Southampton French Quarter 1382
Specialist Report Download E2: Fish Bone

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Introduction

An assemblage of almost 7500 identifiable fish bones was recovered both by hand retrieval during the excavation, but predominantly from the sorted residues of the processed bulk soil samples.

During excavations at Southampton French Quarter a total of 188 bulk samples were sieved to 0.5mm (occasionally 1mm) as part of the flotation process for the recovery of plant and animal remains. The sampling strategy followed during the excavation involved, where possible, the full sampling of one rubbish pit and one latrine pit per tenement for each major period, avoiding intercut features or those clearly containing residual material. Occupation surfaces and other distinct features such as hearths were also sampled. Mixed contexts or contexts of uncertain provenance were avoided. While complete standardisation of sample volumes was not possible, wherever practicable samples were 40 litres.

Following assessment of the fish remains recovered largely from the > 4mm residues, the richer assemblages were targeted for further fine residue and flot sorting. This report comprises an analysis of all the identified the fish remains from these samples, together with the material collected by hand on site.

Methodology

The residues from all of the bulk-sieved samples were sorted to 4mm. Where samples were identified as having significant numbers of fish bones, residues were sorted to 2mm. Samples from the Late Saxon deposits which produced fish remains were routinely sorted to 2mm even where fish remains were not abundant, in order to avoid a perceived bias against the recovery of small fish in pre-medieval deposits (see Barrett *et al.* 2004, 4). Where fine (4-2mm) residues proved to be particularly large and/or rich in small bones and therefore very time-consuming to sort, a proportion (50% or 25%) was fully sorted. All 2-0.5mm residues were rapidly scanned for tiny fish bones, and where abundant a proportion (usually $1/8^{th}$) was sorted with the aid of a microscope. Fish bones and scales were also extracted from the flots taken for charred plant remains. Full details of sample sizes and volumes of material sorted (where less than 100%) are available in the site archive, together with with the full fish identifications and measurements. Where a proportion of the residue has been sorted, the results have not been scaled up for reporting, since the bones so recovered are from tiny individuals which would have been of relatively limited dietary and economic significance.

Bones and scales have been identified to taxon and anatomical element using the author's personal reference collection in conjunction with published guides (in particular Watt *et al.* 1997). Where species identifications were uncertain the bones have been identified either to family level or have been classified as unidentified. Spines, ribs, rays cranial fragments and branchial bones were only identified when particularly diagnostic, for example gurnard skull fragments and rays. Clupeid bones (herring/ sprat/sardine) were further identified to species where possible; the great majority were classified as herring, based on their size and morphology. While sprat was identified with certainty in several instances, the similarity between sprat and small herring vertebrae and most head bones means that sprats may be a more common component of the small clupeids than the numbers of identified bones indicates.

For this reason, many small vertebrae are classified only as Clupeidae while almost certainly being from herring (*Clupea harengus*).

Fish scales were present in a number of samples, but can difficult to identify as they vary in appearance not only between taxa but also with position along the body. Fragmented scales are particularly problematic. Given these limitations, the majority of scales recovered were identified as sea bream (Sparidae), sea bass (*Dicentrarchus labrax*) or clupeid, although grey mullet (Mugilidae), perch (*Perca fluviatilis*), cyprinid (Cyprinidae) and goby (Gobidae) scales were also recorded. Where many scales were present they have been counted as 1 where this was the only identification for the taxon in the sample, or 0 where other remains had been identified, to avoid taxa with many surviving and distinctive scales being grossly over-represented. Notes are provided in the archive record to indicate general abundance. Other dermal structures included the distinctive skin bucklers or thorns from rays; where quantities of small and tiny dermal structures were present, they have been scored as for scales. Where dermal denticles could be identified to species the larger ones were almost all from the thornback ray or roker (*Raja clavata*), while numerous tiny denticles resembled starry ray (*Raja radiata*). Bony scutes of gurnards (Triglidae) and scad (*Trachurus trachurus*) were also recorded.

