ÖAW ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN

ÖAI ÖSTERREICHISCHES ARCHÄOLOGISCHES INSTITUT

# PLANT-BASED RESOURCES OF A LATE BRONZE AGE COPPER MINING SITE IN THE EASTERN ALPS

## Archaeobotany at Prigglitz-Gasteil (Lower Austria)

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FWF Der Wissenschaftsfonds.

IMC Innsbruck 2019 International Mountain Conference

*Map of Austria with location of the site*

*Aerial photo of the excavation site*

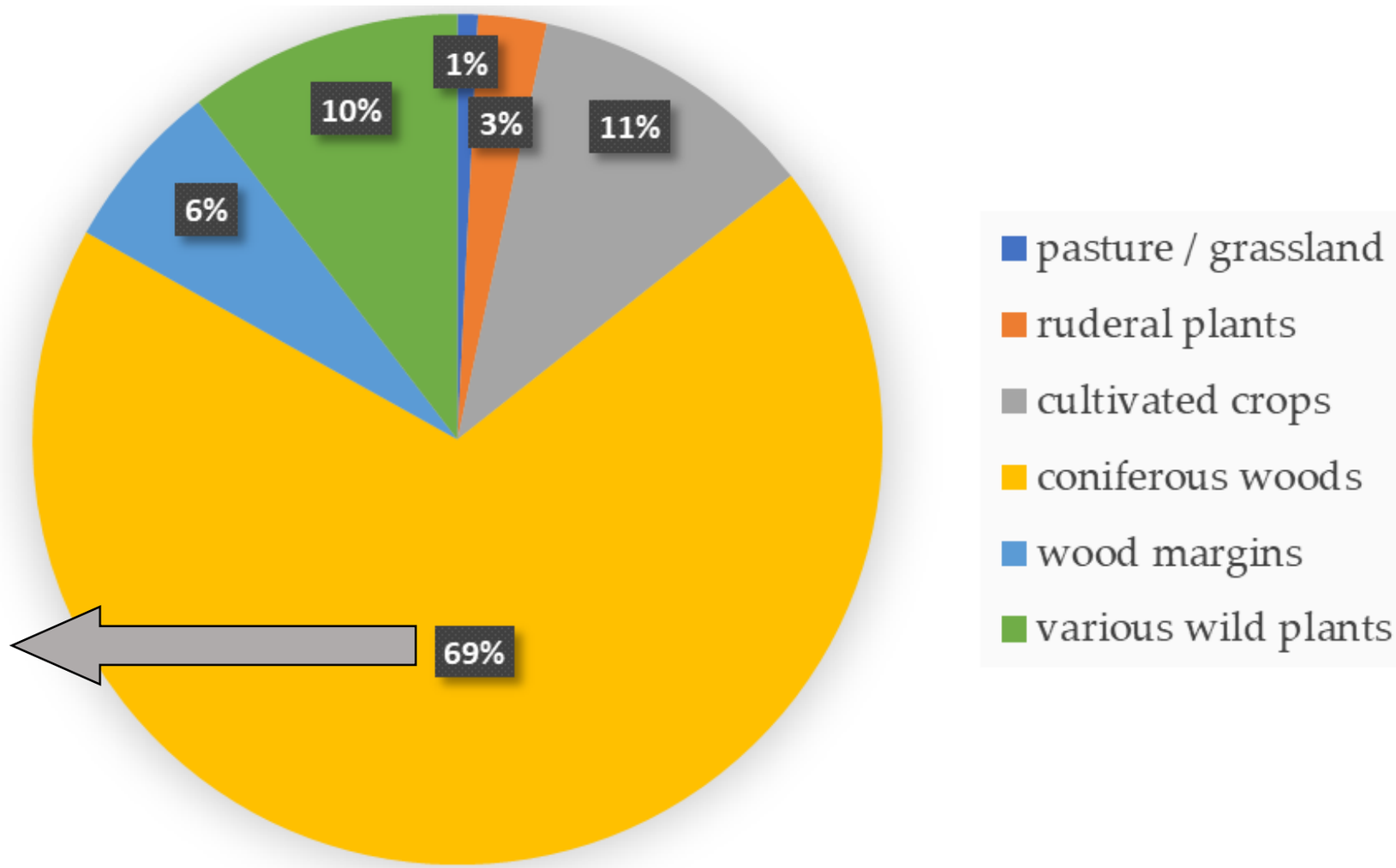
## PRIGGLITZ - GASTEIL

- easternmost known Bronze Age mining area in the Alps
- early to late Urnfield Culture (11th – 9th century BCE)
- large work camp for the extraction and processing of copper ore (massive mining waste heap)
- excavations from 2010 – 2014 directed by Peter Trebsche
- various antler tools, bone artefacts, numerous animal bones, ceramics, bronze finds and slags

