

The wood species in roof constructions of palaces from XIX c. in Mazovia and their outbuildings

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Abstract: *The wood species in roof constructions of palaces from XIX c. in Mazovia and their outbuildings*

The wood species in roof constructions of historic brick buildings: 6 historic palaces and 1 outbuilding of big manor from XIX century were determined. The wood species in roof constructions of 1 building from XVIII century and 1 building from XX century were determined for comparison. Moreover, the wood species in roofs and walls constructions of 4 wood outbuildings of palaces in Mazovia region were determined. Present studies are a continuation of the earlier analysis of the historic wooden churches from the Mazovia region. In all buildings the only material used in the roof constructions was Scots pine. Of the three buildings in two cases the walls were made of Scots pine and in one case was made of Scots pine and oak (*Quercus* sp.). The results obtained in the study confirm previous authors observation, in contrast to the views colloquial, main building material used in wooden historic constructions in the Mazovia region was Scots pine.

Keywords: old buildings, wood material in architecture, *Pinus sylvestris* L., *Quercus* sp.

INTRODUCTION

By 1995 - 2012, studied at the Department of Wood Science and Wood Protection species composition of structural timber in 37 historic wooden churches and 7 historic brick churches in Mazovia region [Krajewski 2005, 2010, 2011, 2012]. This work contains the results investigations of wood species in constructions of palaces and their outbuildings from XIX c. in Mazovia region.

MATERIAL AND METHODS

The wood species used for the construction of 13 buildings were tested. The samples of wood from roof trusses were collected from 7 objects with brick walls from 19th century: 5 palaces: (Wilanów, Rybienko, Wola Chojnata, Grzmiąca, Guzów), 1 outbuilding in Żelazowa Wola, and 1 object of garden architecture – Temple of Diana in Arkadia near Nieborów. Other samples were collected from 4 completely wooden objects: object of garden architecture – the Temple of Diana in the Royal Łazienki, Warsaw, the forester's lodge in Morysin near Wilanów (Warsaw), the gardener's cottage in Opinogóra and granary in Wola Chojnata.

In addition, samples of wood from 2 objects were collected, which buildings were not built in the 18th century. In one case samples from the Temple of Diana in Arcadia was interesting due to ability of comparison with the 19th century material from the Temple of Diana in the Royal Łazienki Park in Warsaw. In other case wood from the Villa of the Iwaszkiewicz family in Stawisko could be compared with samples from villa of Karol Dittrich in Żyrządów.

Not all construction elements of buildings were fully sampling. Items that are not exposed samples were collected in the "-" sign. Objects dating from the information contained in the literature. These objects can be characterized in the summary manner as follows:

Wilanów – South Wing of the Palace, rebuilt by Jan Zygmunt Deybl in the twenties of the 18th century, and reconstructed in the 20th with some remains from 19th century; **Rybienko** - the Classicist chateau built circa 1780 for bishop Giedroyc, assigned to Szymon Bogumił Zug

or Jan Chrystian Kamsetzer, reconstructed and redecorated several times in the 19th and 20th century; **Wola Chojnata** - the Palace from 1873, built for the Wierzbicki family, with original roof; **Grzmiąca** - Neo-Renaissance palace from the mid-19th century built for Julian Wilhelm Brunney according to a design by Wojciech Bobiński, with preserved original roof; **Żelazowa Wola** - outbuilding of Manor House of the Skarbek family, the family home of Frederic Chopin, mentioned for the first time in 1818, perhaps an existing already in the second half of the 18th century, the roof from the 20th century; **The Diana Temple in Royal Baths Park in Warsaw Łazienki Garden**- built about 1820 for Joanna Grudzieńska, wife of Grand Duke of Russia Constantine Pavlovich Romanov; **The Diana Temple in Arkadia near Nieborów**- built 1783; **Żyrardów** -Villa of Karol Dittrich, built between 1886-1896, with partially preserved the original timber roof construction; **Stawisko** - house built in 1928 for the Iwaszkiewicz family; **Morysin** – forester’s lodge of Wilanów estate, about the middle of the 19th century, featuring original material wood walls and roof; **Opinogóra** - house of gardener in the estate of the Krasieński family, probably built around the middle of the 19th century; **Wola Chojnata** - granary from the first half of the 19th century, roof reconstructed in 20th century.

Membership of the species of wood samples identified under the microscope, using an wood atlas [Wagenführ and Scheibler 1989].

RESULTS AND DISCUSSION

The research results of the species composition in roof constructions of 9 brick buildings: 6 palaces from XIX c. and 1 from XX c. and 2 their outbuildings in Mazovia region are presented in Table 1.

