prepare development plans within four years and submit them to the forest administration for approval (Congoles Institute for Nature Conservation, 2014).As of 2018, all 23 of the convertible titles with a valid management plan had been converted to forestry concession contracts (MA of DRC, *in litt.* to UNEP-WCMC, 2018).

The DIAF is responsible for validation and monitoring of all documents relating to logging sustainability in concessions, including the four-year (provisional) management plans, sampling plans and inventory reports (which was reported to be the current focus of the organisation), but also the five year management plans (that establish Annual Allowable Cuts (ACC)) and operational plans (which set the MED by species), as well as certificates of origin and phytosanitary certificates (Betti, *in litt.* to UNEP-WCMC, 2018). The four-year management plans were considered of limited use for assessing

sustainability as there is no requirement for the Directorate of Forest Management (DGF) to calibrate the volumes of species exploited between the annual cut permits and the limits set by the AAC in the plan; a lack of collaboration with the DIAF was also noted (Betti, *in litt.* to UNEP-WCMC, 2018).

It was noted by DRC that quotas were calculated on the basis of data from verified and monitored baseline inventories (MA of DRC, *in litt.* to UNEP-WCMC, 2018). A model for calculating recovery rate based on the MED and other parameters (die off rate, harvesting rate) was used, with an MED set in each concession to ensure that after 25 years, a minimum recovery rate was 50%, in accordance with Decree No. 034/2015 (MA of DRC, *in litt.* to UNEP-WCMC, 2018). The MED varied within concessions from 70-130 cm, according to the 2018 NDF report (MA of DRC, *in litt.* to UNEP-WCMC, 2018). Annual quotas were established by 'relating' the gross volume of trees greater than the MED to the useable surface areas of concession, and applying the maximum harvest rate of 80% and a marketing coefficient of 85% (MA of DRC, *in litt.* to UNEP-WCMC, 2018).

Quotas for concessions are valid for four years, with exploitation permitted only during the first three years, but exports can take place over the four years (MA of DRC, *in litt.* to UNEP-WCMC, 2018). The quotas granted by the MA are converted into round wood equivalent using a fixed yield of 48%, and it is this round wood volume that is used for monitoring of the national quota (MA of DRC, *in litt.* to UNEP-WCMC, 2018). The quota for 2017 totalled 41 108 m³ round wood equivalent, based on 14 concessions (MA of DRC, *in litt.* to UNEP-WCMC, 2018). The 2018 quota of 50 013 m³ was set based on the management inventory reports submitted to and approved by the Forestry Administration before 31 October 2017; the increase was attributed to one concession holder submitting a plan that had not done so previously, and an increase in *P.elata* richness in another concession (MA of DRC, *in litt.* to UNEP-WCMC, 2018).

Whilst the DRC was considered to have an adequate regulatory framework for forestry management, the effective application of the requirements was considered to be in a precarious transition phase on a national basis (Betti, *in litt.* to UNEP-WCMC, 2018). The availability of sustainable management data provided by forestry companies managing concessions was considered to provide a basis for the current NDF, however it was noted that relevant administrations were not well coordinated within each other, there is a lack of checks on legal obligations, and a lack of a reliable strategy for monitoring and control of *P. elata* (Betti, *in litt.* to UNEP-WCMC, 2018). It was noted by the MA of the DRC (*in litt.* to UNEP-WCMC) that whilst the legal arsenal, regulatory and institutional framework for forest exploitation and management is in place, effective field application for monitoring and control are hampered by technical, financial and institutional aspects, and that capacity building of institutions is needed.

Trade in *Pericopsis elata* from DRC has also been considered by the Standing Committee through Article XIII measures. At SC69 (December 2017) it was recommended that DRC take urgent steps to implement measures presented in their NDF report (PC22 Doc 12.1 and Annex), with regard to finalization and use of a database to monitor the volumes of *P. elata* exported and study the systematic conversion of volumes of processed products into round wood equivalent volumes, based on an appropriate conversion rate (SC69 Summary Record). The SC recommended that until the database was operational, importing Parties should not accept export permits from DRC until their authenticity was confirmed by the Secretariat (SC69 Summary Record). In the 2018 NDF, a database for registration of quotas was referred to, and a conversion rate of 48% sawn wood to round wood equivalent was noted (having been 30% in 2017) (MA of DRC, *in litt.* to UNEP-WCMC, 2018). Notification 2014/017 on verification of permits from DRC is no longer valid.

Through its national legislation project, the CITES Secretariat categorised the national legislation in DRC as legislation that is believed to meet all four requirements for effective implementation of CITES (CITES, 2017).

Republic of Congo

Distribution: *P. elata* is distributed in the northwest of Congo, in the Sangha basin (Betti, *in litt.* to UNEP-WCMC, 2018). It was reported to be found in the five Forestry Management Units (FMUs) of Tala Tala, Ngombé, Kabo, Djoua-Ikié and Pokola (Betti, *in litt.* to UNEP-WCMC, 2018. Previously, FMUs of Sembé and Souanké were referred to (PC15 Inf.2). The current distribution was estimated at 7.79 million ha (Betti, *in litt.* to UNEP-WCMC, 2018). *P. elata* occurs in two protected areas, Odzala National Park and Nouabalé-Ndoki National Park, covering 40% of the total distribution in northern Congo with the most significant stocks considered to be found in Odzala National Park (PC15 Inf.2). The extent of distribution located within protected areas was reported to be 40% in Congo (Betti, *in litt.* to UNEP-WCMC, 2018).

