Suburban life in Roman *Durnovaria*

Additional specialist report

Environmental
Fish bone from selected contexts

By Sheila Hamilton-Dyer

Fish bone from selected contexts

Sheila Hamilton-Dyer

Methodology

The sieved samples submitted for examination are from three deposits deliberately selected as they were noted as containing significant amounts of fish remains. Oven 1470 contained a large amount of charcoal in the basal fill (sample 14) but also an 'ashy' layer above it which was noted as including very small fish remains. The probable latrine trench 4162 contained three fills part way down that were noted as possibly containing very small fish bones. The sample from the lower fill of pit 4230 was selected for comparative purposes, being almost contemporary with the latrine but of 'normal' deposits.

The fish (and other faunal remains) were so numerous and so small that they had not been picked out of the residues and flots but submitted entire. Almost all of the material is from the flots and was retained on sieves of 300 micron and above.

Taxonomic identifications were made using the author's modern comparative collection. All of the material was first examined at a superficial level in order to establish the overall constituents and amounts represented. Sub-samples were used to estimate the numbers of the fish elements. Measurements of a few vertebrae were taken for estimates of fish length and the material was also visually compared with recent specimens. Estimates of the number of individuals were based on the numbers of the prootic bone in sub-samples.

Results

Oven 1470

context 1418, sample 13. Ashy layer above sample 14, 6l 100%.
context 1418, sample 14. Base of oven 10l.

Sample 14 from this context contained a very large quantity of charcoal but no obvious faunal remains. Sample 13 is quite different; only small amounts of charcoal are present and the residue is composed largely of a 'slag' light in colour and weight (Plate FB1). Numerous tiny fish remains are present, none of which are burnt or heat affected in any way (Plate FB2). Although most are incomplete the fish remains can be identified as young clupeids, members of the herring family, including herring, *Clupea harengus*, and probably also sprat, *Sprattus sprattus*. The prootic and vertebrae are the most frequent skeletal elements. Although the bones were not fully identified or counted the sample is judged to be similar in size and composition to sample 3128 (see below). This would therefore imply that 600-700 individual fish are represented. A selection of vertebrae was measured; these ranged between 0.7 and 0.8 mm length. Recent specimens of young herring with similar measurements would be in the region of 75 to 85 mm total length.

Latrine Trench 4162

context 4180 samples 3098, 3128. Layer part way down feature, 3l and 10l.
context 4185 sample 3105. Thin lens, charcoal rich, 0.5l 100%.
context 4186 sample 3130. Chalky clay layer lower in sequence, 10l.

The two flot and residue samples from context 4180 are very similar in appearance and content but are of differing size, commensurate with their original sample size. Sample 3128, the smaller of the two, contained many vertebrae and head elements of small clupeids (Plate FB3). The head bones include prootic, dentary, maxilla supraoccipital, hyomandibular and ceratohyal, among others. This combination of head elements and vertebrae clearly indicates we are dealing with whole fish. Although most bones are incomplete and the clupeids have very similar anatomical features it could be seen that the dentaries definitely included herring (only a small sub-sample was examined closely). The prootic bones in a tenth of the sample were counted; the 128 thus give a rough total of 1280 in the whole sample. As a paired element this equates to a minimum of 640 individual fish. The material from sample 3098 is very similar but about four times the size, giving a rough estimate of 2560 fish. A small selection of vertebrae was measured for estimates of fish length. The measurements ranged from 1.1 to 1.3 mm, equivalent to recent herring of 90 – 105 mm.

Sample 3105 from context 4185 contained a large amount of charcoal but relatively little faunal material. As with the previous context small clupeid remains are present, but at a low frequency. In addition there are several small fragments of large mammal bone. Some of these have cessy material adhering and two are slightly polished (Plate FB4). This is more usually associated with canid digestion rather than human. The proximal epiphysis of a sheep-sized rib is also present.

The last sample, 3130 from context 4186, has relatively small amounts of flot and residue and appears to be contaminated by fragments of modern plastic and leaves. There are some faunal remains as well and these have the same preservation as those from the other samples (i.e. they are not modern). The remains are, again, mainly of small clupeid vertebrae and prootics.

