



## Original Papers

# Historical records for a 16<sup>th</sup>-century monastery: the use of *jacarandá-da-bahia*

Thaís Ferreira Siston<sup>1,4</sup>, Dom Mauro Maia Fragoso<sup>2</sup>, Arno Fritz das Neves Brandes<sup>3</sup>  
& Claudia Franca Barros<sup>1,5,6</sup>

### Abstract

The Monastery of St. Benedict was founded in 1590 and has a very rich historical record comprising both artifacts and written records. Anatomical study of the wood of artifacts allows the species used in each to be identified. It also reveals issues related to patterns of choice and preference of the artists. Many artifacts at the Monastery of St. Benedict were made with wood from the species *Dalbergia nigra* (Leguminosae), popularly known as *jacarandá-da-bahia* (Brazilian rosewood). Research was carried out with 36 collected samples of wooden artifacts and seven specimens analyzed *in loco*, reported in documents as *D. nigra* and dated from the 17<sup>th</sup> to the 21<sup>st</sup> centuries. Macroscopic anatomical analyses of the wood were carried out following standard methods. The results indicated that 65% of the wood samples were of *D. nigra*. Other woods used in furniture belonged to *Cedrela* sp., *Tachigali* sp., *Paratecoma peroba*, *Ocotea* sp. and *Nectandra* sp. The analyzed furniture and integrated goods from the 17<sup>th</sup> and 20<sup>th</sup> centuries were mostly made with *jacarandá-da-bahia*, while those of the 21<sup>st</sup> century were made with *Cedrela* sp., corroborating a preference for *D. nigra* in making ecclesiastical furniture between the 17<sup>th</sup> and 20<sup>th</sup> centuries.

**Key words:** Brazilian woods, historic woods, native timbers, wood anatomy, wood identification.

### Resumo

O Mosteiro de São Bento foi fundado em 1590, desde a sua fundação conta com um registro histórico composto por artefatos e publicações. Estudar peças em madeira, através da sua anatomia, nos permite saber as espécies empregadas, além dos padrões de escolhas e preferências dos artistas. Muitas peças do Mosteiro de São Bento em seus registros referem *Dalbergia nigra* como a madeira utilizada em sua confecção. Muitos artefatos do Mosteiro de São Bento foram confeccionados com madeira da espécie *Dalbergia nigra* (Leguminosae), conhecida popularmente como *jacarandá-da-bahia*. A pesquisa foi realizada em 36 amostras coletadas de artefatos de madeira e sete exemplares analisados *in loco*, relatados em documentos como *D. nigra* e datados do século XVII ao século XXI. As análises anatômicas macroscópicas da madeira foram realizadas seguindo os métodos usuais. Os resultados indicaram que 65% das amostras de madeira eram de *D. nigra*. Outras madeiras identificadas foram *Cedrela* sp., *Tachigali* sp., *Paratecoma peroba*, *Ocotea* sp. and *Nectandra* sp. O mobiliário e bens integrados dos séculos XVII e XX foram confeccionados em sua maioria com *jacarandá-da-bahia*, enquanto os do século XXI utilizaram outras madeiras. Nossos resultados corroboram outras publicações, que referem *D. nigra* como a principal escolha para a confecção de mobiliários eclesiásticos nos séculos XVII e XX.

**Palavras-chave:** madeiras brasileiras, madeiras históricas, madeiras nativas, anatomia da madeira, identificação da madeira.

<sup>1</sup> Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Lab. Botânica Estrutural, Jardim Botânico Rio de Janeiro, Rio de Janeiro, RJ, Brazil.

<sup>2</sup> Mosteiro de São Bento, Faculdade de São Bento do Rio de Janeiro, Rio de Janeiro, RJ, Brazil. ORCID: <<https://orcid.org/0009-0009-3884-2178>>.

<sup>3</sup> Universidade Federal Fluminense, Inst. Biologia, Depto. Biologia Geral, Campus do Gragoatá, Niterói, RJ, Brazil. ORCID: <<https://orcid.org/0000-0002-7876-1892>>.

<sup>4</sup> ORCID: <<https://orcid.org/0000-0001-8314-2570>>.

<sup>5</sup> ORCID: <<https://orcid.org/0000-0003-4300-1006>>.

