A small mesolithic site at Fife Ness, Fife, Scotland.

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Abstract

In the summer of 1996 work to build a new golf course on the coast at Crail in Fife, Scotland, uncovered a small patch of dark soil associated with microliths. Excavation revealed an arc of seven pits or post-holes, a hearth site and several other pit-like features. There was a small lithic assemblage, and also a quantity of carbonised hazelnut shell, samples of which were sent off for radiocarbon assay. The site was remarkable for several reasons:

- Size — Its size (75m2) was unusual in that most mesolithic sites in Scotland (and elsewhere) are often much larger. Small sites have played an important role in theoretical interpretations of the mesolithic way of life, but few have been excavated.
- Lithic assemblage — The lithic assemblage was small, even for such a small site, and comprised solely of flint, which is very rare in Scotland. There was relatively little knapping debris, but several retouched tools, over half of which were narrow blade microliths. The microliths were very interesting because they were dominated by crescentic microliths, while more common types such as scalene triangles were absent.
- Dates — A series of fourteen radiocarbon dates were obtained for the site and all centred round the same period: between 7400 and 7600 BC, calibrated. This was earlier than had been expected, and is an interesting addition to knowledge of the early settlement of eastern Scotland since most other early dates have been from west coast sites. The similarity of the dates adds weight to the argument that the site represents a single occupation which, in view of its size, is likely to have been of short duration. This, and the nature of the lithic assemblage, have lead us to the interpretation that the site was a specialised camp site, probably making use of coastal resources.

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Summary

Introduction and Location

The site was examined as part of general archaeological work in advance of the construction of a new golf course. The mesolithic remains comprised a spread of discoloured soil and pits, together with carbonised hazelnut shells and flaked flint, including microliths. The site lies 8m behind the edge of low cliffs on the present coast-line, and it is 15m above the sea.

Structural evidence

The remains included an oval pit with burnt hazelnut shell and worked flint in the fill. Some 4m to the north-east of this lay a spread of dark loam, also rich in artefacts and hazel shell and below this layer a series of cut features, probably pits or post-holes, were found. There was also a small oval area of reddish subsoil that may have been a hearth. Interpretation is difficult, but some of the features may have related to a small structure or windbreak.

Dating

A series of fourteen samples from seven contexts were sent for AMS dating both to test the hypothesis that the site was a short-term camp as well as to determine a general age for the site. A Student-t test suggested that there was no significant difference between the different dates, and they were then calibrated to provide a likely date for the site of between 7400-7600BC.

The Lithic Assemblage

1516 pieces of flaked flint were recovered from the site and there were two cobble tools. The flint assemblage contained relatively little debitage and appeared to have resulted mainly from the use and repair of tools. There were 56 retouched pieces, of which the majority, 36 pieces, were microliths - principally crescents. Many of the flints, particularly from certain features, were burnt. The cobble tools comprised a small hollowed stone and a faceted hammerstone.

Past Environment

There has been considerable sea-level change in post-glacial Scotland. There are no detailed records for Fife Ness, but the date of the site is very close to the age of the Low Buried Shoreline. Extrapolation from elsewhere would place the sea level at the time of occupation between +2m and -3.5m OD. Environmental data is similarly lacking, but it is likely that the immediate environs of the site were clear of trees, while the hinterland would be covered in forest.

Interpretation

The site at Fife Ness is interpreted as a short-lived activity site, possibly involving the construction of a small shelter. There was a hearth, and some of the pits were subsequently infilled with burnt material. The lithic assemblage is small and relates primarily to the use and repair of stone tools, many of which were apparently brought to the site ready made.

Cultural and chronological comparisons

Fife Ness is particularly small in relation to other mesolithic sites in Scotland. As such it occupies an important place in current theories of the mesolithic life-style. The dates indicate that it lies at the outset of the known post-glacial settlement of Scotland and there are few related sites in the area. Wider comparisons suggest that assemblages like that found may derive from specialised sites. This would be quite in keeping with the evidence from Fife Ness, where the specialisation on crescentic microliths is very unusual.

The Final Picture

The actual interpretation of the activities that gave rise to the site at Fife Ness is difficult, but a short-lived, task-oriented occupation would seem likely. The location suggests that this may have involved the exploitation of marine resources, and today this is a well-known spot for migratory birds. The features may have derived from a small structure, nothing substantial, and fire was certainly involved. The site at Fife Ness opens a new window on to Scotland’s ancient past.

1.0 Introduction

For the construction of a second 18-hole golf course at Craighead, Fife Ness, large areas of topsoil were to be removed in advance of landscaping operations. A part of the planning conditions for this development was the requirement of an archaeological watching brief throughout the earth-moving works. Headland Archaeology Ltd was commissioned by Crail Golfing Society to undertake this work which was carried out during the summer of 1996.

The work was scheduled to allow all areas stripped of topsoil to be examined for archaeological features. In total some 35 hectares were investigated. This large area contained only three sites of archaeological significance and they covered a total of some 75 m2 or 0.2%, a small fraction of the area investigated. The three sites were all examined by detailed archaeological excavation. The sites comprised a large pit and post-holes of late prehistoric date, a pit containing flint tools and bronze age pottery, and a small mesolithic camp site, the subject of this paper. A report on the other two sites was published in Discovery and Excavation in Scotland (Dalland 1996).

The camp site was discovered near the thirteenth green where topsoil stripping revealed a spread of discoloured soil and a pit. Associated with these features were carbonised hazelnut shells and a small lithic assemblage which, because of the presence of several microliths, indicated that the site might be mesolithic.

1.1 Location

2.0 Structural evidence
Click on image to view full plan of excavated features with context numbers in separate viewing window

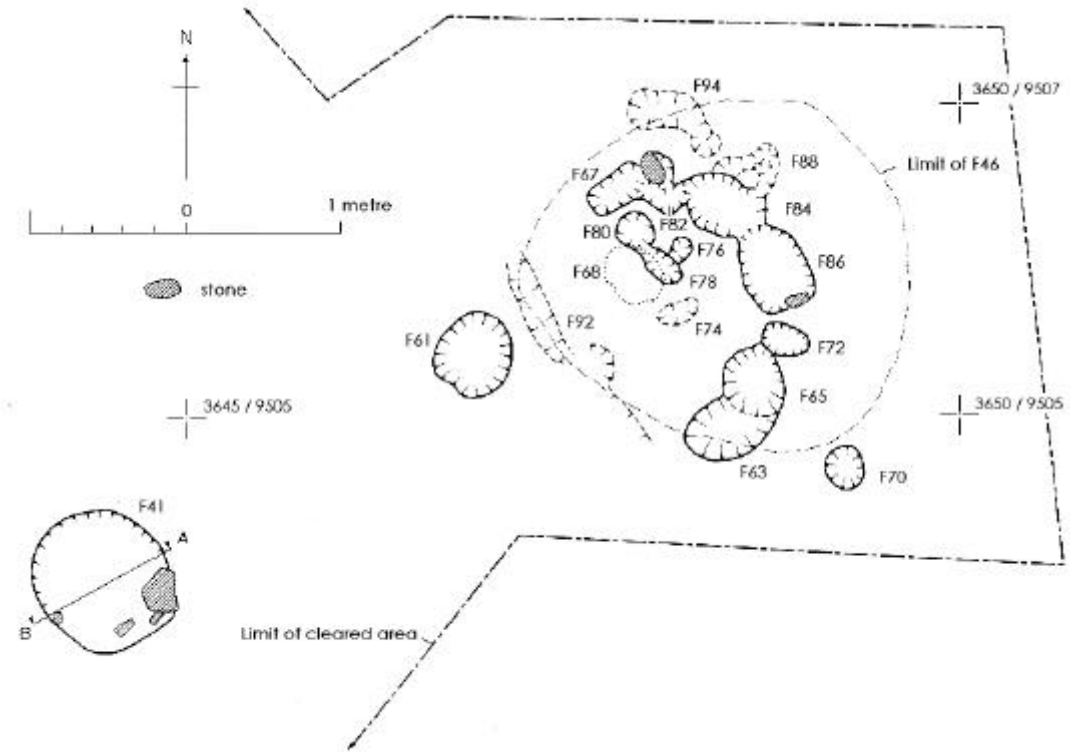

Figure 2: part of the excavated features

2.1 Description The site was discovered at the corner of a stripped area. At first only pit F41 (see Figure 2) was

exposed, which was oval (98cm by 90cm), with near vertical sides and a flat base. It was possible to

identify three different fills in the pit, the upper and lower fills, F40 and F45, separated by a narrow band of brown sand, F44 (Figure 3). The fills contained hazelnut shells and pieces of worked flint. Amongst the flint were blades, cores and microliths.

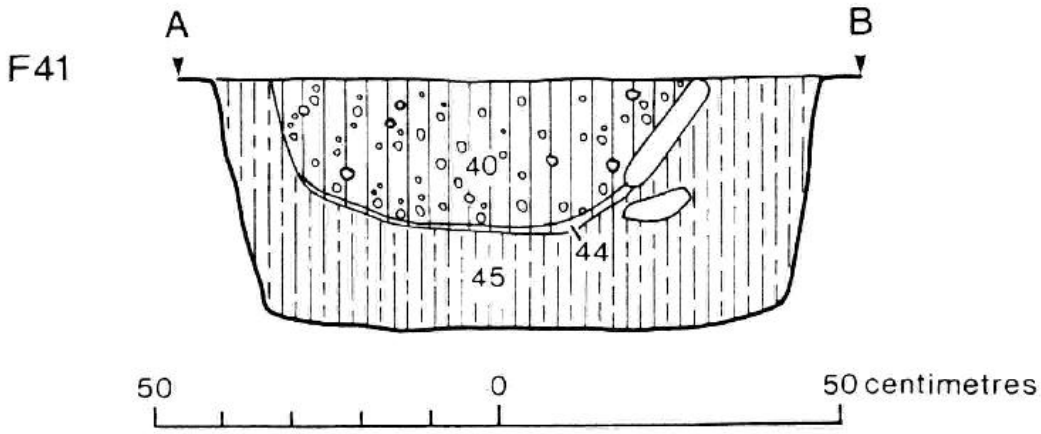

Figure 3: section across pit F41 from the north-west

During the investigation of pit F41, flint flakes and fragments of carbonised hazelnut shells were discovered some 4m to the north-east of the pit at the edge of the area stripped of topsoil. The topsoil had not been completely removed in this area and this allowed hand excavation of the lower part of the ploughsoil, revealing F46 (see Figure 2), a layer of dark brown loam, rich in flint material and hazelnut shell. Its upper surface had been disturbed by ploughing, but the layer was clearly confined to an oval area, 2.2m by 2.5m. It was up to 8cm thick in the middle, but thinner towards the edges. As this part of the site was just outside the area affected by the development, only a narrow buffer zone 0.5 to 1m wide was cleared in order to establish the full extent of the layer.