Pit 4230

Context 4322 sample 3122. Lower fill of deep pit, 20l.

Remains of small clupeids (principally the prootic and vertebrae) are again present in this sample, but at a much lower level than in the other samples described above. Other fish taxa and other vertebrates are also present. Mammal bones include tail vertebrae from a very small mammal, a shrew pelvis and tiny fragments of bone from large animals. At least some of these last are likely to be from cess. A few of the larger ones of these have a slightly shiny surface and have cessy deposits filling the spongiform structure. These could have come from dog coprolites rather than human cess (Payne and Munson 1985). The bird remains are from small passerines of thrush size and include a synsacrum, radius and vertebrae. One limb bone shaft from a small amphibian was noted. The fish are of at least four species in addition to the clupeids. Eel, *Anguilla anguilla*, is represented by a dentary and caudal vertebra, scad, *Trachurus trachurus*, by a single lateral line scute. Bullhead, *Cottus gobio*, is represented by several bones including the distinctive preopercular. Stoneloach, *Noemacheilus barbatulus*, is also represented by several bones, including a pair of maxillae. Although the clupeids are marine all of these other fish are freshwater species.

In addition to the vertebrate remains this sample contains cessy concretions, mineralised plant material (including *Prunus* and *Malus* seeds) and insect pupal cases (Plate FB5). These last include those usually associated with cess deposits. The seeds are probably the waste from human consumption, either spat out or passed through, and the smallest fragments of bone likewise. It is very unlikely that the shrew is from human consumption, it is likely to be a

pitfall victim or from sweeping up round the property. Cats do catch shrews but usually leave them, as they are distasteful. The amphibian is similarly likely to be the remains from pitfall. The passerine remains could be from human consumption but could equally well be from sweepings. No crushing of the fish vertebrae was noted, although they were not all examined closely, but this does not exclude that they might have passed through the human digestive system. The bullhead and stoneloach are very small fish (often no more than 100 mm TL) and are often found together in clear streams and shallow rivers with pebbly bottoms. Eels may also be found in the same habitat but are also found in almost all waters including the sea. These specimens are not of very large size and are probably from freshwater fish. The scad, although it can be inshore as well as pelagic, is not a freshwater fish.

The composition of the material

It is clear that the material from the oven and latrine samples is similar and different to that from the deep pit. The pit fill sample is from the lower fill near the base of the pit and there is strong evidence for it being, at least partly, a cess deposit. There are several small fish species, including marine and freshwater taxa, along with other small-sized animal remains, mineralised seeds and other organic material. The other two deposits contain very little material besides the fish remains. The fish assemblage from these appears to be entirely of small clupeids (although it is not excluded that one or two other species of similar size might be present). Some of these were positively identified as juvenile herring and it is probable that some sprat are also present. The estimates of fish length from vertebral length, if consistent over the samples, indicate slightly larger specimens from the latrine sample compared with those from the oven sample. Both, however, are clearly of very small fish less than 110 mm overall length and comparable with modern 'whitebait'.

Location on site and comparison with previous material

In spite of the similarity of the two main deposits they are not close either spatially or chronologically. The oven is one of two in a yard area near building 6. This feature was sealed by deposits probably of mid-late 2nd century AD date. The latrine is 45 metres to the south, near the late phase aisled building. The fills containing the fish material are not from low in this feature (which was not bottomed) but from two fill layers and a small charcoal rich lens at about a metre depth. They almost certainly date from late infill of the feature, not the primary use phase, and might be of a similar date to the building and clearance phase, i.e. 4th century AD. The cesspit is a deep shaft cut into the chalk quite close to the latrine and is also thought to be 4th century AD.

There were fish remains in several contexts from County Hall in the North-West quarter of *Durnovaria* (the present site is in the South-West quarter) and also from the Greyhound site in the *insula* (Hamilton-Dyer 1993a; 1993b), but none contained clupeids.

