4 THE LITHIC ARTEFACTS, *by Karen Hardy, Alan Saville and Torben Bjarke Ballin*

4.1 Introduction

The lithic assemblage from the excavation includes 5184 artefacts, derived almost entirely from the lower horizons, C31 to C41, with nearly half having been recovered from the lowest two contexts, C40 and C41 (Table 2). The artefacts from the lowest black silty horizon of C36, which represents a discrete stratigraphic context within the main C36 midden, are listed separately as 'the base of C36'.

4.2 Raw material

Two main types of raw material are represented (Table 3) and these were identified petrologically in thin-section as baked mudstone and chalcedonic silica. Both materials have excellent flaking properties.

4.2.1 Baked mudstone

Baked mudstone is the collection's most common material (3259 pieces, or 63%). In the Staffin Bay area, it occurs within the local igneous rocks as rafted sediments, which were altered by contact metamorphism. It ranges in colour from dense black through grey to light olive-grey and fawn, and it is always opaque and matt (illus 23–25). Colour and texture relate in part to the extent to which the local mudstone was exposed to heat during its formation process, for which reason a wide range of effects may occur within a single outcrop, with the exterior of the raft being more highly baked than the interior, but also to the effects of weathering on the exterior of individual pieces. Although there are numerous mudstone exposures in the area around An Corran, only one occurrence of an intact baked raft of sediment was noted, and samples taken from this by one of us (Karen Hardy) produced a range of baked mudstone varieties closely similar to those from the archaeological assemblage. This outcrop occurs a few metres above and just north of the now removed rockshelter overhang. Below this still-surviving outcrop there was previously a ledge, accessible from above, which could have been used in connection with the quarrying of baked mudstone. Unfortunately, this ledge was only recognised from photographs after the rock face had been taken back during road construction, and it no longer exists. Samples of baked mudstone collected from the top of the cliff above the site and from the scree produced by blasting of the rock face have been added to the site archive. It is quite likely that the baked mudstone exploited at the site came either from this outcrop, immediately adjacent to the archaeological site, or from eroded blocks scattered in the vicinity. Baked mudstone also occurs as rounded pebbles and cobbles on the beach at An Corran, and some of the collection's artefacts are clearly based on pebbles.

Table 2 Lithic artefacts by context

Context	Number	%
C31	1173	23
C34	23	<1
C35	1	<1
C36	838	16
Base of C36	584	11
C37	9	<1
C38	3	<1
C39	3	<1
C40	1765	34
C41	713	15
Unstratified	72	1
TOTAL	**5184**	**100**

4.2.2 Chalcedonic silica

The second most common material (1800 pieces, or 34%) exploited at An Corran has an igneous origin, forming as chalcedonic fibres in a dark fine-grained groundmass, and occurring in the assemblage in the form of waterworn pebbles with abraded, sometimes vesicular cortex. The specific source of this raw material (in the following text referred to simply as chalcedony) was not found, but extensive field study (by Karen Hardy) located areas from which it may

Table 3 Lithic artefacts by raw material

Raw material	Number	%
Baked mudstone	3259	63
Chalcedony	1800	34
Chert	71	2
Basalt/dolerite	7	<1
Quartz	15	<1
Bloodstone	6	<1
Other	20	<1
Indeterminate / burnt	6	<1
TOTAL	**5184**	**100**

Illus 23 Flakes and blades of baked mudstone (photo: NMS)

Illus 24 Flakes and blades of baked mudstone (photo: NMS)

possibly have been collected in pebble form. The nearest location was the beach at the mouth of the Stenscholl River, half a kilometre from the site (illus 1, C). Chalcedony occurred sporadically along the beach, but was concentrated at this particular point. The river was searched upstream for several miles, and chalcedony pebbles were collected from every gravel exposure along it. Other rivers and streams were checked around the Trotternish peninsula, but no pebbles were found in rivers or river mouths

Illus 25 Large blades of baked mudstone (photo: NMS)

Illus 26 Flakes and blades of chalcedonic silica (Photo: NMS)

anywhere on the western or northern sides. Most likely, the source of this raw material must be found inland, somewhere east of the main escarpment. The chalcedony is translucent, and it displays a wide variety of colours, ranging from black, through light and dark grey, to red, orange and yellow (illus 26). Some pebbles are multi-coloured, and some are banded.

