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

Twentieth meeting of the Conference of the Parties
Samarkand (Uzbekistan), 24 November - 05 December 2025

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Transfer from Appendix II to Appendix I of *Paubrasilia echinata* in accordance with Resolution Conf. 9.24 (Rev. CoP17), Annex I, Paragraph A) i) habitat where the species occurs is reducing and v) the species is suffering selective logging and Paragraph B) iii) the species is suffering selective logging and iv) a decrease in the area and quality of habitat and in the number of individuals

B. Proponent

Brazil

C. Supporting statement

1. Taxonomy

1.1 Class: Magnoliopsida
1.2 Order: Fabales
1.3 Family:Fabaceae
1.4 Genus, species or subspecies, including author and year: *Paubrasilia echinata* (Lam.) Gagnon, H.C.Lima & G.P.Lewis, 2016.
1.5 Scientific synonyms: *Caesalpinia echinata* Lam., *Guilandina echinata* (Lam) Spreng, *Caesalpinia obliqua* Vog., *Caesalpinia vesicaria* Vell.
1.6 Common names: English: Brazilwood, Pernambuco, Pernambuco wood.
Spanish: Palo brasil, Brasil, Palo pernambuco, Pernambuco, Palo rosado
French: Bois-Brésil, Pernambouc, Bois de Pernambouc.
German: Pernambuckholz.
Portuguese: Arabutá, Arabutã, Árvore-do-brasil, Brasilete, Brasileto, Ibirapiranga, Ibirapita, Ibirapitã, Ibirapitanga, Ibirapitinga, Ibirapuíta, Ibiripitanga, Imirapiranga, Imirapitã, Imirapitanga, Muirapiranga, Orabutã, **Pau-brasil**, Pau-de-pernambuco, Pau-pernambuco, Pau-rosado, Pau-vermelho, Sapão (Camargos et al, 2001).

1.7 Code numbers:

2. Overview

Brazilwood or Pernambuco - Paubrasilia echinata - is a medium-sized tree of the Fabaceae family, with yellow flowers, an endemic species of the Atlantic Forest of Brazil. It produces excellent quality wood that is appreciated around the world for making bows for musical instruments. The tree was overexploited as one of the main commercial products during the Portuguese colonial period for the extraction of dyes (brazilein). Estimated exploitation data of Brazilwood point to the removal of 527,182 mature trees over five centuries of economic exploitation (Rocha, 2008). Brazilwood is the national tree (Brazil, 1978).

The use of Brazilwood in the music industry began in the mid-eighteenth century, due to its physical-mechanical characteristics that provide it with excellent sound. 520 years of intense exploitation of the tree to obtain dyes and later for the music industry, combined with urbanization pressure on the coastal biome led to the fragmentation of natural populations, drastic reduction of populations, to the complete elimination of the species in several regions. The tree is in the red list of the IUCN and classified as "Endangered" (EN) since 1998 under criteria A1acd (Varty, 1998). In a recent review from CNCFlora (2024) - National Center for Flora Conservation, linked to the Rio de Janeiro Botanical Garden (JBRJ) – is has been considered "Critically Endangered" (CR).

Since 2018, investigations by the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) have shown that the wood has been illegally exploited to supply the international market for bows for musical instruments in the USA, Europe, and Asia. Thousands of bows were sold in the international market without any control from national and international authorities, since finished products were exempt from CITES Permits until February 2023.

To combat these criminal activities, stricter control over the international trade of the species must be enforced. The inclusion of Brazilwood in Appendix I of CITES would strengthen trade restrictions, aiming to reduce pressure on the remaining native populations of *Paubrasilia echinata* in Brazilian forests.

3. Species characteristics

3.1 Distribution

Brazilwood occurs exclusively in Brazilian territory, in the coastal strip between the states of Rio de Janeiro and Rio Grande do Norte, between latitudes 5° 30' (RN) and 23° (RJ), only in the Atlantic Forest biome. Data on the distribution of the species can be found in Rocha & Simabukuro (2008) and Rocha (2010). There are no reliable estimates about the size of native populations. Isolated trees are widely cultivated in the country as ornamental plants in streets and parks, and sometimes in commercial plantations (Gagnon et al, 2016). Isolated trees are widely cultivated in the country as ornamental plants in streets and parks, and sometimes in commercial plantations (Gagnon et al, 2016).

3.2 Habitat

This tree grows in inland ombrophilous mesic forests and in a range of much drier habitats, including disturbed dry coastal cactus scrub, rocky outcrops, seasonally semideciduous forest (tabuleiro forest), and restinga, a type of coastal forest with well-drained sandy soil (Lewis, 1998; Gagnon et al., 2020).