Fish sizes were estimated by a combination of bone measurements and direct visual comparison with bones from comparative modern fishes. Measurements were taken using digital callipers to 0.01mm, on the premaxilla and dentary (following Wheeler and Jones 1976) and the atlas vertebra (following Morales and Rosenlund 1977) of cod family fish (Gadidae). Details are as follows: premaxilla - width of the ascending process; dentary - depth from the tooth row to the base of the ridge, taken at the posterior margin of the nutrient foramen (M1) and depth at the symphysis (M2); atlas vertebra- length of the anterior articulating facet (M1), width of the anterior articulating facet (M2), and maximum centrum height (M3). Otolith maximum length (M1) and breadth (M2) were also measured as was the total length of eel cleithra (the latter following Coy 1989). Where appropriate, the total length of fish was estimated using alogorithms established for gadid fish by Barrett (1995) and Wheeler and Jones (1976), eel by Coy (1989) and by reference to modern comparative fish skeletons held by the author. Measurements and identifications are available in the site archive. Where sizes are indicated for gadid (cod family) fish the following sizes apply : tiny (under 0.2m length), small (0.2-0.4m), medium (0.4-0.7m), large (0.7-1m), extra-large (over 1m). For flatfishes, small (under 0.3m) medium (0.3-0.5m) and large (over 0.5m).

The Assemblage

As is usually the case, while only 13 fish taxa were recovered by hand collection (Table 1) some 45 species were identified from sieved soil samples (Table 2). The dominance of large gadids and conger eel (*Conger conger*) in the hand collected group is typical for sites in the region (Coy 1996), while in the sieved assemblage the increased range of taxa in the Anglo-Norman and later periods is also reflected at other sites in the city (*Ibid.*).

In general the fish remains are well preserved, but this finding must be qualified in that those assemblages from the waterlogged and cess-rich features are exceptionally well preserved while those from later medieval deposits (generally pit fills) are in poorer condition. The assemblages from these later deposits are therefore liable to be biased in favour of larger fish or those with more robust bones and scales.

Late Saxon Deposits (AD 900 – 1066)

In terms of the numbers of identified bones, fish were least frequent in the Late Saxon deposits, a reflection of the concentration of fish bone in the samples rather than just the volumes of processed soil. The majority of bones from this phase derived from pit fills in what, from the 13th century, became tenements 172 (pit 48), 173 (pit 210), 180 (pit 5303) and 242 (pit 8044). Only 494 bones were identified in the sieved assemblage, of which just over one third were from tiny, small and medium sized flatfishes

including: plaice (*Pleuronectes platessa*), flounder (*Platichthys flesus*) and left eyed flatfish (Scophthalmidae); at least one quarter were from eel (*Anguilla anguilla*) and one fifth were from clupeids (mainly herring), including some juvenile fish. Measurements taken on the cleithrum indicated eels of 250-350 mm long, but smaller eels and elvers were also present. Less frequent taxa included rays (Rajiidae), salmonids (including probable trout, *Salmo trutta*), mackerel (*Scomber scombrus*), conger eel (*Conger conger*) and small gadids, the last represented by only 25 bones and three otoliths from small individuals including whiting (*Merlangius merlangus*) and poor cod (*Trisopterus minutus*). Juvenile grey mullet (Mugilidae) wereidentified from tiny vertebrae.

Pit fills from this phase contained considerable quantities of marine shell; the finer residues from samples 5, 7, 8, 9, 10, 11, 12 and 14 (pits 210 and 48) in particular included very large amounts of crushed mussel (*Mytilus edulis*) and cockle (*Cerastoderma edule*) shell. Hence the relative scarcity of fish bones can not be attributed to unfavourable burial conditions, although the density of shell would have diluted other rubbish. No deposit contained the quality of anaerobically preserved and cess-rich material as was present in several of the Anglo-Norman and High Medieval features.

Only three identifiable fish bones were recovered by hand, including a medium-sized shark vertebra identified as tope (*Galeorhinus galeus*) and two large indeterminate gadid bones: a poorly preserved quadrate and a vertebral centrum.

Bone assemblages recorded from mainly Middle Saxon contexts in Hamwic include very similar suites of fish: eel, salmonids, bass, grey mullet, gurnard(s), flatfish, mackerel, conger eel, sea bream, rays, scad, whiting, cod (*Gadus morhua*), pollack (*Pollachius pollachius*) and herring have all been identified (Bourdillon and Coy 1980, Bourdillon and Andrews 1997, Hamilton-Dyer 2005). Late Saxon and Saxo-Norman contexts at Lower High Street produced these fish as well as others including: wrasse (Labridae), hake (*Merluccius merluccius*), gobies (Gobidae), sand smelt (*Atherina presbyter*) and small cyprinids (Hamilton-Dyer 1997).

