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3.13.1 Introduction

A study of crab recovered among the residues from the sieved midden material at the Mesolithic site of Sand has revealed a surprising quantity of remains. An examination of the literature, however, demonstrates that the consumption of crabs is very rarely discussed in Mesolithic studies. Even Grahame Clark, who wrote extensively about the ways in which different types of animal may have been procured, did not consider crab (see for example Clark 1952).

Some studies of crab are undertaken in other parts of the world and for other periods but it is often noted that there is a lack of research into the exploitation of this animal. Serrand (2004) has recently been studying crab exploitation by the pre-Columbian people of the Antilles and work on crab consumption has been carried out in Oman and the Arabian Gulf by Hogarth & Beech (2002). There is also evidence of crab consumption from some Roman and Medieval sites in Britain (Nicholson 1988; Lindsay Allason-Jones and Terry O'Connor *pers comm*), for example fragments of edible crab were found in late second-century AD deposits at York (Alcock 2001:54) but usually the data is only referred to in passing.

So why has the evidence been ignored? For Mesolithic studies the traditional focus of enquiry has concentrated on broad topics such as the overall economy, ranking of resources and calculations of calorific values, meaning that many 'unimportant' or 'minor' resources (such as shellfish, plants, small mammals and so on) gain little or no attention (though see Milner 2002; Wickham-Jones 2003). If these minor resources are considered at all it is often as a peripheral foodstuff, used to plug a gap in the seasonal resource cycle (for example Rowley-Conwy 1984). Consequently, Mesolithic dialogue often retains an androcentric bias with a proliferation of 'boys and arrows' narratives directed on the importance of the deer hunt (Finlay 2000a).

However, the study of resources should not be explored solely within these empirical frameworks. Ethnography demonstrates the wealth of taboos and rituals which can be associated with hunting, fishing expeditions or shell gathering events and the maintenance of social relations is as fundamental to these activities as the goal of finding the next meal. Equally, once a resource is transformed into food it is not merely sustenance; food also creates and constitutes social relationships and it is rich in symbolic meaning and metaphor. These aspects of food studies have been explored by historians, anthropologists and social scientists in the last 20 years but archaeology is only beginning to follow their lead (Milner & Miracle 2002; Parker Pearson 2003).

Each species found within a midden is one of many ingredients in the overall diet of the people who used the site. We have no idea how Mesolithic people perceived different

animals in terms of ideology and the supernatural, which tastes were favoured, which foods had symbolic significance, whether some were regarded as high or low status food and whether complex prohibitions were played out. From ethnography these types of meanings and metaphors are usually evident but do not necessarily correlate to optimum foraging theories, calorific values, return rates and so on and attitudes change according to culture. For instance, the crab is often perceived as a fairly anomalous creature in that it can live in both water and on land and it walks sideways; because in some cultures it does not easily fit into set categories it becomes proscribed (for example Douglas 1966) but in others it is valued as a rich and tasty food. In this sense, perhaps a different approach can be taken which considers all foods equally worthy of study. Therefore, rather than dismissing crab as an unimportant resource, the study of crab remains can lead to questions such as: how were they procured; were they eaten or used as bait; were they cooked; where were they deposited? This paper is therefore concerned with the procurement, processing, consumption and deposition of crab, thus providing a more intimate picture of people and their life on the seashore and at the rockshelter of Sand.

3.13.2 The evidence

Illus 508: Sand – the range of crab claws

Illus 509: Sand – some fragments which appear to belong to the carapace of larger crabs

The material from the midden was sorted initially by students at Edinburgh University and any crab remains were separated out. The part of the body that appeared to survive best was the claw (see Illustration 508, left). Claws are fairly robust, especially in the larger crabs, but they are also the more easily identifiable part of a crab and perhaps during sorting were recognised more often than other parts of the animal. It is also possible that some of the specimens may be lobster but currently it is difficult to differentiate between the two. Some parts of the walking legs survive but there are far fewer examples of these. There were also some fragments which appear to belong to the carapace (exoskeleton) of larger specimens (see Illustration 509, right). These can be recognised because the rough texture of this part of the crab is usually very distinct. There was no clear evidence of abdomens or other less robust parts such as the flattened fifth legs which belong to some species, for example the swimming or harbour crab Liocarcinus depurator.

