

USING LANDSCAPE IN THE MIDDLE AGES IN THE LIGHT OF INTERDISCIPLINARY RESEARCH
KORIŠTENJE KRAJOLIKA U SREDNJEM VIJEKU U SVJETLU INTERDISCIPLINARNIH ISTRAŽIVANJA

Institute of Archaeology / Institut za arheologiju

Zagreb, 6th June 2019
Zagreb, 6. lipnja 2019



**Middle Ages forest and woodland cover in Drava region,
archaeological perspective:
Torčec, Virje and Hlebine case study**

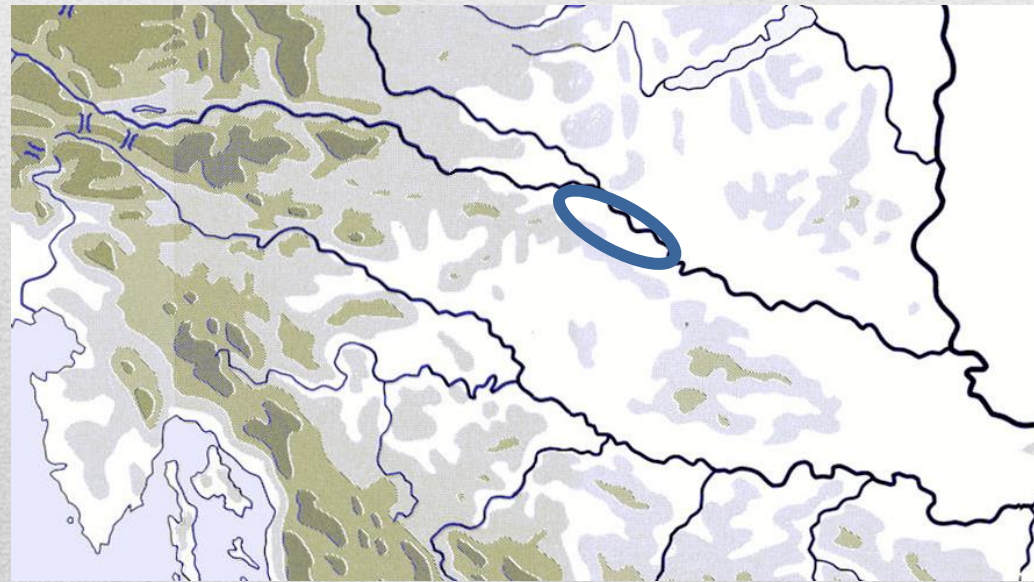
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TransFER







<https://mapire.eu/en/>

Provinz Kroatien (1783–1784) - First Military Survey

Warasdiner Generalat (1781–1782) - First Military Survey



Project: TransFER (2017-2021)

Proizvodnja željeza uz rijeku Dravu u antici i srednjem vijeku: stvaranje i transfer znanja, tehnologija i roba

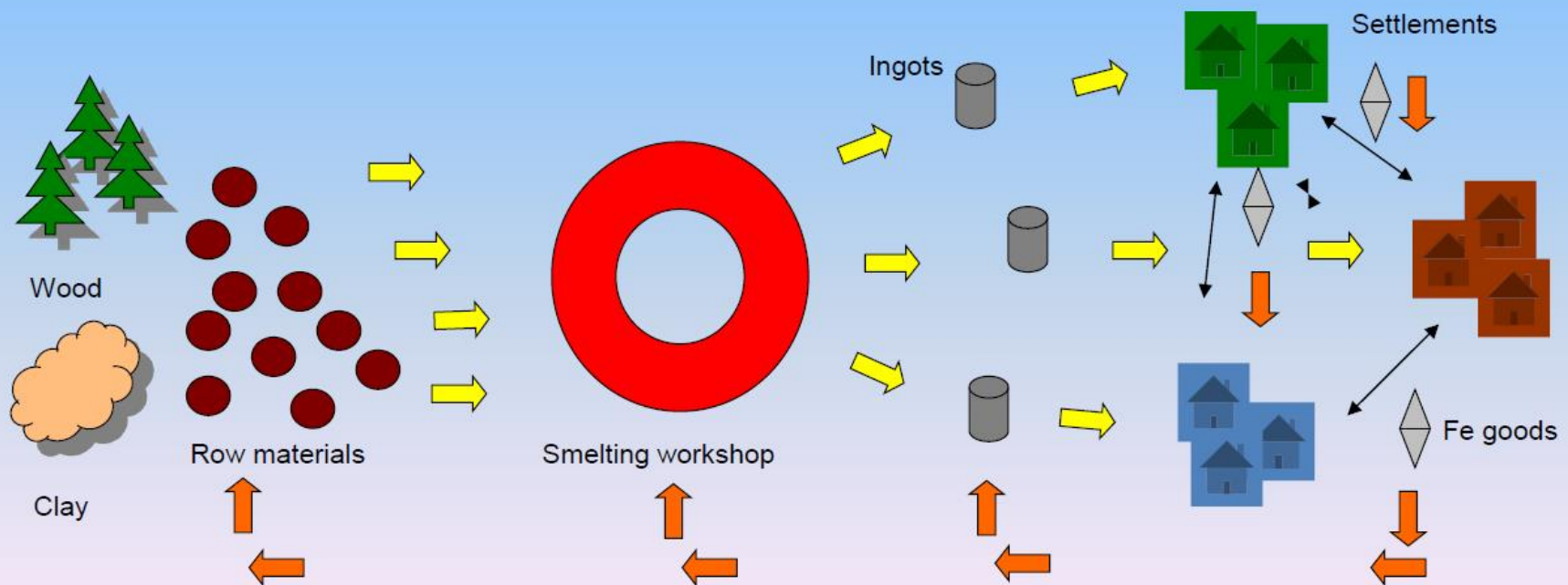
Iron production along the Drava River in the Roman period and the Middle Ages: Creation and transfer of knowledge, technologies and goods

