Cambridge Archaeology Field Group

Oysters as food in Britain

A discussion of their history and

typical finds from field walking

Field walking and oyster shells.

Our field walking efforts produce finds representing many different types of material and covering a wide range of periods. We may find prehistoric struck and burnt flint or pottery from the Iron Age to the present day. There may be bricks and tiles from the Roman period onwards or glass from windows and vessels of many sorts.

A lesser category of finds would be the shells from a variety of shellfish, but mostly those of oysters. Figure 1 shows some of the oyster shells recovered from field walking on the Childerley Estate, both upper and lower valves may be found. Very occasionally we may find mussels, cockles, whelk and limpet shells but they are not as robust as oyster shells and rarely survive in the plough soil.

Figure 1. Examples of oyster shells collected by field walking on the Childerley Estate. (Author's photograph)

In undisturbed soils, such as those uncovered in excavations, it is often that all types of shells may be found in midden deposits. Photograph 2 shows a thick concreted layer of oyster shells in a midden at a Roman site near Faversham in Kent. The pit was some 3 metres across and 2 metres deep. The pit also contained Roman pottery and some small animal bones.

Figure 2. Oyster shells in a midden pit from a Roman site near Faversham, Kent.

How many oysters might be recovered from such an excavation site? In an excavation at Caister-on-sea from 1951 – 1955 by Charles Green, he noted that "*at first the shells were counted until, at an early stage in the digging, the number passed 10,000, when counting was discontinued"* (Darling and Gurney, 1993). Both Caister-on-sea and Faversham lie close to the sea so finding large numbers of oysters in those

places may be understandable but Roman villa sites well inland also regularly turn up similarly abundant numbers of shells indicating a well-used distribution chain.

Currently we do little with oyster shells apart from logging how many we find at a particular site – but should we do more? Jessica Winder (1993 unpublished PhD thesis, University of Southampton) has suggested that much more information can be derived by careful study of the archaeological remains – information on age, where they came from and how they were used can be derived. Unfortunately, a lot of her work requires excavation quality shells, as previously remarked this is not a description of many of our finds.

What we know of the history of oysters in Britain – the early years

During the pre-historic period, people gradually changed from a hunter/gatherer existence to becoming settled agriculturalists. When people first started growing wild wheats and barley cereals some 10 thousand years ago it was to supplement their subsistence diets. During the earlier Mesolithic period Britons had been semi-nomadic collecting wild fruits such as mushrooms, nettle, crab apple, hazelnut, and sorrel. Fish were speared, shellfish collected if you lived near the coast and various animals hunted, including waterfowl, boar, red deer and wild cattle. All this information comes from the study of their waste tips as many European middens date to the Later Mesolithic period. Most archaeological evidence from the Mesolithic period shows that these oyster shells have traces of scorch marks consistent with fire but are undamaged by rocks or tools. This suggests intact oysters were placed on the fire embers or heated stones and cooked for a short time until the oyster shell opened up and the flesh could be extracted.

In the Neolithic period the villagers on Skara Brae on the Orkney Islands were farmers, raising large cattle and sheep and growing a little barley. Their varied diet, as gleaned from examination of their middens, also consisted of meat and eggs from seabirds like the Great Auk while oysters, crabs, cockles and mussels were collected from the sea. However, the further from the coast a habitation site is, the less the likelihood of finding oyster shells. An example would be the Iron Age/Roman villa site at Piddington in Northamptonshire where oysters were shown to be absent in the Iron Age contexts but suddenly appear in the 1st C AD (Current Arch 117, p321). Piddington is over 60 miles

from the nearest coast in the Wash. In fact there is a considerable amount of scientific evidence to show that up until the Romans arrived very little fish or shellfish were consumed on later pre-historic sites. Using isotope analysis of human bones from Iron Age cemeteries Bradford University researchers led by Dr. Mike Richards can determine the source of the food eaten by the people. The isotope ratios (carbon-12 to carbon-13, and nitrogen-14 to nitrogen-15) seem to indicate that around 6,000 years ago Stone Age man in Britain seem to have stopped eating fish or shellfish. This persisted until the Romans arrived some 4,000 years later. Their primary research site is at Wetwang, the largest Iron Age cemetery in Britain, which lies some 25 kilometres from the coast (Jay and Richards, 2006). However, research at other sites throughout Britain, such as Figure 3 for Owslebury near Winchester (Winder. 1992) and a study of the whole SW area of Britain by Dr M Allen (2014) seems to confirm this, see Figure 4.

