Analysis of charred plant remains from Houghton

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In 2019, as part of the Feeding Anglo-Saxon England project (FeedSax; ERC AdG741751), Mark McKerracher visited the offices of Museum of London Archaeology, to view the environmental samples retrieved from the deserted medieval village of Houghton, during MOLA Headland Infrastructure's excavations along the route of the A14 Cambridge to Huntingdon Improvement Scheme (site TEA7C; Smith *et al.* 2021). The samples had previously been subject to archaeobotanical assessments by MOLA Headland Infrastructure (Walker 2019). Based upon both a review of the existing assessment data and a rapid microscope examination of samples, six were deemed to be of particular significance to the FeedSax project: containing abundant, well-preserved charred plant remains, incorporating diverse crop and weed flora. These samples were borrowed and brought back to the University of Oxford's Institute of Archaeology for further study. This work included a fully quantitative analysis of the charred plant remains, which is reported on here.

Methods

The samples were received in a cleaned, processed condition in plastic bags. The environmental remains had undergone no prior sorting or quantification. The basic method adopted here was therefore to sieve the material into size fractions (>2.0mm, 1.0-2.0mm, 0.3-1.0mm, <0.3mm), to sort the resultant fractions – prioritising the extraction of charred plant remains – and then to identify the latter as closely as possible in taxonomic and anatomical terms, to quantify those items according to standardized criteria, and finally to re-package them. Samples were analysed at the Institute of Archaeology, using a combination of CETI stereo microscope at 8-65x magnification, a Motic SMZ-171 stereo microscope with a range of 2-50x and a Nikon SMZ stereo microscope with in-built apochromatic optical system and a further range of up to 157.5x. The latter allowed for the precise measurement of seeds, the examination of minute seed-coat patterns and for photographs of well-preserved specimens to be taken as reference; all of which proved useful during the identification process. The majority of identification and quantification work on chaff and weed seeds was undertaken by Tina Roushannafas; most of the charred cereal grains were identified and quantified by Mark McKerracher, including some free-threshing wheat grains which were deemed '*Secale*-form': plump enough to be identified as wheat, but with a tapering embryo and slightly squared apex reminiscent of rye.

Identifications were made with the use of the archaeobotanical reference and teaching collections at the Institute of Archaeology, University of Oxford. Further reference was made to the Digital Plant Atlas (https://www.plantatlas.eu/repository) as well as the print-version Digital Seed Atlas of the Netherlands (Cappers, Bekker & Jans 2012). Guidance in identification was also drawn from Martin and Barkley (1961), Knörzer (1970), Berggren (1981), Cappers and Bekker (2013) and Nesbitt (2006). While the latter concerns near eastern grasses, it contains useful descriptions for distinguishing between genera that occur in the British Isles and was used for this reason. Reference was also made to McKerracher (2019), particularly the inventory of plant taxa from Anglo-Saxon contexts. Nomenclature follows Stace (2010) for wild species, Jacomet (2006) for cultivars.

For quantification of fragmentary grass and cereal remains, whole grains, apical and embryo ends were counted, with a total count obtained by adding together whole grains to either the embryo or apical ends

(whichever group was largest). Flax seeds were quantified by counting the most diagnostic element – the 'hooked' shape at the top of the seed. In general, seed counts are expressed as MNIs, with the exception of nutshell which is scored as fragments. Samples were fully sorted and as such the scores represent real counts. However, it is noted that the very large number of *Phleum* seeds listed from sample <73978> were estimated based on calculating the number of seeds per 1cm square and extrapolating to the total area covered on a grid.

The most unusual identifications were of seven seeds of *Ficus* (fig) from three different samples. These compared well in all views with modern specimens (Figures 1 and 2). If truly dating to the early medieval period (and not residual) these would be a notable find, with well-dated examples previously only recorded from urban contexts of London and York (Moffett 2011). However, the woody seeds of figs are known to be robust and at least one of the seeds appears partially mineralised, so their surviving redeposition from an earlier phase is possible.

Figure 1. Charred seeds of cf. *Ficus* from Houghton photographed alongside uncharred modern fig seeds.

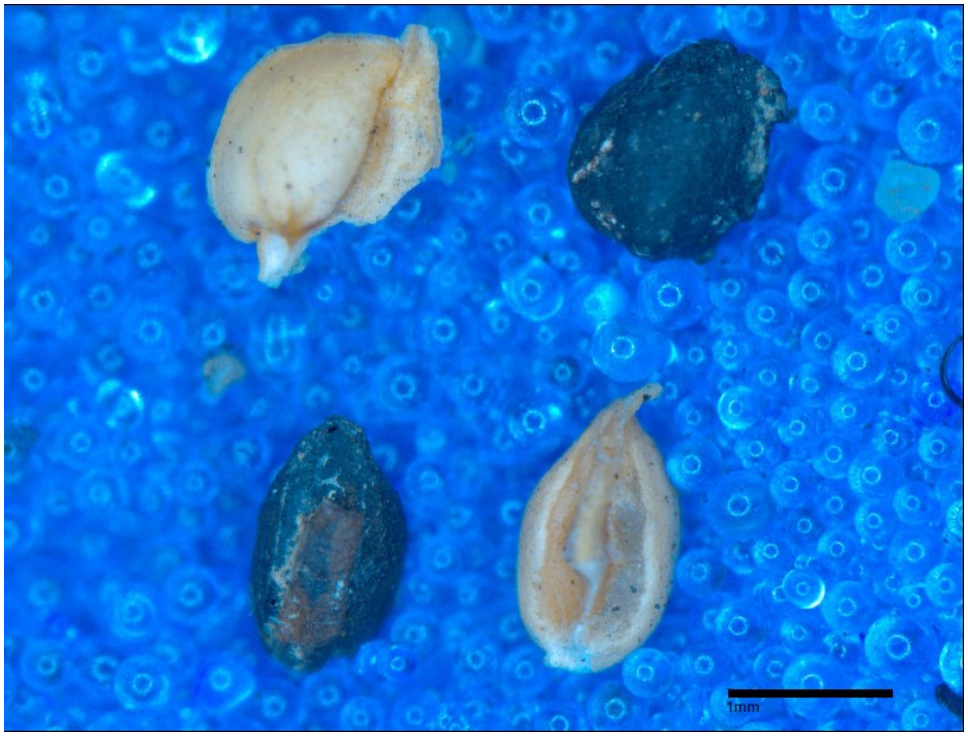

Figure 2. Charred seeds of cf. *Ficus* from Houghton photographed alongside uncharred modern fig seeds (alternative view).

Results

The quantitative data produced by this analysis are provided in FeedSax Digital Archive Document B04. No further analysis or interpretation is presented in this report; Houghton is one of the FeedSax case study sites, so detailed analyses are presented in project publications (Hamerow *et al.* in prep.).

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