Fish remains from excavations at 199, Borough High Street, Southwark.

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Introduction

A large number of fish remains, as well as other biological and archaeological inclusions, have been recovered from deposits at the site by sieving soil samples and sorting the soil residues. The sampled deposits range in date from the mid-first century AD to the post-medieval period. A variety of different kinds of deposits have been examined including Roman ditches, medieval rubbish pits and well fills.

Methods and materials

The bones submitted for identification were retrieved by wet-sieving soil samples through a tower of sieves, with the finest mesh having 300 micron apertures. The fractions were sorted using fine-pointed forceps and, where necessary, a low-power binocular stereo-microscope. It is worth remarking that conventional excavation techniques, e.g. trowelling, failed to produce any identifiable fish remains. Identifications were made by comparing the ancient material with modern reference skeletons in the collection of the British Museum (Natural History).

Because the majority of the species identified are small fish, no attempt has been made to estimate the size of the individuals represented in the deposits; in particular, no measurements of bones were taken. Fish nomenclature follows Wheeler (1969).

Results

Table 1 is a condensation of the results of the analyses. A full catalogue of the identified bones is available from the Environmental Archaeology Unit, University of York, the Fish Section of the British Museum (Natural History) or the Southwark Excavation Committee.

Approximately half of the bones collected from the soil samples were found to be unidentifiable. Most were fin rays, ribs, interhaemals and branchiostegal rays, all of which are insufficiently characteristic to allow specific determinations to be made.

However, eight species of bony fish have been identified from a total of 63 archaeological contexts. In addition, teeth and dermal denticles testify to the presence of at least one mollusc-feeding member of the cartilagenous fishes (Elasmobranchii).

The identified species

Cartilagenous fish, Elasmobranchii

Cartilagenous fish (dogfish, sharks and rays) are, generally speaking, not very well represented in archaeological deposits because their main skeletal material, cartilage, rapidly decays once the animal dies. However, fish from this group produce resistant dermal structures and mineralized cores of vertebral centra, which may survive in archaeological deposits. Unfortunately such remains as are found are not usually identifiable to species; thus the amount of information likely to be gleaned from studying the remains of cartilagenous fish is likely to remain small.

Herring, Clupea harengus (L.)

This pelagic fish which formerly occurred in enormous shoals around much of the British Isles has been recognized by the presence of 60 vertebral centra from 11 contexts. The herring rarely exceeds 40 cm in length. It can easily be taken in the lower reaches of estuaries; and at sea, can be taken at the surface in floating nets, and at depths of up to 200 metres. It is valuable as a food resource for it may be caught in large numbers and is readily preserved by salting and/or smoking.

Smelt, Osmerus eperlanus (L.)

This small pelagic fish is rarely found far from the shore and is often taken in estuaries. Like herring, it is usually caught in drift or seine nets. The Thames once supported a substantial smelt fishery (Wheeler, 1979), but by the time Yarrell (cited by Wheeler, 1957) was writing, in 1836, a marked decline in this fishery was evident. A total of 521 verebral centra were recovered from 15 deposits (236 were found in one context).

Pike, Esox lucius (L.)

Pike is a carnivorous freshwater fish which lies in wait for its prey using aquatic plants as cover. It can grow to over 1 metre in length but the size of the one vertebral centrum recovered suggests the specimen was approximately 30 cm long. While pike is an exclusively freshwater fish, it has been recorded in areas of London where the Thames is brackish, for example, it has been reported from the East India, West India and London Docks (Wheeler, 1957). Today it is fairly common above the tidal reaches of the Thames. The single bone recovered from the late/post medieval layers suggests that pike was not regularly eaten.

Carp family, Cyprinidae

A number of vertebrae and scale fragments have been identified to the family Cyprinidae. This family includes dace, the only cyprinid to be specifically identified, and a variety of other freshwater fish (including roach, rudd, chub and tench) which may have been present in the Thames and its tributaries.

Dace, Leuciscus leuciscus (L.)

Dace is typically a fish of clear, fast-running streams and rivers but can be found in lakes and slow rivers. It often forms large shoals near the surface. Dace grow to 30 cm but usually attain 25 cm or less in length. One pharyngeal tooth plate allowed identification to be made. Dace is generally regarded as too small to be of any great value as a food fish although it is well known as a good angling fish, being a vigorous fighter. It is thought to be widely distributed in the streams and rivers of the London area (Wheeler, 1957 op. cit.).

Eel, Anguilla anguilla (L.)

As the eel spends some parts of its life in freshwater before returning to the sea to spawn, it can be caught in salt, brackish or fresh-water. It can grow to over a metre in length but the identified vertebral centra are from specimens approximately 50 cm long. A wide variety of methods are employed in the capture of eels, including hook and line, nets, traps and eel spears. The eel is one of the few fish that is able to pass regularly through polluted waters and it seems likely that this fish has always been common in the London area. Over 200 centra were recovered from 13 contexts.

