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Plant remains recovered from daub from a 16th century manor-house—Althrey Hall, near Wrexham, Clwyd, U.K.

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Summary

This paper demonstrates that well-preserved desiccated plant remains can be recovered from samples of daub from standing buildings. Where such material is well dated it can provide valuable information on cereal usage where there is preservation of large fragments of identifiable chaff.

Introduction

In 1987, conservation work on wattle and daub walls within a sixteenth century manor-house, Althrey Hall, near Wrexham, was undertaken by the Department of Archaeology, University College, Cardiff. A section of one wall, dated by wall paintings to *c.* AD1540, had been badly damaged. Since desiccated straw fragments were clearly visible within the clay matrix of the daub, the opportunity was taken to sample the daub for plant remains in order to determine their composition.

A 500 ml sample of daub was removed from the damaged section for this purpose. The sample was gently broken down by soaking it in hot water for an hour. The resulting slurry was then washed through a stack of sieves (minimum mesh size 250 μm) and the cleaned residues sorted under a binocular microscope for plant remains.

Results

The plant remains recovered are listed in Table 5. The taxa have been arranged in habitat groups to assist in the interpretation, but it should be noted that some species do not strictly adhere to these groupings. For example, stinking mayweed (*Anthemis cotula*) is a locally common arable weed of heavy soils but it can also be found in other cultivated and disturbed habitats. Many of the weeds in Section C of Table 5 grow in a wide variety of disturbed habitats such as waysides and waste ground. Some of the grassland taxa may also grow on disturbed land, for example buttercups and plantains.

Many of the cereal remains were well preserved and large fragments of cereal ears survived intact. A few fragments of rivet/macaroni wheat (*Triticum turgidum/durum*) rachis were identified by their trapezoidal shape and characteristic bulges at the point of disarticulation of the glumes (Hillman, forthcoming). Two-row barley rachis fragments were identified by the presence of sterile lateral spikelets.

Discussion

The plant remains contained within the daub had been preserved by desiccation and were generally recovered in a good state of preservation. From the composition of the assemblage it appears that the bulk of the organic matter used to temper the daub consisted of the waste products of cereal processing activities. Straw fragments were predominant, and some large fragments of cereal ears were present. Rachis fragments and glumes were also recovered, and approximately 15% of the weed seeds found were from weeds of arable land and were probably harvested with the crop. The threshing seems to have been quite thorough, as very few cereal caryopses were recovered. It is unlikely that this was due to differential preservation since larger numbers of grains have been found in other samples of daub (Green 1979; Arthur 1963).

Sixteenth century samples of daub examined by Arthur (1960; 1961) produced small fragments of straw less than 2" (50 mm) long, indicating that the material had been finely chopped prior to inclusion within the clay matrix. The straw incorporated into the Althrey Hall daub must have been chopped in a less careful fashion, since the fragments

A. Cultivated plants			
Triticum aestivum L. (bread wheat)	rachis fragments	8	
	glumes	6	
T. cf. *turgidum/durum* (?rivet/macaroni wheat)	rachis fragments	4	
Triticum sp. (wheat)	rachis fragments	3	
Hordeum distichon L. (2-row barley)	rachis fragments	3	
Hordeum sp. (barley)	caryopses	3	
Hordeum sp. (barley)	rachis fragments	2	
Secale cereale L. (rye)	± complete ear	1	
	ear fragment	1	
	spikelets	4	
	rachis fragments	2	
Avena sativa L. (common oat)	florets	2	
	glumes	2	
cereal indet.	straw fragments	numerous	
Linum usitatissimum L. (flax)	seeds	12	
	capsule fragments	53	

B. Arable weeds			
Agrostemma githago L. (corn cockle)	seed fragment	1	
Anthemis cotula L. (stinking mayweed)	achenes	15	h
Centaurea cyanus L. (cornflower)	achenes	7	
	fragments of head	4	
Chrysanthemum segetum L. (corn marigold)	achenes	4	a
Papaver dubium/hybridum L. (poppy)	seeds	3	

