

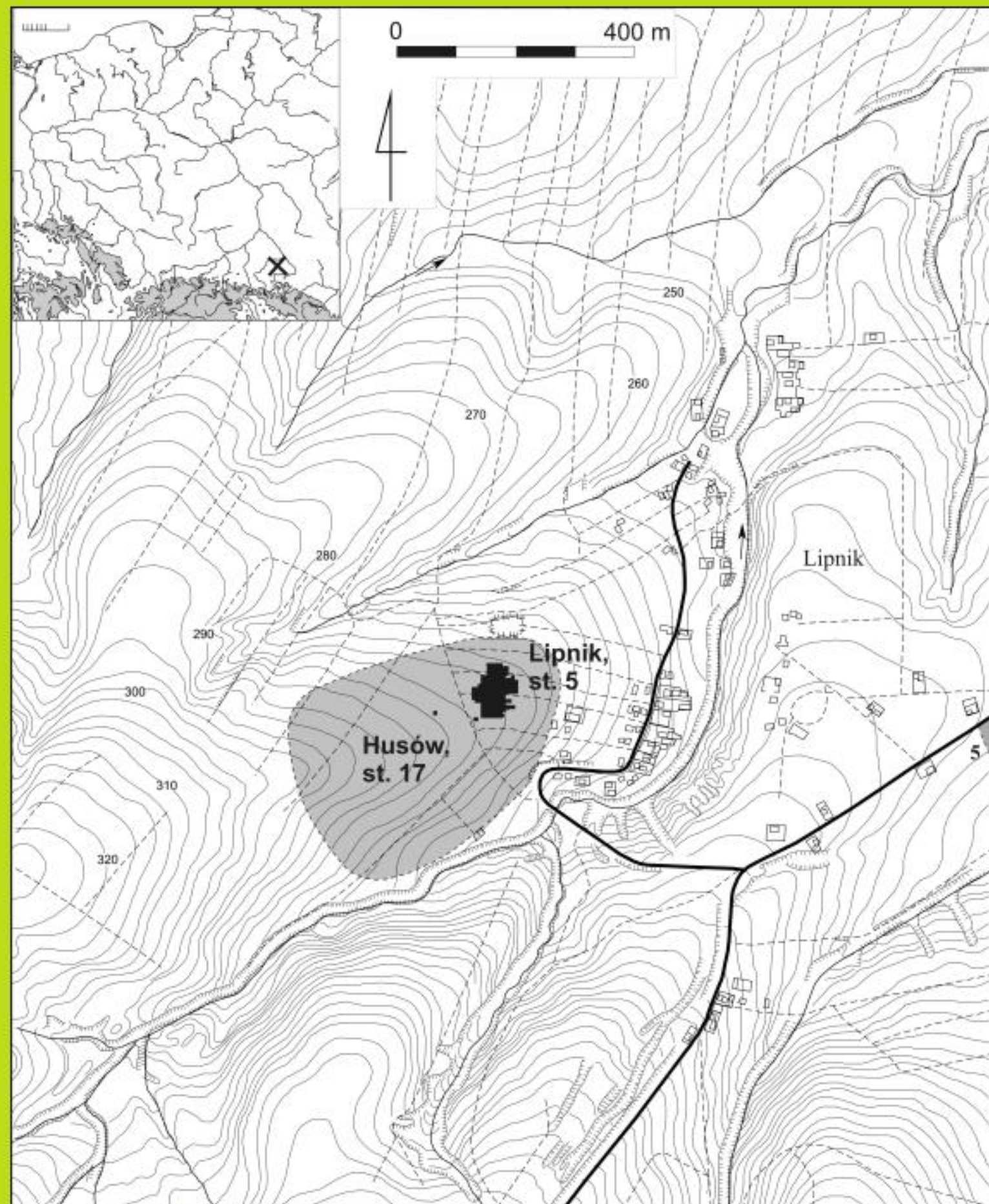
A storage pit with the remains of animal fodder?

A case study from a Bronze Age site at Lipnik, SE Poland

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Site location (drawn by Marcin S. Przybyła)

Site No. 5 at Lipnik is located near Przeworsk, in the western part of Podgórze Rzeszowskie, SE Poland. It lies on the north slope of a loess hill (c. 275-280 m a.s.l.), elevated about 30 m above the base of the nearest stream valleys. The site was excavated in 1998-2006, uncovering an area of about 4400 m². A few traces of an unspecified Neolithic culture and some finds of the Early Bronze Age Mierzanowice culture were noted. About 70 features (mainly pits) dated to the Trzciniec culture (Early/Middle Bronze Age, ca. 1500-1300 BC) were also discovered, but most of the features present (about 400) are described as cremation graves dated to the Tarnobrzeg Group of the Lusatian culture (ca. 1300-500 BC).