# ARCHAEOBOTANICAL MACROREMAINS

- majority of identified macroremains derive from coniferous forest species (69 %)
- cultivated crops are scarce (11 %)
- many unidentified macroremains (about 50 %) due to bad preservation (excluded from graph)

*Abies alba* needles




*graph: N = 5028 macroremains*

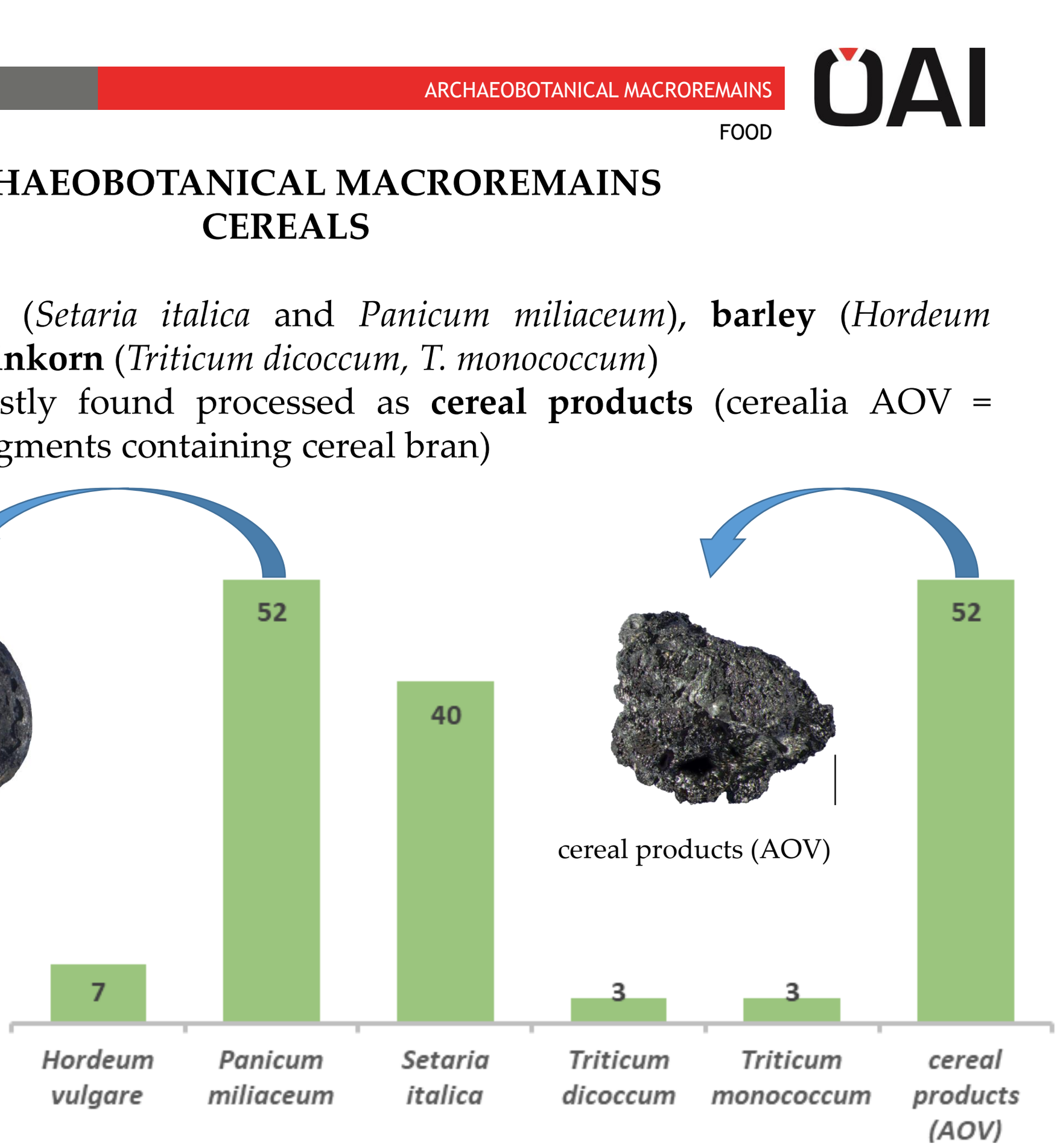
# ARCHAEOBOTANICAL MACROREMAINS
# CEREALS

- main cereals: **millets** (*Setaria italica* and *Panicum miliaceum*), **barley** (*Hordeum vulgare*), **emmer and einkorn** (*Triticum dicoccum, T. monococcum*)