<sup>6</sup> Author for correspondence: [claudiafrancabarrosgmail.com](mailto:claudiafrancabarrosgmail.com)

## Introduction

The Monastery of St. Benedict was founded in 1590, twenty-five years after the founding of the city of Rio de Janeiro. This historic heritage constitutes a relevant legacy of the Benedictines, as it preserves historical records and artifacts in good condition built throughout the Monastery's history by different artists. Due to a very close relationship between monastic life and reading, the Monastery has a varied collection made up of raw material from plants, including furniture, tapestry and integrated goods, such as carvings, paintings (oil on canvas and oil on wood) and manuscripts on paper, in addition to thousands of books, including some dating from the founding of the cenobium (Ermakoff & Fragoso 2016). A series of documents and publications currently gathered in the Monastery of St. Benedict record the contracts signed with artists for the construction, conservation and restoration of the historical heritage residing therein (Silva-Nigra 1950; Fragoso 2013; Ermakoff & Fragoso 2016). The wood most cited in these documents for making furniture and integrated goods, both inside the Abacial Church of Our Lady of Monserrate and in the cloister, was *jacarandá-da-bahia* (Brazilian rosewood), *Dalbergia nigra* (Vell.) Allemão *ex* Benth (Leguminosae) (Silva-Nigra 1950).

*Dalbergia nigra* is an endemic tree of the Atlantic Forest biome, which occurs in the South, Southeast and Northeast regions of Brazil, and can reach about 25 meters in height. Its wood is very resistant, has an oily appearance and ranges in color among shades of brown, chocolate, red and violet, with irregular black streaks (CNCFlora 2023; Lorenzi 2002; Rego & Possamai 2003; Gasson *et al.* 2010). Due to its high resistance and workability, *jacarandá-da-bahia* was heavily exploited between the 17<sup>th</sup> and 19<sup>th</sup> centuries, being widely exported to Europe to make furniture, musical instruments and sculptures (Carvalho 2013; Dias 2022). Due to overexploitation, and with few remaining populations with low gene flow, the species is classified as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List and included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (CNCFlora 2023; Varty 1998; Gonzaga 2006; Gasson *et al.* 2010; Taylor *et al.* 2012). Despite being listed by the Brazilian government as an endangered species and having its extraction prohibited, the Document of Forest Origin (DOF, acronym in Portuguese) recorded the

sale of 60m<sup>3</sup> between 2012 and 2016 in the national territory (Brandes *et al.* 2020).

The identification of species used in artifacts or furniture is one application of wood anatomy (Melo Júnior 2012a, b; Macchioni & Bernabei 2018). However, according to Macchioni & Bernabei (2018), despite its importance, few scientists are trained to carry out this activity. Many Brazilian cities have a rich historical and cultural heritage, of which a relevant part comprises wooden pieces (Melo Júnior 2012a, b). Nonetheless, few works deal with the identification of the woods used. The present work aims to contribute to the knowledge of this heritage and recover knowledge about the use of native woods by studying the wood anatomy of artifacts from the Monastery of St. Benedict, with a focus those documented as being made from *jacarandá-da-bahia*.

## Material and Methods

The studied artifacts were selected from the analysis of historical records available at the Monastery of St. Benedict, namely: Arruda (2007), Fragoso (2013), Silva-Nigra (1950) and Vantini *et al.* (2018). The first two citations address the 426-year history of the Monastery and mention the year of manufacture, the contracted artist and the popular name of the wood used for the different works of art and furniture. Silva-Nigra (1950) details the life of the artist Frei Domingos da Conceição, describing the pieces he executed or supervised. Analysis of these works resulted in the selection of seven pieces of furniture made of *jacarandá-da-bahia* for study (Tab. 1).