3.3 Biological characteristics

Brazilwood is a perennial tree, a climax species, slow-growing, long-lived, occupying the middle stratum of the forest, usually 5 to 15 meters high and 15 to 50 cm diameter at breast height (DBH), but can reach up to 30 meters high and 100 cm DBH at adulthood. The trunk is short, twisted and sharp, with a short stem, exceptionally reaching 15m in primary forest, with small buttress at the base. Open, broad crown, with shiny dark green foliage and sharp branches. The bark is greyish-brown or pinkish-brown in places where it peels off in the form of plates. The heartwood is red, with the trunk exuding a red sap when injured. The tree is hermaphrodite plant, with fragrant golden yellow flowers, and is pollinated mainly by bees. It blooms from September to November in the state of Rio de Janeiro and from December to May in the state of Pernambuco. It produces orange or orange-red coloured wood, with high densities (1.0 to 1.10 g/cm^3), glossy, irregular grain, medium texture, very resistant to fungi (Carvalho, 2003

3.4 Morphological characteristics

Medium sized to large trees, 5–15+ m tall, armed with small to large upturned prickles, usually arising from woody protuberances, 1–20 mm long (the prickles often sparse or lacking on more mature specimens and larger, older branches); bark chestnut brown to almost black with greyish pustular lenticels, flaking in large woody plates. It has bipinnate leaves, ending with a pair of pinnae; petiole and rachis finely tomentose; pinnae alternate, the terminal pair opposite to subopposite, with (2–) 3–20 pairs of pinnae per leaf. The inflorescence is terminal, occasionally axillary, consisting of a finely tomentose raceme or panicle bearing approximately 15 to 40 flowers. The bracts are broadly ovate-triangular with an acute to acuminate apex, less than 1 mm long, pubescent, and caducous. Flowers are bisexual and zygomorphic. The calyx forms a tomentose hypanthium with five sepals, each about 5–9 mm long. The lowest sepal is cucullate, enclosing the other four sepals in bud. All sepals are caducous, but the hypanthium remains as a free ring around the

pedicel as the pod matures.There are five free petals, bright yellow in color, with the median petal showing a blood-red blotch on its inner face. The petals measure approximately 11–15 × 4–10 mm, are eglandular, and range from broadly obovate to slightly spathulate, with pubescent claws.The ten stamens are free, 7–9 mm long, eglandular, and densely pubescent on their lower halves. The ovary is pubescent with small spines intermixed, and the stigma forms a subterminal fringed chamber. Fruit is a spiny, finely pubescent, sub-lunate woody pod measuring 5.5–7.3 × 1.9–2.6 cm. It is elastically dehiscent with twisting valves and contains one or two seeds. The seeds are laterally compressed and ovate to obovate in shape (Gagnon et al., 2016).

Despite being recognized as a single species, Brazilwood shows considerable variation throughout its range. It is possible to recognize at least three morphological patterns, which show differences in leaves (leaf formula, leaflet shape, and size) and in the anatomical structure of the wood. The first is a common and widely distributed small-leafleted variant called small-leaf or *Arruda* found in dry restinga forests, tabuleiro forests, and rocky outcrops along the coast, in the southern state of Rio de Janeiro and the northern states of Bahia, Alagoas, Pernambuco, Paraíba, and Rio Grande do Norte. The second is a medium-leafleted variant named medium-sized-leaf or coffee-leaf (Folha-de-café) found predominantly in the states of Espírito Santo and southern Bahia. The third variant, known as the large-leafleted or orange-leaf (Folha-de-laranja), is extremely rare and localized, occurring in restricted populations along the Rio Pardo Valley in the state of Bahia, primarily within ombrophilous mesic forests (Figure 1). Genetic analysis of Paubrasilia echinata across its current range revealed at least five genetically distinct lineages within the fragmented Atlantic Forest of Brazil, which are strongly geographically structured (Rees et al., 2023).

3.5 Role of the species in its ecosystem

It is a climax, long-lived species that occupies the middle stratum of coastal forests on poorly fertile soils, with high dominance value and importance in the tree composition in the fragments where it was evaluated (Zani et al, 2012; Sarnaglia Junior et al, 2014). It plays a significant role in the cocoa-cabruca agroforestry system (Lobão, 2007). Little is known about the function of this species in the ecosystem or other relevant ecological aspects.

4. Status and trends

4.1 Habitat trends

The Atlantic Forest originally covered about 15% of Brazil's territory across 17 states, but today only 12.4% of the forest that existed 500 years ago remains stading. The original geographical distribution of Brazilwood and the size of its native populations have been reduced by logging, caused by the exploitation of its wood, by the expansion of urban centres (Rocha, 2010). The largest remaining populations are now found mainly in fully protected conservation units or within cocoa-cabruca agroforestry systems in southern Bahia. However, these populations are rapidly declining as cocoa plantations are being converted into pastures.

4.2 Population size

Although reliable data on the size of natural populations in the remaining fragments of the species is lacking, estimates suggest there are around 10,000 adult individuals (CNCFlora, 2024). The species' populations have declined by 84% over the past three generations (De Lima et al., 2024).

4.3 Population structure

Zani et al. (2012) evaluated the population structure of Brazilwood in one of the last native forest fragments in Espírito Santo. Phytosociological data showed that Brazilwood had the highest importance value among 181 tree species sampled in that fragment of Ombrophylous Dense Lowland Forest (Tableland Forest) (see Table). They also noted a large number of regenerating individuals, which was linked to the high availability of light in areas with clearings. No other studies on the population structure of Brazilwood in other fragments where the species occurs are currently known.

Figure 1 – *Paubrasilia echinata* morphotypes. A - Small-leaf or Arruda; B – Medium-sized-leaf or Coffee-leaf; C - Large-leaf variant or Orange-leaf. Images from Rees et al (2023).

