

# Dendrochronological investigation of basements of the Palace of the Grand Dukes of Lithuania in Vilnius

P40<sup>C</sup>

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The Vilnius Lower Castle has been built at the foot of the Castle Hill and is the most complex defence structure of the 13<sup>th</sup> – 14<sup>th</sup> Cs. in Lithuania. The largest building in the Castle territory was the Palace of the Grand Dukes built in the beginning of the 16<sup>th</sup> c. partly on the demolished walls of the former defence system. The entire Lower Castle site is located in a swampy valley at the confluence of two rivers Vilnia and Neris. Therefore a big part of masonry constructions is erected on different wooden supporting basements. Wooden grillages were found under defence walls and towers. Wooden supporting constructions of different types were found under the basements of the Palace as well. Chronology of the Palace construction and development was specified during dendrochronological investigation of these constructions.

Pine, black alder and oak were used to build the supports. The use of different tree species is characteristic of the constructions of different periods of time. Pine and small size oak timbers were used for the constructions built under the defence walls of the Castle. Only pine timbers were suitable for dating. The Castle walls that later served as the base for some walls of the Palace were dated to the beginning of the 14<sup>th</sup> c., dendrochronological dates 1326 and 1328 AD. Some additional abutments were added in the middle of the 15<sup>th</sup> c.

The use of black alder caught on in the 16<sup>th</sup> c. The oldest southeast part of the Palace was built on alder posts. A later northeast wing was also built on alder posts but its construction contained pine logs as well. The pine logs were dated to 1542. A floating 114 years alder chronology was constructed using tree ring series of the posts found under the oldest and the northeast wings of the Palace. The terminal ring of the oldest part posts was dated to the relative 61, but the terminal ring of the northeast part posts – to the relative year 91. Supposing the pine and alder timbers for the northeast wing were logged in the same year, the last ring of the alders used for the oldest southeast wing of the Palace had been formed in 1512 and the trees were felled in 1512/1513 dormant season.

A grillage made of pine logs was found under the basements of the western and northwestern wings of the Palace. The pines were dated to 1552. A support made of pine logs under the staircase annex in the inner yard of the Palace was also dated to 1552.