Anglo-Norman Deposits (AD 1066 – 1250)

By contrast with the pit fills from the earlier phase of activity, the Anglo-Norman features contained the greatest concentration of fish remains, with the cessy fills of well 3145 especially rich. The fact that many of the excavated and sampled Anglo-Norman features were cess pits or pits/wells with evidence for cess (see also W. and D. Smith and Tetlow, this volume) is likely to explain the large quantities of herring and eel bones, since these fish often appear together in features containing human cess and would appear to have been consumed bones and all. A proportion of the larger herring and eel bones appeared crushed, consistent with chewing; many were also encased in cess. Based on measurements from modern comparative fish, the herrings represented here were generally from 240-300 mm in length, although numerous bones from tiny, juvenile clupeids were also present in the finest residue fractions and flots. Sprats (*Sprattus sprattus*) and pilchards (*Sardina pilchardus*) were also identified and may be more frequent than the figures suggest, since many of their bones are difficult to distinguish from herring. In all, over 50% of the identified bones were from clupeids, while eels represented 7% and gadids 10%. Most of the gadid bones were from small fish, particularly whiting, although bib (*Trisopterus luscus*) and poor cod (*T. minutus*) or pout (*T. esmarkii*) were also consistently present in the samples. Although small fish were clearly relatively abundant, it is also worth noting that since only a proportion of the finer residues were sorted from these exceptionally rich samples, inevitably smaller fish such as herrings and eels will be under-represented numerically in relation to larger fish. Flatfishes were again common, representing 13% of identified bones. Other fish included: conger eel, rays - particularly thornback ray (*Raja clavata*), sharks including tope (*Galeorhinus galeus*) and dogfish (Scyliorhinidae), salmonids (Salmonidae), garfish (*Belone belone*), gurnards, sea breams, sea bass, grey mullet, mackerel and, rarely, shad (*Alosa* sp.), cottids (Cottidae), scad, sandeel (Ammodytidae), small wrasses and even gobies and sand smelt. The last were found in the fills of well 3145 in conjunction with numerous tiny fish bones

from juvenile clupeids, eels and grey mullet, abundant fish scales and tiny ray dermal denticles. At least two sea breams were identified; the red sea bream (*Pagellus bogaraveo*) and gilthead (*Sparus aurata)* and many samples contained abundant sea bream scales. Giltheads are now only occasional summer visitors to the south coast, but this fish was also found at Melbourne Street (Bourdillon and Coy 1980, 120) and at Townwall Street, Dover (Nicholson 2006). Flatfishes included plaice, flounder, and sole (*Solea solea*) as well as rare finds of lemon sole (*Microstomus kitt*) and turbot (*Scophthalmus maximus*), the last identified only from one dermal tubercle. Exclusively freshwater fish included perch (*Perca fluviatilis*) and cyprinids, although the bones from these fish indicated surprisingly small individuals of under 15cm.

The hand collected assemblage included a number of hake (*Merluccius merluccius*) bones; together with conger eel; fish is more typical of sites in south west Britain. Hake were also found at Lower High Street (Hamilton-Dyer 1997) and is documented as being imported into Southampton from Brittany and south-west England in the late Medieval period (Coy 1996).

Although the tenement divisions were only established at the end of this period, by using the tenements to divide features by location some interesting patterns can be observed. Most immediately, it is clear that the largest fish assemblage was recovered from the area of tenement 237, largely a reflection of the exceptional preservation and abundance of fish remains within well 3145. Pit fill 3464 (from pit 3462) was notable in that it contained over 20 hand collected head bones from large hake, from a minimum of two fish. Pits within the area of tenement 167, 177 and 178 also contained more than one hundred identifiable fish bones, while features from across the rest of the site proved to contain very sparse fish remains.

Context 5252 (from pit 5172) has been interpreted as redeposited natural. Rather surprisingly, sample 92 from this context contained numerous bones from small and very small fish together with bones from a cod of 456 mm (based on Barrett's formula for the premaxilla measurement P1, Barrett 1995, 231).

High Medieval Deposits (AD 1250 – 1350)

The bulk sieved fish assemblage from this phase has much in common with the preceding one. A very similar range of taxa has been identified, in rather similar proportions. In terms of their relative contribution to the assemblage, eel bones are rather more numerous and those from clupeid rather less so. Measureable eel cleithra indicated fish ranging from 140 mm to over 500 mm in length. The only bone identified as probably from red mullet (*Mullus surmeletus*) came from sample 141 (context 4438) dated to this period, and the tiny dragonet (*Callionymus lyra*) was also identified in the same sample. Several small wrasse bones including one pharyngeal from corkwing wrasse (*Crenilabrus melops*) were found in sample 102 (occupation surface context 3357 in tenement 237). A single pharyngeal from a small chub (*Leuciscus cephalus* or dace *Leuciscus leuciscus*) represented one of the very few exclusively freshwater fish from this phase, however small cyprinids were also found in the garderobe of Southampton Castle (Hamilton-Dyer 1986). As in the Anglo-Norman cess-rich fills, tiny gobies and clupeids were common in the cessy fills of pits 813, 5237 and 5160 (tenements 173, 177 and 180), as they also were from a stone lined cess-pit 4800, dated to around AD 1350, at Lower High Street (Hamilton-Dyer 1997). In contrast to the sieved assemblage, bones recovered by hand from deposits dating to the Anglo-Norman and High Medieval periods differ significantly: hake are absent from the High Medieval contexts, but mature cod and ling are much more common than they were before.