It should be noted that larger artefacts in this material, especially those with cortex, are all

Table 4 Lithic raw materials by main context

Context	Baked mudstone Number	%	Chalcedony Number	%	The remainder Number	%	Total Number	%
C31	798	68	328	28	47	4	1173	100
C36	528	63	302	36	8	1	838	100
Base of C36	444	76	134	23	6	1	584	100
C40	988	56	741	42	36	2	1765	100
C41	435	61	250	35	28	4	713	100
TOTAL	**3193**	**63**	**1755**	**35**	**125**	**2**	**5073**	**100**

Note: as this table does not include finds from insignificant contexts or unstratified finds, its total is lower than that of Table 2

Table 5 Baked mudstone artefacts with and without surface alteration, by main context

Context	Weathered pieces Number	%	Unaltered pieces Number	%	Total Number	%
C31	391	49	407	51	798	100
C36	153	29	375	71	528	100
Base of C36	160	36	284	64	444	100
C40	840	85	148	15	988	100
C41	335	77	100	23	435	100
TOTAL	**1879**	**59**	**1314**	**41**	**3193**	**100**

Note: as this table does not include finds from insignificant contexts or unstratified finds, its total is lower than that of Table 2

readily identifiable as chalcedony, but identification of small inner flakes and spalls can be difficult. This is particularly the case with some of the microliths and microburins, some of which are very 'flint-like'. On balance, the absence from the assemblage of any larger implements or waste identifiable as flint, coupled with the absence of flint pebbles from the An Corran beach, argues against the presence of flint at this site, but it cannot be ruled out that a small number of flint artefacts, such as microliths or bladelets, could have been imported.

4.2.3 Bloodstone and other raw materials

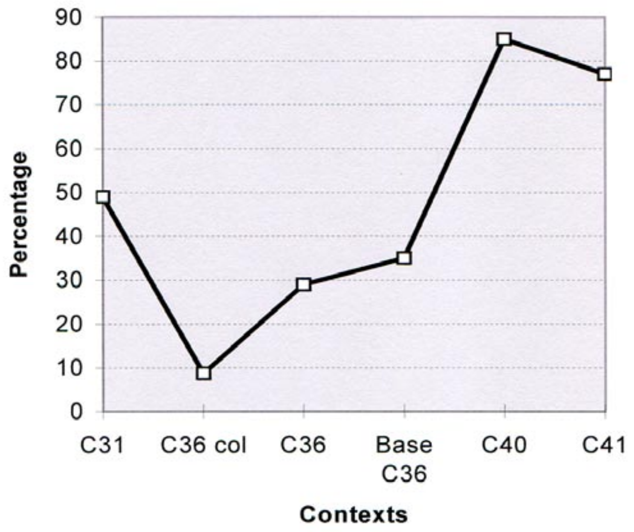
Seventy-one pieces were defined as chert, probably deriving from the various beds of sediments of the Staffin Bay Formation (Emeleus & Bell 2005, 35). However, as the colours of these pieces are similar to several of the colours experienced within the baked mudstone continuum, some of them may actually belong to the latter category. Quartz (15 pieces), presumably procured locally, was knapped on-site in small quantities, but there are no implements in this material, only waste. Five bloodstone flakes and chips, as well as one bloodstone core, were recovered. In prehistory, bloodstone was probably mainly obtained from the vicinity of Bloodstone Hill on Rùm, an island south of Skye (Clarke & Griffiths 1990, 156). In addition, there are a number of artefacts in a variety of unidentifiable siliceous raw materials which are simply listed as 'other' raw material. It is unclear whether the few pieces of struck basalt/dolerite in the assemblage are deliberate or incidental products. One large dolerite pebble from C36 is characterised by five removals along one edge, and it may be a chopper-like tool. However, its sharp edge appears unused, suggesting that the detached flakes may have been the intended products, and it was subsequently classed as a core. Basalt and dolerite are common rock forms on Skye, where they form part of the island's volcanic complex (Emeleus & Bell 2005, 98).

4.2.4 Distribution by context

The distribution of raw materials through the contexts differs (Table 4), with baked mudstone being rather more common in the upper levels, but the differences are small overall and probably of little archaeological significance. Thus, both baked mudstone and chalcedony appear to have been exploited in whatever phases are represented by contexts C36 through to C41.