Table 1. The timber species in roof construction of 7 historic buildings in Mazovia

Original large-size structural elements of roof constructions	Original pins of roof constructions	New large-size structural elements of roof constructions	New pins of roof constructions
Wilanów – southern wing of the palace from the first half of the eighteenth century with later roof construction (XIX and XX century)			
2 x <i>Pinus sylvestris</i> L. (original ?)	no original pins of roof constructions	10 x <i>Pinus sylvestris</i> L.	no new pins of roof constructions
Żelazowa Wola – outbuilding of Skarbek manor recorded for the first time in 1818 with the roof construction from the twentieth century			
no original large-size structural elements of roof constructions	no original pins of roof constructions	7 x <i>Pinus sylvestris</i> L.	3 x <i>Pinus sylvestris</i> L.
Rybienko – palace built around 1780, perhaps by design with changeable later its harness			
1 x <i>Pinus sylvestris</i> L.	-	-	-
Grzmiąca – palace with original roof, the mid -nineteenth century			
6 x <i>Pinus sylvestris</i> L.	7 x <i>Pinus sylvestris</i> L.	1 x <i>Pinus sylvestris</i> L.	-
Wola Chojnata - palace with the original roof, 1873			
5 x <i>Pinus sylvestris</i> L.	2 x <i>Pinus sylvestris</i> L.	-	-
Guzów - palace			
6 x <i>Pinus sylvestris</i> L	steel joints	3 x <i>Pinus sylvestris</i> L.	
Żyrardów – villa of Karol Dittrich, 1886 – 1896			
4 x <i>Pinus sylvestris</i> L. (original ?)	-	-	-
Stawisko – house of Anna and Jarosław Iwaszkiewicz, 1928 r.			
4 x <i>Pinus sylvestris</i> L.	4 x <i>Pinus sylvestris</i> L.	-	-
Diana Temple in Arkadia near Nieborów, 1783			
4 x <i>Pinus sylvestris</i> L.	-	-	-

The research results of the species composition in outbuildings constructions of historic wood buildings in Mazovia region are presented in Table 2.

Table 2. The timber species in construction of 4 outbuildings of historic palaces from XIX c. in Mazovia

The foundations of walls	Beams of walls	Dowels or pins in walls	Large size structural elements of roof constructions	Pins in roof constructions
Diana Temple in Royal Baths Park in Warsaw Łazienki Garden, 1820				
2 x <i>Pinus sylvestris</i>	original large-size structural elements of walls constructions - 5 x <i>Pinus sylvestris</i> L.	-	new large-size structural elements of roof constructions - 5 x <i>Pinus sylvestris</i> L.	-
Morysin – forester, about the mid -nineteenth century				
-	8 x <i>Pinus sylvestris</i> L., 7 x <i>Quercus sp.</i>	-	new and old large-size structural elements of roof constructions - 6 x <i>Pinus sylvestris</i> L.	-
Opinogóra – gardener's house, supposedly built in the mid-nineteenth century				
1 x <i>Pinus sylvestris</i> L.	5 x <i>Pinus sylvestris</i> L.	-	8 x <i>Pinus sylvestris</i> L.	4 x <i>Pinus sylvestris</i> L.
Wola Chojnata – granary, the first half nineteenth century				
2 x <i>Pinus sylvestris</i> L.	original large-size structural elements of walls constructions -5 x <i>Pinus sylvestris</i> L.	-	new large-size structural elements of roof constructions - 5 x <i>Pinus sylvestris</i> L.	-

Most of the buildings has been significantly rebuild and redecorated in the 19th century and the 20th century, which makes difficulties in dating wooden elements. A good example of the problem are changes in an external view of an outbuilding in Żelazowa Wola (photo.1).

A

B

Photo.1. Żelazowa Wola - outbuilding of Manor House of the Skarbek family: A - figure of the nineteenth century [source: Bronisław Jaworski, "Tygodnik Ilustrowany", 1870, nr 152, s. 25 – in Wojtylak (2000)], B - contemporary photography [photo. A. Krajewski, february 2004]

Despite the seemingly performance as masonry walls, a real building material of Diana Temple in Royal Baths Park in Warsaw Łazienki Garden was shown on the pictures in the infrared (photo. 2).