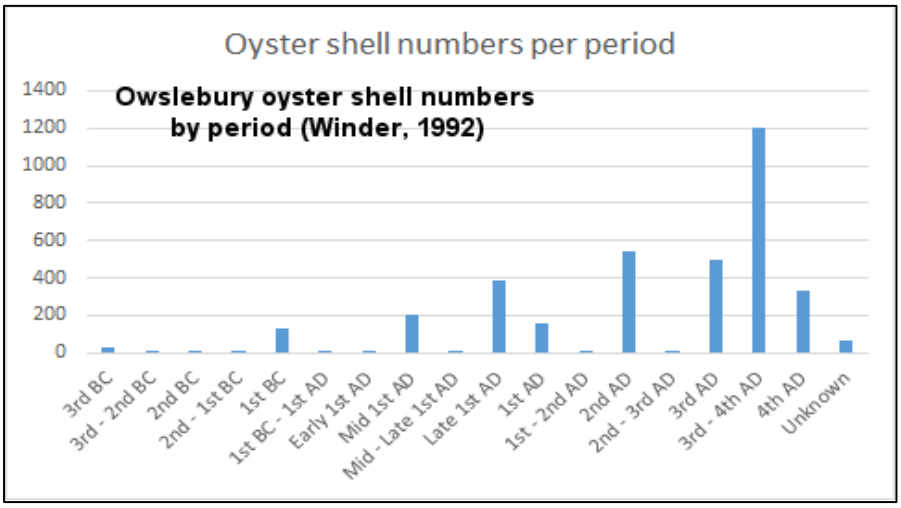

Figure 3.Totals of oyster shells recovered at Owlesbury for each time period. (from Winder 1992)

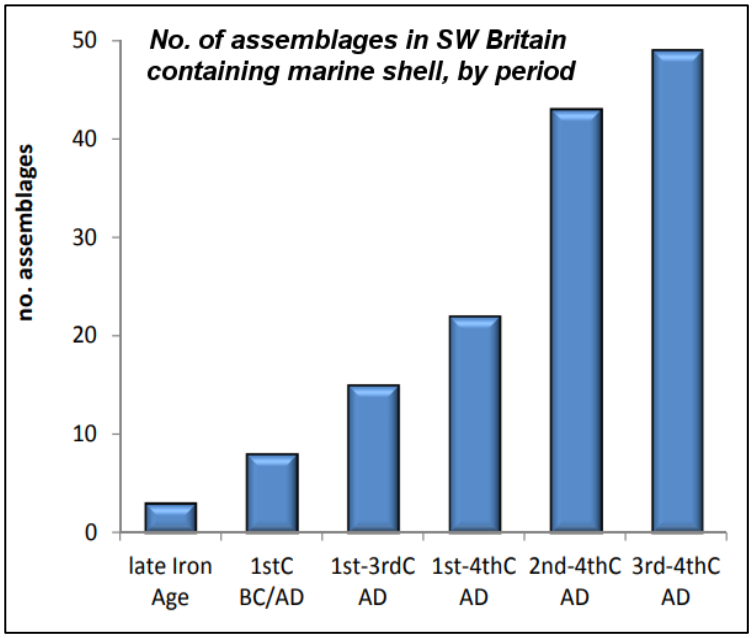

Figure 4.Totals of marine shells recovered in SW Britain for each time period. (from Allen 2014)

The Roman influence

With the Roman invasion of Britain, they brought with them many innovations and these included changes in what food was eaten by the Romanised population. Once the military activity was finished and traders and civilians began arriving to take advantage of the new opportunities a large demand for all kinds of fish and shellfish was created. The shells of oysters, mussels, limpets, cockles and whelks are found, often in large numbers, in all sorts of Roman sites such as villas, towns and forts as far north as Hadrian's Wall. They are not only found near the coast but also long distances from the sea, indicating a well-developed transport system for live shellfish. Allen (2014) shows that oysters were the shellfish of choice, see Figure 5 below