4.4 Population trends

The Atlantic Forest is one of the most threatened biomes in the world. Brazilwood occurs in environments that have been severely degraded from colonization to the present, leading to a sharp decline in habitat quality and the extinction of local subpopulations. These local extinctions have fragmented Brazilwood's distribution, reducing genetic variability and limiting gene flow between remaining subpopulations (Martinelli & Moraes, 2013). Natural populations no longer exist in Sergipe. In Espírito Santo, only one native population remains in a forest fragment in Aracruz, with a recently discovered new population in Vila Velha. Urban sprawl poses a significant threat to Brazilwood populations in forest fragments in Rio de Janeiro. In southern Bahia, the decline of cocoa production areas further aggravates this threat, as Brazilwood has traditionally been maintained to provide shade for Theobroma cacao in the cocoa-cabruca agroforestry system (Lobão, 2007).

Despite all legal protections in place, selective logging of century-old Brazilwood trees has been recorded both inside and outside protected areas in Paraíba, Rio Grande do Norte (Rocha, 2008), and especially in southern Bahia, where trees are harvested to supply the market for bows used in musical instruments (Guimarães, 2025).

Although the last two decades have seen increased investments in environmental awareness and numerous studies on the species' phenology, genetics, germination, and wood anatomy, among others, negative pressures on natural populations in remaining forest fragments remain. No formal studies have yet evaluated population trends in these fragments. However, due to the pressures indicated above, the population decline is accelerating.

The two lineages most urgently needing further research and conservation are the rarer and less well-known coffee-leaf and orange-leaf groups. These represent distinct evolutionary lineages and inhabit different forest types than the other populations (Rees et al., 2023).

4.5 Geographic trends

The Atlantic Forest has only 12.4% of its original cover. There are dozens of experimental plantings both inside and outside the species' natural range, especially in the state of São Paulo, which contribute to ex-situ conservation efforts (Rocha & Simabukuro, 2008). Morphometric analyses indicate that most cultivated specimens cluster with those from the Arruda and North groups, suggesting that cultivated trees in Brazil may primarily originate from a limited number of genetic pools. Many of these trees were planted in urban areas between 1970 and 1995. Because Brazilwood is rare and protected in the wild, most cultivated seed stock in horticultural nurseries likely comes from similar geographic origins and does not represent the species' broader genetic and geographic diversity (Rees et al., 2023).

5. Threats

5.1 Loss of native vegetation

The loss of native vegetation of the Atlantic Forest is one important threat to the Brazilwood: 14.4 thousand hectares were deforested between 2023/2024, 14.7 thousand hectares in 2022/2023 and 20.1 thousand hectares between 2021/2022.The maintenance of the high level of loss of native vegetation is a real threat to *Paubrasilia echinata*, specially to the morphotypes Café-leaf and Orange-leaf.

5.2 Illegal logging and export of *Paubrasilia echinata*

By Federal Law No. 11,428 of 2006 and Federal Decree No. 6,660 of 2008, the exploitation of native species included in the Official List of Threatened Species of Brazilian Flora in the Atlantic Forest is prohibited. Therefore, the national legislation does not allow the extraction of Brazilwood in its natural habitat. Legal protection has not stopped criminals from illegally logging mature trees in Bahia, Rio Grande do Norte and Paraíba (Rocha, 2008). In 2019 IBAMA caught 102 of recently cutted Brazilwood logs hidden in a rural property linked to a famous *archetier* from Aracruz (ES), who was legally exporting bows to Europe and the USA. In 2022, IBAMA confiscated 175 illegal logs found in a rural property in Mascote, Bahia. Investigations shows that these trunks were being sold to archetiers, transformed in bows sold to the USA, covering this wood under documents obtained from environmental agencies. Selective logging of centuries-old trees inside Pau-brasil National Park in Porto Seguro (BA) were also caught in 2021. Selective extraction of Brazilwood is still active, both inside and outside protected areas. In all cases recently detected, the destination of these woods is the bow making industry for musical instruments (Guimarães, 2025).

6. Utilization and trade

6.1 National utilization

High-quality and valuable bows can be crafted from Brazilwood, including affordable models commonly used by amateurs and students (Angyalossy, 2005). Brazilwood is highly sought after internationally and is widely regarded as the only species that possesses the ideal combination of resonance, density, durability, aesthetic appeal, curvature flexibility, weight, thickness, and tonal richness necessary for crafting the finest string instrument bows. According to invoices from the past two decades analyzed by Guimarães (2025), 94.2% of all violin, viola, cello, and double bass bows produced in Brazil are exported. Our observations indicate that the international market primarily demands professional-grade bows—classified as gold, silver, and nickel—whose production requires exceptionally high-quality wood. It is estimated that more than 90% of harvested Brazilwood is discarded as waste during the production process, deemed unsuitable for professional bow-making due to stringent quality standards.

6.2 Legal trade

According to Brazilian legislation, specifically IBAMA Normative Instruction No. 21 of 2014, the DOF (Document of Forest Origin) system regulates Brazilwood only up to the level of bow blanks (sticks). Finished bows, like other manufactured products, fall outside the scope of control and are not tracked in environmental agency commercialization records.

Until 2022, there was no formal control of the international commercialization of bows for musical instruments, because annotation #10 excluded finished articles for the control under Appendix II. At CoP 19, the annotation #10 was changed, and included "*All parts, derivatives and finished products, except re-export of finished musical instruments, finished musical instrument accessories and finished musical instrument parts*". Since then, no CITES Permits were issued in Brazil for international bow trade.