Pit 302 (Phot. Marcin S. Przybyła)

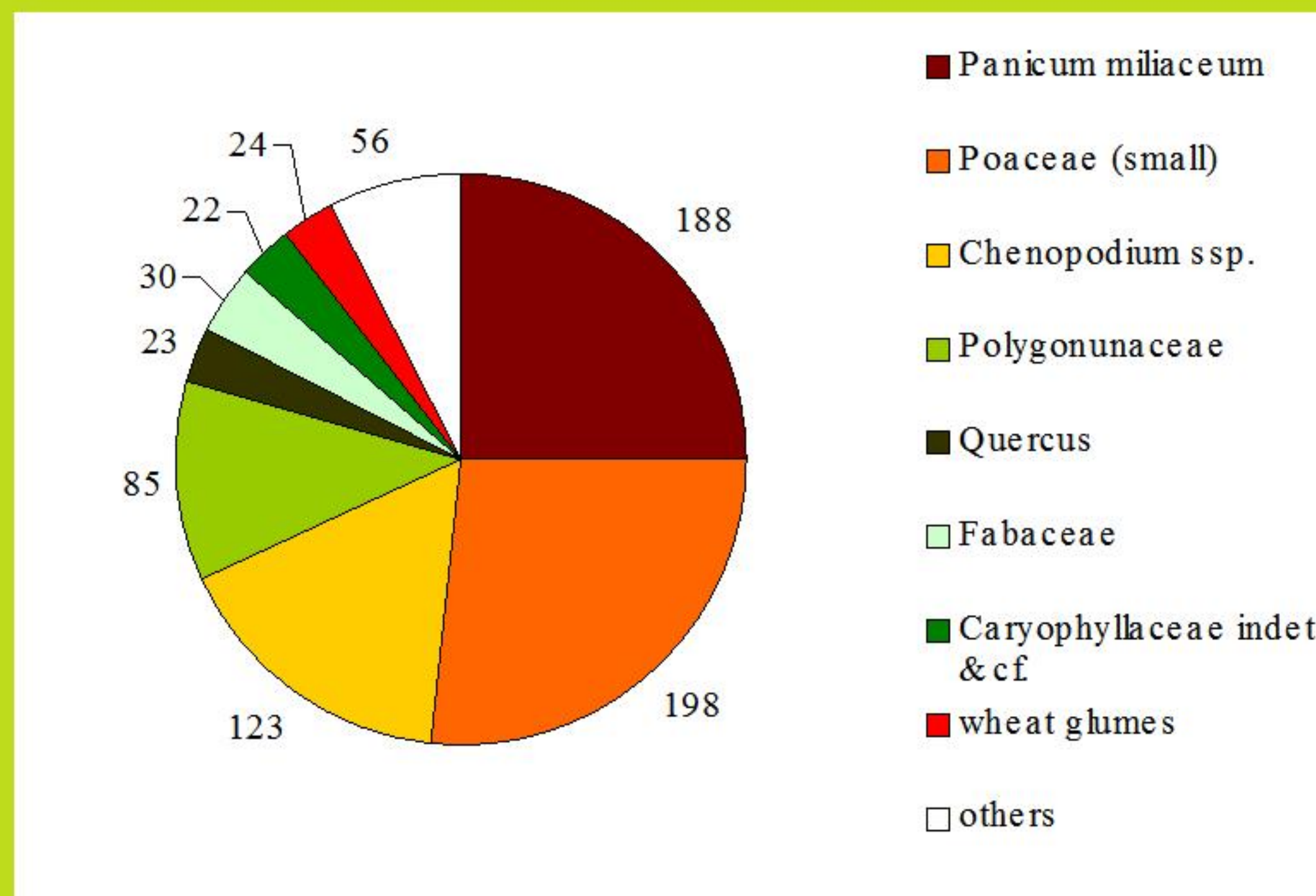
The pit subjected to archaeobotanical study (pit 302) was trapezoid in section and 130 cm deep. The basal deposits (at a depth of 110-125 cm) comprised a layer of charred remains (5-15 cm thick). On the basis of the potsherds it contained, the pit is dated to the late Trzciniec culture or the early Tarnobrzeg group of the Lusatian culture (Poz-19925: 3015±35 BP, 1390 BC (95.4%) 1120 BC). It also contained a Neolithic obsidian tool.

Two sub-samples were analysed from the pit. In one of them a large quantity of acorns (*Quercus* sp.) was visible to naked eye. Both samples were processed by flotation in lab. All the remains were charred and no modern contamination was noted. Except of acorn presence the sub-samples are very similar. In that presentation they are joined.