Once F46 had been removed, a series of cut features were exposed (Figure 4). The most striking of these was a curving line of seven pits (F63, F65, F72, F86, F84, F82 and F67). These covered an arc of just under 180° of a circle, 2m in diameter. The pits differed in shape and size, from 10cm to 28cm deep, and 20cm to 42cm wide. The deepest pits were in the middle and southern part of the arc: F72; F86; and F65. Opposite the curving line of pits was a single large cut (F61), some 50cm in diameter and 25cm deep (see Figure 4, bottom left corner).

Figure 4: Showing arc of pits after removal of F46 - seen from the south

A few pits lay outside the arc: one (F70) outside and to the south-east of the arc; and two irregular shallow cuts (F88 and F94) to the north. Four shallow pits (F74, F76, F78 and F80) were located inside the northern part of the arc. These lay on the east side of a small oval area of reddish subsoil (F68), 40cm by 30cm. The red colour is likely be caused by heat and this feature may therefore represent the position of a small hearth. A shallow linear cut (F92) ran north-west to south-east to the west of the arc, possibly the remains of a shallow drain.

During the excavation of the ‘occupation’ layer F46, it was not possible to establish the relationship between this layer and the pits and cuts exposed after its removal, despite a baulk section which

crossed pit F86. The first impression, that the layer sealed the underlying cuts, could not be substantiated, and it is likely that the clues to this had been obscured by soil processes in the past.

All fills and a 40 litre sample of the occupation layer were collected and brought back to the laboratory where the soil was wet-sieved. All floating material was retained in a 300mm mesh and all the remaining material was washed through a 1mm mesh achieving a near 100% retrieval of flint artefacts and waste. The charred plant remains retrieved from this processing were dominated by hazelnut fragments. A small number of charcoal fragments were also retrieved. Only 22 of these were of sufficient size to be identified. The results are summarized in Table 1 below.

Table 1: Identified wood species

Species:	No:	Percent:
Betula	3	13%
Corylus	16	72%
Salix	1	5%
Quercus	1	5%
cf Quercus	1	5%
Total	22	100%

Although the numbers are small, Corylus clearly dominates the assemblage. The one piece of Quercus derives from F46, the spread of occupation material at the base of the ploughsoil. It is therefore possible that this fragment stems from the more recent ploughsoil.

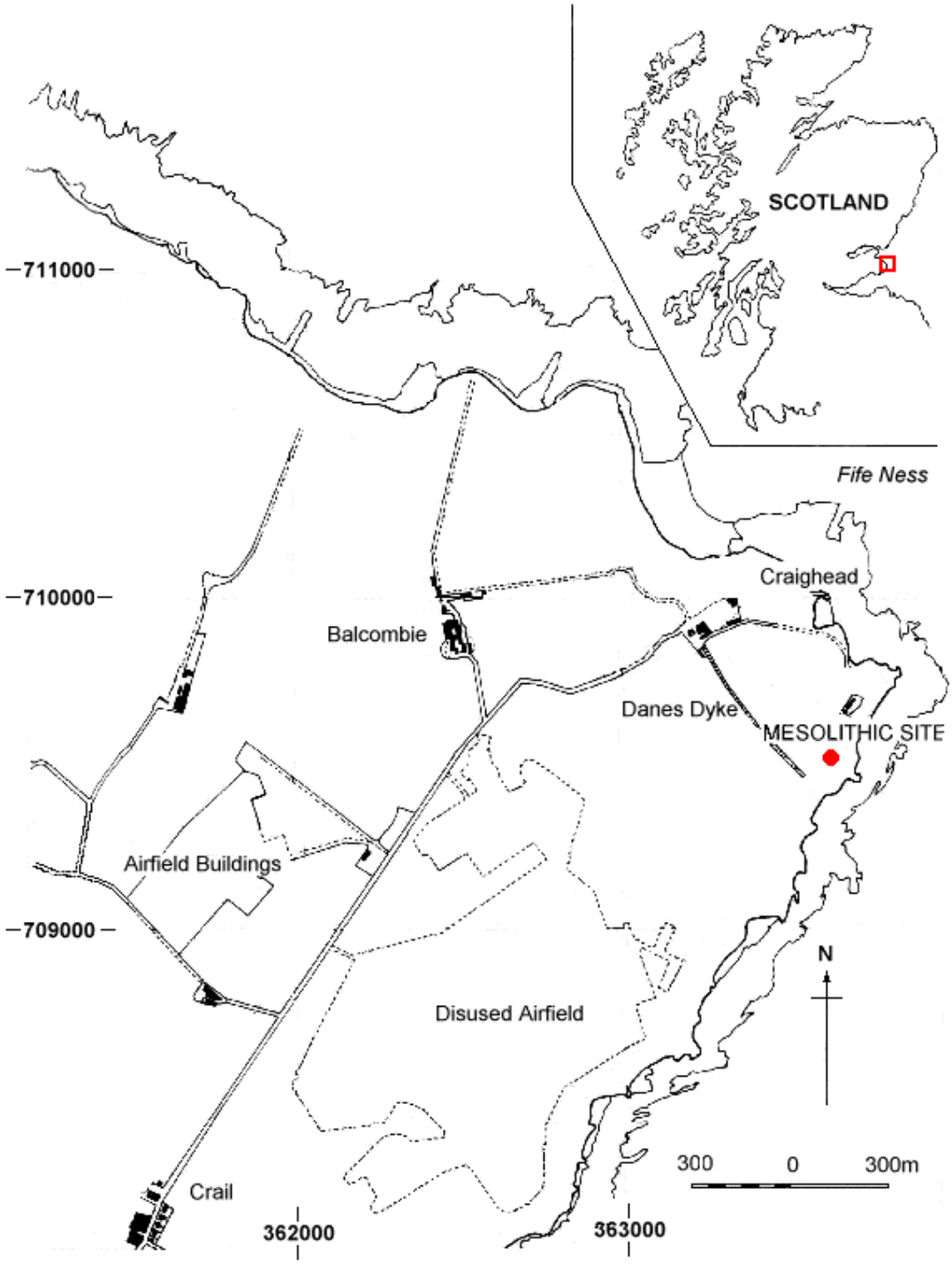

Figure 1: Location of site

The site was situated at NGR NO 6365 0951 on the south side of Fife Ness some 300m south-west of Foreland Head, the north-eastern headland of Fife. It was located 8m back from the edge of the low sea cliffs on the lower parts of the late glacial raised beach at c.15m OD. The land rises gently inland from the site culminating in a small summit at 30m OD some 700m to the west.

2.2 Interpretation The immediate on-site interpretation of the curving line of pits was that they were post-holes from a

wind-break structure, built as a shelter against north-easterly onshore winds. The larger pit F61 could

have contained an upright post to support the ends of seven rear posts, thus creating a semi-conical roof structure. This interpretation was purely based on the configuration of the features, as none had any visible remains of a post-pipe or packing stones. It is possible, however, that any traces of posts left in the post-holes would have been erased by invertebrate activity over several thousands of years. Assuming that the arc of pits represented post-holes, the evidence from the fills suggests that the structure was built on an existing site. Post-holes are likely to have been backfilled soon after excavation and as all of the fills contained fragments of carbonised hazelnut shells and worked flint, it would seem that this backfill contained occupation material which is likely to have come from near-by. This is also supported by the occupation layer F46 which is not limited in extent by the line of the supposed shelter. If the shelter had stood for the entire period over which the site was in use, it might be expected that the line of the shelter would reflect more closely the extent of the occupation layer. As it is, it could be argued that the occupation layer represents pre-structural activity which was then dug through and disturbed during the construction of the shelter.

Nevertheless, as none of the pits contained any evidence for posts, nor were they cut particularly deeply, it must be noted that any shelter would have been flimsy. However, given their form, an alternative, non-structural explanation must be considered. Pits, of various sizes and with various fills, are common on mesolithic sites. Their interpretation is generally problematic, not least because the fill must be later than the actual cutting of the pit and may bear little relation to its original function. If the pits at Fife Ness did not relate to a structure, they clearly related to the activities that were taking place on site and, as such, further discussion on both this, and the possible function of any shelter, is left until the final discussion, when other relevant evidence such as that relating to the lithic assemblage may be taken into account.

2.3 Preservation During the watching brief, the only features found to be preserved had been cut into the subsoil. It was

therefore quite unexpected to find preserved sediments at the interface between the subsoil and the topsoil. This was obviously helped by the fact that the topsoil was removed by hand in the area of the site after the discovery of F41, but there was no indication of similar artefact concentrations in the topsoil elsewhere. The occupation layer F46 had been cut into by the plough, but it seemed largely intact as there was a clear colour distinction between it and the overlying topsoil. The reason why this occupation layer had survived may be due to its location. The site was situated in a slight hollow set back from the cliff-edge. It is likely that hill-wash from the gentle slopes to the west has deepened the topsoil in the hollow and thus protected the mesolithic deposits from the reach of the plough. The hollow was therefore responsible for the preservation of the site, but it was only shallow and so it is unlikely that similar cut features could have been missed elsewhere.

As the entire area to the north-east of the site was stripped of topsoil, it is clear that there were no remains of any further sites inland or along the cliff-edge to the north. No pits similar to F41 were found in this area of the golf course. The land to the south was not affected by the development and it was covered by turf, as was a narrow zone along the cliff edge. It was therefore not possible to assess the possibility of further sites by field-walking in this area. But since the density of artefacts tailed out rapidly so that no finds were made away from the discoloured area, F46, it seems that the site was revealed in its entirety.

Based on this evidence, the site would seem to be a small, isolated camp. There was only a small number of pits and post-holes, and, whatever their interpretation, all could be ascribed to a single

phase of activity.

3.0 Dating 3.1 Method and Results The radiocarbon dating strategy was aimed at testing the hypothesis that the site was a short term

camp that had been used for short stays infrequently over decades rather than a long term occupation. As the mesolithic artefact assemblage only gives a very broad dating, radiocarbon provided the only means of getting a more precise date for the site.

Carbonised hazelnut shells were chosen as the material to be dated because they occurred in most of the fills and it was felt that they were likely to be roughly contemporary with their contexts. As there was a possibility that younger and older material could be mixed giving a spurious average date, two single shell fragments from each context were AMS dated (see radiocarbon dating). To reduce the possibility of dating intrusive material from above, the largest two shell fragments from each context were taken.

Samples from seven contexts were selected for dating; the upper (F40) and lower (F45) fills of pit F41; the occupation layer F46; the fills of pits F61 and F70; and of two pits in the arc, F63 and F84. These contexts represented a sample of all major features on the site and thus tested the hypothesis that all elements were contemporary. The dating results are shown in Table 2 below:

Table 2: Uncalibrated radiocarbon dates

Lab. no:	**Feature:**	**Uncalibrated date (years BP):**
AA-25202	F83-B	8275±65
AA-25203	F83-A	8340±60
AA-25204	F69-B	8505±75
AA-25205	F69-A	8405±60
AA-25206	F62-B	8355±60
AA-25207	F62-A	8420±65
AA-25208	F60-B	8510±70
AA-25209	F60-A	8475±75
AA-25210	F46-B	8410±60
AA-25211	F46-A	8460±85
AA-25212	F45-B	8545±65
AA-25213	F45-A	8495±65
AA-25214	F40-B	8510±65
AA-25215	F40-A	8490±60

The Student-t test was applied to the set of dates to test whether their variable age was significant and reflected a true age difference between the samples, or whether it could be ascribed to statistical variation. The test suggested that there was no significant difference between the dates despite the 270 radiocarbon years difference between the oldest date and the youngest.