- crop plants were mostly found processed as **cereal products** (cerealia AOV = amophous charred fragments containing cereal bran)

*Panicum miliaceum* seeds



cereal products (AOV)

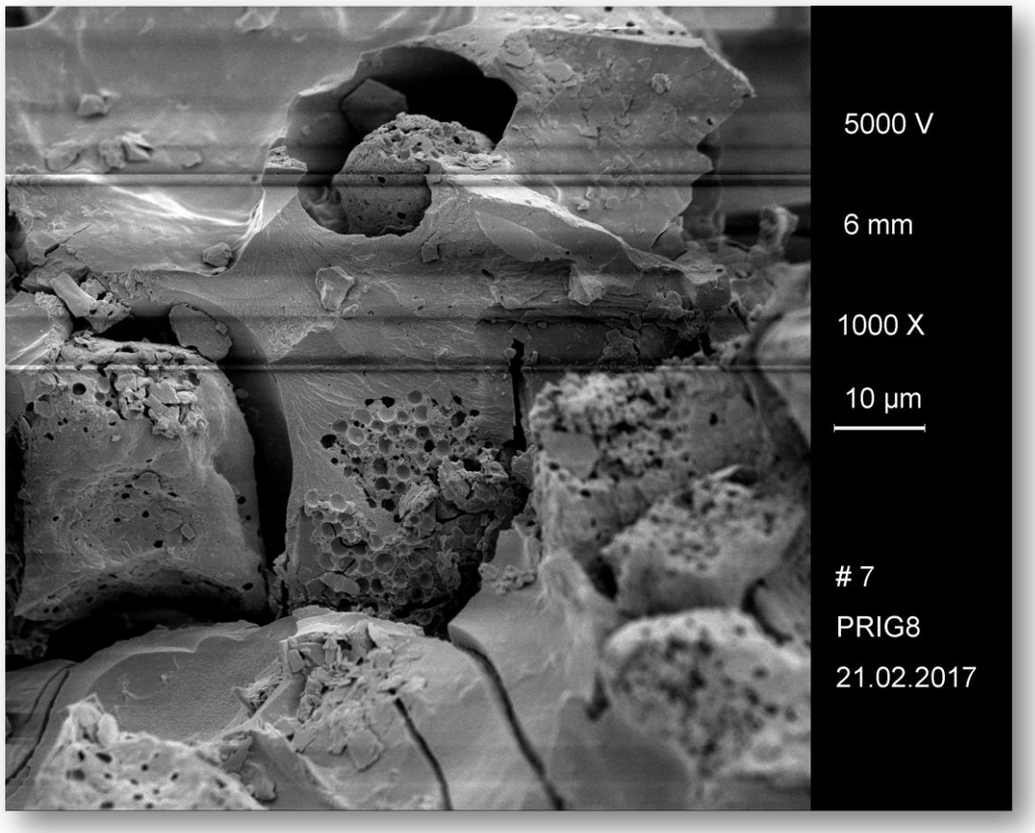



*graph: N = 157 cereal remains. Excluded from graph: unidentified cereal remains (67 %), intermediate groups (1 %).*

# ARCHAEOBOTANICAL MACROREMAINS
# CEREAL PRODUCTS (AOV)

- **cereal products** (cerealia AOV = amophous charred fragments containing cereal bran)
- interpreted as remains of processed food on basis of cereals (most probably some porridge-like foodstuff)

cereal products (AOV)