After analysing 346 cases over the past 25 years, Guimarães (2025) found that, from the invoices available, 464,515 bow blanks were traded within Brazil and 45,163 were exported. In the same period, Brazilian companies sold 7,986 finished bows in the internal market and 131,232 finished bows abroad.

The estimated volume*[1] of bows and bow blanks traded in Brazil was of 70.87m³, while the volume exported was 26.46m³. Additionally, 8.4 m³ of boards and planks were exported in this period, totalling 34,86m³ of Brazilwood exported. Analysing the trade values reported on invoices, the bow-making industry declared transactions amounting to R$ 86,795,311.33, equivalent to € 13,540,046,20. It should be noted that the

[1] Considering 0,00015m³ the volume of a bow blank

values declared on invoices are approximately five to ten times lower than actual market prices, based on comparisons with prices listed on specialized musical instrument and accessory trade websites for identical bows. Guimarães (2025) highlights the absence of hundreds of invoice records across multiple years and companies within the administrative cases analyzed. As a result, the data presented here are incomplete and reflect only a portion of the actual volumes, quantities, and values traded by Brazilian companies and bow makers (archetiers).

The main consumers of finished bows according to the invoices analysed are: USA (72,040 units), Belgium (20,732 units), Japan (13,305 units), Germany (7,025 units), The Netherlands (5,211 units), Italy (2,346 units), Portugal (2,164 units), England (2,034), Taiwan (1,383 units) and Canada (1,245), as shown on Figure 2. Other 3,747 finished bows (2,86%) were sold to France, Singapore, South Korea, Slovenia, Spain, Poland, Switzerland, England, Wales, Australia, Hong Kong, Chile, Austria, Russia, Scotland, China, Argentina, Slovakia, Romania, Vietnam, Costa Rica, Finland, Hungary, Paraguay, South Africa and Peru. Before the species was listed under CITES in September 13, 2007, invoices' records show the export of 11,464 bow blanks between 2002 and 2007, with 10,137 units shipped to the USA (88,4%), 684 units to Italy (5,9%), 553 units to Germany (4,8%), 85 units to China (0,7%), and 5 sticks to France (0,04%).

After Brazilwood was included in Appendix II of CITES on September 13, 2007, a total 33,699 bow blanks were exported, according to data available on the invoices (Guimarães, 2025). From the total of 45,163 bow blanks exported from Brazil between 2002 and 2022, the main consumers were Japan (26,000 units), USA (11,052 units), Germany (2,774 units), Italy (2,538 units) and Portugal (1,950 units), as shown on Figure 3.

IBAMA issued 45 CITES Permits for Brazilwood from 2010 to 2020, with 39 Permits covering commercial transactions (T code), although some of these received the Law code (L). Analysing data from SisCITES from IBAMA, a total of 15,487m³ of boards, planks and bow blanks were exported with CITES Permits to China, Japan, Germany, Portugal, USA, Italy, and Austria. IBAMA did not have access to the invoices on these transactions. From this amount, 27,274 bow blanks were exported due to judicial decisions that recognized the raw material as pre-Convention, including one transaction with a trading company based in Japan (26,000 bow blanks) and ten registered transactions to Italy (1,274 bow blanks).

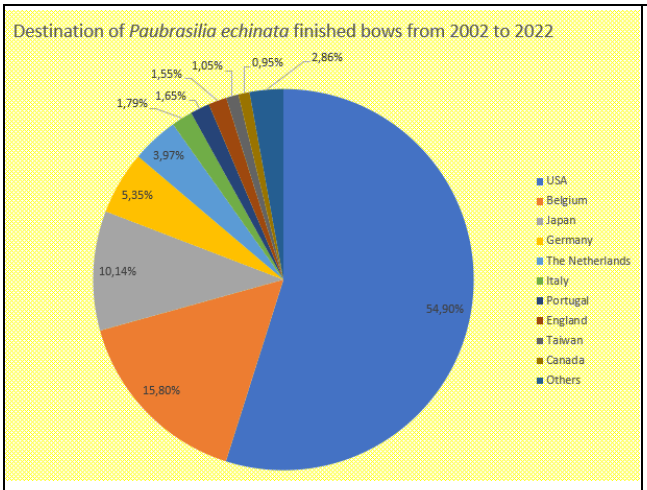

Figure 2 – Destination of *Paubrasilia echinata* finished bows exported from Brazil between 2002 and 2022, according to information from the invoices (Guimarães, 2025).

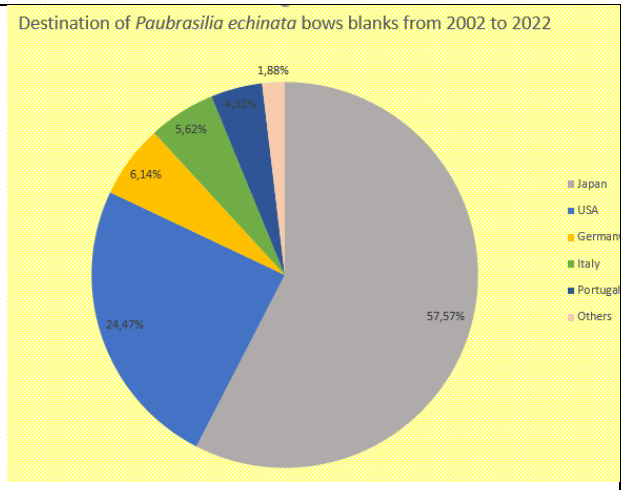

Figure 3 – Destination of *Paubrasilia echinata* bow blanks exported from Brazil between 2002 and 2022, according to information from the invoices (Guimarães, 2025).