C. Weeds of cultivated and other disturbed soils			
Arctium lappa L. (great burdock)	achene	1	
Atriplex hastata/patula L. (orache)	seed	1	
Chenopodium album L. (fat hen)	seed	1	n
Euphorbia helioscopia L. (sun spurge)	seed	1	
Euphrasia sp./*Odontites verna* (eyebright/red bartsia)	seed	1	
Fumaria sp. (fumitory)	seed	1	
Hyoscyamus niger L. (henbane)	seeds	6	n
Lapsana communis L. (nipplewort)	achenes	2	
Polygonum aviculare agg. (knotgrass)	nutlets	37	
Rumex obtusifolius L. (broad-leaved dock)	nutlet	1	
Sonchus asper (L.) Hill (spiny sow-thistle)	achenes	2	
S. oleraceus L. (sow-thistle)	achene	1	
Stellaria media (L.) Vill. (chickweed)	seeds	2	
Tripleurospermum maritimum (L.) Koch (scentless mayweed)	achenes	17	
Urtica dioica L. (stinging nettle)	achenes	2	n

D. Grassland taxa			
Bellis perennis L. (daisy)	achene	1	
Gramineae gen. et sp. indet. (grasses)	caryopses	49	
Plantago lanceolata L. (ribwort plantain)	seed	1	
P. major L. (great plantain)	seeds	4	o
Prunella vulgaris L. (self-heal)	nutlets	7	
Ranunculus acris/bulbosus/repens (buttercups)	achenes	2	
Rhinanthus minor L. (yellow-rattle)	seeds	2	
Rumex acetosella agg. (sheep's sorrel)	nutlet	1	a, heath
R. conglomeratus Murr. (sharp dock)	nutlets	5	d
Torilis japonica (Houtt.) DC. (upright hedge-parsley)	mericarps	2	
Trifolium sp. (clover)	calyces	5	
	leaf	1	

E. Plants of wet grasslands, riverbanks and marsh			
Carex sp. (sedge)	nutlets	5	also dry
Eleocharis Subgenus *Palustres* (spike-rush)	nutlets	2	d
Juncus sp. (rush)	inflorescence frags	8	d
Polygonum hydropiper L. (water-pepper)	nutlets	8	ponds, rivers
Ranunculus Subgenus *Batrachium*	achene	1	ponds, rivers
F. Other habitats			
Alnus glutinosa (L.) Gaertn. (alder)	fruit	1	banks, scrub, woods, d
Cerastium sp. (chickweed)	seed	1	various
Pteridium aquilinum (L.) Kuhn (bracken)	frond frags	8	heath, scrub, a, l
Rosa sp. (rose)	thorn	1	woods, scrub, hedges
Rubus fruticosus agg. (blackberry)	seed	1	woods, scrub, hedges
Rumex sp. (dock)	nutlets	3	various
Silene sp. (campion)	seed	1	various
Leguminosae	pod fragments	4	various
moss	shoot fragments	7	various
	Total	347+	

Table 5 (above and opposite). Plant remains recovered from a 500 ml sample of daub from Althrey Hall. Key to preferred soil types in last column: a—acid; d—damp; h—heavy; l—light; n—nitrogen/phosphorus-rich; o—open. Nomenclature follows Clapham et al. *(1962).*

were variable in length, the longest being 120 mm.

Of the cereals represented by the caryopses and chaff remains, wheat, barley, cultivated oats and rye were identified. Both bread wheat (*Triticum aestivum*) and rivet/macaroni wheat (*T. turgidum/durum*) were present. It is not possible to distinguish between the rachis fragments of rivet and macaroni wheat but no evidence has yet been found for the cultivation of macaroni wheat in Britain (Moffett, forthcoming). Rivet wheat is said to have been the main wheat grown in southern England at one time (Peterson 1965), although it has only recently begun to be recognised amongst archaeological plant material. Greig (1988, 110) lists a number of sites dating from the eleventh to fourteenth centuries from which this free-threshing tetraploid wheat has been recovered, and Arthur (1960; 1961; 1963) recovered spikelets, glumes and rachis fragments of rivet wheat from late fourteenth to sixteenth century daub samples. It is a taller wheat than bread wheat so that the straw is ideal for thatching, but its soft, mealy grain is less suitable for bread-making and it does not grow well in poor soils.

Two-row barley (*Hordeum distichon*) was identified, but the presence of 6-row barley (*H. vulgare* L. emend.) could not be confirmed. Archaeological records of 2-row barley are sparse, as it is necessary to recover well preserved rachis segments in order to be sure of the identification. However, it has been recorded amongst Late Saxon carbonised remains from Stafford (Lisa Moffett, pers. comm.), from a thirteenth to fifteenth century site in Norwich (Murphy 1985) and from a late fourteenth to early fifteenth century daub sample from Kent (Arthur 1963). The presence of rachis fragments complete with well-preserved sterile spikelets in this sample of daub provides useful evidence for the cultivation of this cereal in the sixteenth century in North Wales. In the last few centuries it has become the most widely grown type of barley, being more suited to the production of malt than the 6-row variety. It is not possible to know whether the crop represented at Althrey was grown for malting.