Population status and trends: In 2001, Tala Tala FMU was believed to hold the highest levels of *P. elata* at 5.1 harvestable trees/100 ha, and 11.4 stems of >20 cm DBH/100 ha, whilst Sembé FMU and Souanké FMU were considered to have moderate abundance (MFEE, 2004). Inventories in Tala Tala found densities of 0.23 stem/ha in 2010 (Loumeto *et al.*, 2011) and 0.13 stems/ha in 2015 (Yoka *et al.*, 2015 a, b, in: Betti, *in litt.* to UNEP-WCMC, 2018). In the former FMU of Sefyd, a density of 0.1 stems/ha was found in 2015 (Yoka *et al.*, 2015 a, b, in: Betti, *in litt.* to UNEP-WCMC, 2018). Following the 2010 surveys, the species was considered “not threatened” in Tala Tala forest (ITTO-CITES, 2010); and the 2015 densities were also noted by Betti (*in litt.* to UNEP-WCMC, 2018) to be above the threshold for a threatened species as defined by Forni (1997). The abundance within the other FMUs and the two national parks was believed to be very low, or unconfirmed (PC15 Inf.2). Low regeneration of the species in Congo was noted (Figure 3) according to the distribution of stems within size classes (Figure 3) (Betti, *in litt.* to UNEP-WCMC, 2018).

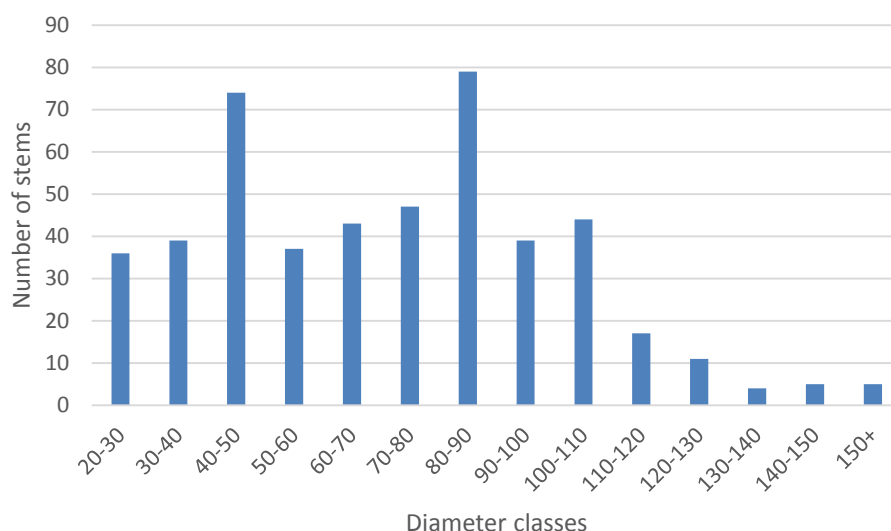


Figure 3. Number of stems and diameter classes for *P. elata* in production forests in north Congo (Betti, *in litt.* to UNEP-WCMC, 2018).

Threats: Commercial logging was considered the only major threat to *P. elata* in Congo, with very minimal local and national consumption (PC15 Inf.2).

Trade: CITES annual reports have been submitted by Congo 2007-2016. Congo published annual export quotas for logs and sawn wood in 2012 and 2014-2017, with a quota published as ‘in preparation’

in 2011 (Table 5). Trade appears to have exceeded the quota published in 2015 by 1001.5 m³ as reported by Congo, and 512.0 m³ as reported by importers.

According to data in the CITES Trade Database, direct exports of *P. elata* from Congo predominantly comprised timber for commercial purposes: 21 860.1 m³ reported by Congo and 16 555.2 m³ reported by importers. All exports reported by the Congo were without a source code while all trade reported by importers was wild-sourced. Direct exports of *P. elata* timber increased 2012-2015, by 74-fold as reported by Congo and by 28-fold as reported by importers; trade subsequently declined by over 70% from 2015 to 2016 (Table 6). China was the main destination for timber exports, accounting for 48% of exports according to Congo and over 75% according to importers. Indirect trade in *P. elata* originating in Congo predominantly comprised 24 415.5 m² wild-sourced veneer reported by re-exporters, of which two thirds was re-exported via Germany to the United States; lower quantities of veneer were reported by importers (2644 m²). In addition, 12 483 m³ wild-sourced timber were reported by importers, predominantly imported by Switzerland from Germany (94%), with lower quantities (162.75 m³) reported by re-exporters.

Table 5: CITES export quotas for wild-sourced *Pericopsis elata* from Congo, 2007-2017, and global direct exports as reported by Congo and countries of import, 2007-2016. Congo has submitted annual reports for 2007-2016.