In summary, the more robust parts of the skeleton appear to survive best, which is perhaps not surprising. Many factors could have affected the survival of the crab skeleton. The crabs may have been cooked in a variety of ways (discussed below) and burning, which is evident in some cases, may have made the skeleton more brittle and liable to fragmentation. Some crabs may have been broken up intentionally in order to get to the meat, in which case there is less chance of preservation. The elements will also have been subject to a range of taphonomic factors such as physical, chemical and biological processes, following deposition on or in the midden and consequently some elements may have been destroyed (O'Connor 2000).

There is no easy way to quantify the material: many cultural and natural processes have had varied affects on the remains and quantification can only provide a figure of how many crab claws are found in the excavated part of the midden. It is very difficult to say how many crabs were caught overall during the accumulation of the midden, calculations could vastly under-represent the nature of crab catching and consumption. There are added complications in that each crab has two claws and these, in turn, have two parts (upper and lower) therefore each crab has four pieces of claw to be counted; it is almost impossible to match any of these up, though no doubt some of those recovered were once joined. Although an MNI could be calculated by dividing the total by four, this only provides a figure which can be used to demonstrate that crab was relatively unimportant

in the overall economic picture. Instead, a very rough quantification was made: the intention was not to produce a definitive figure, but rather to obtain an approximate representation of the amount of crab found in the midden.

Illus 510: Sand – Modern and archaeological crab claws, all from Sand

The different sizes of crab, the species of crab and ways in which the crab had been processed were also noted. The crab remains had been sorted by context but no detailed study of variation between context was made because evidence for crab consumption was found across the midden and in this preliminary study there were no obvious differences between areas or contexts. The crab claws were divided by eye into arbitrary categories of small, middle and large sizes and the numbers tallied across the site. No measurements were made because there was no measurable component due to the fact that very few claws were complete. As can be seen from Table 170 (below), there is a total of 545 crab claws in the midden which vary quite significantly in size (see Table 170, below & Illustration 510, right; The modern claws on the left hand side show the variation between 3 different species. The archaeological specimens on the right hand side show some of the variation in size, shape and surface contours in the midden assemblage, which are not matched to the modern specimens).

Table 170		
Small claws	Middling sized claws	Large claws
205	245	95

Table 170: Sand – the numbers of crab claws, or significant pieces of claw, found throughout the midden

Although the claws in general were also quite worn it is tentatively possible to identify some to species. Differences in crab claw morphology are distinctive between species but these tend not to be described or drawn in any detail in reference works (Ingle 1980 & 1996). It was therefore important to use modern controls which could be used to help distinguish different species. A number of dead modern crabs were collected from Filey beach, East Yorkshire, after a spring storm had thrown up a large amount of seaweed and marine animals onto the beach. The crabs were macerated in water with a very weak solution of bleach over a period of about a month (with frequent changes of water) this cleaned out the rotting flesh but unfortunately it also eroded away some of the more fragile elements such as the carapace and abdomen. However, (as seen in the midden) the more robust claws and legs remained intact.

Illus 511: Comparison of modern and archaeologial claws

In the midden there appear to be at least three species of crab, but there are probably several more. It is thought that the well known edible crab, Cancer pagurus, is fairly abundant in the midden and perhaps most of the large claws actually belong to this species. Some claws had very distinctive striations along the claw and these might match with either Macropipus tuberculatus or Liocarcinus depurator (see Illustration 511, right; Bottom – modern claw of crab with striations compared with archaeological specimen on right (with striations) and archaeological specimen on left (large and without striations which probably belongs to *Cancer pagurus*)). There were also other crab claws which were not similar to either of these kinds of crab and these could belong to a number of so far unidentified species, though it is likely that many of the smaller claws belong to the common shore crab Carcinus maenas. In addition, as already mentioned, some may be lobster claws. The

different species of crabs are found in different places in the natural environment; for instance, Carcinus maenas is predominantly a shore and shallow water species and can be found on all types of shore. Cancer pagurus on the other hand is usually found on the lower shore, shallow sublittoral and offshore to about 100m, under boulders or in muddy sands.