4.2.5 Surface alteration

A number of baked mudstone artefacts (1879 pieces, or 59%) are characterised by clearly altered flaked surfaces (Table 5), with a lighter-coloured surface



Illus 27 Baked mudstone artefacts with surface alteration, as a percentage of all baked mudstone artefacts in each context

overlying a darker-coloured interior, which may have been exposed by edge damage or fragmentation. The precise causes of this surface alteration are not known, but it is probably related to localised contextual conditions ('weathering'). Artefacts CAT 422 and CAT 423, with differently coloured refitting parts, suggest that at least some of this alteration is post-depositional and local.

The unaltered baked mudstone (1314 pieces, or 41%) occurs in three major colour groups: light olive-grey, darker grey and black. Some of the colours probably represent different degrees of exposure to heat during original formation, with at one extreme a shiny jet black, fine-grained baked mudstone, and at the other a dark-grey, dull, coarser-grained baked mudstone. However, most of the present colours are thought to represent post-depositional effects.

The proportions of artefacts with surface alteration vary between contexts (illus 27). Almost all baked mudstone artefacts from C40 and C41 are altered. No soil analyses are available from An Corran but, since these contexts are the ones without shell and bone and probably represent the original soil and subsoil, they probably had a much higher acidity, which probably had a bearing on the alteration of the baked mudstone.

4.3 Weight

All lithic artefacts were weighed. The total weight of the assemblage is 20kg, with an average artefact weight of 3.8g. Separation by raw material type shows that, on average, the weight of baked mudstone artefacts (4.5g) is twice that of chalcedony ones (2.2g). This is thought to relate to the different character of the procured material, with baked mudstone having been procured in part as relatively large blocks from the nearby quarry or beach, whereas chalcedony was procured in the form of relatively small pebbles further away from the site.

4.4 Reduction techniques

Reduction techniques were assessed using the criteria of Newcomer (1975) and Ohnuma & Bergman (1982), which include bulb type (pronounced or diffuse), presence or absence of lip, size of platform remnant, and trimming of the platform margin. Almost all the flakes and blades in this assemblage have very small, plain platform remnants and diffuse bulbs, and many have notable lips below the platform. A large number are trimmed, and many platform remnants are punctiform or linear (often less than 1mm wide). Occasional large flakes show indicators of hard-hammer percussion, such as pronounced bulbs and conchoidal rings, cones and obvious points-of-impact, but otherwise the evidence overwhelmingly suggests reduction by direct percussion with soft hammers.

4.5 Refitting

Some refits of two and three successive flakes were achieved, involving both baked mudstone and chalcedony flakes. All the refits involved artefacts from within the same contexts; no inter-context refits were noted. The chalcedony refits include several instances involving primary and secondary flakes, providing a further indication that complete pebbles of this material were brought to the site for reduction.

4.6 The assemblage

In Table 6 the assemblage is subdivided by main artefact categories and main contexts, and in Table 7 by main artefact categories and raw materials.

4.6.1 Flakes and blades (illus 28)

A substantial number (approximately 2500 pieces) of the unretouched flakes are small flakes and spalls with a greatest dimension of 10mm or less (chips). The presence of these pieces demonstrates that primary reduction occurred routinely at the site. Table 6 shows that blades represent a notable proportion of the assemblage (6%). According to Bordes & Gaussen (1970), a blade ratio of 20 per cent is required to classify an industry as a blade one, suggesting that the An Corran assemblage is not the product of a blade industry. In the authors' view, the approach of Bordes and Gaussen is too mechanistic, and the classification of an industry as a flake or blade industry should not be based entirely on

Table 6 Main lithic artefact categories subdivided by main context

Main category	C31	C36	Base of C36	C40	C41	Total
			Number			
Flakes	1086	702	541	1526	632	4487
Blades	34	54	32	164	50	334
Cores and core frags	19	29	2	20	8	78
Tools	25	49	6	49	18	147
Chunks	9	4	3	6	5	27
TOTAL	**1173**	**838**	**584**	**1765**	**713**	**5073**
			Per cent			
Flakes	92	84	92	87	88	88
Blades	3	6	6	9	7	6
Cores	2	3	<1	1	1	2
Tools	2	6	1	3	3	3
Chunks	1	1	1	<1	1	1
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**