Quota	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
logs and sawn wood (m ³)	-	-	-	-	in prep	863.561 [*]	-	7262.46 ^{**}	6309	6309	6309
Reported by Congo	498.7	2966.1	1156.3	428.9	301.4	98.8	1840.1	5100.3	7310.5	2159.7	-
Reported by importer	667.6	203.9	115.8	948.4	1024.8	244.3	551.3	4455.5	6821.0	1522.4	-

^{*} 318.837 m³ logs and 543.724 m³ sawn wood

^{**} 2223.373 m³ logs and 5039.087 m³ sawn wood

Table 6: Direct exports of *Pericopsis elata* from Congo, 2007-2016. Quantities have been rounded to one decimal place, where appropriate.

Term	Unit	Purpose	Source	Reported by	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
chips	-	T	W	Exporter											
				Importer				20.63	20.63						
derivatives	m ³	T	W	Exporter											
				Importer						53.54					
timber	m ³	T	W	Exporter											
				Importer	667.6	203.9	115.8	948.4	1024.8	244.3	551.3	4455.5	6821.0	1522.4	16555.2
				Exporter	498.7	2966.1	1156.3	428.9	301.4	98.8	1840.1	5100.3	7310.5	2159.7	21860.9
				Importer											
veneer	m ²	T	I	Exporter											
				Importer				6.0							
specimens	-	S	-	Exporter									262.0	30.0	292.0
				Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/02/2018

Management: Congo became a Party to CITES on 31st January 1983, with entry into force on 1st May 1983.

It was reported in PC19 Doc. 12.3 Annex 3 that *P. elata* was first protected under Law No. 004/74 of January 1974, amended by Law No. 32/82 of July 1982. Law No. 004/74 also established the principles of sustainable forest management in Congo, including partitioning State forests into FMUs and introducing Annual Allowable Cuts (AAC) which took place in 1980 (Law No.004/74; PC19. Doc.12.3 Annex 3). A Tropical Forest Action Plan (PAFT) was developed and completed in 1997 (PC19. 12.3 Annex 3). Congo introduced a new Forestry Code in November 2000, Law No.16-2000, which outlined the governance framework of the forestry sector based on principles of sustainable forest management (Republic of Congo, 2000); Article 80 of this law stipulates that forest products should respect international regulations.

The forests of Congo are divided between private and State-owned, with the majority of forest owned and managed by the State (Rights and Resources Initiative, 2018). Under Law No.16/2000 exploitation must occur under State control or by an exportation title holder (Republic of Congo, 2000). There are four types of exploitation title that can be allocated to timber operators in Congo; industrial transformation agreements, development and conversion agreements, cutting permits for plantation timber, and special permits (Republic of Congo, 2000). The minimum exploitable diameter (MED) was set at 60 cm DBH (PC15 Inf.2).

Logging operators can only harvest specifically determined areas according to an annual allowable cut (AAC), an amount of timber deemed to be harvested sustainably, that can only cover areas that have been subject to a full enumeration of harvestable trees and the most sought after species (PC14 Doc. 9.2.2 Annex 3). All holders of a logging permit are required to present an annual request for approval of the planned annual cut (PC14 Doc. 9.2.2 Annex 3). The Forest Administration must verify the information provided and ensure that boundaries are in place before granting a logging permit (PC14 Doc. 9.2.2 Annex 3).

All management plans for FMUs were intended to be in place by 2014, however in 2016, 87% of the total 23 FMUs across the country did not have an approved plan (Loumeto *et al.*, 2011; Cerutti, *et al.* 2016). Betti (*in litt.* to UNEP-WCMC, 2018) noted that of the five FMUs where *P. elata* occurs, Tala Tala and Djoua-Ikié had almost complete management plans, and that these were being analysed by the forestry administration. Whilst three FMUs (Ngombé, Kabo, and Pokola) were now certified by the Forest Stewardship Council (FSC) scheme (covering 1.89 million ha of forest), logging of *P. elata* within these FMUs is not permitted due to very low densities of the species observed (Betti *in litt.* to UNEP-WCMC, 2018). Of the two main concessions, Tala Tala FMU (on the border of Cameroon) was noted to be producing 1 599 200 m³ timber annually, and Djoua-Ikié FMU was producing 3600 m³ timber annually (Yoka *et al.*, 2015a, in: Betti *in litt.* to UNEP-WCMC, 2018).

Forest inventories that took place in Tala Tala FMU in 2010 found that 80% had been exploited with all trees over 60 cm logged, mother trees were not kept, and the 60 cm MED was considered too low to allow regeneration; it was estimated that raising the MED to 70 cm would increase regeneration from 42% to 74% (ITTO-CITES, 2010).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Congo as legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES (CITES, 2017).

D. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Cameroon have not yet submitted annual reports for flora for 2009-2012, although the fauna component was received for 2009 and 2011. There are numerous NGO reports, e.g. Greenpeace (2015) and Global Witness (2015) of *P. elata* being traded illegally across the Congo basin, and in particular in DRC.

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