Considering the fish remains by tenement, it is again clear that the most diverse and numerous assemblages were recovered from pit fills within tenement 237 (Ongerisplace, to become Polymond's Hall in the mid 15th century), with samples from features from tenements 176, 177, 180 and 243 also containing varied groups. Pit 813, from tenement 173, contained abundant bones from tiny fish including clupeids, sand smelt and gobies, which may have originated in the guts of larger fish or may have been deliberately caught as food (see below).

In contrast to the sieved samples, the hand collected fish bones largely derived from pits within tenement 173, with bones from large cod and ling common. Large cod bones from pit 104, tenement 173, probably derive from a single cod's head; large conger eel head bones were also identified in the fills of this feature. Head bones from mature cod and ling were also recovered from pit fill 1078, pit 680 and pit fill 579 (a recut of pit 165), both in tenement 173. The almost complete dominance of head bones from these large gadids is likely to have resulted from the preparation of complete fish rather than an imported dried and salted product (stockfish), since the latter are typified by bone assemblages dominated by appendicular bones including the cleithrum, supracleithrum and post temporal as well as anterior precaudal and posterior caudal vertebrae (Barrett 1995, 237; Locker 2001, 160).

Using the formula established by Barrett (1995, 231) for the premaxilla, three of the cod in pit 104 would have measured 1.02m, 1.26m and 1.33m respectively, while cod in pit fills 624 and 680 would have measured 0.92m, 0.93m and 1.11m. A ling from pit 165 would have measured 1.35m.

While the quantities of fish bones varied between different features, no clear pattern emerged to distinguish individual tenements in term of the fish consumed. This is perhaps not surprising, since household status appears to have been defined more by the quantity of food consumed than by the types of food (Mennell 1992, 280-81). There were no particularly expensive kinds of fish, such as sturgeon (*Acipenser sturio*), large turbot or large freshwater fish represented in the assemblage, but the prevalence of bones from large cod family fish within tenement 173 may indicate a preference for whitefish and possibly for cod cheeks.

Late Medieval Deposits (AD 1350 – 1510)

The taxa present in the Late Medieval deposits are markedly similar to those identified from earlier periods. Twenty five percent of fish remains were identified as clupeid, 22% as eel, 13% as gadid and 28% as flatfish. As in the preceding period, large cod and ling were almost as frequently identified as whiting. Together with hake, many of these large fish are likely to have been imported as preserved dried fish since the almost all of the represented skeletal elements in the sieved samples are the posterior caudal vertebrae, clethrum, post-temporal and supracleithrum. The presence of an occasional ling or cod head bone does, however, suggest that some fresh fish may have been eaten, although cod's heads are also known to have been imported in the 15th and 16th centuries (Locker 2001, 79).

Post-Medieval Deposits (AD 1510 – 1750)

Only in this phase does cod become a significant component of the fish assemblage. The significance of large cod and to a lesser extent ling, can be seen in the hand-collected assemblage, which includes many more bones from these fish than were recovered in the preceding periods. Notably, head bones were common, although cleithra continue to be over-represented, suggesting the presence of at least some imported stockfish. While a range of fish are still represented, gadids, clupeids (especially herring) and eels dominate numerically, although small and medium-sized flatfishes are still represented by around 1/8th of the bones. Although rare, a greater number of freshwater fish bones occur in this period when compared to the earlier ones, with tench (*Tinca tinca*) occurring only in this period. This fish would have measured approximately 300mm, and while freshwater fish did command a higher price than sea fish in the later medieval period (Dyer 1988), a fish of this size can not be considered to have been particularly valuable.

The hand-collected assemblage is again dominated by bones from large cod, ling and conger eel. Cod cleithra were particularly common in the fills of cess pit 3169, tenement 237 (St Denys Great House or Polymond's Hall); a minimum of eight cod were represented. Other bones from this fill included the post-

temporal and supra-cleithrum; taken together these elements are typical for stockfish. A similar range of cod bones was recovered from pit 6200, tenement 170, while pit 3186, tenement 237, contained cod head bones from at least one fish in excess of 1m long.