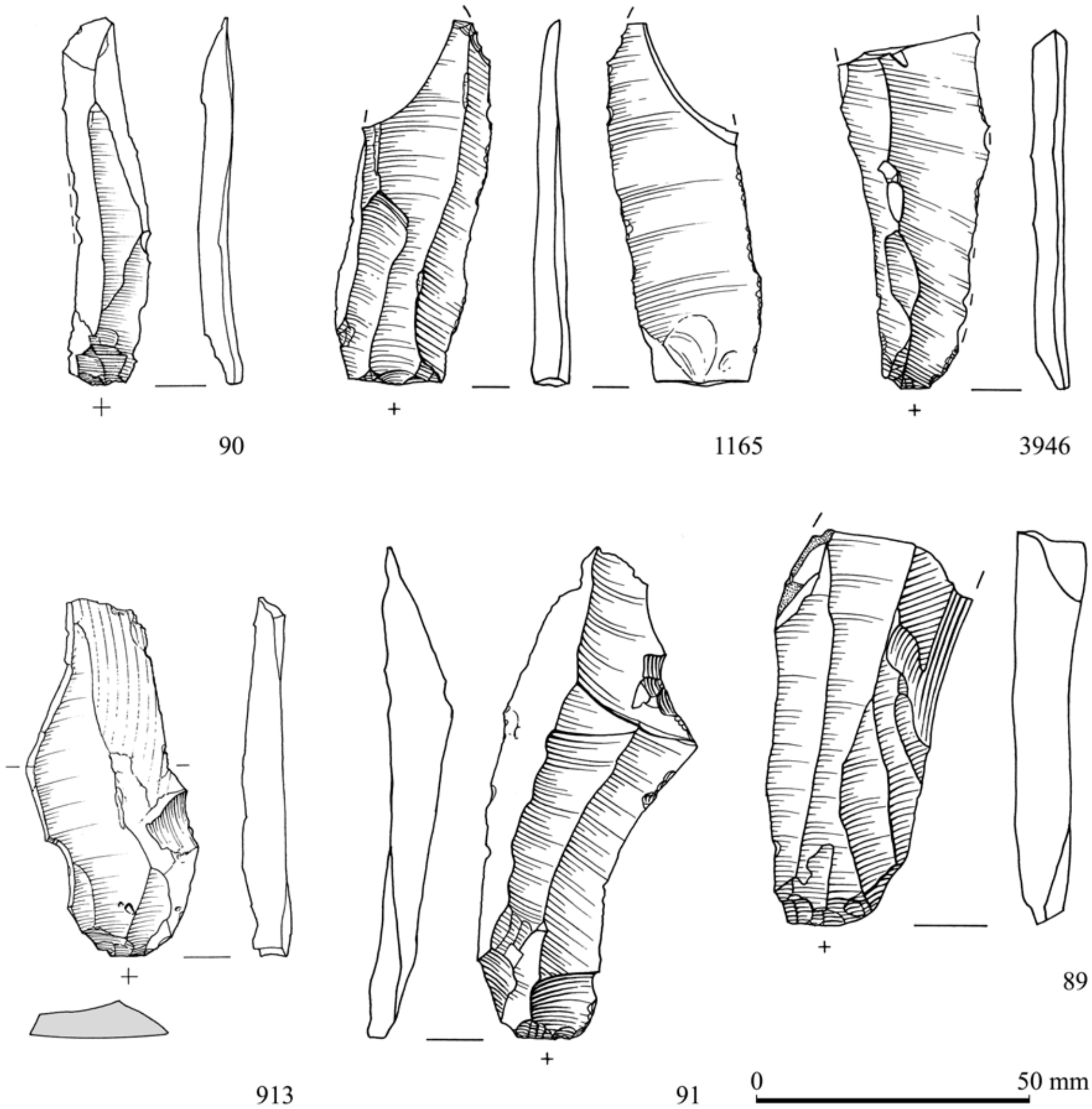
Note: as this table does not include finds from insignificant contexts or unstratified finds, its total is lower than that of Table 2