Source of clupeids and use

Young herring often shoal together with sprats, with the herring forming the bulk of the shoal. These first-year fish are just a few centimetres in length and are marketed in Britain today as 'whitebait'. The shoals are commonly encountered in the coastal waters of Dorset in the winter and early spring (Milligan 1986; Pawson *et al.* 2002). Although Dorchester is not directly on the coast it is only 8 km from Weymouth Bay. In the Roman period fish of this size were used in the production of one of the many fish sauces and allied products. *Garum* was the classic sauce made around the Mediterranean from (among others) the guts of tuna

and mackerel but this contains no bones. *Salsamenta* is a salted fish product with bones, but made with larger fish and fish parts, the material here matches *allec*, a sauce with bones, produced by fermentation of very small fish, traditionally those found in the Mediterranean but there is increasing evidence for local production elsewhere in the Empire (Van Neer and Lentacker 1994, Van Neer and Ervynck 2004, Van Neer *et al.* 2007). These deposits at Dorchester could represent the discard of residues from fresh fish brought in for processing into fish sauce in Dorchester itself. As production is likely to be rather odorous it seems unlikely to be carried out in the middle of a city, so perhaps this is instead the residue or remains of spoilt product that had been made on the coast.

Other sites

In 1982 excavations at a Roman waterfront site in London revealed a deposit of small fish bones. These were mainly the remains of several thousand clupeids (Bateman and Locker 1982). The herrings in the sample were estimated as being no more than 83 mm in length. The deposit overlay a 3rd century AD drain and floor. It is thought that these are the remains of a locally produced product, probably *allec*.

In 1988 a similar deposit was reported from York (Jones 1988). In this case the sample had been collected some years previously, from a layer on an *opus signum* floor inside a building. Unfortunately the deposit could not be closely dated. A 100 ml sample was found to contain small herrings with sprats and a bone of whiting. The herrings were estimated as between 70 – 110 mm in length and the excavated part of the deposit was estimated as representing 40,000 fish. Being an inland site the fish must have been brought in, either fresh for processing or already prepared.

Deposits containing large numbers of small clupeids together with sandeels (*Ammodytes tobianus*) were found in Roman deposits at Lincoln (Dobney *et al.* 1996). It was felt that although these were probably from fish sauce, it was not certain and could result from fish gutting or other sources. Given the current body of evidence, however, and the lack of such deposits from non-Roman assemblages it seems certain that these too are from fish sauce.

A further sample was recovered from a pit at a villa near Beddingham, East Sussex. This is not yet published but the feature is thought to be 3rd century AD and, again, the fish assemblage consists of small clupeids (Jaques pers com, Van Neer pers com).

In Belgium four comparable samples of small clupeids have been reported, three from Tienen (Vanderhoeven *et al.* 2001; Lentacker *et al.* 2004; Van Neer *et al.* 2005) and one each from Brieves (Van Neer and Lentacker 1994) and Tongeren (Van Neer and Ervynck unpub.).

A possible association with ovens has been described for a site in the Netherlands; it was considered that local production of *allec* might require heating to aid the fermenting process in northern regions (Immerzeel 1990).

The evidence for production and distribution of *allec* and other fish products in the Roman Empire is extensively discussed by Van Neer and others (Van Neer and Ervynck 2004; Van Neer and Lentacker 1994) and continues to be a topic of much interest. The probable *allec* deposits from Dorchester are an important addition to our evidential data; they are, thus far, only the fifth such to be reported from Britain, and the furthest west in the northern part of the

Roman world. It is not certain that they were prepared in Dorchester itself but the association of one deposit with the mid-late 2nd century AD oven may be significant.

Bibliography

Bateman, N., and Locker, A., 1982, The sauce of the Thames, London Archaeologist **4/8**, 204-207

Dobney, K.M., Jaques S.D., and Irving B.G., 1996, Of Butchers and Breeds, Report on vertebrate remains from various sites in the City of Lincoln, *Lincoln Archaeological Studies*, **5**

Hamilton-Dyer, S., 1993a, Fish remains, in P.J., Woodward, S.M., Davies and A.H., Graham, *Excavations at the old methodist chapel and Greyhound Yard, Dorchester, 1981-1984*. Dorset Natural History and Archaeological Society Monograph Series, **12**, Dorset, 345-346