3.2 Calibration

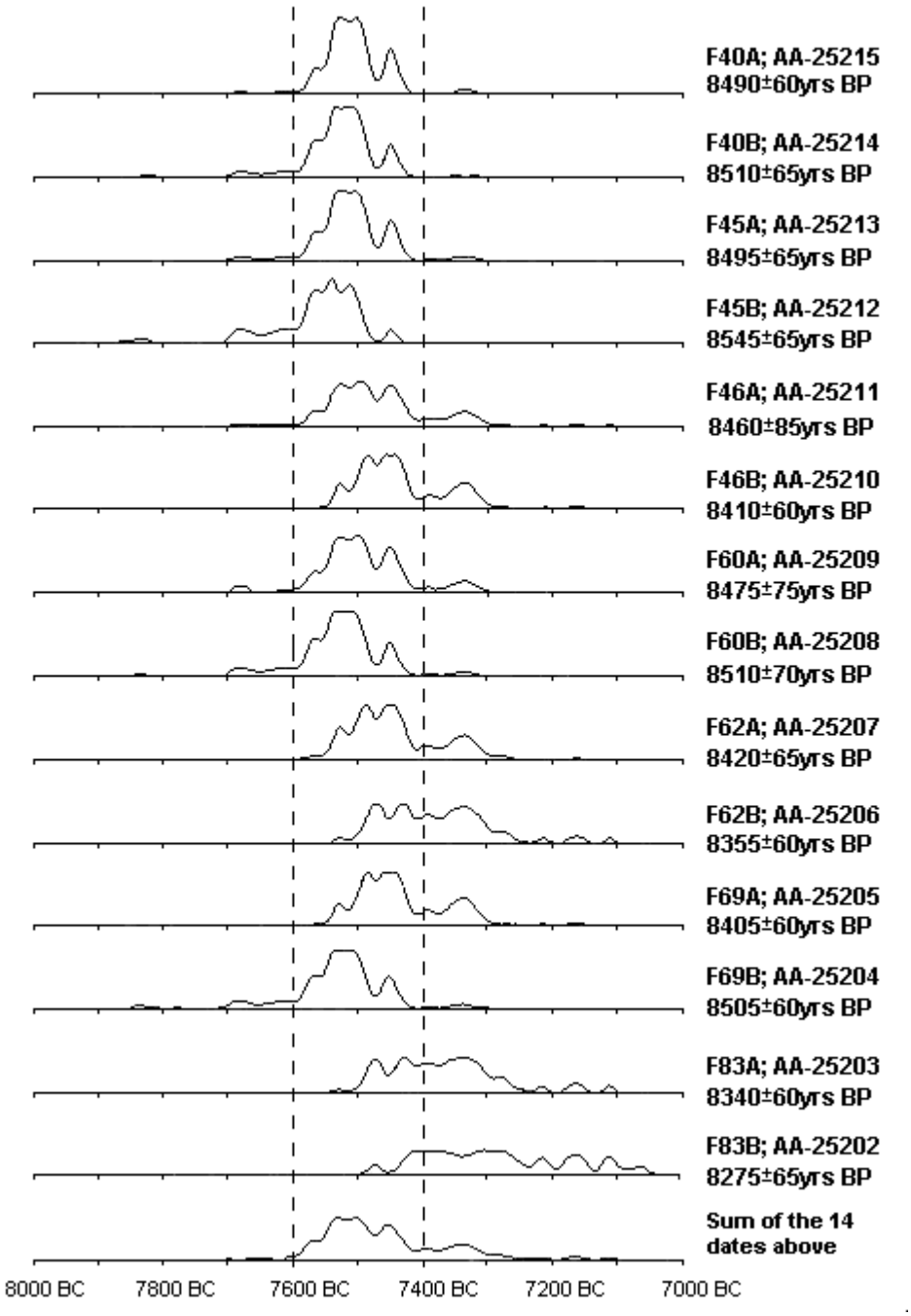

Figure 5: The probability distributions of the calibrated Fife Ness dates

The probability distributions of the calibrated dates are shown in Figure 5. The dates were calibrated using the calibration data published by Stuiver and Reimer 1993. The curve is fairly steep in the region between 8350 BP and 8650 BP (Figure 6) which is reflected in fairly precise calibrated dates. As can

be seen from Figure 5, the most likely calibrated date for the site lies between 7400 and 7600 BC.

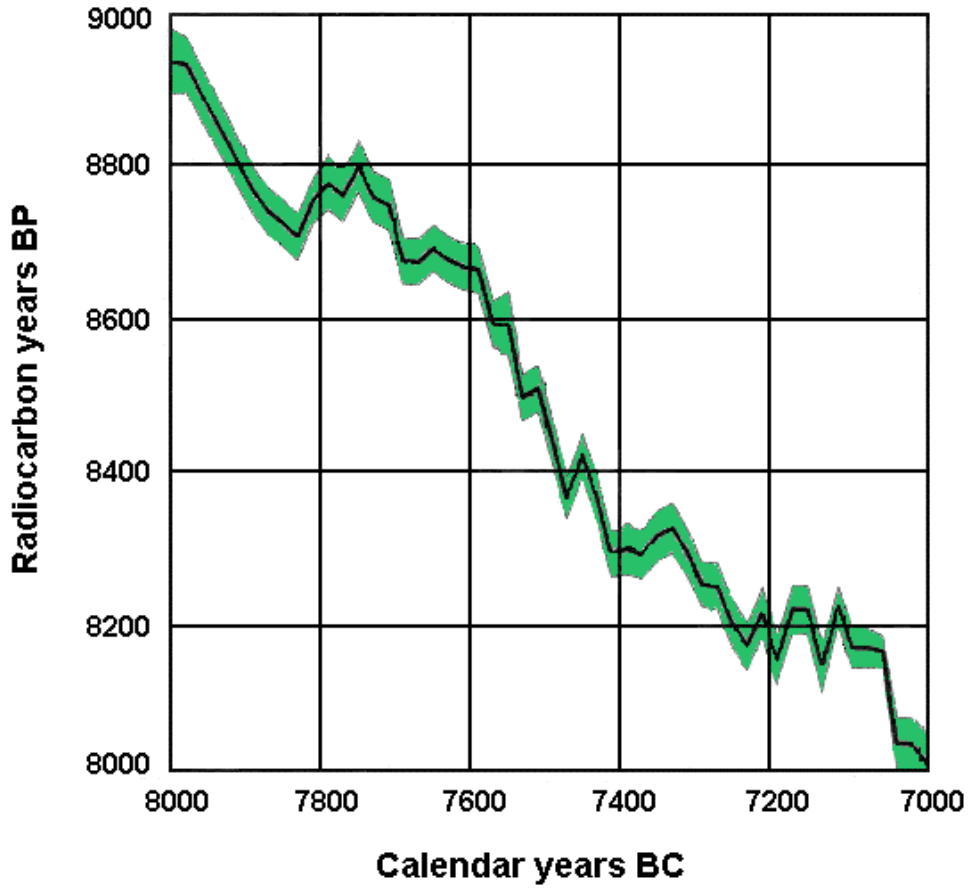

Figure 6: Dates after calibration curve (after Stuiver and Reimer 1993).

The green band indicates plus/minus one standard deviation 4.0 The Lithic Assemblage

4.1 Introduction

The lithic assemblage comprises 1518 pieces of flaked stone, including two cobble tools: a small hollowed stone and a hammerstone. A basic breakdown of the flaked lithic assemblage by type is given in Table 3. Table 3: A breakdown of the flaked lithic assemblage by type:

by clicking on the highighted text in this table will take you to the relevant catalogue entry for that artefact type

*Type	*Quantity
***Pebbles**	*3
*Platform Cores	*9
***Chunks**	*173
*Debitage Flakes	*942
***Regular Flakes**	*
Primary	20
Secondary	76
Inner	167
***Retouched Flakes**	*
Scrapers	10

Edge Retouched	4
Microlithic retouch	2
Broken	4
***Blades**	*
Primary	3
Secondary	13
Inner	54
***Retouched Blades**	*
Edge Retouched	1
Broken	1
***Microliths**	*
Crescents	20
Backed Bladelets	2
Fine Point	1
Backed Triangle	1
Microburin	2
Broken	7
Obliquely Blunted	1

4.2 Material All the flaked lithic assemblage is made of flint. The surviving cortex is abraded, indicating that the

material is derived from a pebble source and indeed flint pebbles are relatively abundant in local gravels. The prehistoric flint knappers probably did not have to look far for suitable material from which to manufacture their tools. Ploughsoil collection in the vicinity of the site recovered a number of largish chunks of flint that are probably natural and may well represent the sort of raw material that was being gathered for use. Some of the chunks, both from the ploughsoil and from the mesolithic site (where they are smaller and more likely to derive as a waste product from tool manufacture), are quite flawed in nature, but generally the material is of good quality. In contrast to most other mesolithic sites in Scotland, no other lithic materials were used and the inhabitants of the site at Fife Ness clearly had access to flint that was good enough, and abundant enough, for their needs.

The assemblage includes three flint pebbles, two of which have flake scars (see catalogue entry). All are small, and while they clearly indicate the type of raw material available to the knappers, they were obviously not chosen to be worked, probably because of their quality and size.

Sixty percent of the material is heavily corticated and the surfaces have transformed into a creamy colour and chalky texture (see catalogue entries of corticated material). This is a post-depositional change, dependent on soil conditions, and does not necessarily reflect the appearance of the flint when it was used. Indeed, the other flint material recovered from elsewhere in the golf course area was not nearly as heavily corticated as that from Fife Ness, and probably relates to different periods of prehistory. Where the original colour survives it is mainly grey, though some pieces are a honey colour.

Some of the material is heavily iron stained and this is often associated with burnt material, of which there is a relatively high proportion (36%) mainly concentrated in certain contexts (see catalogue entries for burnt material). This is discussed below. As experimental work has shown (Finlayson 1990), not all burnt pieces show noticeable signs of the process, and so the actual number of burnt pieces from the site is likely to be considerably higher.