6.3 Parts and derivatives in trade

The main commercialised products of the *Paubrasilia echinata* are bow blanks and bows for violin, viola, cello and double bass. Occasionally frogs, buttons, pegs, chinrests and tailpieces are also made of Brazilwood. For musical instrument bows, HS code (Harmonised System) 920992 and NCM (MERCOSUR Common Number) 92099200 are used for string musical instruments.

Data on commerce of bows and bow blanks were explained in section 6.2. Brazil does not have data on commerce of other musical instruments parts made of Brazilwood.

6.4 Illegal trade

The bow making industry uses logs of 1m long. According to Guimarães (2025), since 2002 a total of 1,073 units of logs this size and 208.1m³ of logs and planks have been seized by environmental authorities in Porto Seguro, Eunápolis, Camacan and Teixeira de Freitas in Bahia, Linhares, Aracruz, João Neiva, Serra, Santa Teresa and Domingos Martins in Espirito Santo, Matozinhos in Minas Gerais, Chã Grande and Recife in Pernambuco.

In October 2018, Brazil launched the "Operation Dó-Ré-Mi" to combat illegal trade of CITES timber species, especially *Paubrasilia echinata*. The operation uncovered numerous environmental crimes and administrative violations involving bow makers and bow-making companies, whose activities are primarily concentrated in the state of Espírito Santo, especially in the municipalities of Aracruz, João Neiva, Linhares, Santa Teresa, and Domingos Martins. In these areas, approximately 45 bow makers, companies, and professionals contracted by them were fined for various infractions, including the possession of wood from illegal sources, providing false or misleading information to environmental authorities, and the illegal transport, receipt, and sale of bows, bow blanks, and logs.

IBAMA agents seized more than 292,000 bow blanks and bows deemed illegal.. This Operation revealed that some Brazilian companies and bow makers carried out a scheme of wood laundry, using pre-convention documents to cover illegal trunks, planks and bow blanks acquired illegally in Southern Bahia. According to Guimarães (2025), the Brazilwood stock held by these companies consists predominantly of scrap material—pieces that have already been evaluated during the production process and discarded due to physical defects such as cracks, fissures, holes, sweep or irregular shapes, cross grain, knots, or other imperfections that render them unsuitable for crafting bows that meet the quality standards required by the export market.

Some companies have actively sought additional suppliers of Brazilwood, attempting to secure high-quality bow blanks that meet the stringent requirements of the export market. This supply chain involves extractors who harvest trees both inside and outside protected areas, intermediaries who process the logs into planks and bow blanks and sell them directly to national and international bow makers, or to transporters who deliver the materials to companies in São Paulo, Rio de Janeiro, Goiás, Paraná, and Espírito Santo. The illegally sourced wood is then incorporated into company inventories and masked by existing official documentation, in an attempt to give subsequent bow sales a false appearance of legality.

In November 2021 and November 2022, the Brazilian Federal Police carried out search and seizure warrants at nearly 60 locations. Most of the wood was probably taken from Pau-Brasil National Park in southern Bahia, which hosts the largest remaining native population of *Paubrasilia*, and has repeatedly reported incidents of selective logging over the past decades—specifically targeting trees cut to standard log sizes used in the bow-making industry. Other sources included municipalities such as Camacan, Potiraguá, Mascote, Itamaraju, Santa Luzia, Eunápolis, and several others in southern Bahia. The Brazilian Federal Police estimates that the suspects generated over US$46 million in profits from illegal exports on the international market. The criminal organization also laundered illegal wood by using permits issued for plantation-grown trees. Virtual credits obtained through the DOF system were used to disguise the origin of illegally harvested logs and planks transported from Bahia.

The majority of bows and bow blanks sold by Brazilian companies over the past 25 years probably originated from illegal sources, concealed through fraudulent reports, misuse of pre-Convention documents, or deceptive operations involving planted trees.

6.5 Actual or potential trade impacts

No Brazilwood bows have been legally exported since the entry into force of Normative Instruction No. 08/2022 (IBAMA, 2022) in June 1st, 2022, as all applications for Licenses, Permits, Certificates and other Documents (LPCO) have been denied. No CITES Permits have been issued for the export of bow blanks or bows since the new annotation # 10 adopted at CoP 19 in November 2022, which entered into force on February 23, 2023.No international trade of seedlings, seeds or bark is known.

The inclusion of Brazilwood in Appendix I will lead to additional administrative procedures for companies that commercialize the species products and by-products outside Brazil, especially in transactions involving finished musical instruments, finished musical instrument accessories and finished musical instrument parts, which are nowadays exempt of CITES Permits in annotation #10. The transfer of the species to Appendix I will affect musicians and orchestras in some way when they move across borders.

However, the Musical Instrument Certificates (MICs) may facilitate the transport of musical instruments, similarly to how it works with *dalbergia nigra* (Brazilian Rosewood). Introduced by Resolution Conf. 16.8 Frequent cross-border non-commercial movements of musical instruments, the MICs are documents that facilitate the international travel of musical instruments containing CITES-listed materials. These certificates streamline the process of obtaining CITES permits for instruments, particularly those frequently transported across borders for non-commercial purposes.