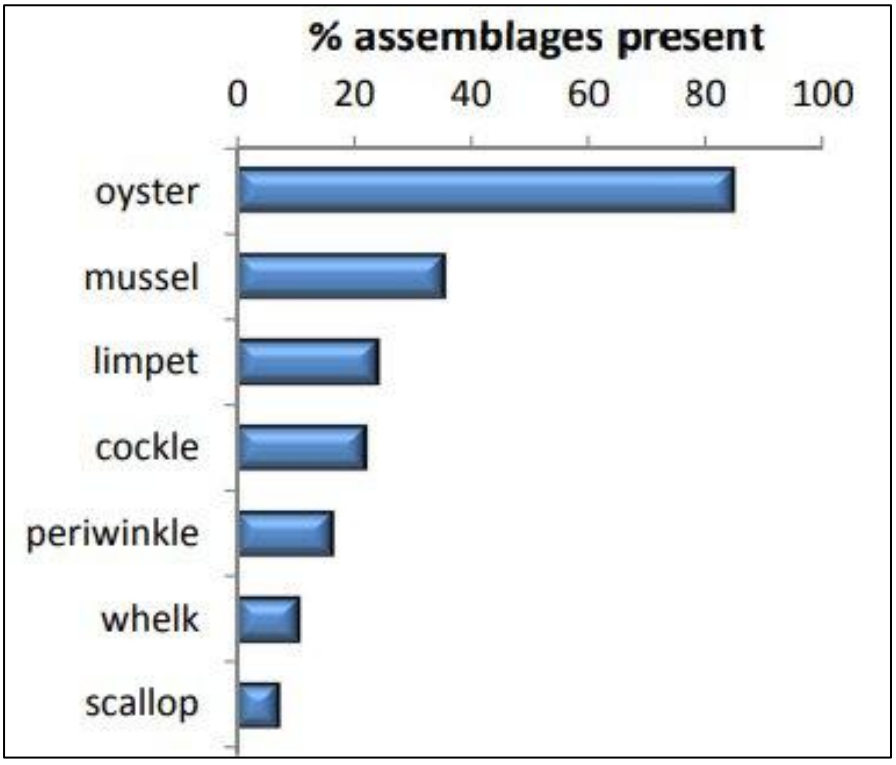

Figure 5.Types of marine shells recovered in SW Britain on Roman sites. (from Allen 2014)

With the arrival of the Romans we have the first written accounts mentioning oysters and Britain. A quotation attributed to Sallust, a Roman historian and politician, in around 50BC said: "*The poor Britons – there is some good in them after all – they produce an oyster."* (Eyton, 1858). One of the most quoted is the letter to Lucius, the Decurion at the Roman fort of Vindolanda which was recovered as part of the Vindolanda Tablets. The Tablet 299 contains the following text, unfortunately the site where they were

harvested (shown as Cordonovi) is unknown but the likelihood is that it is on the Thames Estuary somewhere.

quod est principium epistulae meae te fortem esse a Cordono- uis amicus missit mihi ostria quinquaginta quo uelocius fir	which is the principal reason for my letter (to express the wish?) that you are vigorous. A friend sent me fifty oysters from Cordonovi (?). In order that … more speedily …

As mentioned previously, the excellent Roman transportation system meant that shellfish were available country-wide. Allen (2014) has a plot showing how the sites where oysters have been recovered in SW Britain covers both coastal and inland sites.