Leader: Phd Tajana Sekelj Ivančan, Institute of Archaeology, Zagreb, Croatia

Funded by: Croatian Scientific Fundation

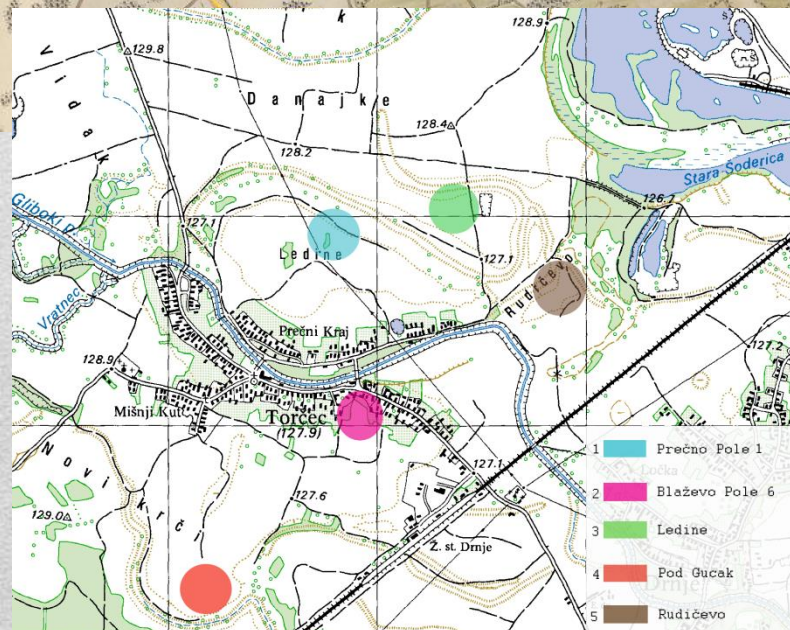
In order to define the meaning of iron production in the context of ancient and medieval societies, the following tasks were set:

- To specify the source of the iron ore and the other necessary resources (clay, water, wood);
- To define the technology of processing the iron ore throughout the historical periods and the intensity of production;
- To define the impact of iron production in the context of socio-cultural relations and interaction of people and goods