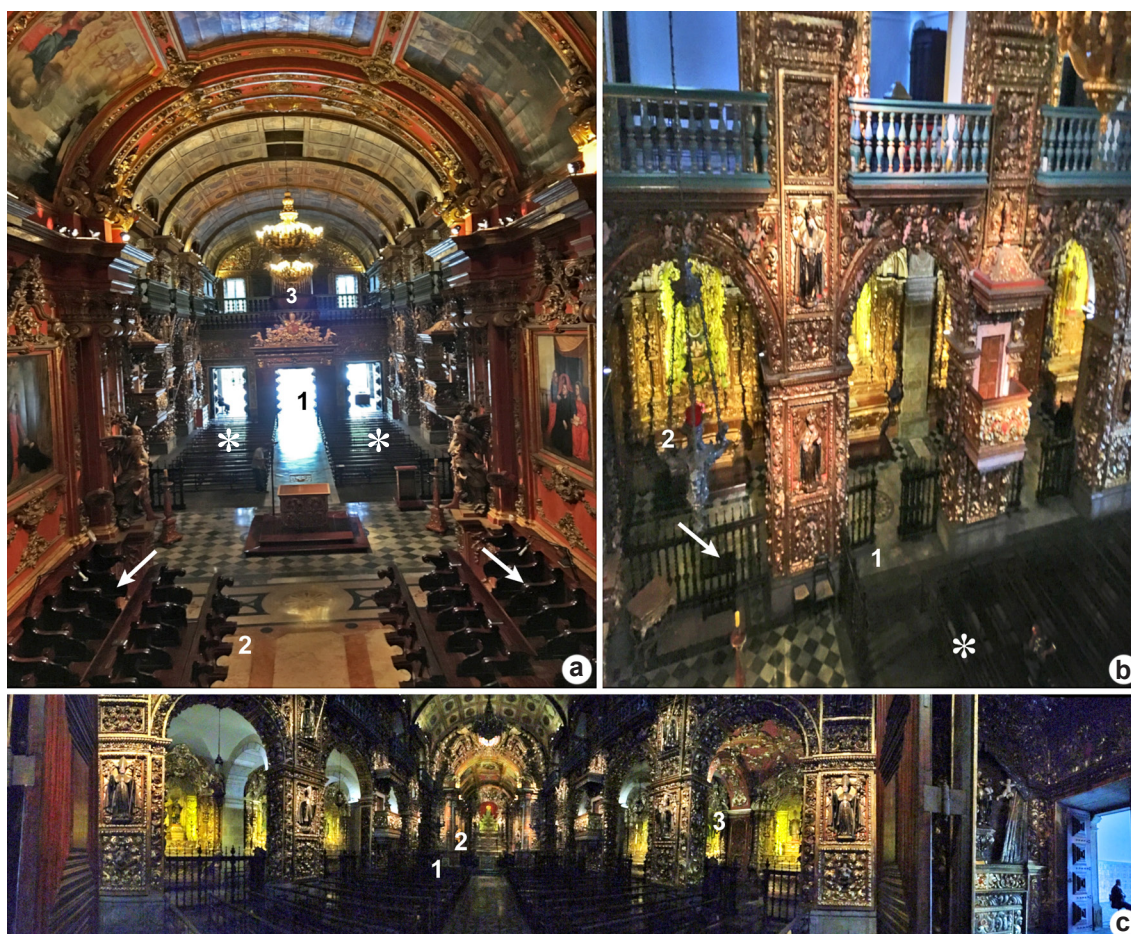
To maintain the integrity of the historical heritage, all samples (maximum of 1 cm<sup>3</sup>) were taken using a manual saw and chisel from places of the respective items that were not visible, such as the back, bottom or interior, or from damaged places to be restored. On-site analysis involved polishing with a razor and observation with a magnifying glass. A total of 43 samples were analyzed, 36 that were collected and seven that were analyzed *in loco*.

The sampled furniture belongs to the Abacial Church of Our Lady of Monserrate. Sampled items kept in the upper choir, above the portico, were the lectern, the set of two rows of stalls and the Abbot's chair.

Sampled furniture kept in the nave, chancel, side chapels and baptistery (Figs. 1-3) include the doors, in double leaves, installed between the portico and the central nave (Fig. 1a); pew

**Table 1** – Studied artifacts, with collection location, furniture item, year of manufacture, responsible artist and the number of samples collected.