Illus 512: Sand – an assortment of crab claws which demonstrate burning and breakage (burning is particularly clear on the middle claw which is blue in colour)

It was also noted that some of the crabs had been burnt, particularly on the tips of their claws (see Illustration 512, left), and interestingly this is something that has been found on crabs from the Roman site of South Shields (Lindsay Allason-Jones *pers comm*). The tips had turned blue-white in some cases which is characteristic of a fairly high temperature, though they do not appear to show thermal cracks (Lyman 1994). Bones on a site can be burnt for a number of reasons; they can be thrown on a fire as fuel, accidentally burnt because fires are created on top of a midden, or burnt in cooking. The pattern of burning on the claws does, however, suggest that in at least some cases the latter explanation is probably true. Many of the claws had also been partially broken. Again breakage can occur for post depositional reasons, such as trampling, but it is likely that people were also breaking up the claws for meat.

3.13.3 A picture of procurement, processing, consumption and deposition

There are many ways to catch a crab. A well known method often used to entertain children at the seaside is 'gillying', which is like fishing. Bait is tied to a weighted line and dropped to the bottom and the line is carefully drawn up if movement or tugging is felt. Different baits can be used because crabs eat a wide variety of foods such as prawns, topshells, dogwhelks, mussels, barnacles and so on (Ingle 1996). They use their claws to break open live shelled animals but also will eat dead matter and rotting material. Long lines may also be used with bait placed at regular intervals; these catch several crabs at a time and need to be laid along the seabed.

Some of the smaller crabs, like *Carcinus maenas*, can be found under rocks along the seashore or they can 'tickled' out from rockpools. Here it is necessary to put one's hand under the seaweed in the pool and carefully feel around for a crab lurking beneath. Perhaps surprisingly, if done carefully, this does not lead to being pinched. As well as being caught by hand, Fenton (1978:543) describes how crabs can be drawn from their hiding places with a hook and there is an evocative description in the Irish folk autobiography of Michael Kirby (1990:12) when as a child he goes to the beach with his father and learns how to use a rod to poke a lobster from its hiding place and how to pick it up so as not to incur a pinch. Some crabs bury themselves in the sand and these can usually be found by torchlight at night-time when they surface and scuttle sideways across the beach (Ingle 1996). However, to catch crabs with the bare hand as they run over the beach is difficult, though it is easier with the slower moving hermit crabs (von Brandt 1984:11). Renfrew (1993:17) suggests that in prehistory crabs and lobsters were probably collected in "weighted baskets – the forerunners of modern lobster pots". Again bait can be used in these and they have the advantage that they can be left for periods of time. Fenton (1978:542) talks about using small nets, "baited with any kind of garbage" for catching lobsters in the eighteenth century.

It is fairly easy to conjure up pictures of how people may have gone about catching crabs in the Mesolithic and at the beach at Sand. There was plenty of opportunity at this location with its rocky coastline (see Illustration 513, right; The incoming sea has just covered a stretch of rocks which are exposed at low tide. The coastline to the right and left of the sand is exposed rocky crag). Bait would have been easily available, whether it was the leftovers of a meal, or

Illus 513: The beach at Sand

perhaps some shellfish collected specifically for the purpose. Limpets may have been used as bait in that they could be fixed firmly to a piece of string without a hook: it is speculative, but a hole punched in the shell of the limpet could be threaded or tied onto string and shells with holes in them are common in the midden (Hardy, Section 3.5). It is also important when using bait in this way to use tough meat which cannot be quickly eaten by the crab and limpets may have worked well in this respect. They may also have been left to rot slightly, as many crabs are attracted to the decaying flesh.