Torčec



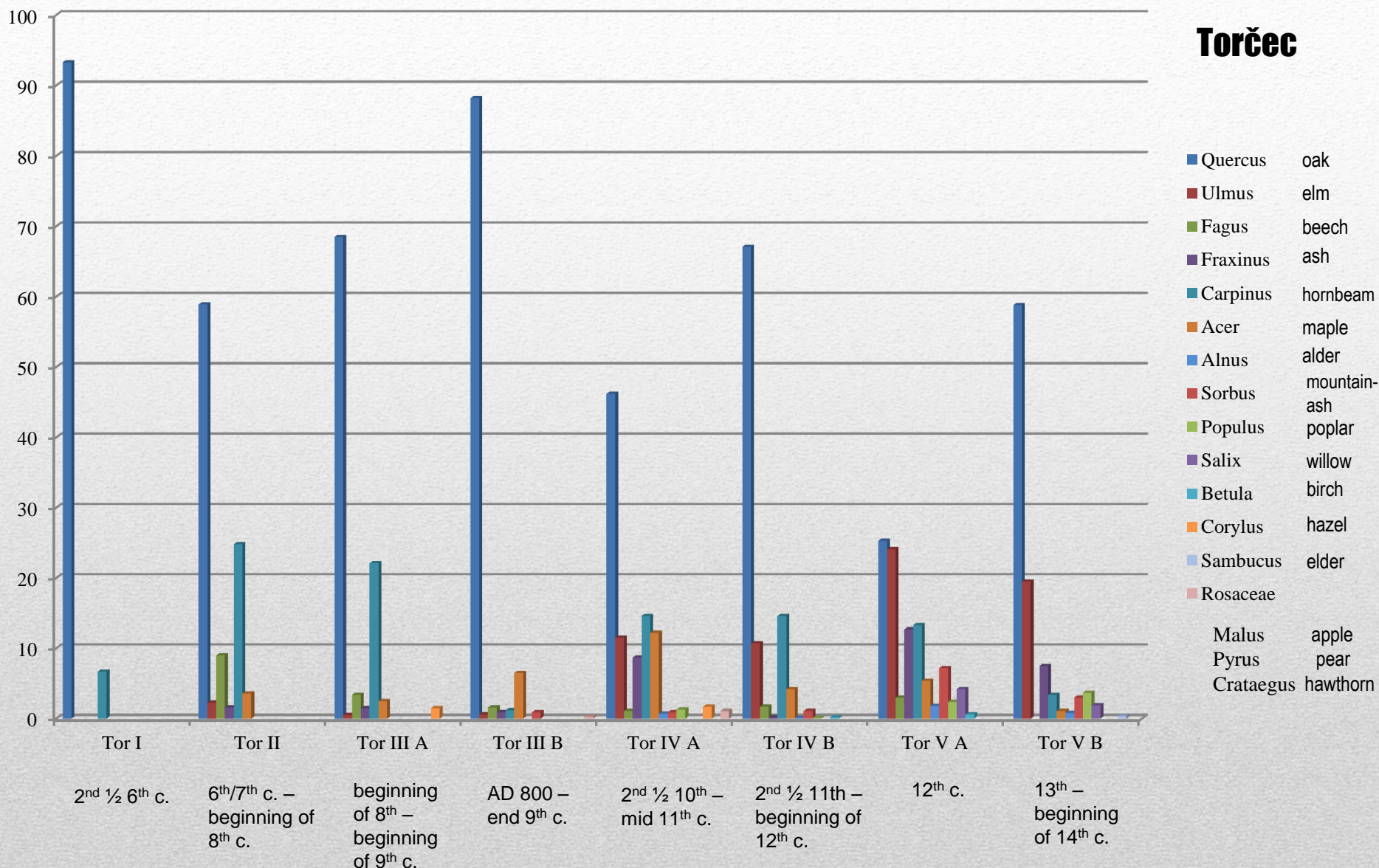


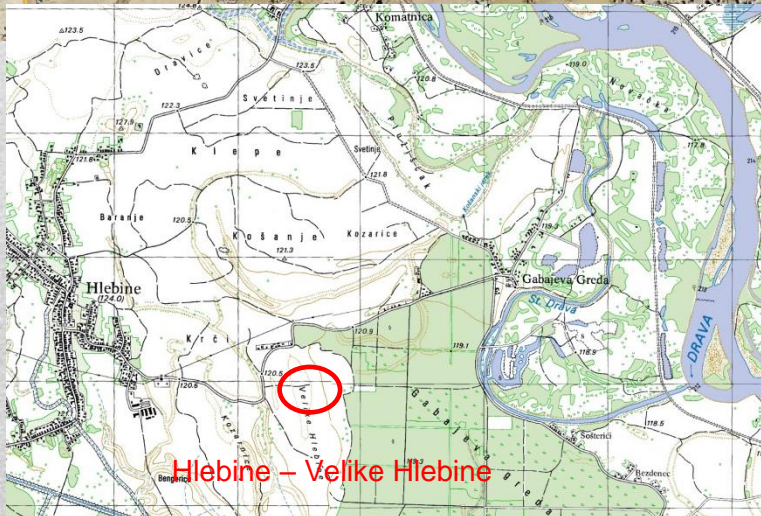
Torčec

- research conducted by IARH from 2002 until 2013 in the scope of two projects: *Archaeological image of medieval settlements in Drava region* (2002–2006) and *Medieval settlement of northern Croatia in the light of archaeological sources* (2007–2013), financed by the Ministry of Science, Education and Sport (leader T. Sekelj Ivančan)
 - based on the results of field surveys conducted for various years by Mr Ivan Zvijerac from Torčec, enthusiast for antiquities, several positions around Torčec were chosen for test archaeological excavations – the aim was to recognize the continuity of life during longer periods in the Middle Ages on one micro complex
 - 5 positions were chosen:
 - Prečno pole I – 4 years of excavations (2005-2008) (T I-V)
 - Blaževo pole 6 – 1 year of excavation (2004) (T IIIa)
 - Ledine – 3 years of excavation (2002-2004) (T IVa)
 - Pod Gucak – 1 year of excavation (2006) (T IVb)
 - Rudičevo – 1 year of excavation (2007) (T Va,b)
 - the results show that the surroundings of Torčec were settled from the end of the 6th and the transition to the 7th century (T I) to the transition from the 13th to the first half of the 14th century (T Vb); settlements were of the open type (scattered)
 - this area was also settled latter in history – excavations were carried out at the late medieval and early modern period Crikvišće site and late medieval fort Gradić
 - from the collected samples of charcoal, M. Culiberg determined the type of wood used in all of five positions and presented the results by phases (Culiberg 2010: 389–397)
 - the most commonly used wood was oak (*Quercus*), followed by hornbeam (*Carpinus*), maple (*Acer*), elm (*Ulmus*) and ash (*Fraxinus*)
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Torčec