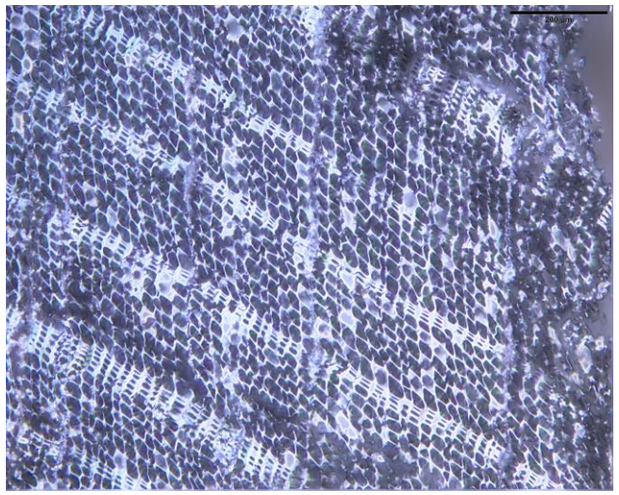



SEM-picture of AOV: aleuron layers of *Hordeum vulgare*

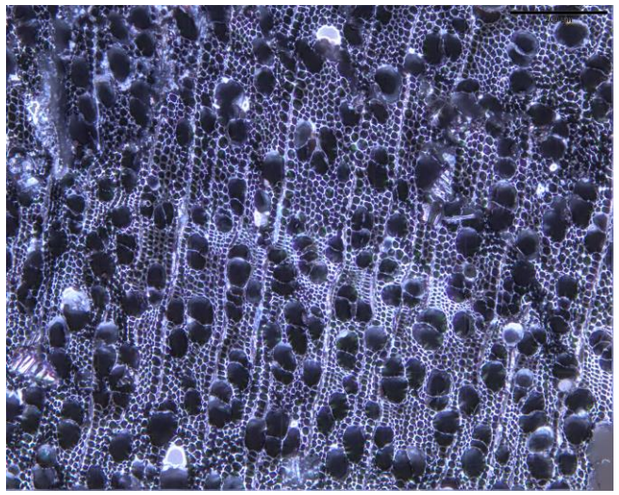
# CHARCOAL ANALYSES

- 6 samples with 50 pieces of charcoal each (300 in total) were analysed so far
- woody taxa from the cultural layers may have been used as **fuel**, especially for the **processing of copper ores**

- montane **pine-dominated mixed forest** (*Fagus, Larix / Picea, Pinus sylvestris* type, *Quercus*)
- **species of open grounds** (*Pinus sylvestris* type, *Populus, Salix*) → **small-scale open areas due to human impact** on forests