Discussion

At least 45 species are represented in the fish assemblage and unsurprisingly, given the coastal location, marine fish were dominant in all periods. Large fish were relatively uncommon, except in the hand-collected material, which would suggest that local, inshore fishing was probably responsible for many of the fish represented in the samples. Of the freshwater taxa, tench, small chub or dace and perch were the only identified species, and then only a few bones were present. Migratory taxa including eel (*Anguilla anguilla*), salmon (*Salmo salar*) and shad (*Alosa sp.*) were identified in a number of samples; eels were present in virtually all samples. The bones identified as trout may be from either the brown trout (*Salmo trutta*) or the sea trout (also *Salmo trutta*), although the small size of the bones is suggestive of brown trout. Other fish which can be found in both salt, brackish and even the lower reaches of fresh water rivers include flounder, bass and grey mullet and sand smelt . Grey mullets and sand smelts (*Atherina* sp.) are typically found in lagoons and estuaries and close to the shore (Wheeler 1978, 270-74) and along with flounders are frequent in the inshore waters around the Solent. Smelt (*Osmerus eperlanus*) are also typically found in estuaries, but were rare in the French Quarter samples. As is typical for most medieval sites, clupeids (here including abundant bones from extremely young individuals), eel (including elvers as well as more mature individuals) smaller flatfishes and gadids dominate. However, the regular inclusion of dermal denticles from rays, especially the thornback ray (*Raja clavata*) indicate the frequency with which these fish were utilised - their cartilagenous skeletons are inevitably under-represented archaeologically. Small and medium-sized sharks were also occasionally identified, most probably dogfishes and tope (*Galeorhinus galeus*). Together with bones from juvenile clupeids and elvers, bones from gobies (Gobidae) were also identified in a number of cess-rich samples where organic preservation was particularly good. These fish have also been identified from Late Saxon deposits at Southampton Lower High Street (Hamilton-Dyer 1997) and from excavations at the Montifiore Halls of Residence (Hamilton-Dyer 1993), and seem to have been eaten together with small clupeids, eels, tiny flatfishes and other juvenile fish. The presence of tiny clupeids has also been noted in Saxon and early post-conquest contexts from the Lower High Street, Southampton (Hamilton-Dyer 1997) where again they typically occur together with gobies and in that case sand smelt. Hamilton-Dyer (*ibid.*) has suggested that these small and tiny fish together consitute a sort of “whitebait”, these days a term usually applied only to small clupeids. The remains of very small flatfish, sand smelt and other unidentified tiny fish was also noted from medieval deposits at St. Michaels (Coy and Hamilton-Dyer 1987). The fact that the tiny fishes seem to be particularly abundant in cessy deposits should come as no surprise, since these deposits in general contain the best preserved bone. It may also indicate that these fish were consumed “bones and all” - and in fact it would be difficult to eat such small individuals any other way. Rather perplexing, however, is the notion that these bones survived the human digestive process. Experiments by Jones (1986) and Nicholson (1993) have demonstrated the destructive nature of the human digestive system on fish bones. Assemblages of small clupeid bones which have passed theough the human digestive system tend to be dominated by certain elements, notably the otic bulla and, less frequently, vertebrae, although these often show characteristic erosion and/or distortion. While some of the herring and eel bones recovered from the cess pits did indeed appear chewed, the tiniest bones survived in particularly good condition and there was no obvious over-representation of otic bullae, although these elements were particularly frequent in cess pit sample 48, from pit 813. It is possible that these tiny fish represent spoilt fish, or the contents of larger fish guts, and the latter suggestion may explain their abundance in pit 813 which has been dated to the High Medieval period, when large gadid fish become a more frequent component of the fish assemblage. However, the fact that the same range of species repeatedly occur together would suggest that they were sold or prepared as a single unit, and this would support Hamilton-

Dyers suggestion of "whitebait". Similar suites of tiny fish are today sold in fish markets across the Mediterranean, and can be fried or form the basis for fish soup or stews.