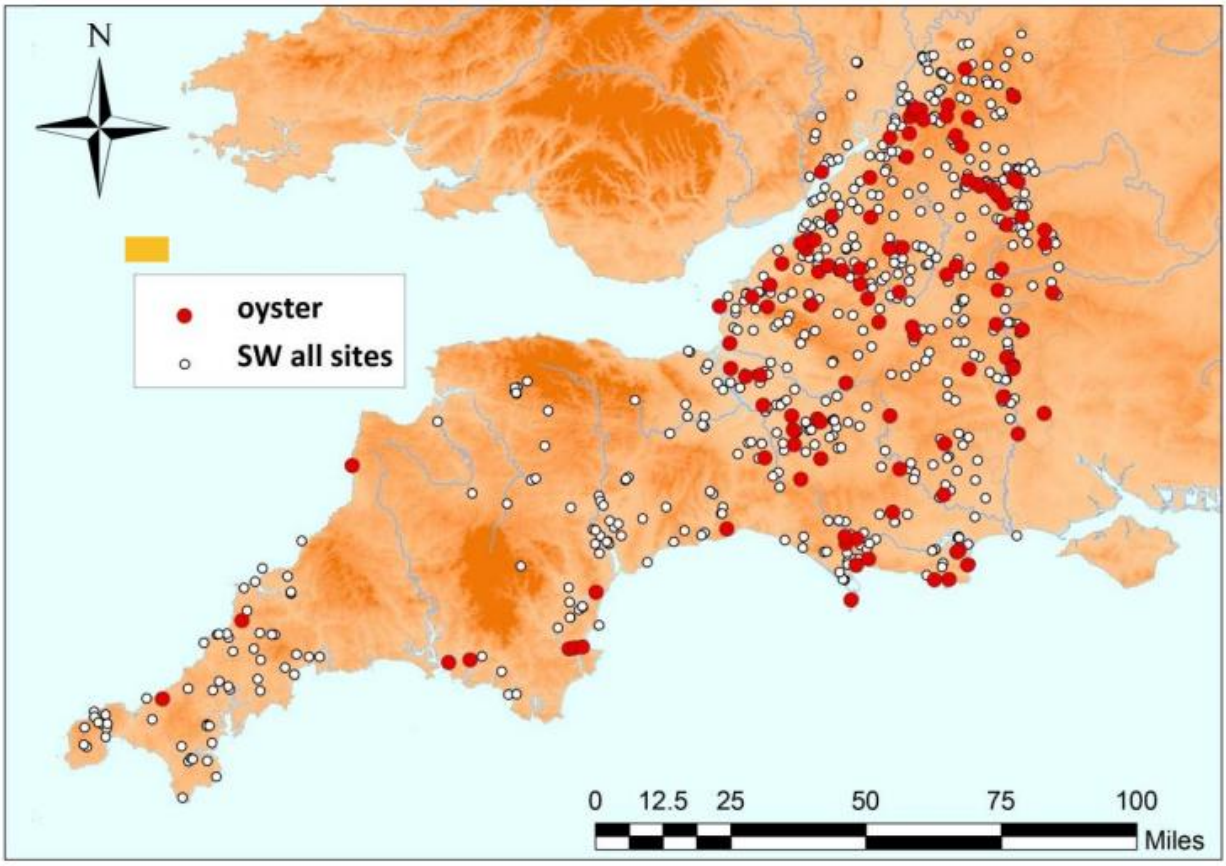

Figure 6. A plot of all Roman sites in SW Britain and showing those where oyster shells have been recovered. (Allen, 2014)

How were the oysters transported over quite large distances – especially given that oysters need to be eaten quite soon after harvesting to avoid intestinal problems. However, the Romans knew that oysters remain fresh enough to eat for about three weeks in cool conditions provided the oysters came from the intertidal zones. Here the

oysters keep their valves closed when exposed to the air and so are ideal for transportation over longer distances (Winder 1992). They also contain more meat than oysters from deeper water beds. What they were transported in is unclear but it is likely to have been in wooden barrels or large pottery containers filled with seawater.

After the Romans

With the departure of the Roman administration in AD460, there was a gradual deterioration in the road infrastructure and there were no longer any organisations controlling transportation over large areas of the country. Consequently in early Saxon times there was a reversion to small scale operations of a very local nature – hence oyster finds for this period are basically most likely to be found near the coast and not far inland unless there was river access to the sea. This can be seen in Saxon Hamwic (modern day Southampton) where Winder's conclusion (Winder, 1997) was "*Overall the number of marine mollusc shells recovered would indicate that shellfish did not constitute a significant part of the diet during the Middle Saxon period*".

After an absence of several centuries, by the late Saxon period oysters start to make a widespread recovery in the archaeological record. This increase continues until the post medieval period, as shown by the data from the French Quarter of medieval Southampton (Campbell, G. in Southampton French Quarter SOU1382, p19) until they dominate the record.