Hlebine – Velike Hlebine

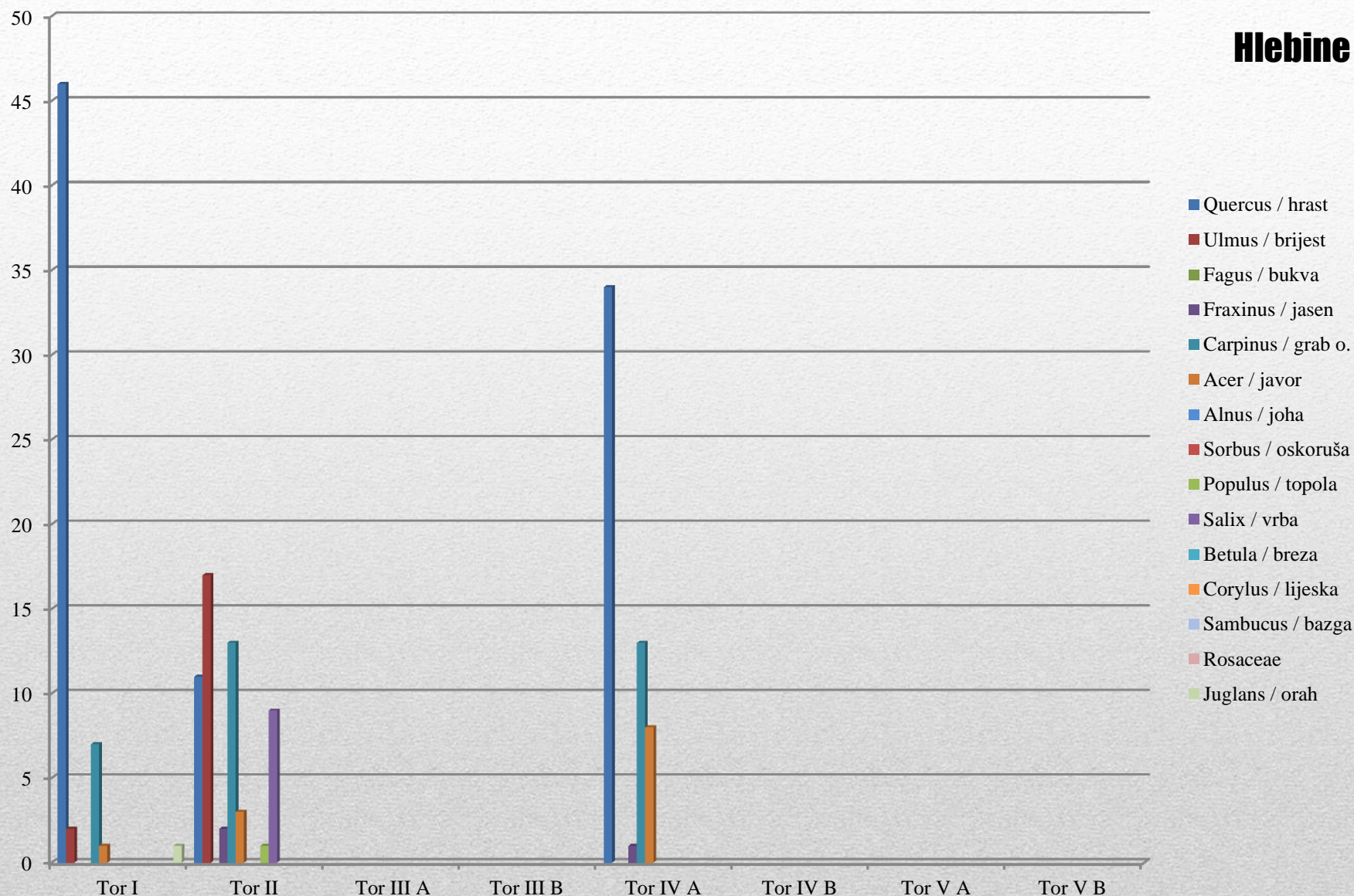


Hlebine

- research conducted by IARH in 2016 and 2017 (financed by the Ministry of Culture; leader T. Sekelj Ivančan)
 - the positions were previously chosen based on the results of 1980's field surveys conducted by Miro Alečković from Hlebine
 - all finds from Hlebine are being analysed in the frame of TransFER project
 - geophysical research on a larger area was conducted (2 x 10,000 m²) – the position of a rectangular smelting workshop was clearly visible
 - the whole workshop and some settlement features in the vicinity were chosen for the excavation:
 - workshop with smelting furnaces in two phases and some pits with burned bottom (all from the beginning of the 7th century according to 14C) – T I
 - 2 features – T II
 - 2 features and several pits near the shallow water area (mlaka) – T IVa
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Hlebine



Tor I = 2nd ½ 6th c.

Tor II = 6th/7th c. – beginning of 8th c.

Tor III A = beginning of 8th – beginning of 9th c.

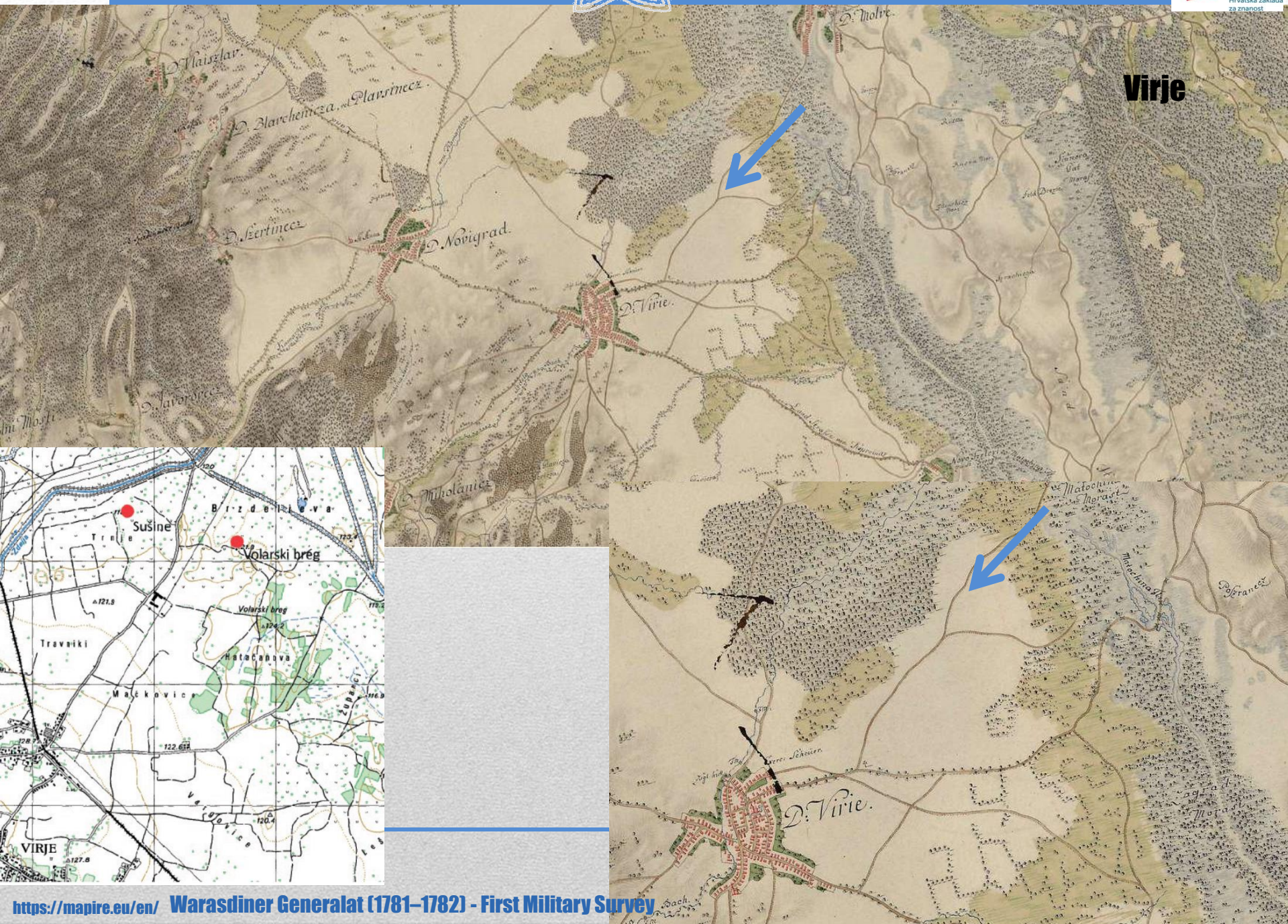
Tor III B = AD 800 – end 9th c.