Fish capture

As discussed above, the range and size of fish represented in all periods from the French Quarter implies a substantial input from local, coastal fisheries. Many of the fish would have available year-round inshore in the Solent, Southampton water and in the mouth of the River Itchen. Fish likely to have been caught seasonally include eels, which could have been captured in large numbers during their migration downsteam to the sea in autumn, and elvers which swim upsteam in spring, although many eels also remain in the lower reaches of rivers and estuaries. Eels could have been effectively caught in fish weirs or traps, devices which could also have caught grey mullets, flounders and bass, fish which may also be found in the lower reaches of rivers. Both plaice and flounders can now be found in the lower reaches of the Itchen, although they are more usually caught in coastal waters and could have been captured by fishermen using fixed nets, traps or baited hooks. Other fish which come inshore seasonally to spawn include gurnards, sea breams, scad, mackerel, garfish and wrasses. These fish, as well as rays and smaller sharks including dogfish, spurdog (*Squalus acanthias*), smoothound (*Mustelus* sp.) and tope are all recorded as being caught by anglers in waters around Southampton (Hamilton-Dyer 1997). The use of fine nets positioned in shallow water is likely to explain the presence of tiny fish such as gobies, sand smelt, tiny mullets and flatfishes. The ubiquity of these fish, together with juvenile clupeids, in cessy deposits from at least the Anglo-Norman period (and from Late Saxon features at Lower High Street, Hamilton-Dyer 1997) indicates a long-lived and deliberate strategy to target small and tiny inshore fish.

Apart from red (*Pagellus bogaraveo*) and black (*Spondyliosoma cantharus*) sea bream, which are native to British waters, other sea breams visit the south coast only during the summer months. Conversely, herring and whiting are more often found inshore in winter, but these fish were commonly preserved and traded long distances. In the case of herring this trade was probably well established by the medieval period in East Anglia (Barrett *et al.* 2004, 625) and hence while herring are found along the southern coast of England and it seems likely that the Saxon fish were caught locally, the presence of these fish in later periods can not be interpreted purely in terms of local fishing.

The fish trade

Although less numerous than the assemblages from the subsequent periods, the fish assemblage from the Late Saxon deposits in what subsequently became the French Quarter accumulated at a time before this part of Southampton became densely settled, yet shows many similarities with the Anglo-Norman and High Medieval assemblages. Since the trading settlement at Southampton was established in the medieval period, it could be anticipated that the earlier assemblages would typify local, small scale, fishing while the later assemblages would include a range of commercially fished taxa, some of which would be preserved by salting, drying, pickling or smoking. Barrett *et al.* (2004) have used evidence from fish remains to place the rise of commercial fishing, and the market in fish as a traded commodity, in the years around AD 1000. This bulk trade in fish was focussed particularly on herring and gadid fishes (principally cod), items which could be caught in quantity and preserved by pickling and smoking in the case of herring (the former "white" or "salt" herrings, latter known as "red herrings") and drying with or without salt in the case of the gadids (as 'stockfish', also referred to by names including 'haburden', 'milwelle' and 'drylynge' in medieval documents). Their investigation concluded that, with a few exceptions, eels and cyprinids dominate pre 11th century fish assemblages while herrings increase fourfold in the 11th-12th centuries when compared with their relative abundance in 7th-10th centuries (*Ibid.*). Gadids, most notably cod, appear as a significant catch only from the 11th century, having been rare to that point. One exception to these general patterns appears to be the assemblage from Middle Saxon excavations at Cook Street, Southampton (Bourdillon 1993) where many small herring were recovered.

However in general, although herring was also recovered from Six Dials (Colley 1983) both herring and gadids were relatively rare in middle Saxon assemblages from Hamwic, despite some, albeit usually limited, sieving programmes (Bourdillon and Coy 1980; Bourdillon and Andrews 1997; Colley *et al.* 1988; Hamilton-Dyer 2005). Herring were, however, particularly frequent (61% of identified bones from the sieved samples) at the Late Saxon/early post-conquest Lower High Street excavations (Hamilton Dyer 1997). In the light of these general trends, it is instructive to look at the data from Southampton French Quarter for the periods either side of 1000AD – in this case by comparing the Late Saxon with the Saxo-Norman and High Medieval assemblages. The clupeids, most of which are likely to be herring, comprised 20% of the Late Saxon assemblage, some 55% of the Anglo-Norman assemblage and 36% in the High Medieval period (only 17% if tiny clupeids are excluded). Hence, there would seem to be some indication of an increase in herring occurring somewhere around AD 1000, conceivably as a result of the importation of preserved fish. However, it is unclear quite to what extent the trend is affected by the different types of deposits in each period. Herrings are clearly relatively more abundant in rich, cessy fills.