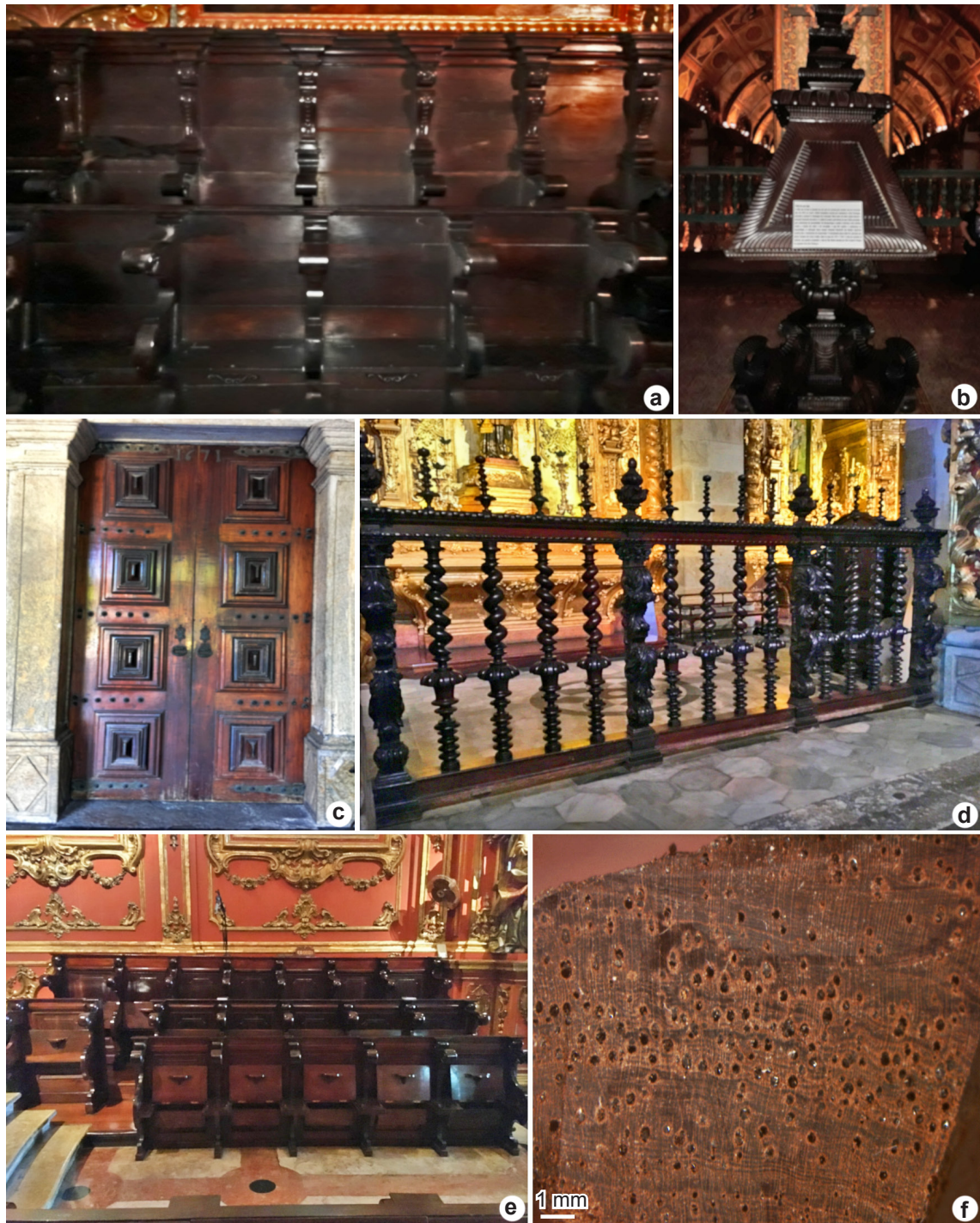
Collection location	Item	Samples	Year	Artist
Choir	Choir stall	5	1669–1676; 1685–1688	José da Conceição and Simão da Cunha
	Lectern	1	1694–1697	José da Conceição and Simão da Cunha
Chapels and baptistry	Confessional	8	1698–1703	José da Conceição
Church	Main chapel	Choir stall	20 <sup>th</sup> and 21 <sup>st</sup> centuries	Uninformed
	Central nave	Pew	Uninformed	Uninformed
Central nave/chapels	Parclose	6	1669–1673; 1682–1685; 1694–1703	Frei Domingos da Conceição
Central nave	Doors	9	1671–1673	Frei Domingos da Conceição

**Figure 1** – a. Church seen from the chancel towards the entrance (1 = nave; 2 = chancel choir; 3 = upper choir; arrow = pews; \* = benches). b. Opening of nave arches to the side chapels (1 = nave; 2 = side chapels; arrow = parclose; \* = bench). c. Panorama of church (1 = nave; 2 = main chapel; 3 = side chapels).



intended for public or assembly, arranged in two rows with sequences of 16 pieces in each row (Fig. 1a); and the parclose that surrounds the nave (Fig. 1b). There are four chapels on both sides of

the nave, which open through arches. Next to the Epistle (to the left of the altar or to the right of the visitor) are the chapels of Our Lady of Conception, Saint Lawrence, Saint Gertrude and Saint Blaise.



**Figure 2** – a. Choir stall. b. Lectern. c. Door. d. Parclose. e. Chancel chair. f. Macroscopic anatomical characteristics of *Dalbergia nigra* (jacarandá-da-bahia).





**Figure 3** – a. Pew. b. Macroscopic anatomical characteristics of *Paratecoma peroba* (*peroba-do-campo*). c. Confessional. d. Macroscopic anatomical characteristics of *Tachigali* sp. (*tachi*). e. Macroscopic anatomical characteristics of *Cedrela* sp. (*cedro*). f. Macroscopic anatomical characteristics of *Ocotea* sp. (*imbuia*). g. Macroscopic anatomical characteristics of *Nectandra* sp. (*canela*).