Tor IV A = 2nd ½ 10th – mid 11th c.

Tor IV B = 2nd ½ 11th – beginning of 12th c.

Tor V A = 12th c.

Tor V B = 13th – beginning of 14th c.



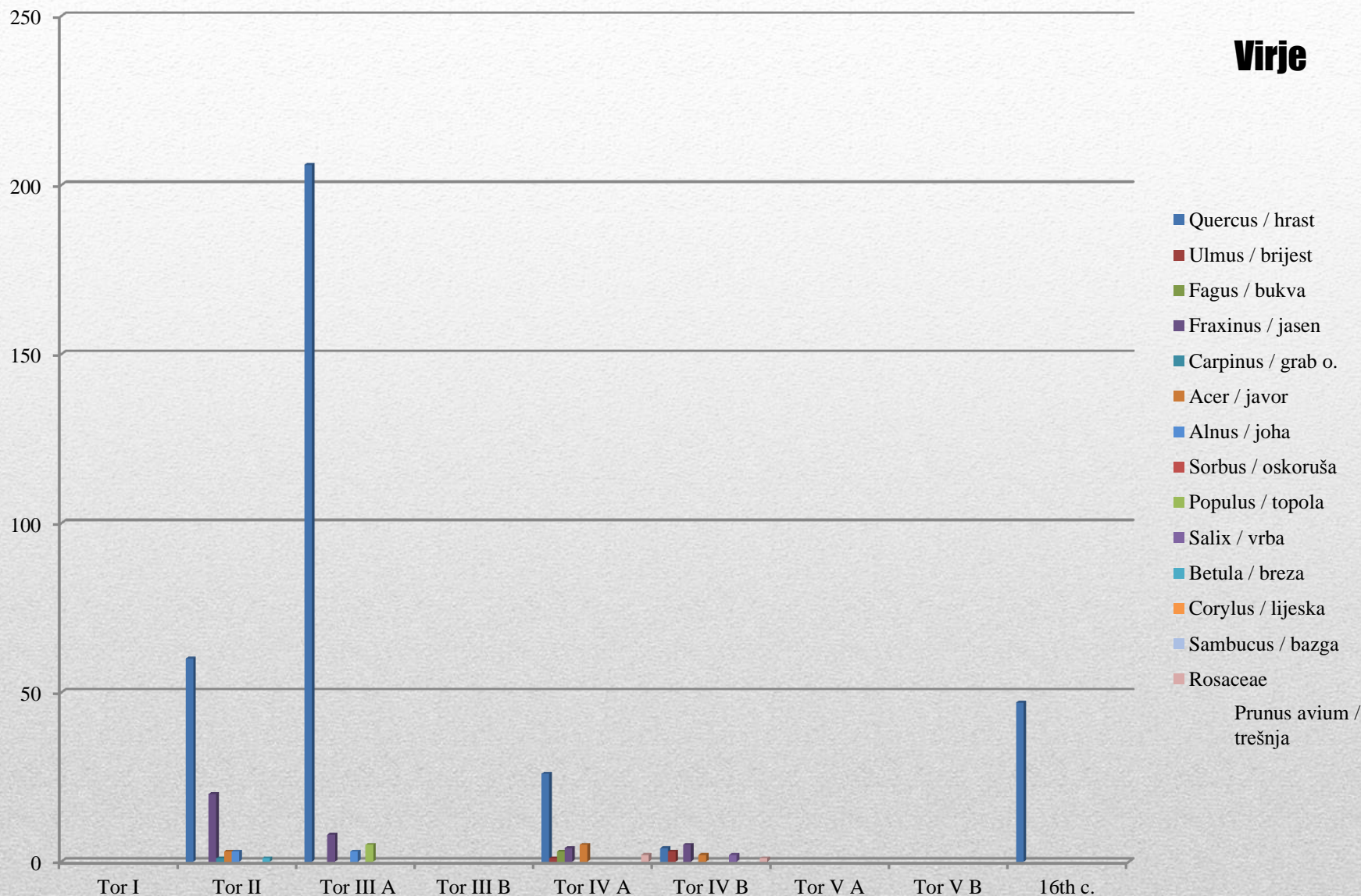


Virje

- research conducted by IARH from 2008 until 2014 in 5 campaigns (financed by the Ministry of Culture; leader T. Sekelj Ivančan)
 - two positions were explored (in 3 campaigns each): Volarski breg (3 trenches – 2008, 2010, 2012) and Sušine (7 trenches – 2012, 2013, 2014)
 - geophysical research was conducted at Sušine; excavation areas were chosen based on these results (place of the smelting waste, smelting furnaces, various features etc.)
 - at both positions workshops for iron smelting were explored – activity conducted here during the late Antiquity (the end of the 4th century and in the 5th century) and Early Middle Ages (the end of the 8th and in the 9th century) according to 14C (life documented in the late Iron Age too)
 - settlement features from the Middle Ages were explored at both positions:
 - Volarski breg – 3 features (T II)
 - Volarski breg – 5 furnaces, 3 pits for charcoal production and parts of the fence (T IIIa according to 14C – possibly contemporaneous with the settlement, i.e. T II)
 - Sušine –
 - 3 features (T II)
 - 1 feature with multiple fillings (T IVa)
 - 4 features (T IVb)
 - 1 feature – 16th century
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Virje