The TEC (Travelling Exhibition Certificate), which was initially created for museums, and later extended by the COP-16 in 2013 to orchestras to allow the registration of all travelling instruments on one single certificate (instead of issuing an MIC for each instrument) may also be facilitate the transport of musical instruments.

Both solutions would facilitate customs procedures by allowing musicians to prove ownership of their instruments and confirm that they are not intended for commercial purposes, thereby simplifying the transport process.

7. Legal instruments

7.1 National

The legislation concerning the preservation of *Paubrasilia echinata* consists of a series of specific legal instruments and more generalized measures that govern the exploitation and transport of native Brazilian plants, including:

Federal Law No. 6,607 of December 7th, 1978 - Declares Brazilwood as the national tree and determines the realization of an elucidative campaign about the relevance of that species in the History of Brazil and the implantation, in all the national territory, of Brazilwood tree nurseries, aiming at its conservation and distribution for civic purposes.

Federal Law No. 11,428, of December 22, 2006 - that provides for use and protection of native vegetation of the Atlantic Forest Biome.

Federal Law No. 12,651, of May 25, 2012 - which provides for the protection of native vegetation, empowering federal and state authorities to prohibit or restrict the cutting of endangered species.

Federal Decree No. 6,660, of November 21, 2008 - which regulates Federal Law No. 11,428/2006.

CONAMA. Resolution No. 278, of August 30, 2001. which determines to IBAMA the suspension of authorizations granted by its own act or by delegation to the other agencies of the National System of Environment - SISNAMA, for the cutting and exploitation of endangered species, included in the official list of that agency, in natural populations in the Atlantic Forest biome, until technical criteria are established, scientifically based, that guarantee the sustainability of the exploitation and the genetic conservation of the exploitable populations.

CONAMA Resolution No 300, of March 20, 2002 - that complements the cases subject to cutting authorization foreseen in art. 2º of CONAMA Resolution nº 278, of May 24, 2001.

CONAMA Resolution No 317 of December 4th, 2002 establishes the criteria necessary for genetic conservation and sustainability of the exploitation of endangered flora species in the Atlantic Forest, which must be substantiated in State Plans of Conservation and Use based on technical and scientific studies.

MMA Ordinance No. 320, of September 21, 2012 - Creates the National Program for Pau-Brasil Conservation.

MMA Ordinance No. 443, of December 17, 2014 - which lists *Paubrasilia echinata* threatened of extinction in Brazil, classified under the IUCN criteria as Endangered (EN). It imposes full protection for species in the categories Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), and Vulnerable (VU), including prohibition of collection, harvesting, transportation, storage, handling, processing, and commercialization, among others. Its appendices were updated by MMA Ordinance No. 148 of June 7, 2022.

MMA Ordinance No. 148, June 7, 2022. Publishes updated national lists of species threatened of extinction.

MMA Normative Instruction No. 01, of February 12, 2015 - details the procedures for approval of Sustainable Forest Management Plans (SFMP) for VU species and indicates a time frame for restrictions on the use of CR and EN species.

IBAMA Normative Instruction No. 21 of December 24, 2014. Establish the National System for the Control of the Origin of Forest Products.

IBAMA Normative Instruction No. 8 of March 25, 2022. Establishes procedures for the export of wood products and by-products of native species originating from natural or planted forests.

7.2 International

Paubrasilia echinata has been included in Appendix II since September 13, 2007, with Annotation #10, which originally covered logs, sawn wood, veneer sheets, and unfinished wood articles used for the fabrication of bows for stringed musical instruments. Following the decision adopted at CoP19, Annotation #10 was revised to read: "*all parts, derivatives and finished products, except re-export of finished musical instruments, finished musical instrument accessories and finished musical instrument parts*".

8. Species management

8.1 Management measures

Brazilian legislation does not permit the exploitation of the species in its natural habitat. However, illegal harvesting continues to occur, including within protected areas. Transactions of wood between companies and bow makers have been regulated by the Document of Forest Origin (DOF) since September 2006. Nonetheless, serious flaws in the verification of the origin of the stocks initially registered in the system—only recently uncovered—have compromised its reliability. Furthermore, the DOF monitors the processing and transportation of wood only up to the stage where it is converted into bow blanks. Finished bows are exempt from declaration to the authorities and do not require any environmental documentation for transportation or commercialization. As a result, current mechanisms for monitoring pre-Convention stocks stored in company yards are ineffective and provide incomplete data to environmental authorities. Moreover, companies are not required to report their commercial transactions to environmental agencies.

8.2 Population monitoring

There is no population monitoring for the *Paubrasilia echinata* species by government institutions, nor data about the feasibility of harvesting the native tree wood in the natural environment.

8.3 Control measures

8.3.1 International

Paubrasilia echinata has been listed in Appendix II of CITES since September 13, 2007. However, finished bows were exempted from CITES control, meaning that trade was only regulated up to the unfinished stage of production—specifically, bow blanks. Following the decision adopted at CoP19, Annotation #10 was amended to state: "*all parts, derivatives and finished products, except re-export of finished musical instruments, finished musical instrument accessories and finished musical instrument parts*".

In practical terms, Brazil is currently the only country requiring CITES permits for the international trade of finished musical instruments made with Paubrasilia echinata. This situation does little to curb illegal logging or the laundering of wood in other countries where stakeholders remain active in the trade of this species.

