Early farming at Umeå in Västerbotten: charred cereal grains dated to the Bronze Age

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Previously, a number of pollen analyses from Norrland (northern Sweden) have given indications of short, intermittent agricultural phases during the Neolithic and Bronze Age (e.g. Segerström 1990 and refs). These often scarce occurrences of cereal-type pollen have been debated (e.g. Welinder 1998, p. 181). Lately, however, it has been possible to corroborate the pollen results with macrofossil evidence from archaeological sites in Middle Norrland that have been investigated using modern methods. Flotation of soil samples and AMS radiocarbon dating of cereal finds have placed grain in the Middle and Late Neolithic.

A comparatively large quantity of charred grain from Hedningahällan in Hälsingland has been radiocarbon dated. Five soil samples of c. 2 litres each were examined, producing a total of around 100 grains. Almost all the determined caryopses (60) are from barley and half were identified as naked barley. Only one possible wheat grain, cf. *Triticum*, was found (Schierbeck 1994). A cereal sample containing ten grains of naked barley was AMS dated to c. 2600–1900 cal BC (3780±110 BP; Ibid).

One cereal grain from the Lill-Mosjön site in Ångermanland was identified as naked barley and AMS dated to c. 2200 cal BC (Runeson 2007, p. 80). A few years later, at the excavations for the Bothnia Line railway near Örnsköldsvik (fig. 1), a total of almost 30 grains were retrieved, most of them out of sizeable soil samples from building remains excavated at Bjästamon, c. 40 km south of Lill-Mosjön. Three grains were AMS dated and shown to originate from roughly the same period: one naked barley, *Hordeum vulgare var nudum*; one barley, *Hordeum sp*; and one unspecified cereal grain. Their dates range between 2600 and 2100 cal BC (Runeson 2007, p. 80).

These dates for grain from Middle Norrland correspond to the pollen records from Anundsjö in Ångermanland (Huttunen & Tolonen 1972) and Lake Rudetjärn in Medelpad (Engelmark 1978) which produced cereal pollen from layers dated to c. 2500 and 2700 BC respectively.

New Bronze Age Dates From Umeå

Moving north from Ångermanland, there are pollen-analytical indications of cultivation from the Bronze Age along the Bothnian coast up to the River Umeälven river estuary in Västerbotten (Huttunen & Tolonen 1972; Engelmark 1978; Segerström 1990; Wallin 1996). Now there are also radiocarbon-dated cereal finds from the same period, as far north as the Umeå area (figs 1–2). The earliest date was obtained from a grain of barley, probably naked barley, at 1270–1040 cal BC (95.4% probability; figs 3a–b). The grain was found at Mariehem in Umeå, a Bronze Age site with cairns and other features investigated by the Archaeology Department in Umeå over several seasons starting in 1988 (Forsberg 1999). The grain was extracted from a one-litre soil sample out of a lower layer (5) in a burnt mound (Viklund 1989). Two more barley grains have been dated, both retrieved from layers 2 and 3, a little higher up in the same mound. They were dated to a somewhat later period, c. 1000–820 cal BC (95.4% prob.) (fig 3a, 3b). One of these is probably also from naked barley. The cereal dates fall within the span of radiocarbon dates of wood charcoal from the site, c. 2000–200 cal BC (Forsberg 1999, p. 269). However, the cereal dates are more restricted in time, all falling within c. 1300–800 BC. Nevertheless, they demonstrate a relatively long use-period for the burnt mound.

A fourth Bronze Age radiocarbon date from Umeå derives from a contract excavation in the Umedalen suburb. The analysed sample was a charred grain fragment determined as barley,
probably hulled barley, *Hordeum vulgare cf. vulgare* (Viklund 2002), which was dated to c. 760–400 cal BC. This grain was retrieved from a c. one-litre soil sample taken out of a pit with charcoal and some fire-cracked stones (Sundström 2002). Two wood charcoal samples from other features at the site were AMS dated to c. 1300–800 BC (95.4% prob.; Ibid, p. 13).

Subsequently only two more cereal finds have appeared in the Umeå area, both from the above-mentioned burnt mound at Mariehem. It has been more rewarding than any of the numerous cooking pits, hearths, graves etc. that have undergone archaeobotanical examination during investigations of Bronze Age sites in the Umeå area in recent years. Unfortunately, burnt mounds do not provide the best of conditions for the preservation of burnt plant material. As is the case at Mariehem, the grains found in such features are often broken and the special characters of any subspecies of barley, for example, are lost or difficult to discern.