Considering the gadids, and in particular, cod, while all gadids together constitute only 6% of the identified assemblage in the Late Saxon period, they still comprise less than 10% of the identified sieved assemblage in the Anglo-Norman and High medieval periods. Within these statistics, the great majority of bones derive from small fish, including poor cod and bib, species typical of local fishing and unlikely to be traded. If cod alone is considered, while these fish first appear in the sieved assemblage in the Anglo-Norman period, they then constitute less than 1% of the identified bones. Hake makes its first appearance in this phase, and is possibly an indication of the importation of stored fish caught off the south-west coast, where these fish are plentiful (Locker 2001, 47). The ling, too, are likely to have been imported (*Ibid.*), since these fish generally have a more northerly distribution but were an important part of the later documented trade in stockfish. By the High Medieval occupation, the fish trade had become well established in Southampton (Coy 1996) yet still only 6% of identified bones derived from gadids. By the Late Medieval period 13% of identified bones were from gadids, 25% were from herrings and 22% were from eel, which compares with 20% gadid (most of which were from cod), 40% herring and 17% eel in the post-medieval centuries. At the possible medieval fish market of St. Michaels, Southampton, samples processed to 1mm produced an identified fish bone assemblage within which roughly 10% of bones were from gadids in the High Medieval deposits, increasing to 11.5% in the Later Medieval period (Coy and Hamilton-Dyer 1987) again indicating limited consumption of these widely traded fish.

By the 13th century, Southampton was an established trading port for fish. A valuable discussion by Coy (1996) lists the main port books and other documents which detail fish entering the port of Southampton in the Middle Ages. The earliest of these is The Oak Book, dated to 1300, which provides information on fish markets, fish sizes and prices as well as customs and privileges afforded to the Guild merchants of Southampton. The Oak Book mentions several types of fish not recorded at the French Quarter, including: lampereys (lampreys), sturgoun (sturgeon), and "gobettes", translation of the term unknown although it is tempting to see these as the tiny fish, including gobies found here and at other sites in Southampton (see above). The cartilagenous skeleton of lampreys means that they are extremely rare archaeologically, although a common item in medieval records. Other fish mentioned in the Oak Book include congres (conger eel), harange (herring), sardeyn (sardine/pilchard), salmoun (salmon) stockfisshe (stockfish), moreau/ mulwell (cod), haddok (haddock), leeng (ling), coignes (grey mullet) and makerel (mackerel). Fish documented as having been imported into Southampton in the middle ages include: congres, heryng, heryng sore (salted herring), salmon, sperlynge (smelt), meluel (cod), codling (young gadids), whiting, poullok (pollack), lyng (ling), stokfische (stockfish), haake (hake) and makerel (mackerel). The source of these fish included: Suffolk and Norfolk (herrings), Guernsey, Brittany, Normandy, Holland, Devon, Dorset and Cornwall. Hansa merchants and merchants from Holland were active in importing fish into Southampton in the 14th century (Littler 1979, 212) and by the 15th century fish were being imported from Irish waters, and in the 16th century from Newfoundland. Many of the cod, saithe (*Pollachius virens*) and

ling entering Southampton in the Later Medieval and Post-medieval centuries are likely to have come from waters around Scotland or from even further afield.

Archaeological evidence indicates that while those fish listed as traded and imported in medieval Southampton were indeed consumed in the town (all apart from lampreys and sturgeon were represented in the French Quarter assemblage) many other fish were eaten as well. Most of these additional fish, including sharks, rays, bass, sea breams, gurnards, scad, garfish, gurnards, wrasses and flatfishes were probably caught locally, and the ubiquity of these taxa throughout the history of the French Quarter would suggest continuity of fishing practice and the enduring popularity of a range of fish in the diet.

Conclusions

The varied nature of the fish remains from Southampton French quarter has been made apparent, to a large extent, by the comprehensive programme of soil sieving and by the sorting of fine residues. Many of the identified taxa were recorded only in residues finer than 4mm, and some only in residues below 2mm. Residue sorting is inevitably time consuming, and a reasonable level of skill in fish bone identification is required at least for the smaller material in order to target speciable material more effectively. Nevertheless, by devoting time to sorting a selection of these fine residues, it has been possible to demonstrate the consumption and probable popularity of mixed small fish. Consumption of these fish does not seem to have been confined to the French Quarter, as sieved assemblages from the Lower High Street have also revealed similar material (Hamilton Dyer 1997). Although the quantity of fish remains and range of identified species increases in the Anglo-Norman period, it is not entirely clear to what extent this may be a product of preservation, the Anglo-Norman pits and wells containing a wealth of mineralised and anaerobically preserved material. While the well documented rise of the fish trade in the medieval period, in particular relating to stored cod and herrings, can not be seen clearly in the assemblages from the French Quarter, the presence of large cod and ling certainly seems to date from the High Medieval period, these fish being virtually absent in the earlier deposits. Herrings were represented at all periods and were the subject of an important fishery from at least early medieval times (Cutting 1955, 54). A locally based fishery for smaller, inshore fish, seems to be a feature of all the periods at the French Quarter, and it is likely that fish traps or weirs and fixed or seine nets positioned in shallow water were utilised to catch coastal fish and herrings, eels, mackerel and garfish which come inshore during their annual migrations.

