

The species of wood in constructions of six historic churches in Mazovia region

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Abstract: *The species of wood in constructions of six historic churches in Mazovia region.* The paper is a continuation of the research of timber species in temples of Mazovia area. Wood samples have been taken from 3 parish churches and 3 cemetery chapels: 1 object of the seventeenth century (Zakrzewo Kościelne), 3 objects from the eighteenth century (Rębertów, Lutkówka and Zambrów) and 2 buildings from the nineteenth century (Białynin and Brańszczyk). All objects were built of pine. In the churches in Zakrzew and Rębertów, were found connecting elements of oak. In other objects lack was access to connecting elements, so not sampled. In the chapel in Białynin is a gothic portal with oak, moved from defunct church in this village. In the chapel in Brańszczyk the painting "Adoration of the 3 Kings" was found on the top backside of the altar, from defunct church in the village. Chapel in Zambrów is known for wall paintings: "dance of death" and illusionist altar. On the roof construction in the church in Rębertów were found little birch wood dowels, as in the church in Boczki. The dowels were fitted probably for drying herbs. Transportation of timber in rafts was limited to objects located very close to the large rivers (Zakrzewo Kościelne).

Keywords: timber, *Pinus sylvestris* L., *Quercus* sp., old wooden architecture

INTRODUCTION

The species composition of structural timber in 37 historic wooden churches and 7 roof constructions of historic brick churches in Mazovia region were studied by 1995 – 2012 at the Department of Wood Science and Wood Protection (Krajewski 2005, 2007, 2010, 2011, 2012]. The species composition of structural timber in 4 wooden historic buildings and 9 roof constructions in brick palaces in Mazovia region were studied too. This work contains the results further investigations of wood species in 6 historic constructions in Mazovia region: 3 wooden historic parish churches and 3 wooden historic cemetery chapels.

MATERIAL AND METHODS

The wood species used for the construction of 3 wooden churches (Zakrzewo Kościelne XVII c., Rębertów XVIII c. and Lutkówka XVIII c.) were studied. The temple in Zakrzewo Kościelne, which was originally a parish church, is now a filial church. The church in Zakrzewo Kościelne was too transferred from the Vistula river flood plains to higher place. The wood species used for the construction of 3 wooden cemetery chapels were studied too. More accurate dating of objects are given in Table 1. The samples of wood from walls and roof constructions of these objects were collected. Studies were carried out under a microscope in magnification of 120x. Species identification was made using atlases (Grosser 1977, Wagenführ et Scheibler 1989). The publication contains photographs of the more interesting detailing that were found in temples.

RESULTS AND DISCUSSION

More accurate dating of objects and the test results of timber species composition in 3 wooden churches are given in Table 1. Wood species other than pine written in bold letters for easy notice.

Table 1. The timber species in construction of 3 historic wooden churches in Mazovia region

The foundations of walls	Beams of walls	Dowels in walls	Large size structural elements of roof constructions	Pegs in roof structure
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Zakrzewo Kościelne, before 1619, the original walls, iridescent beam approx. 1540 and a new roof structure

not sampled - foundations unoriginal	4 x <i>Pinus sylvestris</i> L.	available to studies - not sampled	5 x <i>Pinus sylvestris</i> L.	the sole survivor pin outside construction 1 x <i>Quercus sp.</i>
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Note: pins connecting the pillars in the nave of the struts: **2 x *Quercus sp.*** [Fig. 1]

raft pins in walls: **1 x *Quercus sp.***, 1 x *Pinus sylvestris* L.

Lutkówka 1774, the parish church *in situ*, original wall, roof structure of chancel and nave available at the time of the inspection

not sampled	4 x <i>Pinus sylvestris</i> L.	available to studies - not sampled	3 x <i>Pinus sylvestris</i> L.	2 x <i>Pinus sylvestris</i> L.
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Rębertów (near Tarczyn) 1730 – 1742, the parish church *in situ*, the original walls and partially roof construction [Fig. 1]

not sampled - foundations unoriginal	available to studies - not sampled	available to studies - not sampled	13 x <i>Pinus sylvestris</i> L.	8 x <i>Quercus sp.</i> , 2 x <i>Pinus sylvestris</i> L.
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Note: small pegs driven into the roof structure elements **6 x *Betula sp.*** [foto 1]

More accurate dating of objects and the test results of timber species composition in 3 wooden cemetery chapels are given in Table 2.

Table 2. The timber species in construction of 3 historic wooden cemetery chapels in Mazovia region

The foundations of walls	Beams of walls	Dowels in walls	Large size structural elements of roof constructions	Pegs in roof structure
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Białynin XIX c., cemetery chapel *in situ*, the original walls and roof construction, the Gothic portal transferred from the defunct parish church [Fig. 3]

2 x <i>Pinus sylvestris</i> L.	4 x <i>Pinus sylvestris</i> L.	1 x <i>Pinus sylvestris</i> L.	5 x <i>Pinus sylvestris</i> L.	4 x <i>Pinus sylvestris</i> L.
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Brańszczyk 1861, cemetery chapel *in situ*, the original walls and roof construction

3 x <i>Pinus sylvestris</i> L.	available to studies	available to studies - not sampled	7 x <i>Pinus sylvestris</i> L.	3 x <i>Pinus sylvestris</i> L.
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Zambrów 1795, cemetery chapel *in situ*, the original walls, the original walls oryginalne, roof structure available at the time of the inspection

not sampled	6 x <i>Pinus sylvestris</i> L.	available to studies - not sampled	available to studies - not sampled	available to studies - not sampled
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All major components in all the churches and chapels were made from Scotch pine wood. Oak wood was in non-original new foundations in the church in Zakrzewo Kościelne, in Gothic portal in chapel in Białynin [Fig. 3] in pins in roof structure in churches in Rębertów and originally in Zakrzewo Kościelne. In Zakrzewo Kościelne was found only one preserved remnant of the pin of original roof structure [Fig.1] ch has been replaced with a new construction. The original pins in roof structures older than the nineteenth are made from Scots pine wood.