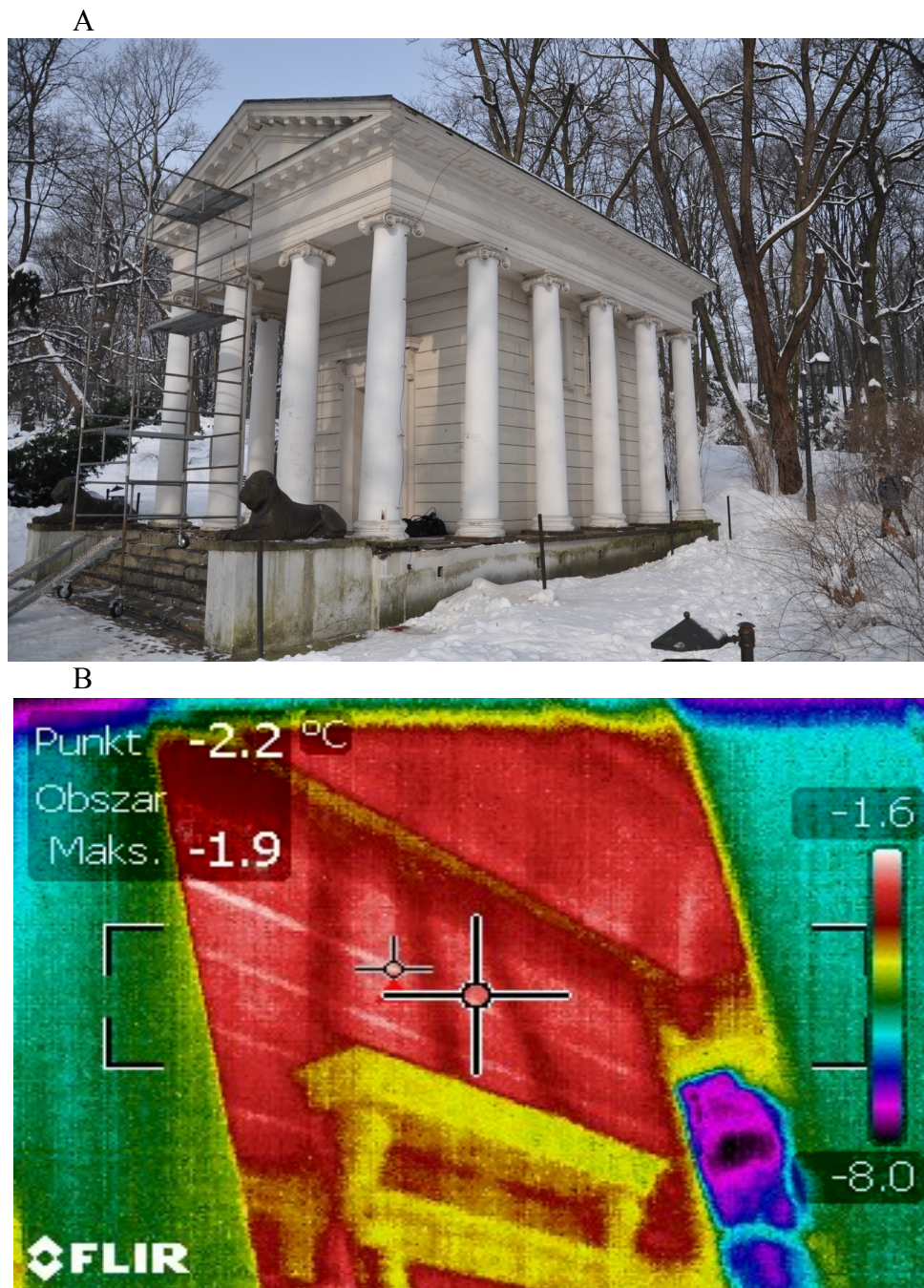


Photo. 2. Temple of Diana at the Royal Baths Park in Warsaw: A - general view [photo. P. Witomski], B - view of a wooden frame structure in the infrared [photo. courtesy of Centrum Mikroskopii, Warszawa]

The results of investigation are similar as in previous investigations of author in churches of Mazovia [Krajewski 2005, 2010, 2011, 2012]. Scots pine (*Pinus sylvestris* L.) was also building material in historical churches in Małopolska region in the XIV – XV c. [Brykowski 1981] and Pomorze region in XV – XIX c. [Gogolin 2008].

The oak wood was used as walls material only in Morysin forester's lodge, built about the mid-nineteenth century. This is an exceptional situation because of costs of this material. There was only one more evidence of usage of oak wood in walls in the region of Mazovia. It was used in the 19th century during partial reconstruction of the walls of the church in Gończyce from 1740. The use of relatively expensive oak as construction material in both cases was probably connected with the availability of the raw material, its durability and a wealthy of landowner.

CONCLUSIONS

Based on the results obtained fund general trends: in large-sizes elements of roof - d walls constructions of historic palaces, their outbuildings and villas is wood of Scots pine (*Pinus sylvestris* L.). Only incidentally was used oak wood (*Quercus* sp.) in walls construction. Unfortunately, few wooden constructions are preserved in its original state or slightly altered.

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Streszczenie: *Gatunki drewna w więźbach dachów pałaców mazowieckich z XIX w. i konstrukcjach budynków im towarzyszących*

Oznaczono gatunki drewna w konstrukcjach dachów 7 zabytkowych budynków murowanych: 6 historycznych pałaców (lub willi) i jednej oficyny dużego dworu z XIX w. Zbadano dla porównania gatunki drewna w więźbie dachu 1 obiektu z XVIII w. (Arkadia) i 1 obiektu z XX w. (Stawisko). Określono również gatunki drewna użyte do budowy 4 drewnianych budynków towarzyszącym pałacom na Mazowszu. Badania te są kontynuacją podjętych wcześniej badań gatunków drewna użytych do budowy zabytkowych kościołów drewnianych na Mazowszu. W więźbach dachów wszystkich budynków stwierdzono użycie jedynie drewna sosny zwyczajnej (*Pinus sylvestris* L.) do wykonania wielkowymiarowych elementów konstrukcyjnych. W trzech drewnianych budynkach materiałem użytym do budowy ścian była sosna zwyczajna a w jednym sosna zwyczajna i dąb (*Quercus* sp.). Wyniki badań potwierdzają wcześniejsze spostrzeżenia, że gatunkiem drewna używanym do wykonywania wielkowymiarowych elementów konstrukcji drewnianych zabytkowych budynków na Mazowszu była sosna zwyczajna.

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