Historical Woods and Public Policies for the Conservation of National Built Monuments in Brazil

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Historical timbers constitute bio-resources that faithfully attest to ancestral knowledge concerning forests and the evolution of technological and cultural understanding associated with the use of wood. Timber is a ubiquitous component of many historical buildings. While significant policies guide interventions on this type of cultural property, gaps persist within the Brazilian context. The present study aims to problematize public preservation policies and propose strategies to address the disposal of historical timbers during interventions in the built heritage. The importance of botanical studies is underscored, as well as the necessity of establishing mandatory safeguarding mechanisms—specifically, the deposition of replaced timber (due to pathological issues in historical buildings) in a specialized scientific collection. This measure serves to register the knowledge and practices that connect the cultural past with the present.

DOI: 10.15376/biores.21.2.2792-2795

Keywords: Cultural bioresource; Historical woods; Wood heritage; Heritage protection; Public heritage

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Wood is, without a doubt, the forest resource most widely used by human cultures around the world (Dominguéz-Delmáz *et al*. 2023). It is present in a diverse range of cultural items, represented by categories of wood use (Melo Júnior 2024a). Among these, historical shelters and buildings stand out globally, not only for their representativeness but also for the great interest of different sciences in traditional construction techniques, architectural styles, biomaterials, and their behaviors (Fig. 1). They aggregate great historical-cultural and economic value (Melo Júnior *et al.* 2025).

Wood, as a biocultural resource (Bhati and Epstein 2023), can reveal builders' technical knowledge of the properties and appropriate uses of each type of wood in structures and architectural elements. Wood, therefore, is not merely a construction input, but also a material testament to the techniques, technological choices, and socio-environmental relationships of each era. Its botanical identification, through anatomical characterization, allows for the reconstitution of histories of use, species circulation, landscape transformations, and knowledge associated with forest management, constituting a biocultural archive of immeasurable value (Melo Júnior 2024b).

The preservation of historical buildings is governed by a set of norms and practices that aim to protect a country's architectural and cultural heritage, often guided by international conservation principles (ICOMOS 1999). In Brazil, there are two federal programs focused on built heritage, which aim to promote economic and social development through heritage, ensure its sustainability, maintain the original characteristics of the assets, and facilitate the maintenance of these characteristics (IPHAN 2025).

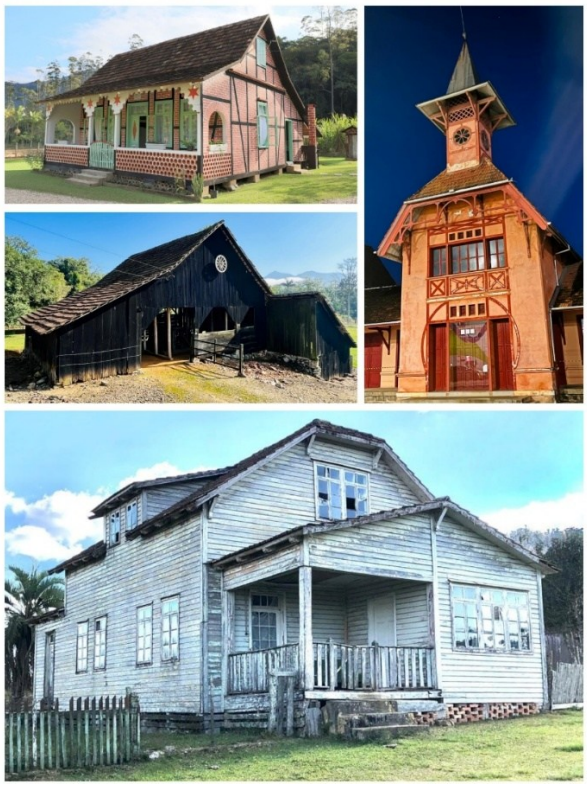

Fig. 1. Examples of historic wooden buildings from European immigration in southern Brazil

According to these programs, interventions in cultural properties must be guided by respect for their authenticity, encompassing their aesthetic, historical, and material values, constructive processes, and spatial context, minimizing interference. The authenticity of materials requires the maximum preservation of original elements, and when their substitution is inevitable, the choice must be made for materials compatible with the original physical, chemical, mechanical, color, and texture characteristics, without allowing confusion between originals and substitutes. Historical authenticity requires interventions that do not alter the historical values inherent in the materials, techniques, aesthetics, or spatiality.

In the aesthetic aspect, both the original ideas and the modifications accumulated over time that confer new layers of value to the property are preserved. Priority is also given to the authenticity of constructive processes and their peculiarities, avoiding the use of incompatible techniques that would mischaracterize the existing system.