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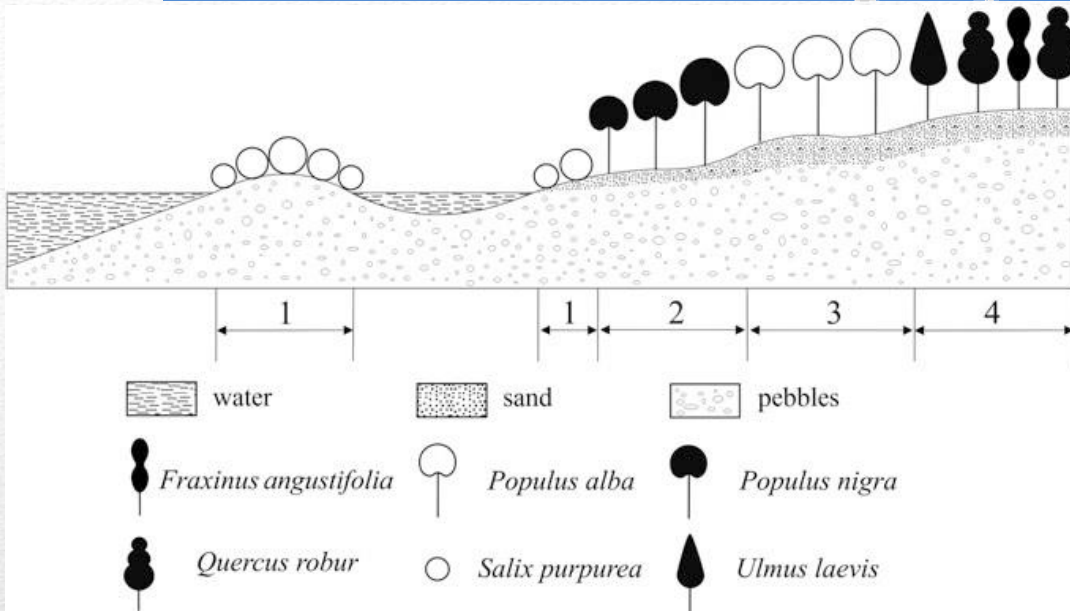
Tor IV B = 2nd ½ 11th – beginning of 12th c.

Tor V A = 12th c.

Tor V B = 13th – beginning of 14th c.