Description of the material

The most abundant plant was millet (*Panicum miliaceum*) represented by charred grains. Only single grains of hulled barley and wheat were found. Large-grained grasses were also scarcely represented. Small-seeded grasses (L < 2mm) were very common. Among them *Digitaria* sp., *Echinochloa crus-galli* and *Phleum* sp. and *Poa* sp. were found. Some of the spikelets were unripe before charring. In the group of *Chenopodium* seeds the most numerous was *Ch. album* type (ca. 100) but also *Ch. cf. polyspermum*, *Ch. cf. ficifolium*, *Ch. cf. foliosum* and *Ch. vulvaria* type were noted. All *Chenopodium* seeds from pit 302 are charred. Polygonaceae fruits are dominated with *Polygonum minus/mite/persicaria* (62); *Fallopia convolvulus*, *Polygonum aviculare* and *Rumex acetosella* were also present. Oak acorns were most abundant volumetrically but on the graph only lower round parts of shell (dissarticulation scars) are signed. In the material also some sprouts most probably belonging to *Quercus* are noted. In the Fabaceae group the most numerous was *Medicago lupulina* (19). Four seeds of *Coronilla varia* were also noticed and some of them were significantly unripe. Most of Caryophyllaceae seeds belongs to *Stellaria* sp. Glumed wheats are represented by spelt (*Triticum spelta*) and emmer (*T. dicoccon*), identification of einkorn (*T. monococcum*) is uncertain.

The group „others” include single grains of barley, wheat and large-grained grasses as well as many other plant from different families: a fruit of *Astrantia major* – very decorative scree plant from Apiaceae family growing in SE Poland in mountains and stream basins, a pip of apple (*Malus* sp.), *Plantago major*, *Scleranthus annuus*, *Veronica cf. serpyllifolia*, *Prunella vulgaris*, *Carex* sp., *Juncus* sp., *Galium* sp., *Ranunculus* sp., *Myosotis* sp., some unidentified fruits, seeds, buds and flowers.



Composition of macroremains found in pit 302

Conclusions

The composition of the plant remains found in the studied pit is visibly dominated by millet (*Panicum miliceum*) and small-seeded grasses but oak is most abundant in volume. Other cultivated plants as well as typical weeds are scarce. Millet and Panicoidae grasses are known not only as component of human diet but also as animal fodder. Acorns could have been used as food for pigs but also for people during some starving periods. The origin of the plant remains can be heterogenous and the interpretation of the finding is very uncertain but the suggestion that we have traces of animal fodder can not be excluded. It is supported but such remains as buds, flowers and unripe diaspores of fodder plants (e.g. small-grained grasses, *Coronilla varia* and *Medicago lupulina*).



Lipnik landscape (Phot. Marcin S. Przybyła)



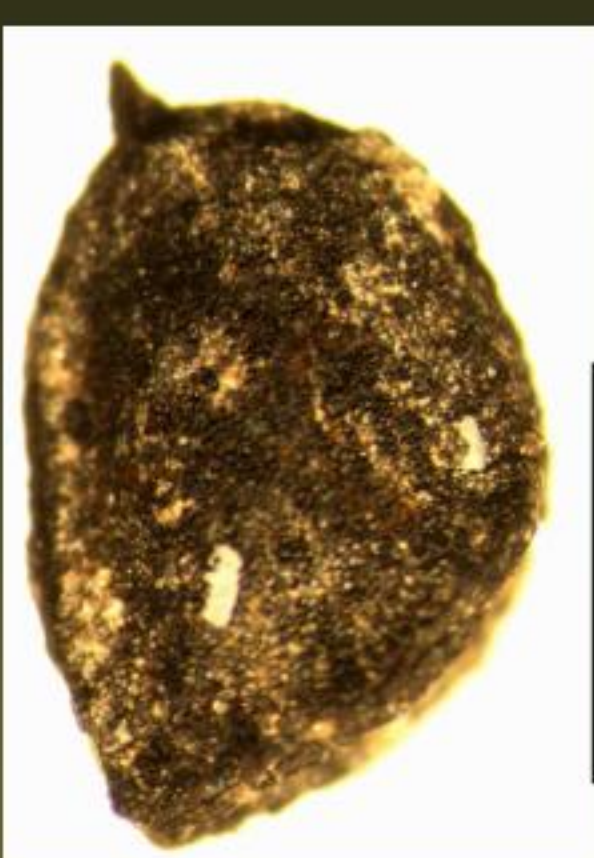
Panicum miliaceum



Triticum spelta



Malus sp.



Ranunculus sp.



Carex sp.



Medicago lupulina



Quercus sp. – fragments of acorns (dissarticulation scars)



Small-seeded Poaceae including *Digitaria* sp., *Echinochloa crus galli* and *Phleum pratense*



Astrantia major



Coronilla varia



Indet. - buds



Indet. - flower



sprouts of *Quercus* sp.??

All pictures of macroremains done by Katarzyna Cywa, all remains are charred, scale bar equals 1 mm