Rye (*Secale cereale*) appears to have been of little importance as a cereal crop in late and post-medieval times in Britain, and Green (1979) found none in the sixteenth century daub samples that he examined from southern England. However, it is a useful crop on poor, acid soils. Oats (*Avena sativa*) also grow well on such soils, particularly in areas of high rainfall since they require little sun to ripen.

Several chaff fragments from both of these species were present in the daub from Althrey Hall.

The arable weed seeds recovered were probably introduced into the daub amongst crop processing debris, and so can provide further information concerning the soils cultivated. Corn marigold (*Chrysanthemum segetum*) is a weed of acidic, sandy soils such as occur in the locality overlying the sandstone bedrock. Stinking mayweed (*Anthemis cotula*) prefers heavy, damp soils and this may indicate the cultivation of alluvial soils on the floodplain of the River Dee.

Many of the weeds in section C, the weeds of cultivated and disturbed soils, can also grow as arable weeds and so could have been introduced into the daub amongst crop-processing waste. Some of the others, particularly those that prefer soils with a high nitrogen or phosphate content such as henbane (*Hyoscyamus niger*) and stinging nettle (*Urtica dioica*), may have been growing on waste ground close to the place of preparation of the daub.

An interesting addition to the list of cultivated plants recovered from the sample was cultivated flax (*Linum usitatissimum*). Both seeds and capsule fragments were recovered, the small size of the capsule fragments suggesting that the remains had been added when the capsules were dry and brittle. Flax grown for the use of the bast fibres in the stem is usually uprooted by hand, tied into bundles and left to dry in the fields. The plants are then pulled through a comb-like device to remove the dry leaves and seed pods, a process called rippling. It may have been the waste product from this process that had been added to the daub. Flax seeds are also grown as a foodstuff, being rich in linseed oil. None of the daub samples examined by Green (1979) contained flax remains, although several contained small amounts of other domestically used plant remains, such as hops and figs. The samples examined by Arthur contained primarily cereal caryopses, chaff and a few weed seeds. However, Willerding (1988) has recovered flax and rye from late medieval daub in half-timbered houses in Germany.

The recovery of a variety of grassland taxa, in particular seeds and capsule fragments from the hay meadow species yellow-rattle (*Rhinanthus minor*), indicated the inclusion of hay in the daub. Sheep's sorrel (*Rumex acetosella*) is a species often found in acidic grasslands. The presence of several riverside and wet grassland taxa, such as spike-rush (*Eleocharis* Subgenus *Palustres*) and sedges (*Carex* sp.) suggests the use of the damp soils of the floodplain for the cultivation of hay. The daub samples examined by Green (1979) and Arthur (1963) also contained some grassland taxa.

The small amounts of other plant remains such as moss fragments, fragments of bracken frond and a rose thorn, could have been introduced amongst hay or domestic waste in the area of preparation of the daub.

The large size of most of the straw and other plant fragments suggests that these plant remains were not added as constituents of herbivore dung. The examination of horse dung from a Roman well in Lancaster (Wilson 1979) demonstrated that although small seeds survived the passage through the gut intact, larger seeds and leaves were fragmented. Dung from ruminants is likely to contain even less intact plant remains due to repeated chewing and longer periods of digestion. However, it is possible that some dung was added. Green (1979) found evidence of the inclusion of dung into a bell mould, but not in the daub samples he examined.

The daub examined appears, therefore, to have been made up of waste plant material from a variety of sources including cereal processing, flax processing, hay making, and probably some domestic waste. As suggested by Green (1979), it is likely that the clay would have been mixed with whatever organic material was at hand at the time.

The value of examining plant remains from daub samples has previously been pointed out by Arthur (1960; 1961; 1963; and undated monograph) and Green (1979). Providing that the material can be securely dated, large quantities of well preserved plant remains can be recovered, particularly cereal chaff fragments which can be vital for accurate identification. Studies of this material could be of great value in obtaining evidence for the cultivation of free-threshing tetraploid wheats and two-row barley in post-medieval Britain. The potential for further research into daub from standing buildings in Britain is great.

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