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Tables

*Table 1. Numbers of identified fish remains recovered from bulk-sieved samples. * - Where samples contained many tiny dermal denticles, teeth or scales these items have been scored as 0 or (if no other remains) 1 per sample. Only a proportion of the fine residues were sorted. Nfi - not identified to genus or species*

SPECIES	Late Saxon	Anglo-Norman	High Medieval	Late Medieval	Post Medieval	Total
Elasmobranchs nfi.	6	28	7	2	3	46
Sharks nfi.		3	3			6
Tope		2				2
Dogfishes		2				2
Rays nfi.*	1	9	6	2	9	27
Thornback ray	11	56	18	5	6	96
Eels nfi.			1			1
Conger eel	3	15	19	8	2	47
Common eel	117	229	483	141	148	1118
Clupeids*	28	267	425	60	302	1081
Pilchard		10	3	6	11	30
Sprat		2				2
Herring	76	1440	242	95	40	1893
Shads		1	1			2
Smelt					1	1
Salmonids nfi.	4	5	2	1	1	13
Salmon		1				1
Trout	2	4				6
Cyprinids nfi.		7	1	1	6	15
Chub/dace			1		2	3
Tench					2	2

SPECIES	Late Saxon	Anglo-Norman	High Medieval	Late Medieval	Post Medieval	Total
Gadids nfi.	22	184	60	49	31	344
Cod		24	9	8	122	163
Cod or Pollack			4			4
Cod or Whiting		20			1	21
Pollack		1	1			2
Saithe or Pollack		1		1		2
Whiting	1	48	17	15	15	96
Haddock		2	2	2	2	8
Bib or Poor cod or Pout	5	18	6			29
Bib		1				1
Poor Cod	1	3	1			5
Ling		6	5	10	1	22
Hake		2	4	2		8
5-bearded rockling		1	1			2
Garfish		3	2	1	11	17
Gurnards nfi.		10	6	5	1	22
Tub gurnard		4				4
Cottids nfi.				1	1	2
Sea Scorpion or Bullrout		1				1
Sea Bass*		13	1		3	17
Perch		2	1	1	1	5
Perch or Ruffe		1			2	3
Scad		2	1		1	4
Sea Breams nfi.*		20	18	1	2	41
Gilthead or Couch's Sea Bream		1				1
Gilthead Sea Bream		1				1
Red Sea Bream		1				1
? Red Mullet			1			1
Grey mullets nfi.*	11	28	3	4	1	47
Thin-lipped grey mullet		1				1
Thick-lipped grey mullet					2	2
Sand smelt		2	109			111
Wrasses nfi.	1	4	1		2	8
Ballan Wrasse					1	1
Corkwing wrasse			1		1	2
Sandeel		1	2			3
Dragonet			1			1
Gobies*		31	127	3		161
Mackerel	1	23	30	2	15	71
Flatfishes nfi.	50	115	96	73	17	351
Left eyed flatfishes nfi		1				1
Turbot		1				1
Turbot or Brill	1		1			2
Right eyed flatfishes nfi	107	216	72	95	73	563
Plaice	8	26	23	3	1	61

SPECIES	Late Saxon	Anglo-Norman	High Medieval	Late Medieval	Post Medieval	Total
Plaice or flounder	1	2	10	1	1	15
Flounder	2	2	1			5
Dab		1				1
Lemon sole		1				1
Soles nfi.		1				1
Dover sole	1	40	4	7	12	64
Unidentified	34	64	66	42	19	225
Total	493	3012	1896	645	872	6918

Table 2. Numbers of identified fish bones in the hand collected fish assemblage. Nfi - not identified to genus/species.

SPECIES	Late Saxon	Anglo-Norman	High Medieval	Late Medieval	Post medieval	Unphased	Total
Elasmobranchs nfi.	1						1
Rays nfi.			3				4
Tope	1						
Conger eel		5	22	8	3	2	40
Salmonid nfi.					4		4
Gadids nfi.	2	6	15	4	10		37
Cod		5	33	7	47	1	93
Cod or saithe				1	18		19
Saithe					2		2
Whiting					10		10
Haddock			3				3
Ling			18	2	2		22
Hake		27			1		28
Grey mullet nfi.					2		2
Mackerel					1		1
Flatfishes nfi.		2	3		1		6
Right eyed flatfish nfi		26	2		5		33
Plaice	1		2				3
Plaice or flounder		4					4
Unidentified	1	60	81	8	35	4	189
Grand Total	6	135	182	30	141	7	501