Between the last two chapels is a confessional. The side chapels next to the Gospel (to the right of the altar or to the left of the visitor) are dedicated to the Blessed Sacrament, Saint Maur, Our Lady of Pilar and Saint Cajetan. The chapel of Saint Cajetan contains another confessional. Next to the chapels next to the Gospel is a room in the tower, which currently houses the baptistery, where two more confessionals were sampled. A space in the main chapel, reserved only for the monks, contained choir stalls dating from the 20<sup>th</sup> and 21<sup>st</sup> centuries, which were also sampled (Tab. 1; Fig. 1a).

Collected samples were processed at the Laboratório de Botânica Estrutural of the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro. Macroscopic analysis was done of samples oriented in the transverse plane and polished with water sandpaper with granulometry between 80 and 1,200. Images were taken using Leica and Sony Cyber Shot cameras coupled to Leica model MZ16 and Olympus SZX12 stereomicroscopes and connected to computers with Image Manager software (IM50). Descriptions and analyses for wood identification followed the list of macroscopic anatomical characteristics of wood proposed by Ruffinatto *et al.* (2015). Identification was verified by comparing the set of anatomical characteristics of the collected samples with characteristics described in specialized literature and with samples from the Wood Collection of the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro (RBw). The collected wood samples were registered and deposited in the RBw (Tab. 2).

## Results and Discussion

The specimens identified as *Dalbergia nigra* had a shiny brownish to blackish color and the following macroscopic characteristics: distinct visible growth layers, demarcated by marginal parenchyma; axial parenchyma visible under lens, vasicentric, aliform, forming irregular lines; vessels visible to the naked eye, porosity diffuse, solitary to multiples of 2 to 4, few whitish deposits; rays thin, slightly contrasted in radial section barely visible under lens in cross-section (Fig. 2f).

Five wood samples (100% of collected samples) from the upper choir stalls, dating from the periods 1669–1676 and 1685–1688 and made by José da Conceição and his team, were identified as *D. nigra* (Tab. 2; Fig. 2a).

*Jacarandá-da-bahia* was also identified in the lectern of the upper choir made by José da

Conceição and his team between 1694 and 1697 (Tab. 2; Fig. 2b).

The literature indicates the use of the species *canela*, *mogno* and *jacarandá-da-bahia* for the doors, dating from 1671 to 1673 and made by Frei Domingos da Conceição and his team (Fig. 2c) (Rocha 1991; Fragoso 2013; Vantini *et al.* 2018). However, all nine samples analyzed were identified as *D. nigra* (Tab. 2).

According to Ermakoff & Fragoso (2016) and Rocha (1991), the parclose was carved of *jacarandá-da-bahia* by Frei Domingos da Conceição and his team (Fig. 2d). Its elaboration began in 1669 and was continued over the next 40 years. It was installed around the Church's central nave and in the extension of the tribunes and upper choir (Fig. 2d). All analyzed samples verified the historical records.

Fragoso (2013) mentions that the chairs stall in the chancel dates from the 20<sup>th</sup> and 21<sup>st</sup> centuries and details that the two rows of chairs that are taller and closer to the wall are made of *jacarandá-da-bahia* (Fig. 2e), while the youngest and lower row was of cedro. The identification of the wood samples confirms this information. The diagnostic macroscopic characteristics of the genus *Cedrela* are: distinct growth rings marked by marginal parenchyma and semi-porous rings; axial parenchyma visible to the naked eye, in marginal bands; vessels visible to the naked eye, small to large and mostly solitary (Tab. 2; Fig. 3e).

Samples of the four confessionals executed by José da Conceição between the years 1757 and 1760, revealed the species *Cedrela* sp. (*cedro*), *Ocotea* sp. (*canela*), *Paratecoma peroba* (*peroba-do-campo*) *Ocotea* sp. (*imbuia*) and *Tachigali* sp. (*tachi*), while those of the benches of the assembly (for which no records of their manufacture were found) revealed *P. peroba* (*peroba-do-campo*) and *Ocotea* sp. (*imbuia*) (Fig. 3a-g). Although the Monastery indicates the use of *D. nigra* in these parts (Rocha 1991; Fragoso 2013; Vantini *et al.* 2018), this was not confirmed by the present anatomical analysis (Tab. 2; Fig. 3). The macroscopic characteristics of *Ocotea* sp. are: distinct growth rings marked by fiber zones; axial parenchyma mostly vasicentric, in some cases indistinct even under lens; vessels visible only under lens, medium, small and very small, numerous, not very numerous; diffuse-porous; solitary, radial multiples of two (Fig. 3f). The diagnostic macroscopic characteristics of *P. peroba* are: indistinct and distinct growth rings marked by fiber