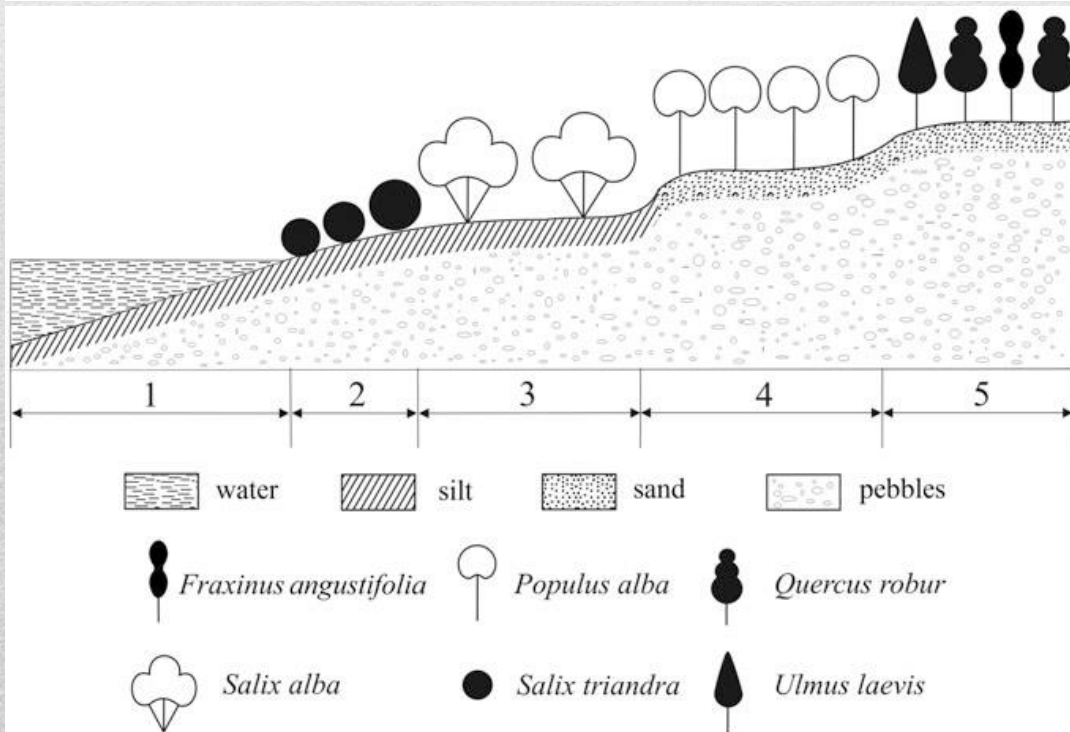
Kevey 2019: 303, Fig. 18.4



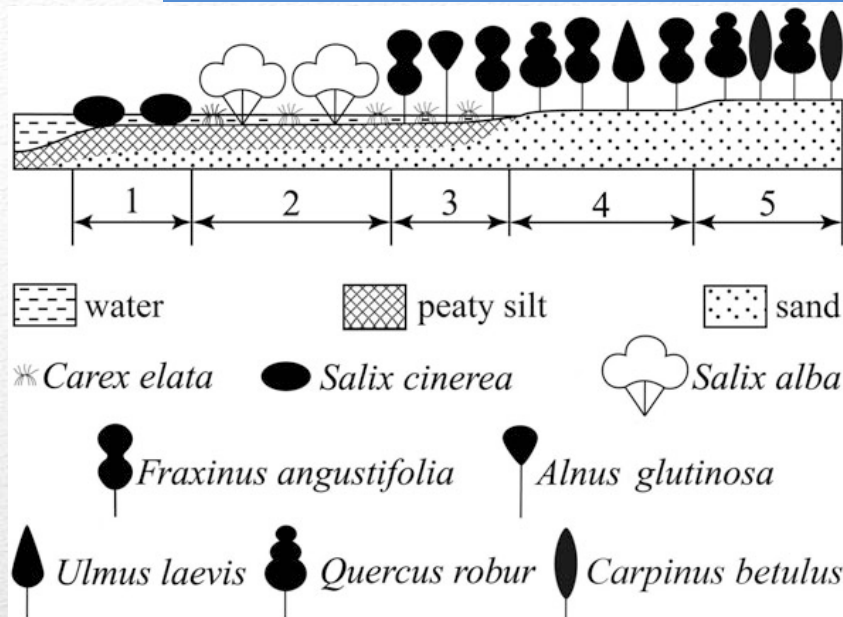
rapid current

Oak-Ash-Elm Forests

Kevey 2019: 305, Fig. 18.5



Cross-section of vegetation from the silty bank zone to the higher floodplain terrain (by B. Kevey).
1, Open water surface; 2, Polygono hydropiperi-Salicetum triandrae; 3, Leucojo aestivi-Salicetum albae; 4, Senecioni sarracenici-Populetum albae; 5, Carici brizoidis-Ulmetum

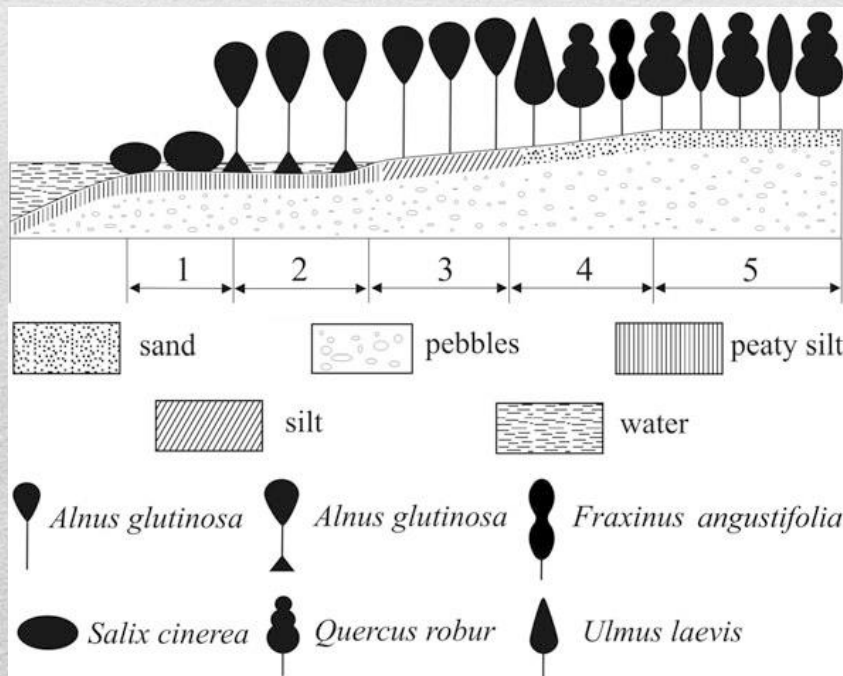


Kevey 2019: 317, Fig. 18.8

Cross-section of vegetation from waterlogged habitats to the higher floodplain terrain I. (by B. Kevey).

1, *Calamagrostio canescentis*-*Salicetum cinereae*; 2, *Carici elatae*-*Salicetum albae*; 3, *Fraxino pannonicae*-*Alnetum glutinosae*; 4, *Carici brizoidis*-*Ulmum*; 5, *Veronico montanae*-*Carpinetum*

Oak-Ash-Elm Forests



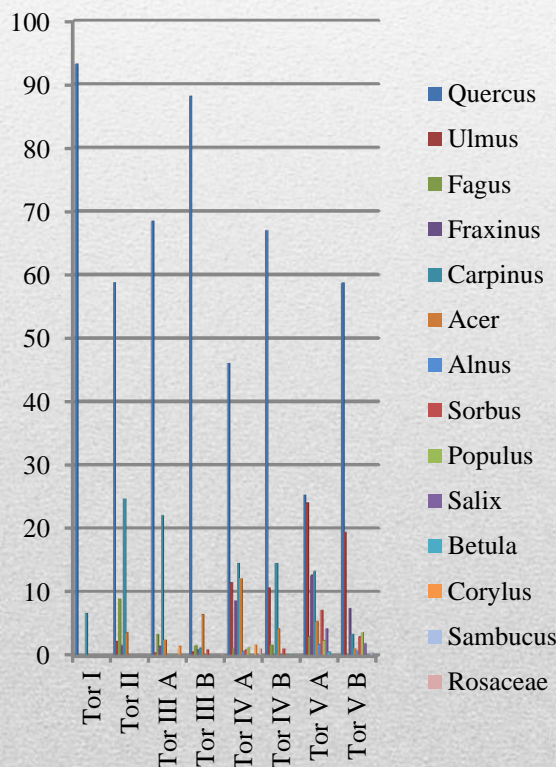
Kevey 2019: 318, Fig. 18.9

Cross-section of vegetation from waterlogged habitats to the higher floodplain terrain II. (by B. Kevey).