Hamilton-Dyer, S., 1993b, Animal bones, in R.J.C., Smith, *Excavations at County Hall, Colliton Park, Dorchester, Dorset, 1988*, Wessex Archaeology Report No **4**, 77-82

Immerzeel M., 1990, Profession: *negotiator allecarius*. Fabrication et commerce de sauce de poissons dans le nord-ouest de l'Empire romain. *Oudheidkundige Mededelingen uit het Rijksmuseum van Oudheden te Leiden* **70**, 183-192

Jones, A. K. G., 1988, Fish bones from excavations in the cemetery of St Mary Bishophill Junior, in T.P., O'Connor, Bones from the General Accident Site, Tanner Row, *The Archaeology of York, volume 15: The Animal Bone*, Fascicule **2**, 26-130

Lentacker, A., Ervynck, A. and Van Neer, W., 2004, The symbolic meaning of the cock. The animal remains from the mithraeum at Tienen, in M., Martens and G., De Boe, *Roman Mithraism: the Evidence of the Small Finds* (Archeologie in Vlaanderen Monografie 5). Zellik and Tienen, Institute for the Archaeological Heritage of the Flemish Community, 7-80

Milligan, S. P., 1986, *Recent studies on the spawning of sprats (*Sprattus sprattus L*.) in the English Channel.* Sci. Ser. Tech Rep. **83**, CEFAS Lowestoft

Pawson, M.G., Pickett, G.D. and Walker, P., 2002, *The coastal fisheries of England and Wales, Part IV: A review of their status 1999-2001*. Sci. Ser. Tech Rep. **116**, CEFAS Lowestoft

Payne, S. and Munson P.J., 1985, Ruby and how many squirrels? The destruction of bones by dogs. in N.R.J., Fieller, D.D. Gilbertson and N.G.A Ralph, *Palaeobiological Investigations: research design, methods and data analysis* Brit Archaeol Rep Int Ser **266**, Oxford, 31-41

Vanderhoeven, A., Martens, M., Ervynck, A., Cooremans, B. and Van Neer, W., 2001, Interdisziplinäre Untersuchungen im römischen Vicus von Tienen (Belgien). Die Integration von ökologischen und archäologischen Daten, in Frey, M. and Hanel, N., *Archäologie – Naturwissenschaften – Umwelt. Beiträge der Arbeitsgemeinschaft "Römische Archäologie" auf dem 3. Deutschen Archäologenkongress in Heidelberg 25.5 – 30.5.1999*, Brit Archaeol Rep Int Ser **929**, Oxford, 13-31

Van Neer, W. and Ervynck A., 2004, Remains of traded fish in archaeological sites: indicators of status, or bulk food?. in S., Jones O'Day, W., Van Neer and A., Ervynck, *Behaviour Behind Bones: The zooarchaeology of ritual, religion, status and identity* Proceedings of the 9th ICAZ Conference, Durham 2002, Vol. 1, Oxbow Books, 203-214

Van Neer, W. and Lentacker A., 1994, New archaeozoological evidence for the consumption of locally-produced fish sauce in the northern provinces of the Roman empire, *Archaeofauna* **3**, 53-62

Van Neer, W., Wouters, W., Ervynck A. and Maes, J., 2005, New evidence from a Roman context in Belgium for fish sauce locally produced in northern Gaul, *Archaeofauna* **14,** 171-182

Van Neer, W., Hamilton-Dyer S., Cappers R., Desender K. and Ervynck A., 2007, The Roman trade in salted Nilotic fish products: some examples from Egypt, *Documenta Archaeobiologiae* **4**, 173-188