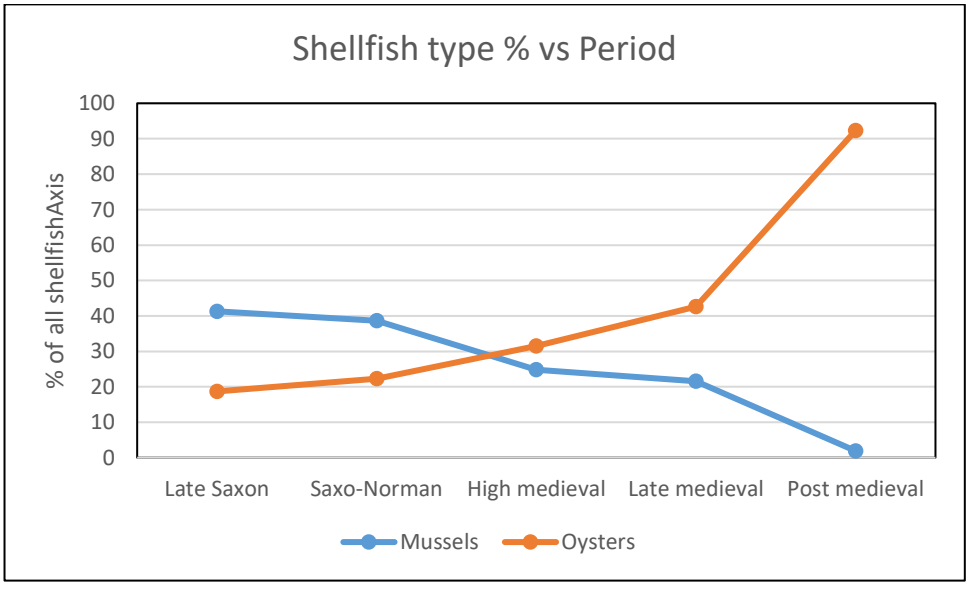

Figure 7. A plot of all shellfish data in Southampton's French Quarter versus the time period, highlighting those for mussels and oysters

There are documents dating from the Saxon period, the most important being the Domesday Book. Satchell (2011) records that it lists a number of oyster beds in the west Sussex and Hampshire area (for example Bosham, Hayling Island, Porchester and the Solent to name a few). Massive deposits of oyster shells that contain large numbers of shells have been excavated under the foreshore of Poole harbour and the Hamworthy peninsula in Dorset. These middens dating to the middle-to-late Saxon period (Horsey, 1992) are believed to be waste from an oyster processing area, where the meat was salted or pickled in brine, On one site alone the number of oysters involved is estimated to lie between 3.8M to 7.6M, yielding between 28 – 57 tons of raw oyster meat. The earliest deposits have been radiocarbon dated to around AD935 +/- 81 while the latest were from AD1095+/- 108.

The Medieval period onwards

By the 15th century the oyster had become a popular foodstuff for all classes of society and were often cooked in their own juices (the small pool of clear seawater found in the cupped shell) with a little ale and pepper. During the medieval period, “fish days” were imposed by the church for a third of the year which stated that meat from animals or birds must not be eaten on those days. It was not until the 17th century that this rigid demarcation between meat and fish broke down. Oysters could be cooked with roast fowl, such as turkey or duck, while sausages and pies were made containing oysters and either pork or mutton. Small fresh oysters were often eaten raw while larger ones were made into stews with herbs and spices. They were also pickled so they could be transported to inland towns and were used to provide sailors with essential nutrients on long voyages. A dozen oysters can contain as much protein as a 4oz steak and as much calcium as a small glass of milk, as well as a cocktail of vitamins and minerals including vitamin C, B12, iron and zinc.. Samuel Pepys mentions oysters 68 times in his diary, often eating them for breakfast accompanied by “a great deal of wine”.

The Victorian era and after

By the 18th and 19th centuries, oysters were plentiful which brought a drop in prices and so oysters became the fish and chips of the urban poor. Sam Weller in Charles Dickens's The Pickwick Papers (1836) states

"It is a wery remarkable circumstance, sir ... that poverty and oysters always seems to go together."

By the mid-19th century oysters were being dredged up in such large numbers that in 1864 over 700 million oysters, packed in barrels, were sold at Billingsgate Market for consumption in London alone. Oyster fisheries employed around 120,000 people across the UK at that time.

However, by the latter half of the Victorian era, the native oyster beds were becoming exhausted due to a combination of overfishing and pollution. The price of oysters then rose to such high levels that only the prosperous classes could afford to eat them and they became a status dish. In 1964, only 3 million oysters were produced from the waters around the UK so that in 1965, the Pacific Oyster was introduced to UK waters by the UK government under quarantine in order to help replace the low stocks of the UK Native Oyster. Today in the UK, the Pacific Oyster represents about 98% of the oysters harvested for sale.