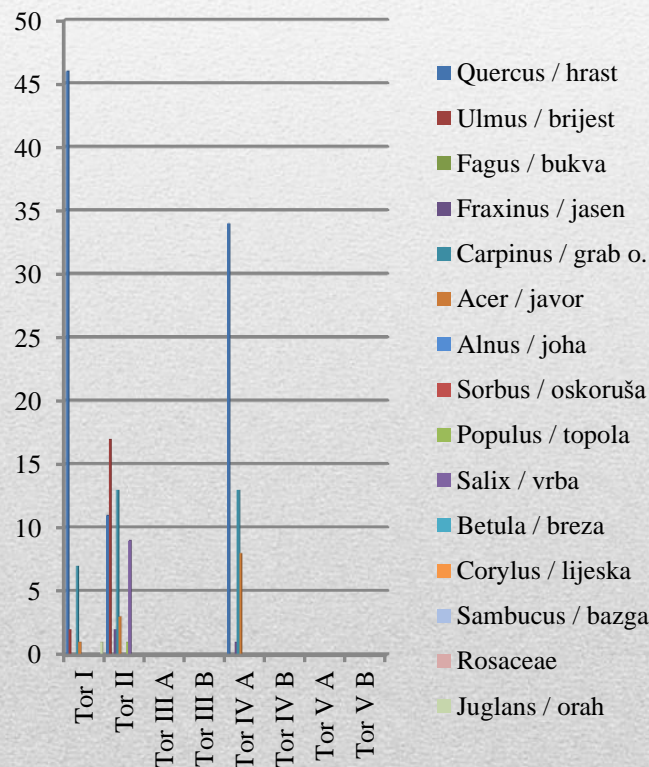
1, *Calamagrostio canescentis*-*Salicetum cinereae*; 2, *Carici elongatae*-*Alnetum glutinosae*; 3, *Paridi quadrifoliae*-*Alnetum glutinosae*; 4, *Carici brizoidis*-*Ulmum*; 5, *Veronico montanae*-*Carpinetum*



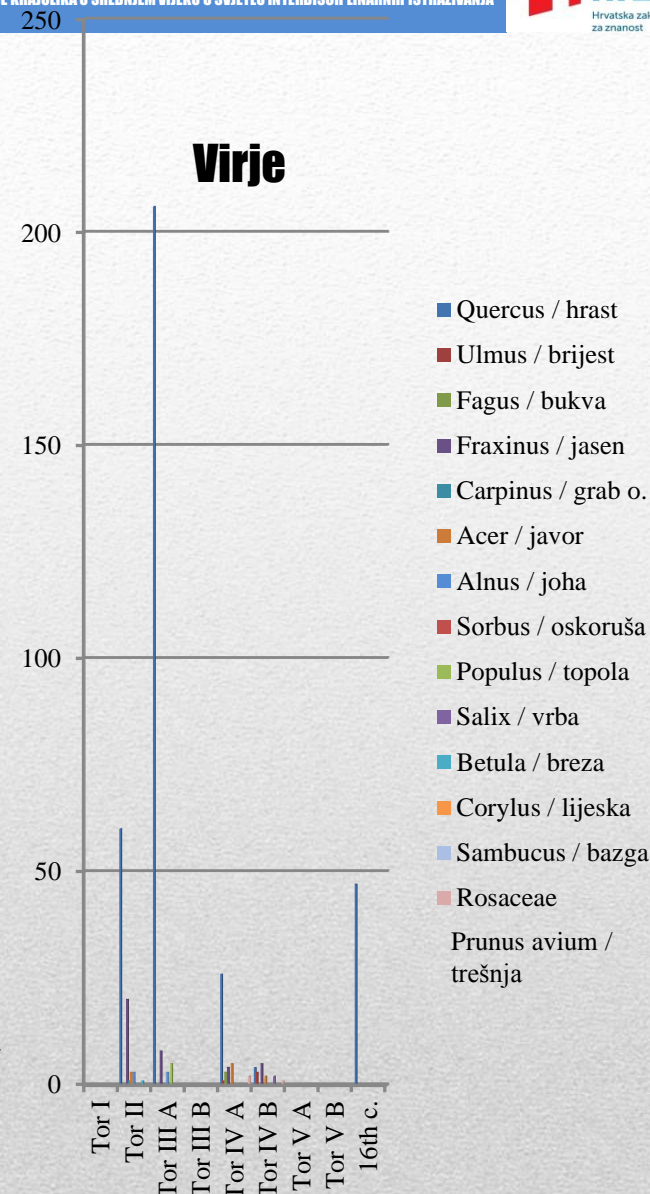
Torčec



Hlebine



Virje



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- the most commonly used wood was oak (*Quercus*), most probably pedunculate oak (*Quercus robur*) used to well-watered soils – for construction in settlements and for fuel in furnaces
 - oak is followed by hornbeam (*Carpinus*), maple (*Acer*), elm (*Ulmus*) and ash (*Fraxinus*) – samples mostly from the settlement features
 - although oak (*Quercus*) prevails in all periods, its use from the 10th century is reduced, when other types of wood appear in Torčec area while at Hlebine and Virje other types of wood were used earlier but in small quantities
 - some medieval settlements were located near the workshops for iron smelting, an activity that over time led to over clearing of oak forests and to the transformation of forest habitats (?) – hazel (*Corylus*), cherry (*Prunus avium*), walnut (*Juglans*); reduced use of oak (*Quercus*)
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