4.3 Primary technology

The assemblage includes much evidence relating to the manufacture of the artefacts. Because flint knapping is a deductive process it leaves a residue of waste material, some of which might be quite

suitable for use, if unintentionally produced, and some of which is too irregular or too small for use. The first category is known as debris and it is of course, difficult to separate from regular material that was intentionally produced, for experimental work has suggested that the manufacture of blades, for example, produces nearly five regular flakes for every blade (Zetterlund 1990; Bordes and Gaussen 1970). The second category of irregular material however is easy to single out and has been classified here as *debitage*.</P>

The presence of debitage is an indication that some tool manufacture and maintenance was carried out in the vicinity of the site. At Fife Ness, 74% of the assemblage was debitage (see debitage catalogue entry), a similar figure to percentages of debitage recovered from other Scottish mesolithic sites. However, the figure from Fife Ness has undoubtedly been inflated due to the sieving procedures used. Residues at Fife Ness were sieved through 1mm meshes as opposed to 3mm (which is more commonly used where the recovery of lithic material is a main aim). This actually means that the relative amount of debitage at Fife Ness is unusually low, since much of it was under 3mm in size and would have been missed had the usual size sieve been used.

Information about the techniques used for artefact manufacture may be deduced from the artefacts themselves, from the waste material, and from the cores: the residues of any nodule from which flakes and blades have been removed. There are nine cores in the assemblage (see core catalogue entry), six of which come from one context, F46: the main “occupation area”. All the cores are platform cores with a single platform from which flakes and blades have been removed. The platform edges were, by and large, carefully maintained to assist successful removals, and six of the cores are classic blade cores (Fig 7). These cores were carefully prepared and flaked in order to produce regular parallel sided blades. Blade manufacture is a specialised process and it is typical of mesolithic sites. Most cores retain some cortical material, but they were very small when abandoned: usually between 23-30mm long. It was presumably difficult to produce viable flakes and blades below this size.

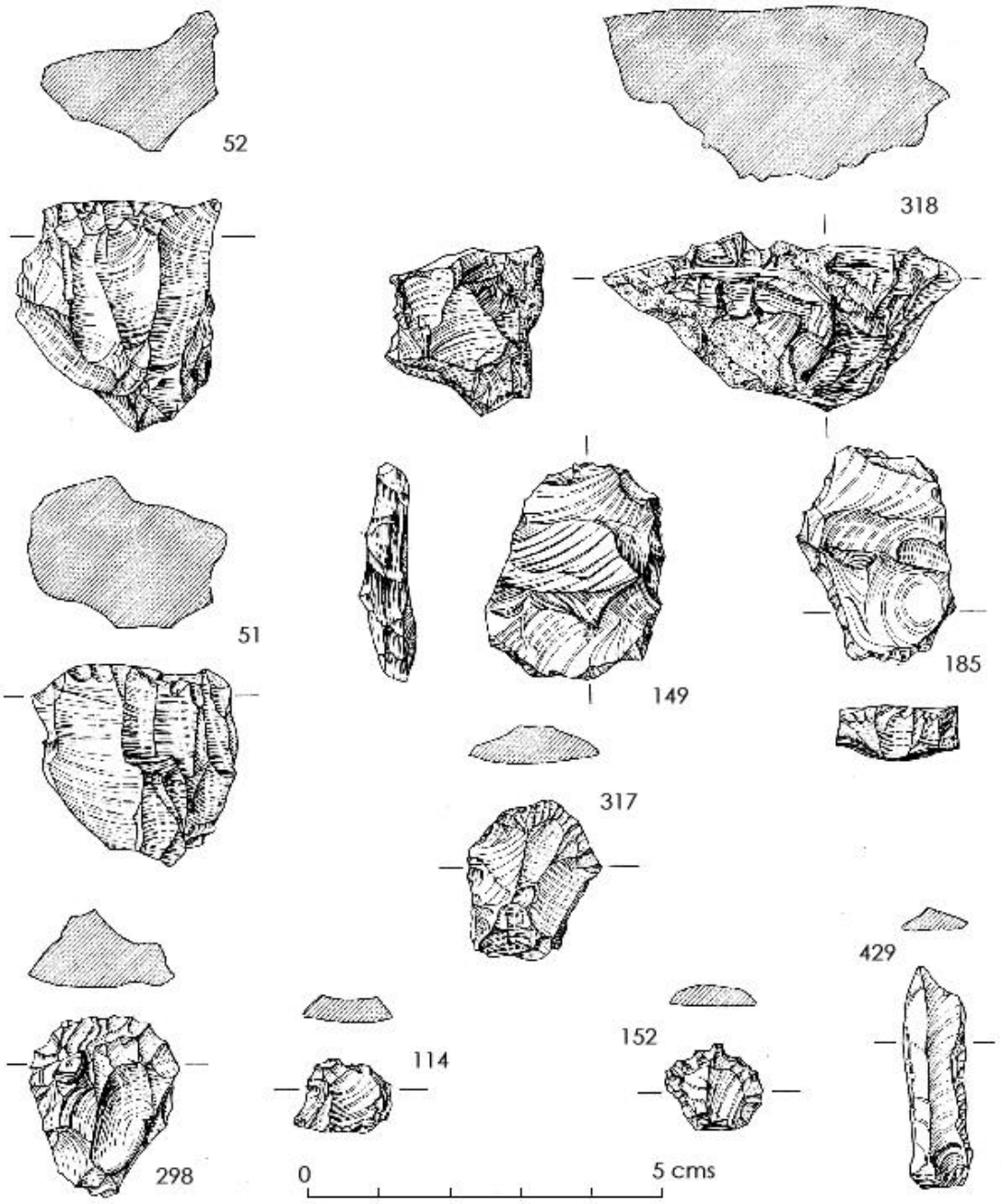

Figure 7: The lithic assemblage: 51, 52 & 318 cores; 149 & 185 core tablet scrapers; 114, 152 & 317 end scrapers; 152 thumbnail scraper; 429 edge retouched piece

One interesting core (318) was made on a very rough chunk of cherty flint (see Figure 7). It is a long piece (50mm) and has only been worked at one end, where two or three removals were made, but there are clear ring cracks on the surface of the platform that show how it was struck in a vain attempt to produce more flakes. The material is not of good quality, and the core seems to have been abandoned early in its life, presumably due to the intractability of the material.

There is no evidence for the use of the bipolar technique in the assemblage. This is interesting in view of its ubiquity on many other mesolithic sites, especially along the west coast, and in view of its particular suitability for the working of pebble nodules such as those at Fife Ness. Bipolar knapping may have been a useful technique in the mesolithic, but it was clearly not one on which the mesolithic inhabitants of Fife at this time wished to draw.

The assemblage includes 70 blades (see catalogue entry) and 263 regular flakes (see catalogue entry), many of which are now broken. The platforms are mainly narrow (84%) and of no particular form,

though bulbs of force are diffuse and there is evidence of the maintenance of the platform edge. All the evidence suggests that relatively soft hammers were used in order to strike the flakes and blades from the cores, and that the cores were carefully prepared and maintained. This is also supported by the amount of debitage from the site, much of which, especially the smaller pieces, is likely to have come from core preparation work. There is, in fact, one core trimming flake (number 55 in catalogue) in the assemblage, which shows how the platform edge did, from time to time, need attention, and two scrapers are made on core tablets (catalogue entries for 149 and 185) showing how even "waste" flakes and debris could be picked up and used.

The presence of 70 blades, together with the types of cores that occur, suggest that a primary product for the knappers may well have been the manufacture of flint blades. This is a process that inevitably results in the production of large amounts of debris as well as regular flakes as a by-product, and there is a measure of its importance in the ratio of blades to flakes. This ratio is known as the *lamellar index* (Zetterlund 1990). At Fife Ness the lamellar index sits at 27% which suggests that blade making was indeed important.

The sizes of the artefacts which the knappers were making were obviously affected by the raw material with which they had to work, but it is clear that they were able to work in a very standardised manner. While the lengths of the unbroken blades varied greatly, blade width was very uniform: between 7-13mm (see catalogue entry). The broken fragments were also relatively uniform in size (lengths varied between 11-24mm and widths between 7-13mm, see catalogue entry). Regular flakes, however, were much more variable with widths between 8-23mm, and lengths between 14-33mm.

4.4 Secondary technology

Working with the local flint, the knappers were able to make both blades and flakes that were suitable for use in many different ways. Many would, no doubt, be used without any further alteration, but some tools required more specialised working, and so a number of pieces were selected for modification. This generally takes the form of retouching, the application of pressure to remove small flakes and so shape a flake or blade, but there are other techniques, one of which is the deliberate breakage of pieces.

At Fife Ness there are indeed many broken blades (see catalogue entry; only 19% of blades were found whole), but it is difficult to say whether this was due to deliberate breakage. Blades are naturally more fragile than flakes and so there are many factors, natural or otherwise, that may lead to their accidental breakage. They may break during use or after they have been deposited as waste. The sizes of the broken pieces at Fife Ness are indeed very uniform, and this might suggest deliberate breakage, but it might also be a reflection of the sizes of the original pieces. It was not possible to refit any of the broken blade fragments, but it is interesting to note that the part of the blade that did survive was more or less evenly distributed between the distal end (30%), the proximal end (30%) and the middle segment (40%) If blades were being deliberately snapped for use, the knappers were not selecting any particular part over another. It is, of course, possible that accidentally broken blades were subsequently used as tools anyway.

Apart from the possibility of deliberate breakage, all the modified tools at Fife Ness have been altered with retouch. This has been used to create a number of specific artefact types. Most numerous of the larger pieces are the scrapers, of which there are 10 (see catalogue entry). Three of these are end scrapers, where a steep scraping edge has been made on the end of a flake. Two (317, 298) are similar in size and shape and they narrow towards the butt end, as if to facilitate hafting (see Figure 7). The third (114) is much smaller and very similar in form and size to one of the thumbnail scrapers (152), though it only has retouch at one end (Figure 7). There are three thumbnail scrapers, 152 mentioned above, being much smaller than the other two (150, 151). Both of these are similar in size and shape, with retouch around most of the circumference of the flake.

The two most interesting scrapers (149 and 185) are both made on inner flakes and are very similar in shape and size (see catalogue). Both have steep scraper retouch which incorporates, on the proximal end, the inverse scars of flake removals from an old core face (see Figure 7). These scrapers have been worked on core tablets. Remnants of the old platform may be seen and the old removal scars have been incorporated into the scraper face. This is a very unusual scraper form that has not, so far, been recorded from other sites. It is interesting to see how apparent waste flakes such as core tablets from the maintenance of cores could be picked up for use. In addition, there are two broken scrapers (97 and 153), but it is not possible to determine the type of scraper from which they came.

There are five *edge retouched pieces* (147, 148, 338, 372 and 429; see also combined catalogue entry) all made on flakes except one (429), which is a fine inner blade, with shallow retouch along the right side (Figure 7). The others vary in shape, though they are all roughly triangular and of roughly the same size. Two (148 and 338) are on finer flakes and worked on one side with small, almost microlithic retouch. The other two are on chunkier flakes and have retouch on two or more sides.

Finally, there are five retouched pieces which are broken to such an extent that it is not possible to determine the form of the original tool (69, 188, 255, 297 and 399). All are on flake blanks, except one (69), which is made on a blade.