8.3.2 Domestic

Despite the existence of restrictive legislation and legal protection for both the Atlantic Forest biome and *P. echinata*, legal exploitation of the species continues to occur, both within and outside protected areas. The control of log and sawn wood transport within national territory is carried out through the DOF System. However, some of the transactions registered over the past two decades are suspected to be fraudulent. Thus, although Brazilian authorities do not have records of all bows sold every year. "An estimated figure has been provided based on invoices submitted by the companies, as reported by Guimarães (2025). However, this number may not accurately reflect reality, given the numerous cases of illegal trade uncovered without any customs documentation, as well as significant gaps in invoice records over various periods among the companies analysed in IBAMA's cases.

8.4 Artificial propagation

There are no large-scale commercial plantations of this species. Only small-scale plantations and conservation efforts exist, such as those led by the International Pernambuco Conservation Initiative (IPCI). However, wood from these plantations is not yet being commercially traded(Groves & Rutherford, 2016). Most of the plantations that exist today do not meet the registration requirements by the environmental legislation and are not listed in IBAMA's National System of the Control of Origin of Forest Products (SINAFLOR). There are also no reports of commercial plantations that have been properly managed and developed with the aim of future harvesting to produce raw material with the specific qualities required for bow making. According to Brazilian legislation, existing plantations must be duly registered with the relevant environmental authorities and supported by technical management plans prepared by legally certified professionals.

There were some instances in which logging of planted Brazilwood trees was authorized for commercial purposes. However, inspections revealed evidence suggesting that these operations were fraudulent schemes aimed at generating virtual credits in control systems to legitimize wood of illegal origin—mixing plantation logs with logs from native trees (Figure 4). According to Guimarães (2025), four of these requests to harvest planted Brazilwood trees were clear cases of wood laundering. In one case, the plantation owner deliberately removed the stumps, failed to keep the harvested wood separated in the company's yard, and claimed to have sold bows made from the plantation wood, even though the timber had not been properly dried. The scheme was only uncovered after IBAMA obtained images from an inspection conducted by IDAF/ES (Figure 5).

There is no consensus regarding the ideal age for harvesting planted Brazilwood trees. Carvalho (2003) notes that the species exhibits slow and irregular growth, often requiring several decades to reach the optimal stage for bow making. To date, no studies have established a minimum age at which planted Brazilwood can be used in the production of bows for musical instruments. In the northeastern states of Pernambuco, Rio Grande do Norte, and Alagoas, some plantations are being monitored by the NGO *Associação Plantas do Nordeste* (APNE), which has reported promising average increases in height and diameter. However, it has not yet confirmed the feasibility of harvesting these planted trees (Santana et al., 2020).

Rolim and Piotto (2018) conducted an extensive study on a 24-year-old Brazilwood plantation and published a technical report detailing growth and productivity data, along with the results of physical and mechanical evaluations of the wood. The assessed parameters included bulk density, basic density, shrinkage, anisotropy coefficient, modulus of rupture in static bending, maximum shear strength, maximum compressive strength parallel to the grain, and Janka hardness. Based on their findings, the authors suggest that Brazilwood requires long growth cycles—approximately 40 to 50 years—to reach a DBH of at least 30 cm. Only a few studies have investigated the wood quality of Brazilwood plantations in Aracruz (Franco & Yojo, 2008; Marques et al., 2012; Schimleck et al., 2013). While some evaluated parameters showed promising results, there is still no conclusive evidence that the wood from these plantations possesses the same qualities as that of native Brazilwood. According to Lichtemberg et al. (2022), the wood quality of planted Brazilwood continues to be seriously questioned when compared to high-quality wood from natural habitats.