**Table 2** – Identification of collected wood samples.

Item	Collection location	Years	<i>Dalbergia nigra</i>	Other taxa
Choir	Choir stall	1669–1676; 1685–1688	RBw11103 RBw11104 RBw11105 RBw11106 RBw11107	0
Choir	Lectern	1694–1697	RBw11108	0
Chapels and baptistry	Confessional	1698–1703	0	<i>Cedrela</i> sp. RBw11136 <i>Nectranda</i> sp. RBw11135 <i>Ocotea</i> sp. RBw11138 <i>Paratecoma peroba</i> RBw11140 <i>Tachigali</i> sp. RBw11133 RBw 11134 RBw 11137 RBw 11141
Main chapel	Choir stall	20 <sup>th</sup> Century	RBw11143 <i>In loco</i> <i>In loco</i>	<i>Cedrela</i> sp. RBw11142
		21 <sup>st</sup> Century	0	<i>Cedrela</i> sp. RBw11144 RBw11145 RBw11146
Central nave	Pew	Uninformed	0	<i>Ocotea</i> sp. RBw 11131 RBw11132 <i>Paratecoma peroba</i> RBw11126 RBw 11127 RBw 11128 RBw 11129 RBw 11130
Central nave/chapels	Parclose	1669–1673; 1682–1685; 1694–1703	RBw11121 RBw11122 RBw11123 RBw11124 RBw11125 RBw11139	0
Central nave	Doors	1671–1673	RBw11157 RBw11160 RBw11161 RBw11162 <i>In loco</i> <i>In loco</i> <i>In loco</i> <i>In loco</i> <i>In loco</i>	0



zones and marginal parenchyma; axial parenchyma indistinct, sometimes in very thin marginal bands; vessels visible only under lens, diffuse-porous, small and very small, mostly solitary (Fig. 3b). The diagnostic macroscopic characteristics of *Tachigali* sp. are: distinct growth rings marked by fiber zones; axial parenchyma visible only under lens, scarce, vasicentric paratracheal; vessels visible to the naked eye, diffuse-porous, small to medium, solitary and multiple of two (Fig. 3d). The diagnostic macroscopic characteristics of *Nectandra* sp. are: indistinct and faint growth rings marked by fiber zones; axial parenchyma mostly indistinct even under lens, in some cases vasicentric; vessels visible to the naked eye, diffuse-porous, small, solitary and multiples of two or three (Fig. 3g).

The results of macroscopic identification indicate that 65% of the 43 analyzed samples are of *D. nigra*, while 35% are from other Brazilian species. The historical use of *jacarandá-da-bahia* is related to the availability of its trees in the Atlantic Forest and to its characteristics of weight, density and high resistance to bending, which provide durability and resistance to biodeterioration (Boschetti *et al.* 2014; Campos-Filho & Sartolli 2015; Macchioni & Bernabei 2018). Gonzaga (2006) points out that *D. nigra* is among the Brazilian woods considered noble, given its exuberant color, high stability and excellent workability. Flexor (2009) indicates *jacarandá-da-bahia* as one of the three main woods used for making furniture, highlighting the report by Lisboa (1803) who exalts *jacarandá-da-bahia* as the wood indicated for several categories of use due to its “glowing black” color.

The samples identified in this study as *jacarandá-da-bahia* are from the stalls, both in the choir and in the chancel, and the lectern, parclose and doors of the church, furniture dating from the 17<sup>th</sup>, 18<sup>th</sup> and 20<sup>th</sup> centuries. Brandão (2009, 2010) indicates that the species was used in the 17<sup>th</sup> and 18<sup>th</sup> centuries, both in luxury furniture for homes and in ecclesiastical furniture, such as the episcopal throne. Other historical uses have demonstrated the versatility of *D. nigra* wood, such as inside homes on floors, stairs and roofs, in addition to mill wheels, turned parts and fuel by Paleoindians (Brandão 2010; Boschetti *et al.* 2014; Melo Júnior & Magalhães 2015). Other species were also used by artists in the manufacture of furniture located in the church.

The results presented here confirm the what is known about the woods used by José da Conceição between the years 1669 and 1703, as

described in the *Dietario* of the Monastery (Rocha 1991; Fragoso 2013; Ermakoff & Fragoso 2016; Vantini *et al.* 2018). The use of *jacarandá-da-bahia* was a routine practice in luxury carpentry for homes and ecclesiastical furniture in the 17<sup>th</sup> and 18<sup>th</sup> centuries and was left in the wills of some historical characters (Flexor 2009; Brandão 2010). The most developed cities at the time in the states of Minas Gerais, Rio de Janeiro and São Paulo had listings and inventories indicating only two major types of joinery. The first highlighted furniture of *jacarandá-da-bahia*, with a dark placement and a high standard of use, reserved for nobler furniture such as beds, chests of drawers and oratories (Flexor 2009; Brandão 2010). The second, called “white wood”, related the most common furniture such as benches, cabinets and stools, where in some cases the wood was not exposed due to pictorial coverings (Bonnet 2009; Flexor 2009; Brandão 2010).