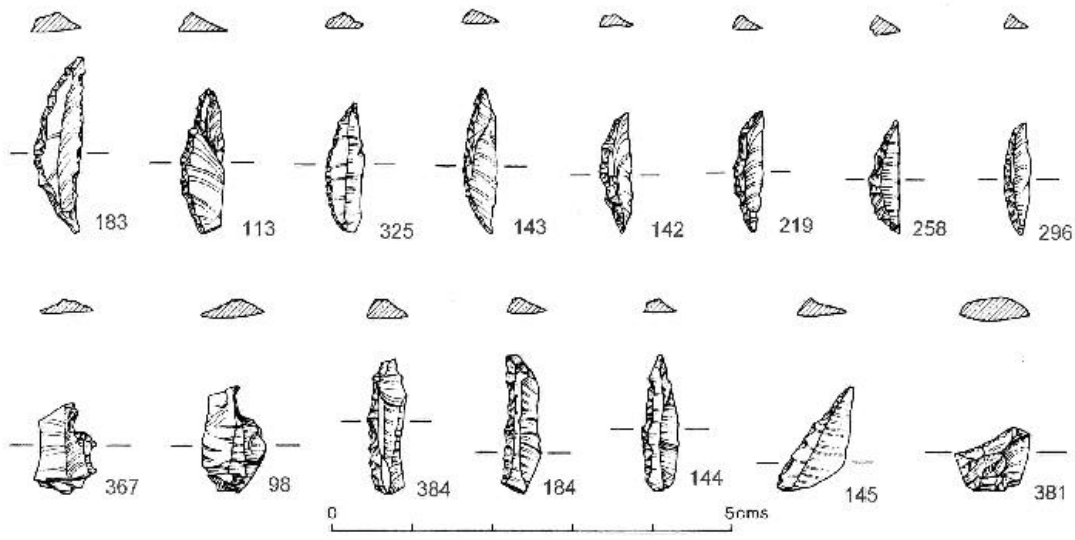

Figure 8: The lithic assemblage: microliths, 183, 113, 325, 143, 142, 219, 258 & 296 crescents; 367 & 98 microburins; 384 & 184 backed bladelets; 144 fine point; 145 & 381 obliquely truncated

In addition to the larger modified tools 36 *microliths* were recovered from the site (see catalogue entry). These are particularly interesting because over half of them are of one specific type: *crescents* of which there are 20 (see figure 8). Of these 9 are whole, and 11 are broken, but all are recognisably from crescents. There are also five broken microlith fragments that cannot be assigned to any specific type. Microlith typology is notoriously difficult and assemblages can be divided and sub-divided again and again on the basis of minute distinctions in the retouch (Finlayson *et al* 1996). At Fife Ness a simple approach has been taken because what is interesting is not just the dominance of microliths with distinctly curved backs (crescents), but also the lack of other types. The crescents from Fife Ness have, therefore, been classified simply into two, basic types. Most (eg: 142; 219; 258; 295; 296; 355) cluster between 11-15mm long and 3-4mm wide and have the widest point towards the centre. Four, however, are larger (16-22mm long and 2-6mm wide), and have off-set curves, with the widest point nearer to the tip (113, 143, 183, 325). All are made on tiny blades which, not surprisingly, are narrower and much shorter than most of the unretouched blades.

There are also four other microlith types, but they are only represented by a small number of pieces. Two (184, 384) are *backed bladelets*, with retouch down one, straight edge (see figure 8). One (144) is a *fine point* with a naturally sharp side and a retouched side converging to form a point (see figure 8). The fourth (145) is best described as *obliquely truncated* or blunted although it is not conventional: it is a slightly wider than normal piece with a long oblique snap that has been retouched opposite the distal end and one sharp side which converge to form a blunt angle (see figure 8). There are two classic *microburins* (98, 367, see combined catalogue entry) where a fine blade has been notched on the right hand side and snapped (see Figure 8). This is recognised to be part of the process of manufacture of some microliths (Brinch-Petersen 1966) though it is often associated with scalene triangles of which none were found at Fife Ness.

Finally, among the microliths, there are five, less conventional pieces. These are all made on wider blades or flakes using microlithic retouch. Two (433 and 381) are made on snapped blade fragments and have retouch across one of the snapped faces, one of these (381) is slightly oblique (see figure 8).

Another two (186 and 340) are of similar size and have retouch around one or more edges. The fifth (187) is broken, but was probably originally similar to the last two in size, shape and working.

4.5 The coarse stone tools

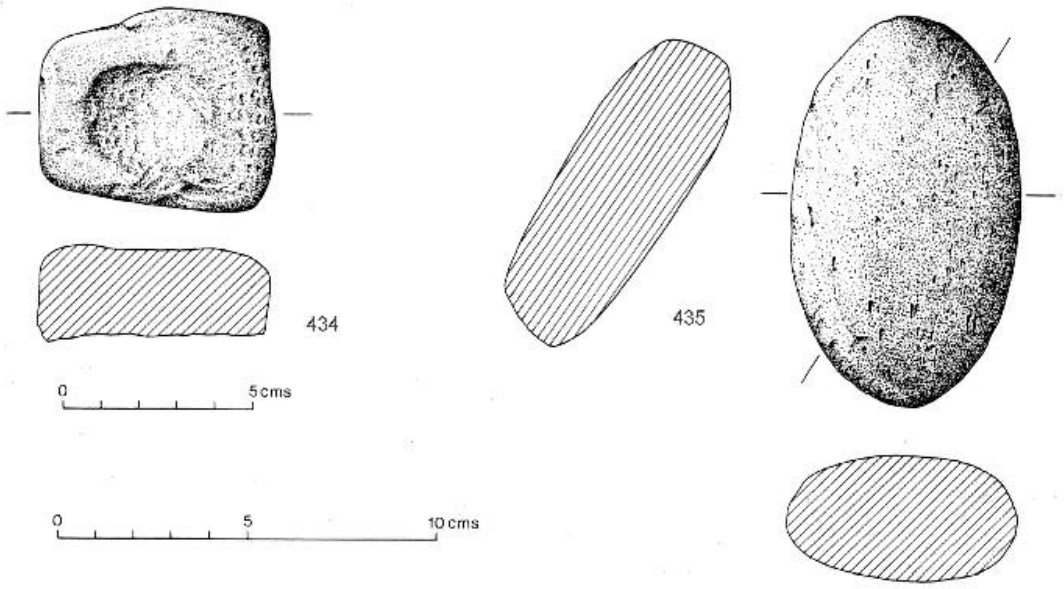

Figure 9: The coarse stone tools: 434 the hollowed stone; 435 the faceted hammerstone

The assemblage includes two cobble tools: a small hollowed stone (434); and a faceted hammerstone (435). The hollowed stone (434) is made on a small trapezoidal cobble of a micaceous sandstone which has one naturally flat surface with a shallow, circular, indentation, while the opposite face has been sheared off and provides a stable base. The indentation is rough within, there is no sign of grinding, rotational wear, or regular pecking. It is hard to say whether the indentation has resulted from use, or whether it has been deliberately made, in which case it may be unfinished because it is so shallow. There are many possible tasks for which a small hollowed stone, such as this, might be used, including the preparation of pigments, and vegetable or other food materials. It is also possible that it was used as an anvil, and likely activities would include the manufacture of flint tools, but it has quite a broad and shallow hollow for this sort of use.

The hammerstone (435) is a larger, smoother, oval cobble, also very micaceous (Figure 9, right). There is some wear on the sides, but wear is most marked at either end where there are pronounced, angled facets. These facets presumably relate to the use of the cobble as a hammerstone and the direction of their slope must relate to the handedness of the user. Angles like this would only develop from use by a right-handed worker. Hammerstones such as this may well have been used in the flint knapping process, especially for the initial opening of nodules and preparation of cores, but they would clearly also be useful for many different everyday tasks.

4.6 Context of the lithic assemblage

With the exception of thirteen pieces from the ploughsoil, the assemblage has a sound context from the fills of a number of features as well as F46, the layer that covered the mesolithic features.

Clearly some contexts have more material than others, but generally, the makeup of the assemblage from individual contexts is remarkably uniform. Most have between 70-80% debitage, 14-20% regular flakes, 3-5% blades, and a few retouched pieces, usually 1-4%. The types of modified tool are evenly spread across the site and most contexts contained a small number of microliths, as well as some larger retouched pieces. Interestingly, over half of the assemblage is concentrated within two features: the pit F41 and spread F46. F41 contained various fills that were distinguishable by texture and colour, but which contained very similar lithics. These lithics comprised 38% of the total assemblage from the site. F46 contained an assemblage of 367 pieces, amounting to 24% of

the material in total. F46 is interesting in that it contained six of the nine cores from the site, but it did not have an unusually high level of debitage. Two other cores came from F41, and one from F70.

When the spread of burnt flint across the site is considered, however, the picture is very different. In comparison with other mesolithic sites, Fife Ness has a high proportion of burnt material (32%). At the site of Kinloch on Rhum, for example, only 8% of the assemblage was recognised as burnt (Wickham-Jones 1990). The amount of burnt material within individual contexts at Fife Ness varies greatly. Many contexts have little burnt flint, but some stand out as they are almost entirely burnt (see Table 4 below). This supports the impression gained from the initial examination of the material that many of the lithics from some contexts, F64, F71, and F85 in particular, were so burnt as to have undergone a noticeable alteration to the material. Many of the burnt pieces from these contexts have a dark iron staining, and they generally seem to be more crazed than the other burnt material. It would seem that they have been subject to heat of a particularly intense or prolonged nature. It is of some note that these three contexts are contiguous and form the eastern side of the arc of pits or post-holes that define the main activity area. Interestingly, few of the *retouched* pieces are burnt (10 = 18%).

Table 4: Distribution of burnt pieces amongst the flaked lithic assemblage*

*Context	*Fill Of	*Total Lithics	*% Burnt
*F40	F41	*142	*22%
*F44	F41	*40	*2.5%
*F45	F41	*179	*12%
*F46	-	*367	*31%
*F59	F41	*214	*16%
*F60	F61	*120	*52%
*F62	F63	*78	*32%
*F64	F65	*49	*80%
*F66	F67	*7	*14%
*F68	-	*1	*-
*F69	F70	*19	*21%
*F71	F72	*50	*66%
*F75	F76	*3	*-
*F77	F78	*12	*8%
*F79	F80	*9	*11%
*F81	F82	*2	*50%
*F83	F84	*38	*42%
*F85	F86	*150	*56%
*F87	F88	*5	*40%
*F91	F92	*1	*100%

***NB: material from the bore-hole and from the ploughsoil across the site has not been included.**

The relationship between any lithic assemblage and the features of a site is a matter of some academic debate (Wickham-Jones 1990). At Fife Ness the very close correspondence between the spread of lithic material and the features suggests some association. The straightforward explanation would associate the lithics with the features, especially given the spread of burnt material and the hearth. This argument is not contradicted by the radiocarbon evidence. The suggestion that there were two quite distinct phases of activity, the first involving the lithic material alone, and the second, sometime later but in exactly the same spot, involving only construction, seems unlikely.