Cod family, Gadidae

This family contains many of the common marine fish which are of economic importance in the British Isles, for example, cod, whiting, coley and haddock. The only bones from 199, Borough High Street, identified to this group are small pharyngeal toothed bones. The majority compare closely to cod (Gadus morhua L.) while one is probably from whiting (Merlangius merlangus (L.). These remains indicate that marine gadids were brought onto the site, presumably for human consumption. It is interesting to note that gadid remains are absent from Roman samples and appear to become most abundant in the late/post medieval period. Large gadid vertebral centra are often the most common fish bones in archaeological samples, these being large enough to be collected by hand from trowelled deposits. It is likely that the small number of gadid bones present in the current sample merely indicate that the volume of soil processed for animal and plant remains is rather small. Had more soil been washed it is likely that more species would have been recovered.

Mackerel, Scomber scombrus L.

A pelagic migratory marine fish which forms shoals close to the surface. It can grow to 50 cm and 2 kg and is most often caught on hooks or in nets. One vertebral centrum bears witness to the presence of this species. Mackerel has never been recorded from the Thames. Its presence is further evidence that marine fisheries were supplying the site during the later periods of occupation.

Stickleback, Gasterosteus aculeatus L.

The three-spined stickleback is probably the best known and most abundant of freshwater fish in northern Europe. It is also common in estuarine conditions and has been taken up to two miles offshore. It rarely grows longer than 7 cm and, possessing sharp strong spines, is not appetizing food for man. Pectoral and dorsal spines, jaw bones and vertebral centra (22 bones in all) from 7 contexts show it to be fairly common, particularly in Roman samples.

Plaice, Pleuronectes platessa L. and other flatfish.

Plaice is a common marine flatfish living on sandy or muddy ground. It may attain a weight of 3.5 kg and is usually caught in trawls, seine nets, set nets or on hook and line. One right dentary of this species was present. Two flatfish vertebral centra were also recovered; these may be from plaice but could be from another species such as flounder or dab.

Discussion

Assuming that the sampling methods have produced representative samples for analysis, it appears that the distribution of fish remains in the archaeological deposits shows definite trends with the passage of time.

The density of identifiable bones seems to increase dramatically as the centuries pass (see table 2). The 41 samples dated to the Roman period produced only 89 identifiable fish bones, while 10 late/post medieval contexts yielded 475 bones.

While differences in the taphonomy (that is the manner in which bones became incorporated into the deposits) are interesting, perhaps of more direct archaeolological and historical relevance are differences in the kinds of fishery supplying the site at different periods. The fish exploited during Roman occupation are all species that could have been caught in the River Thames and its estuary. It is not until medieval times (13th and 14th centuries) that exclusively marine fish like sharks and/or rays, mackerel and large gadids (cod family) appear in the deposits. From the data available, there does not appear to be a marked difference between the assemblages of fish bones gathered from high medieval deposits and those from late/post medieval layers.

The results from this investigation must be seen in the light of similar recent work in Southwark (Jones, 1978). At St Thomas St., while the majority of the fish remains are from estuarine species, haddock and mackerel are also reported from Roman layers. Three sites on Borough High Street (Nos. 93-95, 106, and 207) all produced small assemblages of fish bones with both estuarine and marine fish present in Roman levels, albeit in very small numbers. Taken in isolation, the evidence from 199, Borough High Street might lead to the conclusion that the Romans in Southwark ate only fish from the Thames and its tributaries. However, we know that material from similar sites in the area indicates that both marine and estuarine fishes were eaten in the Roman period. Here, then, is a good example of the need to ensure adequate sampling of both the layers within a site and sites within an area.

While the change from an exclusively estuarine fishery to a more broadly-based fishery exploiting both estuarine and marine species seems to represent the major development in fishing activity reflected in the bones from deposits at 199, Borough High Street, there is evidence of less obvious changes.

For instance, it is clear that the numbers of both stickleback and cyprinid remains in the deposits diminish from Roman times towards the present day. The explanation for this change may, in part, be related to differences in the kind of features that were sampled during each of the three broad periods of occupation. The majority of these small freshwater fish remains are from Roman ditch fills. As such drainage ditches became filled, sticklebacks and small cyprinids which lived, or which had recently died in them, became trapped. The majority of medieval samples were taken from pits, which are not likely to have sustained an indigenous populations of fish, but are most likely to contained food refuse. Thus the three assemblages are probably not comparable at a very detailed level.

However, while there are some species which appear to show differences in their relative abundance during the periods under consideration, there are others which do not. Thus smelt is the most abundant fish in all periods and eel seems to have been fairly common from earliest times.

