

Diatom assessment of sediments from No.1 Poultry (ONE94)

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Introduction

A rapid diatom assessment was carried out on 71 samples from the No.1 Poultry site (ONE94) in the City of London. The samples were taken from a number of phases in the occupation of the site and from a number of contexts where analysis of water quality would be of archaeological relevance. Unpublished data on sample locations, sediment characteristics, and site plans were provided by Jane Corcoran and Pete Rowsome. The purpose of the assessment was primarily to determine if diatoms were present, and the potential for percentage analysis of diatom assemblages. Since no formal assessment was required for this site, information on diatom valve concentrations, diatom assemblage type, the state of diatom preservation and the diversity of taxa were not considered in detail.

Methods

Diatom preparation followed standard techniques (Battarbee 1986). Two coverslips, each of a differing concentration of the cleaned solution, were prepared from each sample. Slides were scanned at magnifications of x400 and at x1200 under phase contrast and differential interference contrast illumination.

Results

The results of the rapid assessment are summarised in Table 1.

The symbols in the "Diatoms" column represent the following qualities of diatom presence, preservation or concentration.

- diatoms absent
- /+ fragmented valves

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- +/- some intact valves but mainly fragments
- + diatoms present but a very low concentration of valves
- ++ diatoms present but a low concentration of valves
- +++ diatoms present and valves common

Discussion and Conclusions

Analysis of the results of scanning the diatom samples from ONE94 shows that diatoms were absent from 23 of the 71 samples. Valve fragments were present in 13 samples. Some whole valves, but mostly fragmented remains, were present in 8 samples. Diatoms were present at very low concentrations in 13 samples, and at low concentrations in 7 samples. Diatoms were common (and species diversity was relatively high) in 7 samples. The latter samples would be suitable immediately for diatom analysis. Four of these samples represent the pre-Roman environment and may be used to test for possible human impact (3 samples from context 1036; one sample from context 900). A single sample is from context 1020 taken from a water tank. A sample from context 890 which may reflect aquatic conditions at the time of the Boudican revolt, and a bulk sample (18066) from an 'external deposit', context 980.

In the majority of the samples assessed, diatoms are present only at low abundances. However, valves are completely absent only from a few samples. Although no detailed comments can be made here on species diversity or assemblage type, it appears that for many of the samples with low diatom concentrations species richness is also low. Further, the diatoms present often represent species that are tolerant of desiccation (e.g. *Hantzschia amphioxys*, *Navicula mutica*, some *Pinnularia* spp.). These aerophilous species are diatoms usually associated with semi-terrestrial habitats, such as the sides of ditches, or soils. Unfortunately this type of diatom assemblage reveals little about water quality and merely represents a specialised diatom community adapted to frequent desiccation. This may be of interest where questions of redeposition or inwash of sediments are relevant.

It should, however, be emphasised that a number of the apparently less promising diatom assemblages, in terms of valve concentration, diversity and assemblage type,

may be of environmental archaeological value. This is exemplified by (slide 36) a bulk sample (737) from context 9422, a well deposit dated to 50-100 AD. In this sample, scanning of the slide revealed a single valve of a marine/brackish, aerophilous species, *Diploneis interrupta*. This species is incongruous in a well deposit. Although it is unreliable to extrapolate from a single diatom occurrence when there is always the possibility of post-excavation sample contamination, further analytical effort may be worthwhile where a sample from a context of particular environmental value has been shown to be diatomaceous. Therefore although only seven samples are of definite diatom analytical value, a total of between 35 and 48 samples are diatomaceous and, if appropriate, some of those from contexts of particular archaeological value could be analysed. The main difficulty in those samples with low diatom concentrations is the time required to make a reliable count.

Where diatoms are present silica dissolution does not appear to be problematic and therefore the diatom valves and fragments that are present are generally well enough preserved to be identifiable to species level. Selection of samples for further analysis should be undertaken after consultation as to which samples are appropriate.

Acknowledgements

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References

Battarbee, R.W., (1986). Diatom analysis. In Berglund, B.E. (Ed.) *Handbook of Holocene Palaeoecology and Palaeohydrology*. Chichester: John Wiley and Sons, pp 527-570.

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Table 1. Assessment of the diatom content of sediment samples from ONE94.

Slide	Sample	Diatoms
1	995, Profile 1, D1 [AE] 15 cm	-
2	995, Profile 1, D2 [AD] 20 cm	++
3	995, Profile 1, D3 [AB] 30 cm	++
4	1020, Profile 1, D4 [X] 68 cm	+/-
5	1020, Profile 1, D5 [W] 81 cm	+++ / ++
6	1020, Profile 1, D6 [U] 93 cm	-/+
7	1020, Profile 1, D7 [S] 168 cm	+
8	1020, Profile 1, D8 [R] 116 cm	+
9	1020, Profile 1, D9 [G] 120 cm	-/+
10	1020, Profile 1, D10 [P] 124 cm	-
11	980, 18066, D11	+++
12	1019, 18200, D12	+/-
13	987, 18034, D13	-
14	1012, 180??, D14	++
15	1027, Profile 1, D15 [I] 202 cm	-
16	1027, Profile 1, D16 [F] 230 cm	-
17	1027, Profile 1, D17 [F] 235 cm	-/+
18	1027, Profile 1, D18 [E] 243 cm	+/-
19	1027, Profile 1, D19 [D] 248 cm	-
20	1027, Profile 1, D20 [C] 254 cm	+/-
21	1027, Profile 1, D21 [B] 264 cm	-
22	1027, Profile 1, D22 [B] 280 cm	-/+
23	890, Profile 4, D23 [E] 16 cm	-/+
24	890, Profile 4, D24 [C/D] 24 cm	-/+
25	890, Profile 4, D25 [B] 32 cm	-/+
26	890, Profile 4, D26 [B] 40 cm	+
27	890, Profile 4, D27 [A] 44 cm	+++
28	890, Profile 4, D28 [A] 48 cm	+
29	741, Profile 3, D29 [J] 13 cm	-/+
30	741, Profile 3, D30 [I] ?	-/+
31	741, Profile 3, D31 [H] 26 cm	+/-
32	741, Profile 3, D32 [F] 60 cm	+
33	741, Profile 3, D33 [C/D] 78 cm	+
34	718, 12052, D34 road side drain	+/-
35	810, 12633, D35 road side drain	++
36	9422, [737]	+/-
37	8875, [595]	-/+
38	8963, [596]	-
39	9252, [676]	-/+
40	16613, [621]	-
41	7416, [411]	+
42	20 cm, [412]	-
43	32 cm, [812]	-/+
44	44 cm, [812]	-
45	6 cm, [895]	-
46	14 cm, [895]	+/-
47	24 cm, [895]	+
48	26 cm, [895]	-
49	34 cm, [895]	+
50	5 cm, [898]	-
51	5 cm, [898]	-
52	23 cm, [898]	-

Slide	Sample	Diatoms
53	26 cm, [898]	-
54	40 cm, [898]	+
55	16 cm, [898 M2]	+
56	24 cm, [898 M2]	++
57	40 cm, [898 M2]	++
58	44 cm, [898 M2]	-/+
59	2 cm, [900]	-
60	28 cm, [900]	++/+++
61	16 cm, [906]	-
62	22 cm, [906]	-
63	26 cm, [906]	+
64	2 cm, [1036]	-
65	6 cm, [1036]	++
66	12 cm, [1036]	+
67	16 cm, [1036]	+++
68	22 cm, [1036]	+++
69	30 cm, [1036]	+++
70	40 cm, [1036]	-
71	[906] C24: ostracods	-