*Jacarandá-da-bahia* was one of the most commercialized resources, being so valuable that shipments abroad were carried out with logs, without further processing (Cabral 2012). Historical records show that from April to December of 1789, Rio de Janeiro alone exported 16,340 *jacarandá-da-bahia* logs (Cabral 2012). The 18<sup>th</sup> century saw a decrease in interest in tropical woods in European countries, yet 1,170 tons of *jacarandá-da-bahia* wood were exported from the states of Pernambuco and Paraíba (Cabral 2012). It is estimated that overexploitation has reduced native populations at 30%, while the species’ current conservation status is Vulnerable (CNCFlora 2023; CITES 2021; IUCN 2011). In addition, the genus *Dalbergia* was included in Appendix II of CITES during COP17 in Durban, South Africa, conditioning the trade on CITES licenses. The species *D. nigra*, on the other hand, was already included in Appendix I of CITES with indication of the export ban endorsed in Ordinance no. 83/1996 of Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA).

Since the colonial period, the Atlantic Forest has been referred to as “construction timber forests”, with reports and letters highlighting the names of the trees and their use (Cabral 2012). The present results show that all the furniture analyzed here was made with Brazilian woods, of which 65% was of *D. nigra*, identified in the stalls of the upper choir and presbytery, lectern, parclose, and doors. Other woods used in the furniture belonged to *Cedrela* sp., *Tachigali* sp., *Paratecoma peroba*, *Ocotea* sp., and *Nectandra* sp.



The furniture and integrated goods of the 17<sup>th</sup> and 20<sup>th</sup> centuries were mostly made with *jacarandá-da-bahia*, while those made in the 21<sup>st</sup> century were made with other woods, corroborating the available literature that reports the preference for using *D. nigra* for the manufacture of ecclesiastical furniture between the 17<sup>th</sup> and 20<sup>th</sup> centuries. The results presented here contribute to understanding the exploitation of wood resources in the Atlantic Forest, which contributed, on a large scale, to current fragmentation and threats to habitats, in addition to establishing current land use dynamics (Cabral 2012; Maioli *et al.* 2020).

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### Data availability statement

In accordance with Open Science communication practices, the authors inform that all data are available within the manuscript.