5.0 Past Environment

The sea-level has varied from 29 m OD 18000 years ago to the present level (Craig 1991, fig 15.18, p525). The date of the site is very close to the age of the Low Buried Shoreline (LBS), when the sea

reached its lowest level in the post-glacial period. As there are no records of the level of this shoreline for Fife Ness, it is necessary to extrapolate from locations where the LBS has been measured, or where sea level curves have been constructed (e.g. Upper Forth, Lower Strathearn, Ythan, Dornoch Firth, Solway Firth). This extrapolation cannot give a precise measurement for Fife Ness, because of the long distances involved, and the uncertainty of the exact gradient of the shorelines. Different extrapolations have produced a range of +2m to -3.5m OD for the altitude of the shoreline at Fife Ness at the time the site was occupied (Cullingford, *pers comm*). As the seabed is very shallow off the Fife coast, the lower estimate would shift the coastline some 200m out to the east, while the upper estimate would only shift the coastline a short distance inland, because of the sea cliffs next to the present shore. The main effect of the two estimates would be to change the width of the intertidal zone which would be significantly larger with the lower sea level, possibly affecting the marine resources available in the area.

From the available data it may be suggested that the site was situated on the top of low cliffs between 70m and 300m from the sea. It is likely that the hinterland would be covered in forest (Whittington, *pers comm*), but that the strip of land along the cliff edge would be clear of trees. Hazel was recovered on site and probably grew along the forest edge and in front of the cliff to the east.

6.0 Discussion

6.1 The interpretation of the evidence

The interest of the mesolithic site at Fife Ness lies in its unusual make-up and size, as well as in the particularly specialised lithic assemblage. Mesolithic sites comprise a range of types of structural evidence and include cemetery sites as well as habitation sites and more specialised sites, of varying nature and sizes. Initially, the features at Fife Ness suggested the presence of a small shelter, a wind-break or tent formed by an arc of post-holes, together with a cultural layer, an internal hearth, and associated pits. There are other possible explanations, but this is the one that will be considered first.

Individual mesolithic structures are rare, although they are known eg at Broom Hill, Hampshire (O'Malley 1978) and Blubberhouses Moor, Yorkshire (Davies 1963). In Scotland, where structural evidence occurs, it seems usually to point to the presence of more than one shelter (e.g. at Morton, Fife, Coles 1971; or Kinloch, Rhum, Wickham-Jones 1990). This lack of other single structure sites is most likely to relate to the problems of identifying small sites rather than their actual scarcity, but it does make it difficult to find good parallels for Fife Ness. Further afield in northern Europe the picture is the same: few small mesolithic sites have been excavated, and so sites with single structures are rare, but they do exist (eg Svevollen I, Boaz 1996).

However many structures are present on a site, most mesolithic structures are similar to those at Fife Ness in that they combine the use of stake- or post-holes with evidence in the form of a soil discolouration, as at Morton in Fife (Coles 1971). But actual structure size varies greatly and the structure at Fife Ness is at the small end of the range of mesolithic structures. Furthermore, on many but not all sites in both Britain and Europe, the archaeological evidence indicates that mesolithic shelters were slightly sunken, perhaps suggesting more substantial or longer-lived sites than that under consideration (see, for example the sites on Vega, Bjerck 1989, and also Boaz 1996). With regard to the reconstruction of sites like this, ethnographic evidence may be combined with archaeological material, but it is never possible to do more than suggest ways in which a shelter might have been built up from the traces of post-holes and other soil features. The evidence from Fife Ness could certainly have derived from a stable shelter of some form, with an arc of posts to support a rear wall, an internal hearth, and perhaps a single, more substantial, front post.

It is possible, however, that the features do not relate to an upstanding structure at all. The pits within the arc are comparatively wide and shallow: they suggest posts that would have been large for the size of structure, and yet they are not deep. There were no recognisable post-pipes within them, and the "cultural" layer F46 appeared to seal them. Mesolithic sites are notorious for comprising unexplained pits, and it is impossible to imagine all the daily activities that took place and the features that were required for life in a hunter-gatherer community. Nevertheless, pit digging and their subsequent filling with rubbish or other materials was clearly an important

aspect of mesolithic life and some sort of open air activity such as this may lie behind the site at Fife Ness.

One problem with the interpretation of pits is that the fills do not necessarily have anything to do with the original reason why the features were cut. Nevertheless, there are some generalisations that may be made. At Fife Ness the pits comprise various types and sizes. Many are steep sided and have flat bases, though some are more curved. Those within the eastern curve of the arc contained fills that included high quantities of heavily burnt lithics, many of which were also very iron stained. There was no sign of burning on the pit walls but the flint within them had clearly been in a hot fire. Nearby lay a hearth site, together with a series of shallow rounded scoops though, in contrast to the pits, these did not contain much flint, and what there was was not heavily burnt. Should activities involving heat and fire have been carried out in the open around the hearth, burnt flint could have been handily disposed of in a nearby pit, that may or may not have been dug as a part of the activity.

If the pits were not related as contiguous parts of an upright structure it is necessary to address the fact that they have a close relationship as an arc around the hearth. This suggests that each was dug within a short time of the others, certainly while they were still visible. For whatever reason they were dug, the individual pits each have the same relationship to the hearth, and so it would seem that the hearth must have been central to the activities on site. Thus, it is possible that the pits were dug one beside another over a short space of time, hence their positions: side by side in an arc, surrounding the central fire. This might be supported by the observation that during excavation it was difficult to distinguish between the fills of the separate pits, though detailed analysis suggested that the lithic component of each was distinct.

Three pits lay outside this complex. F70 (see plan, Figure 2) is small, but very similar to F72 within the arc, and it did contain some burnt material, though not a great quantity. F61 is larger, but not dissimilar to the larger pits within the arc. It contained 120 flints, and 52% of them were burnt, though they were not as iron stained as those to the east of the hearth. Further away lay F41. This was almost twice the size of the other pits, and deeper, with steep sides and a flat bottom. The fill within F41 could be distinguished into various layers, and it contained a large quantity of lithics, 38% of the whole assemblage. The material within F41 was not heavily burnt in comparison with the features of the arc, and it seems likely that these fills had resulted from very different activities to those of the other pits.

6.2 The manufacture and content of the lithic assemblage

Whatever the explanation of the features, the lithic assemblage from Fife Ness indicates that those who visited the site were able to use local flint in order to satisfy their needs for flaked stone tools. Small pebbles were worked into cores with a single platform, these cores were carefully prepared and from them an assemblage of blades and flakes was made. Many of these would have been quite suitable for use without modification, but some were selected for alteration into two principal types of artefact. The most numerous artefact type is the microlith, of which there are 36, principally crescents, and there are also 20 larger tools, of which the most common are scrapers, of which there are 10 of various forms.

The assemblage includes debitage, cores and regular blades and flakes as well as modified tools. Nevertheless, it is likely that it has principally resulted from the use, rather than the manufacture, of stone tools. Debitage amounts to 74%, which is comparable with many other mesolithic sites, but it has to be remembered that at Fife Ness the soil residues were sieved through 1mm sieves and this is a smaller size than that used for standard lithic recovery on many mesolithic sites. The sieve size has undoubtedly inflated the quantity of tiny lithic debris recovered. At the same time, however, it resulted in the recovery of many of the tiny fragments of broken microliths, and it is also interesting to note that blades make up nearly 5% of the assemblage while regular flakes comprise 17%, both of which are quite high in contrast to other mesolithic sites. On the other hand, there are relatively few cores, only nine (less than 1% of the assemblage) and most of them came from one particular feature, F46. Retouched artefacts make up 4% of the assemblage, which is relatively high. Even with such a small sieve size the assemblage contains relatively high proportions of blades, flakes and retouched tools, while there are few cores and the debitage is no higher than other sites, despite a more complete method of archaeological recovery.

Altogether the assemblage is small, even for such a small site. Mesolithic sites generally produce prolific lithic assemblages; densities of well over 1000 pieces per square metre were recorded at Kinloch on Rhum (Wickham-Jones 1990). Kinloch was a large site with a palimpsest of early

occupation, but even on other smaller sites, high densities of lithic material have been recorded; for example at Gleann Mor, a small short occupancy site on Islay, where over 12,000 lithics were recovered from a 4mx4m trench (Mithen and Lake 1996), or Bolsay Farm on Islay, a larger site with more complex stratigraphy where over 300,000 artefacts were recovered after three years of excavation culminating in a 20mx15m trench in 1992 (Mithen and Lake 1996). At Fife Ness the excavation covered c.35m^2 and yielded only 1516 flaked artefacts. Clearly, something very different was going on here.

The working of even nine cores should result in sizable quantities of debitage and so, while many pieces are likely to have come from these cores, it is also likely that some tools, whether blades and flakes or modified pieces, and possibly the cores themselves, were brought on to the site ready-made. Nevertheless, much of the flint is so similar as to suggest that individual pieces might re-fit, though no re-fits were found during analysis. This would add weight to the idea that a local, homogenous source of flint was used, and might indicate that manufacture took place not far away from and within a relatively short period of time of tool use.

The lithic analysis did not include any detailed functional work so it is not possible to give further information on likely percentages of used tools, modified or otherwise. It may be relevant, in this respect, to note the high proportion of broken blades and flakes: 81% in both cases. Breakage may be due to many things only one of which is use, and the possible use of breakage to modify blades has already been mentioned. Macroscopic edge damage, which may also be a sign of use was noted on very few pieces, but it may well have been masked by the heavily burnt or corticated nature of much of the assemblage.

6.3 Cultural and chronological comparisons

As has already been noted the majority of mesolithic sites are larger and more complex than Fife Ness, and they have much larger and denser lithic assemblages. This does not mean that it is particularly unique, merely that small sites such as this are rarely found. Fife Ness is, therefore, important in that it provides an insight into an aspect of mesolithic life that is rarely touched upon. The mesolithic is traditionally characterised as having a mobile life-style incorporating a variety of different settlement and activity sites of varying degrees of permanence, size, and complexity: Fife Ness clearly fits into a different slot within this compared to larger sites, such as its neighbour in Fife at Morton (Coles 1971).