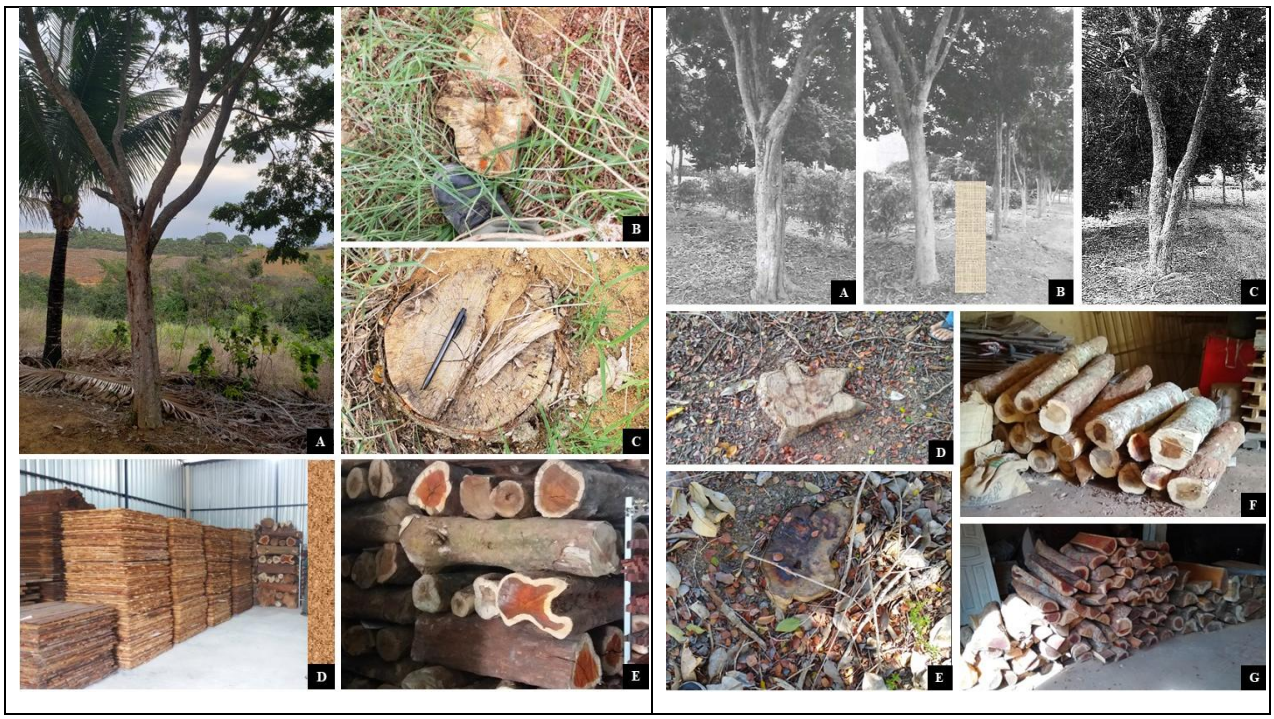

Figure 4 – **A** – Remaining tree in a plantation in Fundão (ES) with a low DBH and short commercial trunk; **B** and **C** – Stumps of 17-year-old trees cut in the plantation in Fundão (ES), without mature heartwood formation; **D** and **E** – Yard of a bow making company in Jacupemba, Aracruz, with piles of slats and logs supposedly originating from the plantation (Guimarães, 2025)	Figure 5 – **A** - **C** – Images of trees planted on a site in Aracruz (ES), authorized for cutting in September 2018 [(188)]; **D** and **E** – Stumps of planted trees, cut with authorization, inspected by IDAF in January 2019; **F** and G – Logs inspected by IDAF in January 2019 at the businessman's rural property – photos provided to the IBAMA's team (Guimarães, 2025)

We have no information on *Paubrasilia echinata* plantations outside Brazil.

8.5 Habitat conservation

Brazilwood populations are present in several protected areas, which include both strictly protected zones and sustainable use units. According to the literature (Rocha & Simabukuro, 2008; Rocha, 2010; CNTFlora, 2024), the species occurs in the following conservation areas: Parque Estadual das Dunas, RPPN Mata da Estrela, Parque Ecológico Água das Dunas, Parque Estadual Mata de Pipa, ESEC Pau-Brasil, REBIO Guaribas, ESEC Tapacurá, RPPN Usina Coruripe, RPPN Estação Veracruz, PARNA do Pau-Brasil, REBIO de Una, RPPN Serra do Teimoso, APA Lagoa Grande, APA Serra da Capoeira Grande, REBIO Tinguá, APA Massambaba, RESEC Estadual de Jacarepiá, APA Serra de Sapiatiba, APA do Pau-Brasil, Parque Estadual Serra da Tiririca, Parque Municipal da Boca da Barra, and Reserva Ecológica Darcy Ribeiro."

8.6 Safeguards

See section 7.1.

9. Information on similar species

Brazilwood wood can be easily identified by its orange/reddish coloration, storied rays on the tangential face, and the presence of brazilein, which appears as a reddish dye when in contact with a basic solution.

Paubrasilia echinata can be distinguished from similar specie, such as *Brosimum rubescens*, *Centrolobium* spp. and *Manilkara* spp., by its general appearance and coloration. Other species often confused with Brazilwood include *Handroanthus* spp. and *Dialium guianense*, primarily because they are also used in the production of bows for musical instruments. However, they can be differentiated from Brazilwood by several anatomical and colorimetric characteristics. *Handroanthus*, typically contains ipein deposits in the heartwood vessels, while *Dialium* is characterized by axial parenchyma arranged in narrow bands. Notably, none of these species—despite their visual similarities to Brazilwood—produce the distinctive ink-like extract associated with *Paubrasilia echinata*.

Macroscopic descriptions of Brazilwood can be found in Mainieri (1960), Manieri et al (1983), Coradin et al (2010), Alves et al (2013), Ruffinatto & Crivellaro (2019). Microscopic anatomical descriptions are provided by Mainieri (1960), Richter & Dallwitz (2000) Insidewood (2004) Angyalossy et al (2005), Alves et al (2008), Gasson et al (2009; 2011); Richter et al (2014), Melo Júnior & Barros (2017), Macedo et al (2019), Macedo el al (2020) and Brandes et al (2020).

10. Consultations

Paubrasilia echinata is endemic to Brazil. Therefore, there is no need to consult data from other countries.

11. Additional remarks

Investigations conducted by IBAMA and the Federal Police have revealed that some Brazilian bow-making companies are reportedly using illegally harvested native Brazilwood to supply the international market for musical instrument bows in the USA, Europe, and Asia. Recent discoveries of serious fraud indicate that certain companies and independent bow makers have been deceiving environmental authorities through a laundering scheme that has persisted for at least 25 years, concealing the illegal origin of materials to present them as legal. Urgent measures are needed to combat these criminal activities, involving not only national enforcement but also stricter controls and oversight in the destination countries receiving Brazilwood products.

The inclusion of Brazilwood in Appendix I of CITES seeks to strengthen restrictions on its international trade, with the goal of alleviating the pressure that international demand places on the remaining native populations of the species along the Brazilian coast.

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