Illus 514: Sand – exposed rocky area at low tide, ideal for shell gathering and searching out small crabs in the seaweed fringed rockpools

Illus 515: Sand – small crab found in one of the rock pools

The beach must have been frequently used by the people at Sand, for example when leaving and returning in boats, gathering shellfish and fishing from the rocky crags. It would, thus, have been easy to look for the smaller species of crab which inhabit spaces under rocks and in amongst the seaweed fringed rock pools (see Illustration 514, left & 515, right) as part of the daily routine. The larger *Cancer pagurus* is not usually found in rock pools but in deeper water and so was more likely to have been deliberately caught using baskets and lines, either from the crags to the side of the beach, or from baskets or lines dropped off-shore from boats. If baskets were used for fishing, it is also possible that some crabs were caught incidentally in this way (Parks, Section 3.11).

Once collected the crabs would have been processed by breaking them up and cooking them. Some of the crab claws found are very small, suggesting that little meat could have been extracted from them. These crabs may have been cooked whole, either roasted on hot stones or above a fire, or perhaps boiled in water heated with hot stones. It is also possible that some of the foods such as crab, shellfish, fish or seaweed were cooked together, perhaps to create a seafood broth.

A large crab can provide plenty of meat and will supply enough food for several people to share. They may have been roasted over a fire as there is evidence of burning on the tips of some of the larger claws. Once cooked, they would be broken open and processed. Today, larger crabs are usually processed by breaking off the legs and claws, which is supposed to make the extraction of meat easier. The central under-body can then be pushed away from the shell. The small stomach sac behind the crab's mouth is usually discarded, as are the gills (also known as dead man's fingers) and in female crabs the 'apron' which contains the eggs is also thrown away. The remaining white meat can then be used. There is also a brown flesh which can be scooped out from the shell and this is intensely flavoured. The flesh from the central part can be used and cooked in different ways and perhaps combined with other foods. The meat is removed from claws and legs by breaking them open with a sharp knock and picking out the flesh. This is the most common way to prepare crabs today; in the past other methods may well have been used but the overall amount of meat is likely to have been similar.

An alternative to direct consumption is to use the crab as

bait. Fenton (1978:539) describes how a net can be lowered to the bottom of the water and a bait of mashed crabs thrown out. Once the sillocks (young saithe) congregate the net will be hauled up and the fish caught. However, crabs used in this way are likely to be invisible archaeologically.

Illus 516: Empty carapace of *Cancer pagurus* (modern)

After consumption the shell of a crab was presumably deposited in the midden. However, the carapaces of larger crabs may also have been used as containers for other things; their size and shape allows liquids to be held (see Illustration 516, right). Perhaps these in turn were used for holding crabmeat, or for the cooking of other foods. In addition, these parts of the animal may have been taken elsewhere and used in archaeologically undetectable ways.

3.13.4 Conclusion

It would be quite easy to dismiss crabs as a very minor resource in this midden assemblage based only on the quantity present and relative calorific contribution. However, other perspectives are possible which consider individual actions and day to day activities. This approach serves as a reminder that resources were transformed into food through the performance of procurement, preparation and consumption activities and through these actions social relationships were created and maintained.

We can begin to see how crabs contributed to Mesolithic meals and may well have been regarded as one of a number of very tasty foods that could easily be procured just a short walk from the rockshelter. Children have a role to play here, as potential crab-hunters along the shore, after tuition from parents, kin, or friends. Larger crabs may have been caught in baskets further offshore. Many of these catches were, no doubt, taken back to the rockshelter and processed. They could have been cooked in a variety of ways and the food created shared out between people. Although there is no way of knowing exactly which methods were used, all of those described above would have been possible for the Mesolithic people at Sand, as well, no doubt, as others.

It is perhaps time to stop side-stepping 'minor' species and integrate all of the faunal and floral evidence into our perceptions of the past. Studies such as Carruthers work on hazelnuts (Carruthers 2000) and Mason & Hather on lesser celandine (Mason & Hather 2000) have opened the way for the contribution of local flora; the Sand crabs are a timely reminder of the other elements. Only through further analysis of crab remains at other sites (species present, processing methods and the study of deposition within contexts) and the study of all other species found within middens will we be able to build up more complex narratives of consumption activities at these sites.

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