Fig. 1. Small pegs (*Betula sp.*) from the roof structure elements in Rębertów church (open) and peg (*Quercus sp.*) from roof structure in Zakrzewo Kościelne (under)

These findings wood species composition of pins and dowels confirm the results previously obtained in other churches of Mazovia region (Krajewski 2005, 2007, 2011 and 2012). While historic churches for example in Małopolska Province were built in the sixteenth century (Brykowski 1981) and later with wood of fir, pine, spruce and larch. In the studies of churches and chapels of Mazowsze region didn't find the big original structural elements of oak. This is a different situation compared to the Pomorze region. In this area, oak was imported wood in large structural elements in historical churches (Gogolin 2008). Oak walls found only in the church in Gończyce (Krajewski 2010) and inforester in Morysin, so far (Krajewski et Witomski 2014). However, these constructions probably came from the late nineteenth century.



Fig. 3. The Gothic portal (*Quercus sp.*) in chapel in Bialynin transferred from the defunct parish church

Chapel in Zambrów is very similar to the later chapel in Brok (Krajewski 2012). The chapel in Zambrów as opposed to the chapel in Brok, however, has beautiful polychrome inside walls [Fig. 4] paintings include illusionist altar and the “dance of death”. The chapel was built on the initiative of Father Marcin Krajewski in 1795. Crest of founder is above the door of chapel.



Fig. 4. The paintings of “dance of death” on the walls (*Pinus sylvestris*) in chapel in Zambrów

The walls of the church in Zakrzewo Kościelne found remains of rafts pins. The church in Zakrzewo is located near the Vistula River. In the pegs is oak and Scotch pine wood. The raft's pegs were found in walls of church in Troszyn by the Vistula River (Krajewski 2010) so far too.

The small pegs driven into the roof structure elements of church in Rembertów [Fig. 2] were intended for wisps of straw or dried herbs. This is indicated by a thick linen thread that is stored on one of them [Fig. 1]. The wood in these small pins is birch. Until now these small pins for drying herbs were found in the construction of the roofs of churches in the Boczki in Mazovia Province (Krajewski 2012) and other churches (Mączyński 2010).



Fig. 2. Part of original roof structure in churches in Rębertów

During the vetting chapel in Brańszczyk found previously unknown paintings of the eighteenth century under the table top of the altar [Fig. 5]. The paintings come from the eighteenth-century church demolished in 1833.



Fig. 5. The unknown paintings of the eighteenth century under the table top (*Pinus sylvestris*) of the altar in chapel in Brańszczyk

CONCLUSIONS

The churches and chapels in Mazovia Province were built of Scotch pine wood. Obtained here results confirm earlier findings. The deliberate use of oak and birch in the surveyed churches testifies to the well-understood natural materials science in the seventeenth and eighteenth centuries. Transportation of timber in rafts was limited to objects located very close to the large rivers.

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Streszczenie: *Gatunki drewna w 3 drewnianych kościołach i 3 drewnianych cmentarnych kaplicach na Mazowszu.* Publikacja jest kontynuacją badań gatunków drewna budulcowego świątyń z terenu Mazowsza. Zostały pobrane próbki drewna z 3 kościołów i 3 kaplic cmentarnych: 1 obiekt z XVII w. (Zakrzewo Kościelne), 3 obiekty z XVIII w. (Rębertów, Lutkówka i Zambrów) i 2 obiekty z XIX w. (Białynin i Brańszczyk). Wszystkie zostały zbudowane z drewna sosnowego. W obiektach z Zakrzewa Kościelnego i Rębertowa stwierdzono występowanie elementów łącznikowych z drewna dębowego. W pozostałych obiektach brak był dostępu do elementów łącznikowych, więc nie pobrano próbek. W kaplicy w Białynin jest gotycki portal z drewna dębowego, przeniesiony z nieistniejącego kościoła w tej wsi. W kaplicy w Brańszczyku zostało znalezione malowidło na spodnie stronie deski mensy ołtarzowej „Pokłon 3 króli”, pochodzące z nieistniejącego kościoła w tej miejscowości. Kaplica w Zambrów jest znana z malowideł naściennych: *dans macabre* i iluzjonistycznego ołtarza. W Rębertowie stwierdzono na konstrukcji dachu kołeczki z drewna brzoźowego podobnie, jak w kościele w Boczkach. Kołeczki te były montowane prawdopodobnie w celu zawieszania ziół lub wiechci słomy. Stwierdzono, że transport drewna tratwami do budowy kościołów i kaplic ograniczał się do obiektów położonych bardzo blisko dużych rzek (tu: Zakrzewo Kościelne).

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