### References

- Arruda V (2007) Tradição e renovação: a arquitetura dos mosteiros beneditinos contemporâneos no Brasil. Dissertação de Mestrado. Universidade de São Paulo, São Paulo. 170p.
- Lisboa BS (1803) Memória sobre as matas da comarca de Ilhéus, cortes de madeiras, regulamento dos cortes e estado atual. Biblioteca Nacional do Rio de Janeiro, Rio de Janeiro. f. 8, ms. 512 (56, doc. 24).
- Bonnet MCL (2009) Entre o artifício e a arte: pintores e entalhadores no Rio de Janeiro, setecentista. Secretaria Municipal de Cultura, Arquivo Geral da Cidade do Rio de Janeiro, Rio de Janeiro. 200p.
- Boschetti WTN, Barbosa AA, Oliveira JTS & Santos AR (2014) Identificação de madeiras do patrimônio histórico usadas em estruturas: estudo de caso da fazenda Fortaleza. *Brazilian Journal of Wood Science* 5: 118-126.
- Brandão A (2009) Anotações para uma história do mobiliário brasileiro do século XVIII. *Revista CPC* 9: 42-64.
- Brandão A (2010) Inventários como fontes para a história da arte e do mobiliário brasileiro. *Cultura Visual* 13: 11-23.
- Brandes AFN, Novello BQ, Domingues GAF, Barros CF & Tamaio N (2020) Endangered species account for 10% of Brazil's documented timber trade. *Journal for Nature Conservation* 55: 125821.
- Cabral DC (2012) O bosque de madeiras e outras histórias: a Mata Atlântica no Brasil colonial (Séculos XVII e XIX). Tese de Doutorado. Universidade Federal do Rio de Janeiro, Rio de Janeiro. 246p.
- Campos-Filho EM & Sartolli PAR (2015) Guia de árvores com valor econômico. Ed Agroicone, São Paulo. 141p.
- Carvalho PER (2013) Espécies arbóreas brasileiras. Embrapa Florestas, Colombo. 1039p.
- CITES (2021) Apêndices I, II y III (22/06/2021). Available at <<https://cites.org/esp/app/appendices.php>>. Access on 30 September 2021.
- CNCFlora (2023) *Dalbergia nigra* in Lista Vermelha da flora brasileira. Versão 2012.2. Centro Nacional de Conservação da Flora. Available at <[http://cncflora.jbrj.gov.br/portal/pt-br/profile/Dalbergia\\_nigra](http://cncflora.jbrj.gov.br/portal/pt-br/profile/Dalbergia_nigra)>. Access on 3 May 2023.
- Dias MH (2022) Árvores e madeiras do litoral brasileiro: usos e exploração econômica no período colonial - para além do pau-brasil. In: Kury L (org.) Árvores, florestas, madeiras: ensaios históricos. Andrea Jakobson Estúdio, Rio de Janeiro. Pp 18-57.
- Ermakoff G & Fragoso DMM (2016) Mosteiro de São Bento do Rio de Janeiro 425 anos, 1590-2015. G. Ermakoff Casa Editorial, Rio de Janeiro. 312p
- Flexor MHO (2009) Mobiliário baiano. Iphan / Programa Monumenta, Brasília. 176p.
- Fragoso MM (2013) Casa de livraria: a coleção bibliográfica de obras raras do Mosteiro de São Bento do Rio de Janeiro. *Revista Coletânea* 12: 45-80.
- Gasson P, Miller R, Stekel DJ, Whinder F & Zieminska K (2010) Wood identification of *Dalbergia nigra* (CITES Appendix I) using quantitative wood anatomy, principal components analysis and naive Bayes classification. *Annals of Botany* 105: 45-56.
- Gonzaga AL (2006) Madeira: uso e conservação. IPHAN, Brasília. 246p.
- Lorenzi H (2002) Árvores brasileiras: manual de identificação e cultivo de plantas arbóreas nativas do Brasil. V. 1. 4ª ed. Instituto Plantarum, Nova Odessa. 368p.
- Macchioni N & Bernabei M (2018) Identifying the wood of historic artifacts: basic information or simply a curiosity? *Global Journal of Archaeology and Anthropology* 6: 555677.
- Maioli V, Belharte S, Kropf MS & Callado CH (2020) Timber exploitation in Colonial Brazil: a historical perspective of the Atlantic Forest. *HALAC - História Ambiental, Latinoamericana y Caribeña* 10: 46-73. DOI: 10.32991/2237-2717.2020v10i2.p74-101
- Melo Júnior JCF & Magalhães WLE (2015) Antrocolgia de fogueiras paleoíndias do Brasil central: considerações tecnológicas e paleoetnobotânicas sobre o uso de recursos florestais no abrigo rupestre

- Lapa do Santo, Minas Gerais, Brasil. *Antípoda* 22: 137-61.
- Melo Júnior JCF (2012a) Anatomia de madeiras históricas: um olhar biológico sobre o patrimônio cultural. Univille, Joinville. 132p.
- Melo Júnior JCF (2012b) Aspectos anatômicos de madeiras históricas do período colonial do nordeste de Santa Catarina: elementos para conservação do patrimônio cultural. *Revista Confluências Culturais*. 1: 71-84.
- Rego M & Possamai E (2003) Jacarandá-da-bahia (*Dalbergia nigra* Vellozo) Leguminosae -Papilionoidae: produção de mudas. Comunicado Técnico 106. Embrapa Florestas, Colombo. 3p.
- Rocha MR (1991) O Mosteiro de São Bento (1590-1990). Lumen Christi, Rio de Janeiro. 130p.
- Ruffinatto F, Crivellaro A & Wiedenhoef AC (2015) Hardwood and softwood identification and a proposal for a new character list. *IAWA Journal* 36: 208-241.
- Silva-Nigra CM (1950) Frei Domingos da Conceição, o escultor seiscentista do Rio de Janeiro. Tipografia Beneditina, Salvador. 97p.
- Taylor V, Kecse-Nagy K & Osborn T (2012) Trade in *Dalbergia nigra* and the European Union. Report prepared for the European Commission. TRAFFIC, Cambridge. 25p.
- Vantini ACF, Oliveira HB, Guilherme J, Bulzan JML & Borges FDCMF (2018) Mosteiro de São Bento: a arquitetura imponente na paisagem urbana do Rio de Janeiro. *Colloquium Socialis* 2: 677-684.
- Varty N (1998) *Dalbergia nigra* (errata version published in 2016). The IUCN Red List of Threatened Species. E.T32985A86221269. Available at <<https://dx.doi.org/10.2305/IUCN.UK.1998.RLTS.T32985A9741135.en>> Access on 1 September 2022.

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