For this purpose, possible actions of maintenance, recovery, rehabilitation, reconstruction, stabilization, restoration, and revitalization are considered. Conservation methods include approaches aimed at preserving the integrity and cultural value of historical buildings, which may involve the replacement and substitution of wooden structures and components, since wood is widely present in architectural elements (Gomide *et al*. 2005). The physicochemical and mechanical characteristics are directly related to the intended use (Galvão 2005) and require care for the correct conservation and durability of the heritage property (Gonzaga 2006). However, traversing historical time and preserving its authenticity presupposes resisting pathologies caused by physical, atmospheric, chemical, and biological agents that trigger wood deterioration (Lelis *et al.* 2001).

The Disposal of Cultural Timber in Historical Buildings

Despite efforts for the preservation of Brazilian built heritage, the reality observed in conservation actions reveals a distinct practice. The lack of full incorporation of the biocultural dimension inherent in wood, to the detriment of an essentially architectural-urbanistic logic, results in the replaced timber being treated as construction waste. There is no provision for its systematic documentation, anatomical analysis, or incorporation into scientific collections (BRASIL, 2005a; 2005b; 2013).

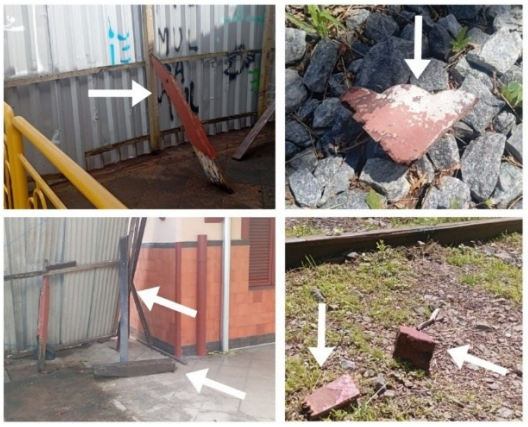

Fig. 2. Inadequate treatment afforded to historical timber (arrow) during heritage restoration projects in Brazil

This limitation is evidenced in restoration procedures, where the replaced historical timber is systematically classified as construction residue. In practice, the absence of specific regulations results in disposal, according to the general rules for civil construction waste, ignoring the biocultural potential of the wood. In general, this disposal is carried out by construction companies contracted by the public sector that manage the restoration project, without any concern for the biological, historical, and cultural values associated with the woods that originally composed the property.

Following such replacement, the timbers are generally collected in solid waste containers by subcontractors of the construction companies for disposal, or they are otherwise discarded within the construction site premises (Fig. 2). Beyond the damage caused by xylophagous agents and weathering, the absence of specific guidelines results in the systematic disregard for the heritage value of the removed historical timbers, as bioresources capable of revealing environmental and human history.

Implications of Discarding Historical Timbers

Discarded timbers are faithful testimonies of the knowledge and practices of the historical past and can reveal a multitude of information about ancestral knowledge concerning forests and their trees; their preferences for use; the technological evolution of traditional construction techniques; the floristic and structural composition of forests in the past; and the possible symbolic and sensorial relationships attributed to the woods (Melo-Júnior 2024a). We propose here that discarded wood fragments, resulting from conservation and restoration interventions, should be considered as heritage of equal importance to the building of which they were a part. Discarding timbers contained in historical buildings during interventions means discarding the cultural past and the social memory related to the historical use of wood, a fact that is independent of maintaining the functionality of the property or its attribution of new use through the rehabilitation or revitalization of the built heritage. It is imperative to recognize that cultural timbers contained in architectural components damaged by pathologies safeguard the history of the restored property itself and, therefore, require, instead of simple disposal, a safeguarding plan based on scientific collections and specialized wood anatomy teams.

The listing and safeguarding of cultural timber allow the history of that specific monument to be revisited and preserved for research, providing information that compliments what is already known about such heritage. The safeguarded timbers can, even in a temporary and spatial *ex situ* condition, serve as spokespersons for the ancestral knowledge of master carpenters regarding the constructive traditions that characterize the multiplicity of typologies and architectural styles of the national built heritage. Wood would then assume its rightful place as a source of our socio-environmental history.

Conclusion

A critical analysis of built heritage conservation practices reveals a multifaceted problem in Brazil. Public policy guidelines, although sophisticated in their discourse, fail to provide mechanisms for managing replaced timbers as a biocultural element. This regulatory gap allows the historical timbers to be handled as mere residue. Such handling results in loss of knowledge about forests, woods, and the associated cultural relationships, thereby requiring a new perspective on heritage policies involving historical timbers.

Acknowledgments

The authors are grateful for the support of the National Council for Scientific and Technological Development (CNPQ 308777/2025-5), Research Support Fund of Univille (FAP 1282), and Santa Catarina State Research and Innovation Support Foundation (FAPESC 2024TR002674 and 00000984/2025).

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