The region of Fife lies between two major river estuaries, the Forth and the Tay, and the inhabitants of Fife Ness would have had easy access to both, as well as a rich hinterland. There is, however, little evidence for the mesolithic exploitation of the area. To the north, the site of Morton is well known. It is a much larger site than Fife Ness, and traces of several structures were uncovered, as well as hearths and midden material with organic preservation. The lithic assemblage made use of a variety of stones and included many different tools, though like Fife Ness it was based on the production of blades and included both microliths and scrapers. The microliths included many different types, and crescents were present, but seemingly not important. Detailed analysis of the lithic materials used at Morton suggested that its inhabitants ranged over a wide territory, in the course of which they amassed a variety of stones to be worked (Coles 1971). Nevertheless, little physical evidence has been recorded for mesolithic sites elsewhere in Fife. This may be surprising in view of the available resources and long period over which mesolithic occupation took place, but it is more likely to be an indication of the unsuitability of recent land use for the detection of stone scatters, rather than of the actual lack of mesolithic penetration into Fife. In this respect Fife Ness is rather peripheral, being right on the modern coast, at the most exposed tip of Fife, but it is likely to be an indication of the presence of other larger, undiscovered sites, from which its occupants set out. Its coastal location has clear advantages in terms of the exploitation of marine resources, and there was also local flint. At Fife Ness it was not necessary to exploit the wide range of materials used at Morton.

On a wider basis, Mellars (1976) has combined site size and complexity with the make-up of the lithic assemblages in order to broaden the interpretation of the mesolithic settlement of Britain. Whatever the interpretation of the features at Fife Ness, it is possible to apply his analysis to the site, and this helps to place it in a more general context. In his terms Fife Ness is a Type I settlement, namely a site occupying a restricted area, and it has a Type B, balanced, lithic assemblage, namely one in which microliths are important, but are balanced by other modified

tool types, particularly scrapers. This is interesting, because in general he notes that smaller sites tend to have Type A, microlith dominated assemblages, though he does list several "intermediate" sites, many of which are in coastal locations, such as Lealt Bay on Jura (Mercer 1968). The intermediate status of Fife Ness is reinforced by the microlith assemblage which Mellars notes is usually dominated by one specific microlith type in Type A assemblages. Interestingly, he does not list any crescent dominated assemblages, rather sites where scalene triangles, rods, or trapezoids are prevalent.

In some ways, Fife Ness is therefore rather anomalous in terms of Mellars's analysis, being a very small site with a range of other tools to balance the microliths, and with the microlith assemblage dominated by crescents. But he does note in his conclusions the possibility that: "sites occupied on a more ephemeral basis may remain largely if not entirely invisible from the prehistorian's point of view" (Mellars 1976, 397), and this may be just what is represented here. His work does reinforce the suggestion that there are few parallels to Fife Ness, and this remains the case, even when more recently excavated sites are taken into account. Unfortunately, the evidence for mesolithic settlement in Scotland has generally comprised either larger and more complex sites such as Morton or Kinloch, or largely unstratified scatters of stone tools which often come up during the excavation of later sites such as Eskbank (Hanson, *pers comm*) and Springwood Park, (Wickham-Jones, forthcoming). In this respect the work undertaken by large scale survey and excavation projects such as the Southern Hebrides Mesolithic Project is particularly interesting as it aims to identify a variety of site types within a certain geographical area, and excavate key locations (Mithen & Lake 1996). Nevertheless, this work is still confined to western Scotland, so that sites like Fife Ness and Morton remain in isolation.

Given that exact parallels to Fife Ness are difficult to find, it is still possible to look at the general nature of the lithic assemblage in the light of lithic material from other mesolithic sites. Mesolithic sites across Scotland and further afield in Britain and northern Europe are often characterised by the use of a particular suite of flaked stone tools, usually including unmodified blades and flakes as well as microliths, scrapers, and edge retouched pieces. All these artefacts occur at Fife Ness, although there is less evidence for the on-site production of tools than is often the case, and this distinction in itself is interesting. Of the modified tools, the microliths are important for scholars of the mesolithic, partly because of their general ubiquity, and partly because they fall into certain well-defined categories of shape (Wickham-Jones 1990; Finlayson *et al* 1996).

While the meaning of the individual types of microlith is still a matter of great debate (Mellars 1976; Finlayson *et al* 1996), their presence, or absence, on specific sites is of interest. Crescents are well known on many mesolithic sites (eg Morton, Fife, Coles 1971 fig 11; Lussa River, Jura, Mercer 1971, fig 8), but they are not usually present in any great quantity, much less dominant. Only at the large and complex site of Kinloch on Rhum has an area dominated by crescentic microliths been recorded, and interestingly there was a suggestion that they may have been associated with scrapers on this part of the site (Wickham-Jones 1990, 105-16). To the south of Rhum, at the site of Gleann Mor on Islay, crescents have been reported as common, though scalene triangles were still dominant (212 microliths in total - 50% scalene triangles, 13% crescents; Finlay *pers comm*). Interestingly, this was a small site on a spur not far from the coast, and it has been interpreted as a short lived hunting camp (Mithen & Lake 1996). Elsewhere, it seems that not only are crescents generally rare, but they are even rarer as sites get further away from the sea. Crescents comprised only 8% of the microlith types recorded by Mulholland (1966) in the Tweed Valley and there was only one, out of twenty eight microliths from the recent excavations at Springwood Park (Wickham-Jones forthcoming). Further south, in the Pennines, Radley *et al* (1974) recorded very few crescents, and they are not dominant on any site. In contrast to many mesolithic sites Fife Ness has no scalene triangles, while rods, backed bladelets, and fine points, make up only a tiny proportion of the assemblage. It would seem that this assemblage was a different and a very specialised one.

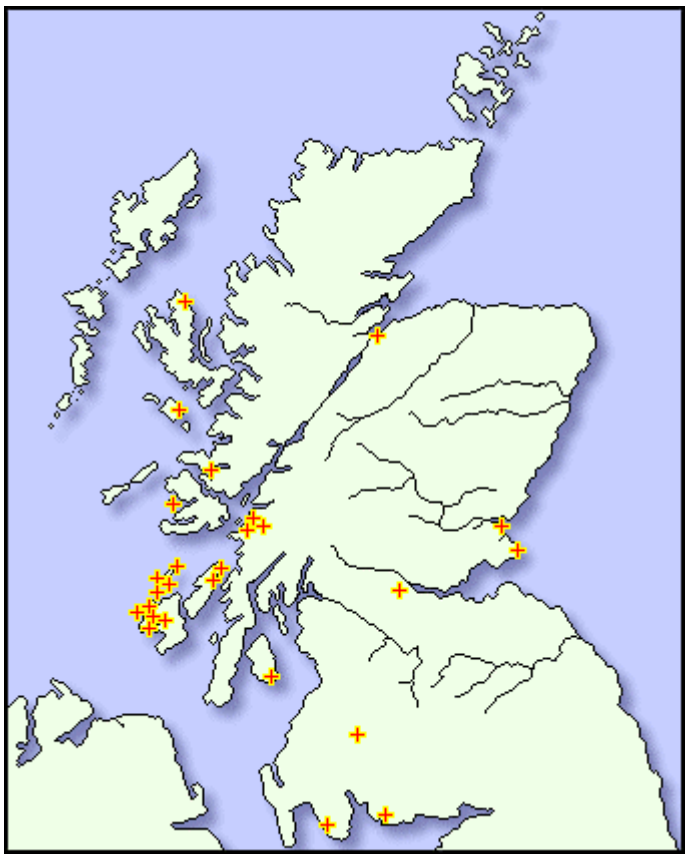

***Figure 10*: Interactive map and database of C14-dated mesolithic settlement sites in Scotland (after Ashmore et al forthcoming)**

With regard to date, Fife Ness lies among the earliest mesolithic sites of Scotland (see Figure 10 above). It is therefore to be included among the earliest evidence for the settlement of Scotland. Most of Scotland's early sites lie on the west coast, so Fife Ness is particularly interesting as it confirms that early settlement was not confined to the western seaboard. However its near neighbour in Fife, at Morton, produced dates that are much more recent, thus confirming, not surprisingly, that settlement of Scotland's eastern lowlands continued throughout the mesolithic period.

The lack of other mesolithic sites in the region means that it is difficult to fit Fife Ness into any contemporary context, but there are some general points. It is generally assumed that the sites relating to the earliest settlement of Scotland will reflect in their artefact assemblages the area from which that settlement came. Thus, the lithics from sites on the west coast have been compared with material from the Irish Sea Province (Wickham-Jones 1990), and sites to the east, in the Tweed Valley, have been noted to include broad blade microliths indicative of parallels in northern England (Wickham-Jones, forthcoming). Though it is also in the east, and close to Morton where the lithics have been characterised as broad blade in nature, the assemblage from Fife Ness comprised only narrow blade material, and a restricted range at that. This surely emphasises the specialised nature of the site, rather than casting doubt on the accepted status of broad blade material; though it should be noted that there is a lack of any recently excavated, broad blade sites in eastern Scotland of sound context.

As for the lithics themselves, comments on their date have varied from surprise that crescentic microliths should occur so early, to interest in the confirmation of another early date for crescents. It is clear that a wide range of different microlith types was well established in Scotland by the mid-eighth millennium. The tools in use were no doubt affected by the geographical area, and cultural affinities of their makers, as well as by the specific nature of the site and uses to which they were to be put. Fife Ness has perhaps shown that despite the advanced nature of archaeological theory, especially where hunter gatherers are concerned, it is impossible to predict both the type of site, and nature of the artefact assemblage that "should" be occuring at any one time in any given place.

Returning to the overall nature of the site, small sites are often interpreted as specialised encampments, that may only have been occupied for a matter of days while some particular activity or activities were

carried out, possibly without even the need for a shelter of any sort (as in Mithen and Lake 1996). They have been found in a variety of locations from safe harbours on the coast (Bjerck 1989) to along elk migration routes in upland, mountainous regions (Boaz 1996). The lithic assemblage from Fife Ness would clearly support the interpretation of the site as a specialised activity centre, where tool manufacture played a secondary role, and the structural evidence would also be in agreement with this. If the excavated features derive from a shelter, it was not large and appears to have been isolated and used for something that involved high temperatures and in which a general amount of lithic waste got burnt; if they did not derive from a structure then some sort of repeated activity involving heat, pits and the disposal of burnt lithic waste seems to have been undertaken over a short time, in the open. Neither scenario is likely to have involved many people, nor lasted for long.

8.0 The Final Picture

***Figure 11*: Reconstruction by Mary Kemp-Clarke - meat smoking in early autumn?**

It only remains to suggest what might have been going on at the site (Figures 11 and 12). This is clearly the hardest task of all, and it is impossible to be certain. Nevertheless, given the location of the site, activities involving the exploitation of marine resources would seem the most likely.

Today, Fife Ness is a well known spot for migratory birds, and birds are generally held to have been an important resource in the mesolithic. It has been noted that the shelter appears to have been erected against winds from the NE, but these occur mainly in the autumn, just when conditions are right for a massive fall of migrants such as Scandinavian thrushes, pipits, and larks (Smout pers com). On the other hand, crescentic microliths might well have been a feature of specialised fishing equipment in mesolithic Fife. Whatever the resource, the smoking of meat such as birds, fish, or shellfish would be well in line with current theories on mesolithic activities as well as those that involve the use of heat and thus, possibly, the accidental burning of lithic waste. Smoking could also have required the use of a small windbreak or shelter such as that indicated by a putative arc of post-holes, or it might have involved the use of a variety of pits, perhaps over a series of days. Given the exposed location of the site and ephemeral nature of the structural evidence (if any), it seems likely that this occupation must have taken place during a more clement time of year, such as the early autumn.