It would not be justifiable to attempt to draw more inferences from these data; indeed it is arguable that some of this discussion is based on rather poor evidence. This is, unfortunately, the nature of much archaeological evidence. Despite their limitations, the present samples

are of great value; not only have they all been obtained by sieving soil samples, thereby eliminating the bias in favour of large fish bones, but an attempt has been made to examine a broad selection of the features excavated. It is hoped that future excavations in Southwark will continue to produce assemblages of fish bones.

SAMPLE NO:			
	Anguilla anguilla	1	Vertebral centrum (VC)
14	(Eel)		
	Gasterosteus aculeatus	1	Spine
	(Stckleback)		
15	Stickleback	8	Headbones and VCs
16	Unidentified		
19	Stickleback	3	Spine and VCs
24	Unid.		
26	Unid.		
27	Unid.		
36	Eel	1	VC
39	Cyprinidae	3	VCs
	(Carp family)		
64	Osmerus eperlanus	2	VCs
	(Smelt)		
74	Unid.		
78	Cyprinidae	3	Scales
79	Unid.		
80	Cyprinidae	2	Scales
	Eel	4	VCs
93	Smelt	3	VCs

Table 1

	Elasmo-branch	Herring	Smelt	Pike	Cyprin-idae	Eel	Gadidae	Mackerel	Stickle-back	Flatfish
Roman		X	XXX		XX	XX			xx	
Medieval	X	XX	XXX		X	XX	X		X	X
Late-Post Medieval	X	XX	XXX	X	X	XX	XX	X		

Table 2

PERIOD	NUMBER OF CONTEXTS SAMPLED	NUMBER OF CONTEXTS PRODUCING FISH REMAINS	NUMBER OF IDENTIFIABLE BONES
ROMAN 1-4th C.	41	20	89
MEDIEVAL 13-14th C.	12	9	296
LATE/POST MEDIEVAL	10	4	475

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Captions

Table 1: The distribution of fish bones by species within the periods of occupation.

X = Present

XX = Frequent

XXX = Dominant species

Table 2: Showing the number of contexts and number of identified bones for the three periods discussed.

Fish remains from 199, Borough High Street, Southwark.

(a full list of identified fish bones)

Sample No	Species and date	No. bones	Kind of remain and comments
	Mid 1st C.		
14	~~Anguilla anguilla~~	1	Vertebral centrum (VC)
	(Eel)		
	~~Gasterosteus aculeatus~~	1	Spine
	(Stickleback)		
15	Stickleback	8	Headbones and VCs
16	Unidentified		
19	Stickleback	3	Spine and VCs
24	Unid.		
26	Unid.		
27	Unid.		
	Eel	1	VC
	Cyprinidae	3	VCs
	(Carp family)		
	~~Osmerus eperlanus~~	2	VCs
	(Smelt)		
	Unid.		

2nd C. & late 2nd C.

Smelt	31	VCs
Cyprinidae	2	VCs
~~Leuciscus~~ leuciscus	1	Pharyngeal tooth plate
(Dace)		
Unid.		
Unid.		
Herring	3	VCs
Unid.		
Unid.		
Unid.		
Unid.		

3rd C. to 7th C.

Unid.		
Unid.		
Unid.		

13th & 14th C.

Herring	3	VCs
Smelt	24	VCs
Eel	1	VC
Gadidae	1	Pharyngeal tooth plate
(Cod family)		
Stickleback	3	Spines and headbone
Smelt	14	VCs
Eel	63	VCs
Gadidae	1	Pharyngeal tooth plate cf Merlangius merlangus (whitir
Herring	4	VCs
Smelt	4	VCs
Pleuronectes platessa	1	Dentary
(Plaice)		
Elasmobranchii	1	Dermal denticle
(Cartilagenous fish)		
Herring	14	VCs
Smelt	93	VCs
Eel	14	VCs
Stickleback	1	Spine
Pleuronectidae	1	VC
(Flatfish)		
Smelt	1	VC
Cyprinidae	1	VC
Flatfish	1	VC
Herring	3	VCs
Smelt	2	VCs

	Late and Post Medieval		
9	Unid.		
10	Unid.		
22	Unid.		
56	Smelt	6	VCs
	Esox lucius	1	VC
	(Pike)		
60	Herring	6	VCs
	Smelt	57	VCs
	Eel	12	VCs
	Scomber scombrus	1	VC
	(Mackerel)		
63	Elasmobranchii	3	Teeth and denticle
	Herring	18	VCs
	Smelt	236	VCs
	Eel	89	VCs
	Eel	89	VCs
	Gadidae	24	Tooth plates from branchial basket cf Gadus morhua
67	Unid.		
123	Herring	3	VCs
	Smelt	19	VCs
	Cyprinidae	6	VCs
	Eel	2	VCs
133	Unid.		

Unid.		
Herring	3	VCs
Smelt	10	VCs
Eel	1	VC
Herring	2	VCs
Smelt	25	VCs
Eel	4	VCs
Unid.		