The Bronze Age cereal dates from Umeå are compatible with the pollen record from Lake Prästsjön, only c. 400 m north-west of the Umedalen site, which includes evidence of farming in layers dated to c. 900/700–400 BC (Engelmark 1976).

**Farming in the North Compared to Farming in the South**

The recently dated archaeobotanical evidence indicates that naked barley was grown in Middle Norrland in the Neolithic. This is in accordance with the situation in other parts of Sweden at that time; naked barley was the predominant cereal although hulled wheats were also cultivated, especially in the south (e.g. Engelmark & Viklund 2008).

The finds from Umeå indicate that, as in other parts of Sweden, naked barley was grown here in the Early Bronze Age and that later, about the transition to the Late Bronze Age c. 1100 cal BC, this crop was replaced by the hulled variety of barley.

Weed seeds that might reflect cultivation practices are rare in the Bronze Age material from Umeå, but the Mariehem burnt mound has produced some charred seeds of fat hen, *Chenopodium album*, *Sw. svinmålla*, in layers 2 and 3 (Viklund 2002).
The occurrence of a nitrophilous arable weed such as fat hen around 1000–800 cal BC fits well with the record from other parts of Sweden (e.g. Gustafsson 1998). This change in the weed flora has been taken to mean that manuring was now practised on a larger scale than before (Ibid.; Engelmark & Viklund 2008). Manuring would presumably have improved the chances of establishing permanent agriculture in the north and, indeed, some domesticates were present by that time: bones of sheep/goats have been found both at Mariehem and Umedalen (Forsberg 1999; Sundström 2002).

To conclude, new AMS dates for cereal grains have confirmed previously reported pollen indications of farming in Neolithic and Bronze Age Norrland. The results show that crops and cultivation techniques in both periods were similar to those in the rest of Sweden. Yet both agricultural phases were transitory; no permanent farming has been verified in Norrland until the Iron Age. By that time, however, farming in the north was regionally differentiated, with cattle, milk production and manuring as essential components.

References
Huttunen, P., & Tolonen M., 1972. Pollen-analytical
Fig. 3. AMS-dated cereal finds from Umeå. Calibration diagrams. (OxCal v4.1.7 Bronk Ramsey (2010); r:5 Atmospheric data from Reimer et al. (2009)).

<table>
<thead>
<tr>
<th>Grain</th>
<th>Species, lab no.</th>
<th>Radiocarbon date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mariehem, L 5</td>
<td>Barley, Hordeum vulgare cf. var nudum, Ua-39874</td>
<td>2937±30 BP</td>
</tr>
<tr>
<td>2. Mariehem, L 3</td>
<td>Barley, Hordeum vulgare cf. var nudum, Ua-39872</td>
<td>2757±30 BP</td>
</tr>
<tr>
<td>3. Mariehem, L 2</td>
<td>Barley, Hordeum vulgare, Ua-39873</td>
<td>2748±30 BP</td>
</tr>
<tr>
<td>4. Umedalen</td>
<td>Barley, Hordeum vulgare cf. var vulgare, Ua-38971</td>
<td>2441±30 BP</td>
</tr>
</tbody>
</table>

Tab. 1. AMS-dated cereal grains from Umeå.
In October 2010 archaeologist Jonas Paulsson made a remarkable discovery during a metal detector survey which formed part of Gotland County Council’s project “Ett plundrat kulturvarv” (“A looted cultural heritage”). On land belonging to the farm Eskelhem Alvena 1:21 in Mästerby parish he recovered what is most likely a ploughed-out hoard of bronze objects (fig. 1).

The project’s goal is to re-survey recorded find sites with the intention to recover as much as possible of the metallic stray finds in the topsoil. Campaigns like the current one have been launched intermittently since the 1970s, when the development of metal detectors had reached a point when anyone thusly equipped could get at the often very rich finds in Gotlandic fields (cf. Jonsson & Östergren 1990).

The field in Mästerby had previously seen metal-detecting by archaeologists in 1984, 2000 and 2006. From the first visit it was evident that the field contains a settlement site. The recovered artefacts point firmly towards the Late Iron Age and Middle Ages (c. AD 400–1500). Several finds are clear indicators of advanced metalworking on the site (e.g. copper-alloy smelts, fragments of hearth lining, scrap metal and a possible master model for a pendant). Most of these were found in the northern part of the field. This part of the parish is mostly known for an altogether different event – the fabled battle of Ajmunds bridge, fought between an invading Danish force and a Gotlandic muster in 1361. It was a less-known prelude to the final end to Gotlandic resistance brought on by the Battle of Visby on 27 July 1361.

The battlefield area in Mästerby has recently attracted the attention of several researchers, and in 2006 one of two teams metal-detected the