Was Fife Ness a mesolithic fishers' camp, or a bird hunters' butt, in use for a short while to provide a supply of food for the winter ? This is the neat answer. The truth remains elusive, and probably involves something quite different: an explanation so completely wild, or so banal, that we would never imagine it could have taken place. Only with the discovery and excavation of other, similar sites can

we really begin to shed light on this aspect of the early settlement of Scotland. Fife Ness has at least opened up a new window onto this, most interesting, period of Scotland's ancient past.

As a final aside, the discovery of the site highlights the value of the watching brief system in use at Craighead Golf Course. The lack of sites like this in the Scottish mesolithic has been mentioned above: they are hard to find. Watching briefs like this may be one of the few ways in which such sites can be found. Fife Ness therefore offers an important lesson to us all, not only those involved in research on the mesolithic, but also those involved in drawing up policy and caring for the remains of our forbears.

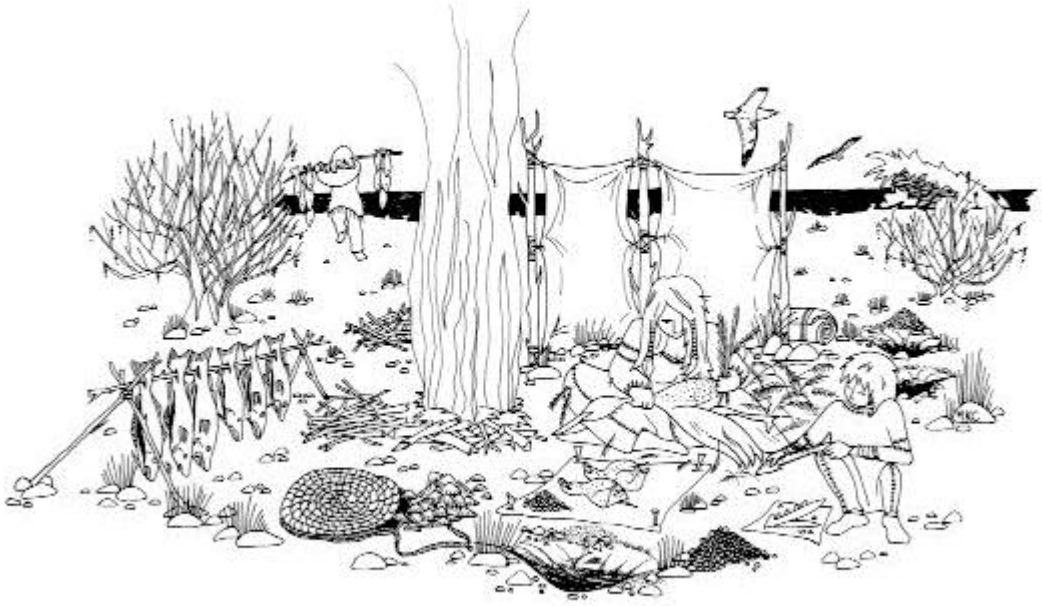

***Figure 12*: Reconstruction by Mary Kemp-Clarke - a mesolithic fishers' camp, or a bird hunters' butt?**

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Glossary

Backed Bladelet A microlith: a blade that has been truncated by microlithic retouch down one side. Backed bladelets have a rectangular plan and triangular cross-section.

Bipolar core A flint knapping term: bipolar cores are cores that were worked on an anvil. They were commonly used when flaking poor quality stone or opening small pebble nodules. Bipolar cores tend to be of a characteristic “scalar” shape. See Bipolar Technique.

Bipolar Technique A flint knapping term: a technique for the removal of flakes in which the core, or nodule, is seated on an anvil and struck from above with a hammerstone. The force of the blow produces a countershock from the anvil so that flakes are frequently detached from both ends simultaneously. Bipolar flaking does not involve the preparation of platforms and the cores tend to be of a characteristic “scalar” shape. There is less control over the shape of the flakes but it is a very useful technique, particularly where small pebble nodules form the only raw material.

Blade A stone tool. Blades are long and fine with sharp parallel edges and they were made using a specific knapping technique.

Bulb of Force A flint knapping term: the raised point on the ventral surface of a flake or blade, just below the platform. The bulb of force indicates the spot to which force was applied in order to make the flake. As a general rule, more pronounced bulbs of force suggest the use of harder stone hammers, while more diffuse bulbs suggest the use of softer hammers.

Calibration Radiocarbon analysis tends to provide dates that are too recent, but this can be corrected by calibration. Dates are therefore quoted either in radiocarbon years (uncalibrated), or in human years (calibrated), and they are often said to be “Before Present” (BP), which in fact means before 1950.

Chip A flint knapping term: chips are small irregular pieces of stone removed as a by-product of making tools. Most chips were waste, but some may have been used.

Chunk A flint knapping term: chunks are larger irregular pieces of stone removed as a by-product of making stone tools. Most chunks were waste, but some may have been used.

Cobble Tool A tool made out of a rounded stone cobble. Cobble tools are generally made of coarser material than flint. There are many different types of cobble tool, only two were found at Fife Ness: a hammerstone and a hollowed stone.

Core A flint knapping term: the core is the central block of material from which blades and flakes are removed. Cores are divided into various different types depending on the knapping process, see platform core and bipolar core.

Core Tablet A flint knapping term: core tablets are flakes removed across a worn or damaged platform in order to create a fresh platform and continue making flakes.

Core Trimming Flake A flint knapping term: core trimming flakes are removed from the platform edge of a core in order to get rid of irregular projections or blunted areas and maintain a suitable edge angle for the making of flakes.

Cortex The outer surface of a flint nodule or pebble. Fresh flint nodules have a white chalky cortex; flint pebbles that have come from a secondary source such as gravels tend to have an abraded and rolled cortex and most of the original chalk may have gone.

Cortication The matt discoloration, usually white or cream, that may cover the surface of a flint with time.

Crescent A microlith: a blade that has been blunted by microlithic retouch down one side. The retouched edge is convex in outline so that the piece is crescentic in plan with a triangular cross section.

Debris A by-product of knapping: that material which inevitably results from the knapping process but which was not necessarily the goal of that process. Some debris may be suitable for use, with or without modification.

Debitage A by-product of knapping: debris that was not apparently suitable for any further purpose. Material that would be discarded immediately upon the end of the knapping process. Debitage includes much very small material, often under 3mm in size.

Edge Retouched Piece A stone tool made from a flake or a blade which has had one (usually long) edge modified by the removal of small flakes (retouching).

Fine Point A microlith: a blade with modification by microlithic retouch along one or both sides to form a narrow point at one end.

Flake A stone tool: the finer pieces of stone that are removed from a core. Flakes tend to be more irregular than blades, but they have useful lengths of edge. Some may have been used unmodified, others were altered by retouching.

Flint knapping The process of making stone tools by breaking up a nodule or core. Good quality stone may be broken in a predictable fashion so that regular flakes and blades may be made.

Hammerstone Stone used to provide force. Hammerstones vary in size and hardness and this affects the blows that they will deliver. They were commonly used for flint knapping, but would have been useful in many other ways. Some were modified by pecking before use and many have wear patterns.

Lamellar Index The ratio of blades to flakes in an assemblage helps to determine what the flint knappers were primarily aiming to make. When a site specialised in blade making then the ratio of blades to flakes should exceed 20% (see Bordes & Gaussen 1970).

Late Glacial The period towards the end of the last Ice Age. A time of great change during which barren glacial conditions were interspersed with warmer conditions when plants and animals returned to Scotland.

Low Buried Shoreline A geomorphological term: the level at which the sea reached its lowest point in the post-glacial period. The height of this shoreline varies around Scotland so care should be taken when extrapolating from one area to another.

Mesolithic A subdivision of prehistory: the “middle stone age”. In Scotland the mesolithic refers to the settlement after the end of the last Ice Age by people who lived by hunting, fishing and gathering plant materials. Mesolithic settlers were generally mobile.

Microburin A microlith: microburins are the snapped ends of blades from which the “useful” part has been removed for further working. They are characterised by a notch produced by microlithic retouch on one side of the blade, this was made in order to generate the snap and the notch is usually truncated by the snap. Microburins may well have been used, but they are generally recognised to be the waste from microlith making. They have been associated with particular types of microlith, but many microliths were made without using microburins.

Microlith A small stone artefact: microliths were made by blunting the edges of tiny blades. They were often made according to specific patterns: crescents, backed bladelets, fine points, obliquely blunted and so on. They were then hafted in groups to make knives, arrowheads and other tools. They are common on many mesolithic sites and do not seem to have been used in later periods.

Obliquely Blunted A microlith: a snapped blade with microlithic retouch across the snap which runs obliquely across the piece.

Pebble Nodule A nodule of flint that has come out of its original chalky matrix and been transported elsewhere before deposition in a new site, such as in river gravels. Pebble nodules are generally well worn and abraded on the outside.

Platform A flint knapping term: the platform is the surface of a core or nodule that is struck during knapping. While any suitable surface will do, successful knappers will usually make a flat platform surface and spend some time maintaining a particular angle at its edge. Specific knapping techniques use different types of platform, and one core may well be worked from more than one platform.

Platform Core A flint knapping term: platform cores are cores that incorporate a flat, platform, area, which is struck in order to remove flakes and blades from the side of the core. Platform cores were particularly used in blade making and they may well have several platforms.

Pressure Flaking A flint knapping term: the application of pressure using a hard tool such as an antler tine, to the edge of a flake or blade. In this way, small flakes are removed and so the piece may be shaped into a more complex tool.

Primary Technology The first part of the systematic process of stone tool production: nodules of raw material are prepared into cores and then used for the manufacture of flakes and blades. Many blades and flakes may be used as functional tools in their original form.

Radiocarbon dating A method of dating archaeological material by calculating the amount of radioactive carbon (carbon 14) left in organic objects. The calculation tends to work out dates that are too recent, but this can be corrected by calibration. AMS **(Accelerator Mass Spectrometry)** is a development of this dating but has greater sensitivity of measurement and requires much smaller samples.

Raised Beach A geomorphological term: a beach deposit laid down when the sea was at a higher level than it is today and subsequently left in a position above the current shoreline as the sea dropped to its present level.

Retouching A flint knapping term: the removal of small flakes from a blade or flake in order to shape it. Retouching may also be used to create specific edges, for example the blunt edges of scrapers. Retouching is generally carried out by pressure flaking.

Ring Crack A flint knapping term: a circular crack observed on a platform. Ring cracks are formed when the platform is struck, but no flake removed. They show where the blow fell, and usually indicate the site of an ancient mistake.

Scraper A flaked stone tool: scrapers have a steep, blunt working edge. They may have been used for processing hides, but they would also be useful in many other ways.

Secondary Technology The second part of the tool production process: selected blades and flakes are modified into specific tool types.

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