Alternative uses for oyster shells

We always think of oysters as foodstuff but their shells also have uses after they have been discarded. For example, they are used in:

- Cement production
- Glass making
- Food preservation
- Cosmetics
- Soil additive for buffering soil acidity and providing calcium for plants and microbes
- Preventing soil compaction and for composting and mulching
- Calcium supplement for poultry and livestock

These uses would possibly account for any shortage of whole shells in the archaeological record.

Conclusions

Oyster meat has been used as foodstuff by various people over thousands of years and so it is no surprise that the shells left behind have been found in many archaeological sites. But what to do with them when they are recovered? Jessica Winder (2011) has produced a guide to processing archaeological oyster finds which lays down certain ground rules for extracting the most information from them about age, size and infestation. This leads to the possibility of finding where the oysters came from.

From a field walking perspective, oyster shells that we find do not comply with her main requirements for meaningful results. We only find relatively few oyster shells in an average field, far too few for statistical analysis (she recommends at least 30 measurable individuals – Winder 2015). Also most of our shells have been damaged by plough activity so that age rings are worn away, parts are missing and surface signs of infestation are removed. The conclusion is that we cannot derive useful information from our usual field walking finds.

However, it is different with excavated material such as that recovered from the Wimpole Parterre gardens excavations. Here in excess of 200 oyster shells were found in the midden pit (or the moat). However, we washed them in our normal way and Winder says this is likely to remove useful evidence of any surface features such as worm casts and barnacles. Analysis of the parterre finds has yet to be fully attempted using the procedures suggested by Winder.

Appendix 1.

Jessica Winder suggested procedures

The procedure involves a number of steps:

1. Select which valve (left or right) has been selected and measure its dimensions (Figure 8, shells recovered from the Wimpole parterre garden excavation 2019).

