

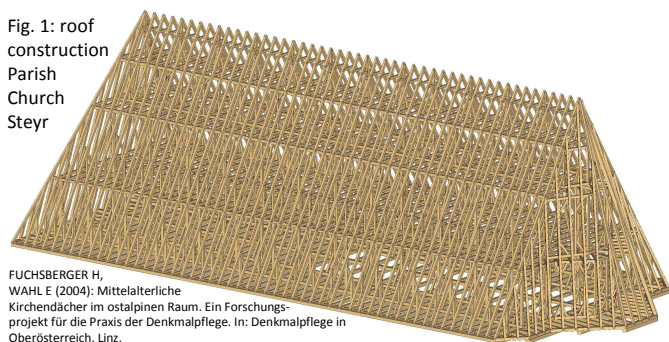
# Wood Utilization in Historical Church Roof Constructions in Austria



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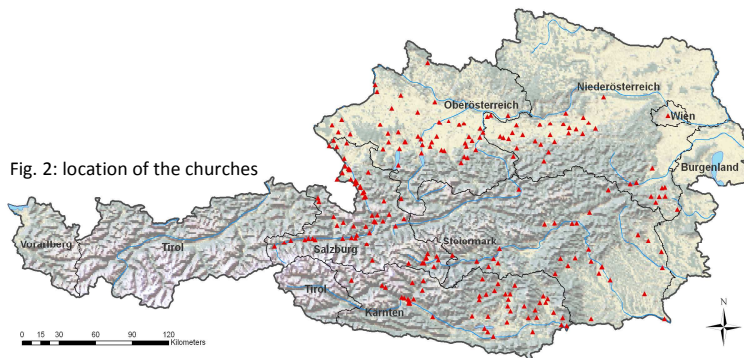
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Fig. 1: roof construction Parish Church Steyr



FUCHSBERGER H, WAHL E (2004): Mittelalterliche Kirchendächer im ostalpinen Raum. Ein Forschungsprojekt für die Praxis der Denkmalpflege in Oberösterreich, Linz.

Fig. 2: location of the churches



## data base

3.443 samples from 223 church roofs in Salzburg, Carinthia, Upper Austria, Lower Austria and Styria between the rivers Danube and Drava (see Fig. 2)

The dendrochronological dates of 1.982 samples cover a time span from the early 12<sup>th</sup> to the middle of the 20<sup>th</sup> century, but almost 95% date between 1350 and 1750.

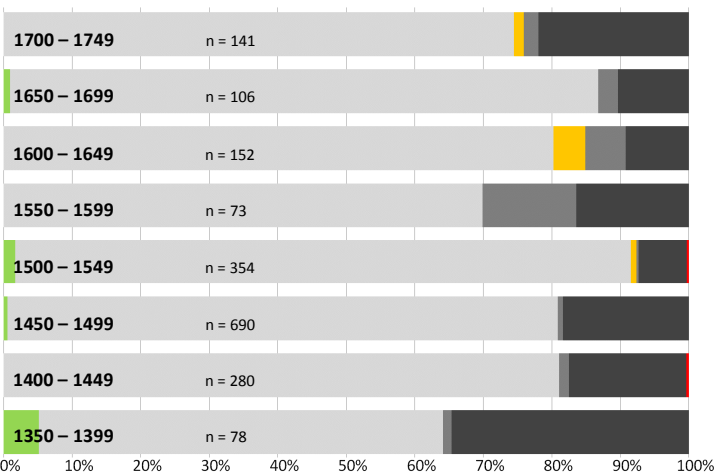


Fig. 4: tree species used in churches grouped by time slices n = 1.874

## results

1. Almost 82% of all elements are spruce followed by fir – more than 11% – and larch (5%) – see Fig. 3.

2. The fir-larch proportion and the average number of tree rings per sample change with elevation (Figs. 4, 5). This reflects the natural species distribution and growth rates in Austria. So the wood for the churches could have been taken from surrounding forests.

3. There are no significant changes in species selection over time (Fig. 4). From 1350 to 1750, spruce – followed by fir and larch – always was the most important species.

4. There is no relationship between construction elements and wood species. Dividing the data set into posts, beams, rafters and struts does not change species distribution very much (Fig. 6). But the average number of rings per sample correlates with construction element (Fig. 5). Older/younger (bigger/smaller) trees were obviously used for construction elements with greater/smaller dimensions.

## research questions

1. Which tree species were used?
2. Are there regional differences?
3. Is there a change over time?
4. Is there a relationship between the different types of construction elements and wood species?

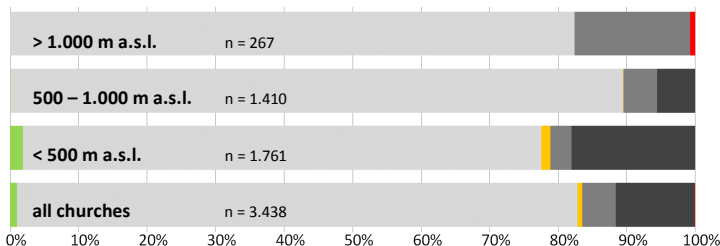


Fig. 3: tree species used in churches grouped by elevation

■ *Quercus robur, Quercus petraea*  
■ *Picea abies*  
■ *Pinus sylvestris, Pinus nigra*  
■ *Larix decidua*  
■ *Abies alba*  
■ *Pinus cembra*

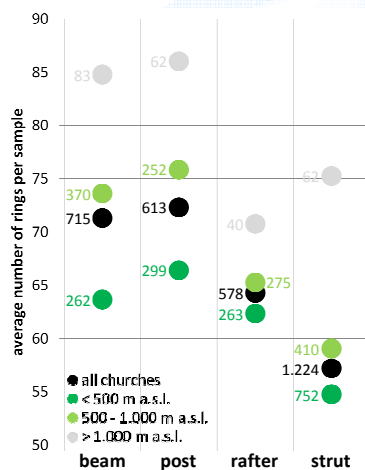


Fig. 5: average number of tree rings per sample grouped by elevation and construction element white numbers next to dots = n

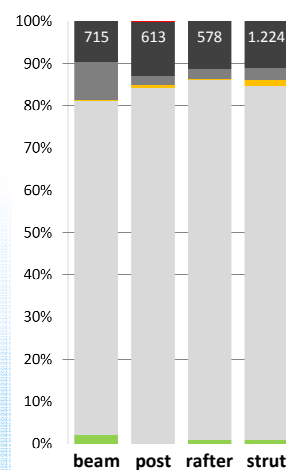


Fig. 6: tree species grouped by construction element white numbers = n

## special thanks to

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