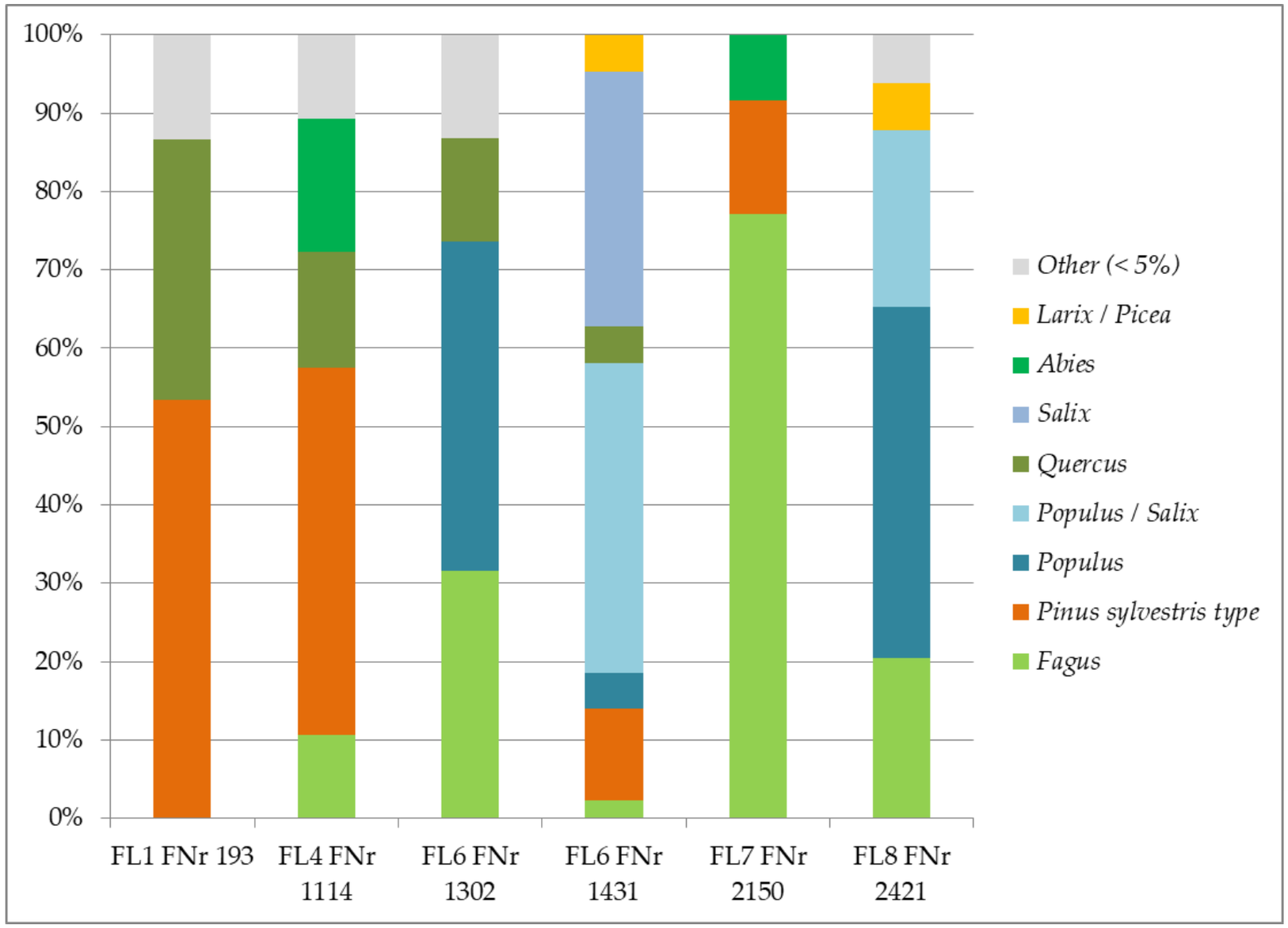


*Pinus sylvestris* type charcoal, cross section



*Salix* charcoal, cross section

# CHARCOAL ANALYSES



- **montane pine-dominated mixed forest** (*Fagus, Larix / Picea, Pinus sylvestris* type, *Quercus*)
- **species of open grounds** (*Pinus sylvestris* type, *Populus, Salix*)

N = 300, taxa with a quantity less than 5% in relation to the whole sample are grouped as „Other (<5%)“

# CONCLUSION
# AND COMPARISON WITH MAUKEN (Tirol)

## Archaeobotany

- **Prigglitz**: solely a mining site with no local food production or food processing. Large amounts of forest species (charred coniferous needles of fir and spruce), few crop remains, but no indicators for crop processing.
- **Mauken** (Bronze Age mining site in western Austria): most abundant remains were needles of fir and spruce, no crop remains and no indicators for crop processing activities (Schibler et al., 2011).

→ <u>import of food</u>

# CONCLUSION
# AND COMPARISON WITH MAUKEN (Tirol)

## Anthracology

- **Prigglitz:** use of timber from pine-dominated mixed forest, species of open grounds show small-scale open areas (working platforms and rock waste heaps)
- **Mauken:** use of timber from a semi-natural mixed forest with minor quantities of species from open grounds (small-scale open areas) (Schibler et al., 2011; Heiss & Oeggl, 2008).

→ climax forests with open grounds around the mining site

# THANK YOU FOR YOUR ATTENTION

**Literature**


Heiss, A. & Oeggl, K. (2008): Analysis of the fuel wood used in Late Bronze Age and Early Iron Age copper mining sites of the Schwaz and Brixlegg area (Tyrol, Austria). In: Veget Hist Archaeobot 17: 211-221.

Schibler, J. et al. (2011): Miners and mining in the Late Bronze Age: a multidisciplinary study from Austria. In: Antiquity 85, 1259-1278.

Trebsche, P. (2015): Zur Absolutdatierung der urnenfelderzeitlichen Kupfergewinnung im südöstlichen Niederösterreich. Archäologisches Korrespondenzblatt 45, 1, 2015, 41-59.

Trebsche, P. & Pucher, E. (2013): Urnenfelderzeitliche Kupfergewinnung am Rande der Ostalpen. Erste Ergebnisse zu Ernährung und Wirtschaftsweise in der Bergbausiedlung von Prigglitz-Gasteil (Niederösterreich). Prähistorische Zeitschrift 88, 1-2, 2013, 114-151.