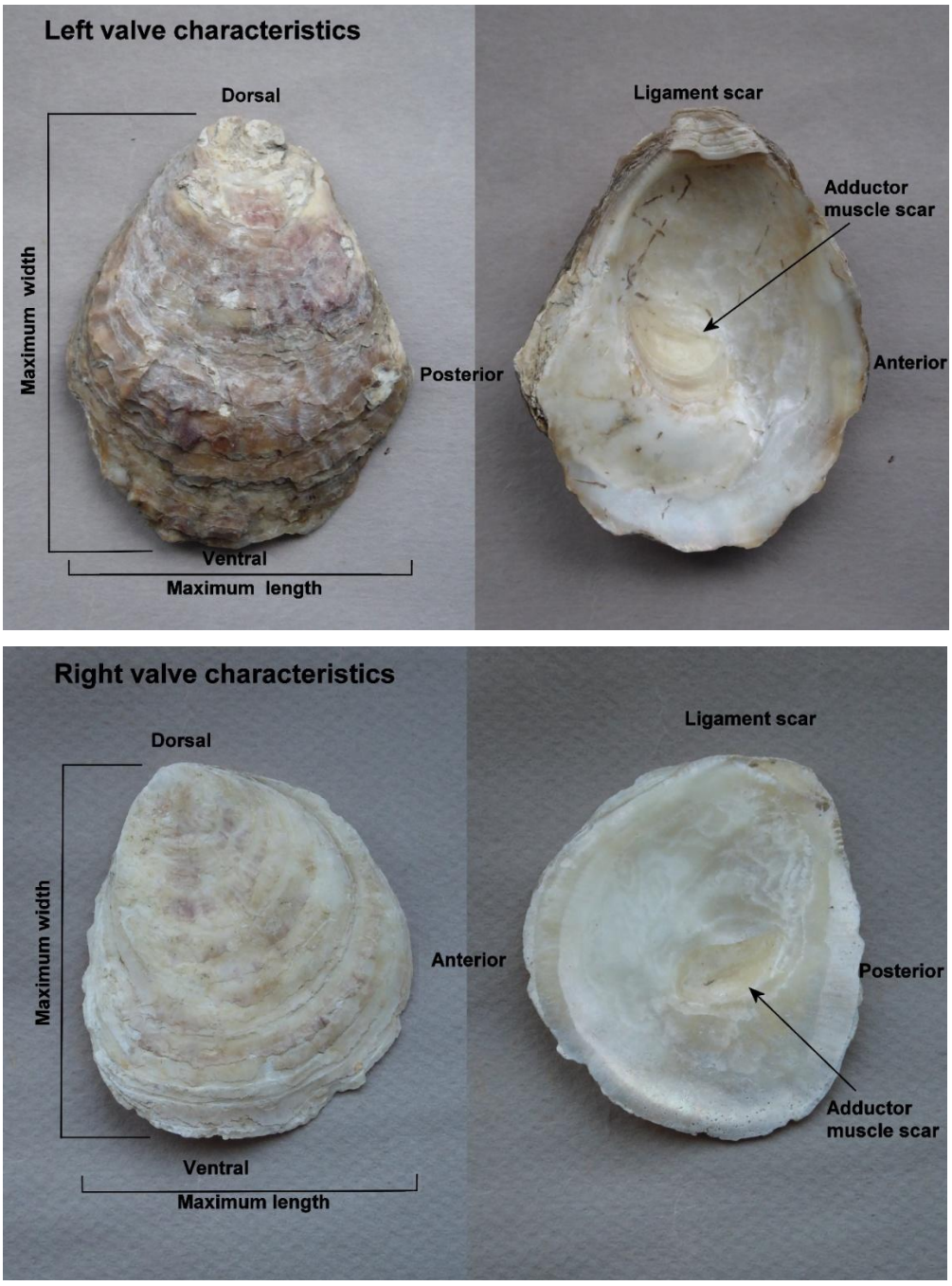

Figure 8. Exterior and interior surfaces of right and left hand valves of the European flat oyster (Ostrea edulis L) showing their characteristics. (Author's photographs).

2. Estimate the approximate age by studying the concentric bands visible on the surface. Difficult and subject to many errors, Uses the flat right valve, Figure 9.

Figure 9. The growth rings on the right hand valve. (Author's photograph)

3. Check for any signs of surface infestation and encrustation. Holes created by worms and sponges (see Figure 10 from Melbourne Street excavation in Southampton for an example and Figure 11 from Wimpole).

Figure10. Polydura hoplura infestation (photo courtesy of Jessica Winder)

Figure 10 shows the effect of Polydora hoplura, for example, which is a boring worm most affecting oysters laid in soft ground near head waters of creeks and inlets where warm, still conditions prevail, as in the south-west and west of England, whereas Polydora ciliata is most prevalent on oysters from hard sandy. or clay grounds particularly in shallow water which may become very warm in summer, (Hancock 1969). The presence, or absence, of a specific infestation has been used to suggest the possible source of oysters found on archaeological sites. Our oyster shells from Wimpole do not show any of these infestations.

Figure 11. Cliona celata sponge borings into an oyster shell from Wimpole (author's photograph)

Figure 11 shows the bore holes caused by a sponge which dissolves the oyster shell and is also prevalent in the south and south-west of the country. We do have a single example of this amongst the Wimpole oysters

4. Add descriptive text covering the appearance and shape.

Oysters, in the early historical periods, were most likely obtained from natural beds rather than cultivated as they are today. As the natural beds became depleted then cultivation became the primary method of propagation. In a cultivated population of oysters the shells would be separate. because juvenile oysters would be detached from the substrate on which they had settled before being laid out for fattening. Each oyster can grow unhindered so they have typically neat, round shells. In a native population, oysters are more crowded with juveniles competing for growing space by settling on empty shells and other live oysters. Figure 12 shows where two juvenile shells have attached themselves to an existing mature shell. Crowded growth results in shells with odd shapes and sizes. Our shells are mostly of very regular shape, suggesting a cultivated origin, although examples like Figure 12 could suggest some came from natural beds.

Figure 12. Wimpole oyster showing attached juvenile shells (Author's photograph)

Finally the descriptive element includes signs of how the oyster was prepared, for example the presence, or lack of, signs of how the oyster was opened.

Oysters cooked intact in a fire or in a boiling liquid would not show any signs of damage caused by an opening tool - they open naturally as they cook.

To open an oyster to be eaten live, an oyster knife is used to lever the halves apart, thus leaving traces of force used. A number of the Wimpole shells show marks that may have been due to this opening technique, as shown below in Figure 13.

Figure 13. Wimpole oyster right hand valve showing a possible V-shaped opening mark (Author's photograph)

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