Plate FB1: The charcoal and 'slag' matrix of the deposit from oven 1470

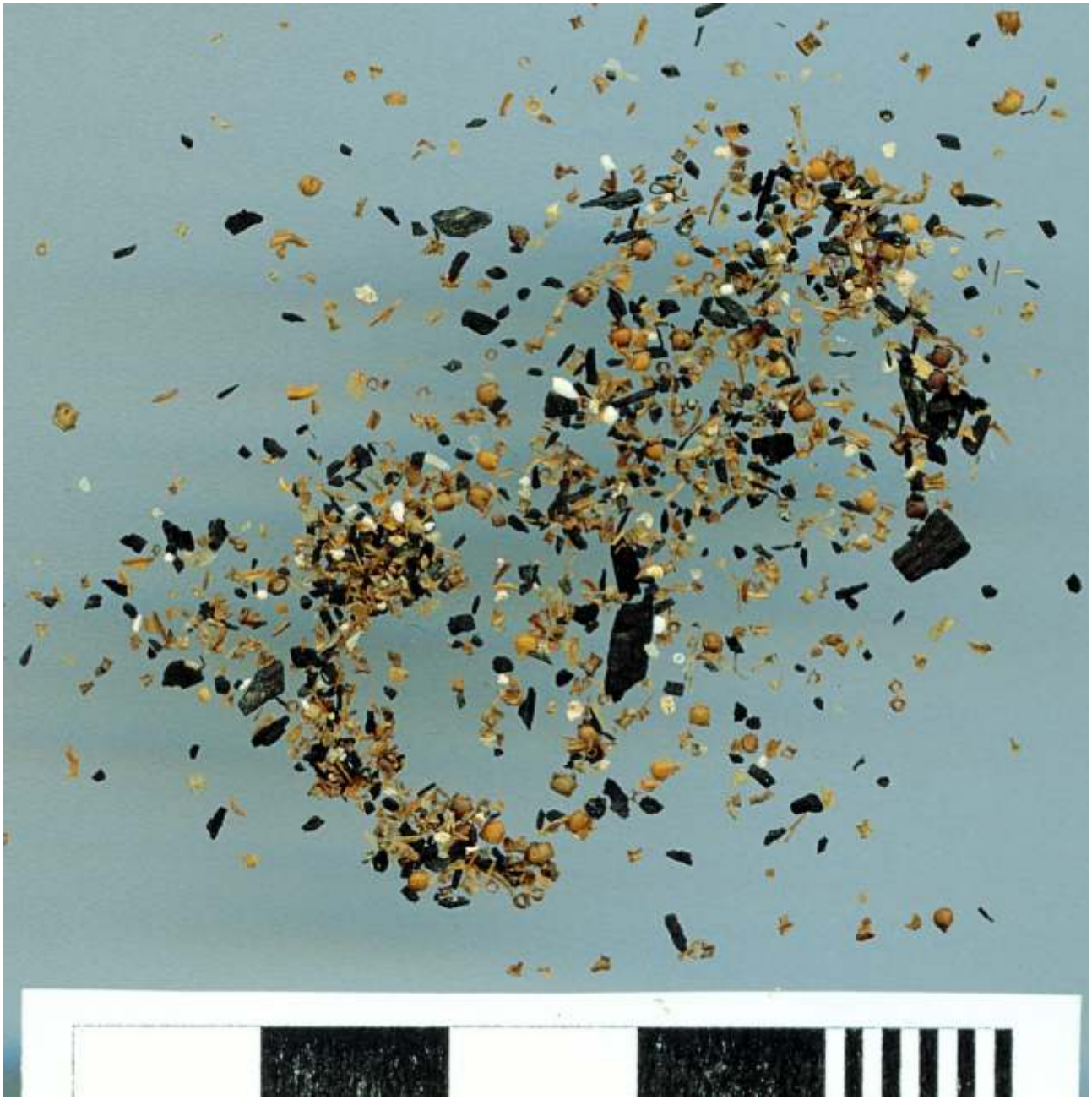

Plate FB2: Deposit from oven 1470 including clupeid fish bones

Plate FB3: Deposit from Latrine Trench 4162 including vertebrae and head elements from clupeids

Plate FB4: Mammal bone fragments from Latrine Trench 4162

Plate FB5: Cessy material from Pit 4230 including fish bones, plant remains and insect pupal cases

This report is supplementary material to the publication
Suburban life in Roman *Durnovaria*
by Mike Trevarthen

ISBN 978-1-874350-46-0
www.wessexarch.co.uk/projects/dorset/dorchester_hospital/

Wessex Archaeology

Bentleigh Cross
developing close care