Table 7 Main lithic artefact categories subdivided by raw material

Raw material	Flakes	Blades	Cores	Tools	Chunks	Total
				Number		
Baked mudstone	2895	231	48	69	16	3259
Chalcedony	1585	104	29	78	4	1800
Chert	63	1			7	71
Basalt/dolerite	6		1			7
Quartz	14	1				15
Bloodstone	6					6
Other (incl. burnt)	26					26
TOTAL	**4595**	**337**	**78**	**147**	**27**	**5184**
				Per cent		
Baked mudstone	89	7	2	2	<1	100
Chalcedony	88	6	2	4	<1	100
Chert	89	1			10	100
Basalt/dolerite	86		14			100
Quartz	93	7				100
Bloodstone	100					100
Other	100					100
TOTAL	**89**	**6**	**2**	**3**	**<1**	**100**

a ratio. Instead, it should be based on whether it could be argued that blades are intentional products of that industry or not (that is, a fuller understanding of the operational schema in question), whatever the collection's blade ratio. The regularity of the An Corran blades and blade blanks (i.e. their parallel lateral sides and dorsal arrises) clearly define these as intentional (i.e. non-random) blades, and thereby the assemblage as the product of an industry focusing on specialised blade production.

Too few of the blades are complete enough for detailed metrical comparisons, but it can be said that most baked mudstone blades are quite broad, whereas the chalcedony blades include many elegant narrow specimens. It is perhaps noteworthy that the five largest baked mudstone blades are from the



Illus 28 Blades: CAT 913 is chalcedonic silica, the others are baked mudstone (drawn by Marion O'Neil)

lowest level, C41. One large chalcedony blade (CAT 913 from C36; illus 28) is exceptional, since the average small pebble-size of this raw material would normally preclude their production. The blades also embrace seven crested pieces, which in Table 6 are included amongst the flakes and blades.

4.6.2 Cores (illus 29)

Cores and core fragments amount to 78 pieces. The 56 typologically definable cores were distributed throughout the stratigraphic sequence (Table 8), with a concentration in C31–36. Baked mudstone is the more common raw material (Table 9). Although the baked mudstone allowed the production of larger cores (also see blades, above), the average core size in both raw materials is similar and small, reflecting the exhausted nature of many of the cores. In their present state, only seven of the cores were characterised as blade cores, the others being either blade and flake cores (23 pieces) or flake cores (25 pieces).

The predominant type is the opposed-platform core (32 pieces), supplemented by single-platform cores and irregular (multi-directional) cores (10 pieces each). One small chalcedony opposed-platform core (from C36) is an anvil-struck bipolar core (CAT 84), but otherwise no conclusive evidence for hammer-and-anvil technology was noted amongst the waste or implements, and most of the An Corran flakes and blades were produced by platform technique. This is confirmed by the presence of core rejuvenation flakes in both baked mudstone and chalcedony.

4.6.3 Tools

In Table 7 the tools are subdivided by raw material and in Table 10 an overview is presented of all imple-

Table 8 Typologically classifiable cores by context

Core type	C31	C36	Base of C36	C40	C41	Unstratified	Total
Single-platform cores	2	5		1	1	1	10
Opposed-platform cores	7	12		8	4	1	32
Cores with two platforms at an angle					1		1
Irregular cores	5	5		2			12
Bipolar anvil cores		1					1
TOTAL	**14**	**23**	**0**	**11**	**6**	**2**	**56**

Table 9 Cores and core fragments by raw material and context

Context	Baked mudstone	Chalcedony	Other	Total
C31	13	4	1	18
C36	20	7		27
Base of C36	1	1		2
C40	9	10		19
C41	3	5		8
Unstratified	2	2		4
TOTAL	**48**	**29**	**1**	**78**

Illus 29 Cores: the middle three and the two at the lower right are chalcedonic silica, the others are baked mudstone (photo: Alan Saville/NMS)

ments by type and context. The most numerous formal tools are the microliths and related pieces, including microburins (53 pieces in total), followed by scrapers (20 pieces), piercers (10 pieces), and edge-trimmed pieces (14 pieces). The remainder includes rare formal tool types (e.g. some notched pieces) and a relatively numerous group of informal or expedient pieces. Approximately three-quarters

Table 10 Lithic tools by type and context

Tool type	C31	C36	Base of C36	C40	C41	Total
Microliths etc	7	6	5	22	13	53
Scrapers	7	7	–	5	–	19
Piercers	2	5	–	2	1	10
Edge-trimmed	2	6	–	4	2	14
Miscellaneous	7	25	1	16	2	51
TOTAL	**25**	**49**	**6**	**49**	**18**	**147**

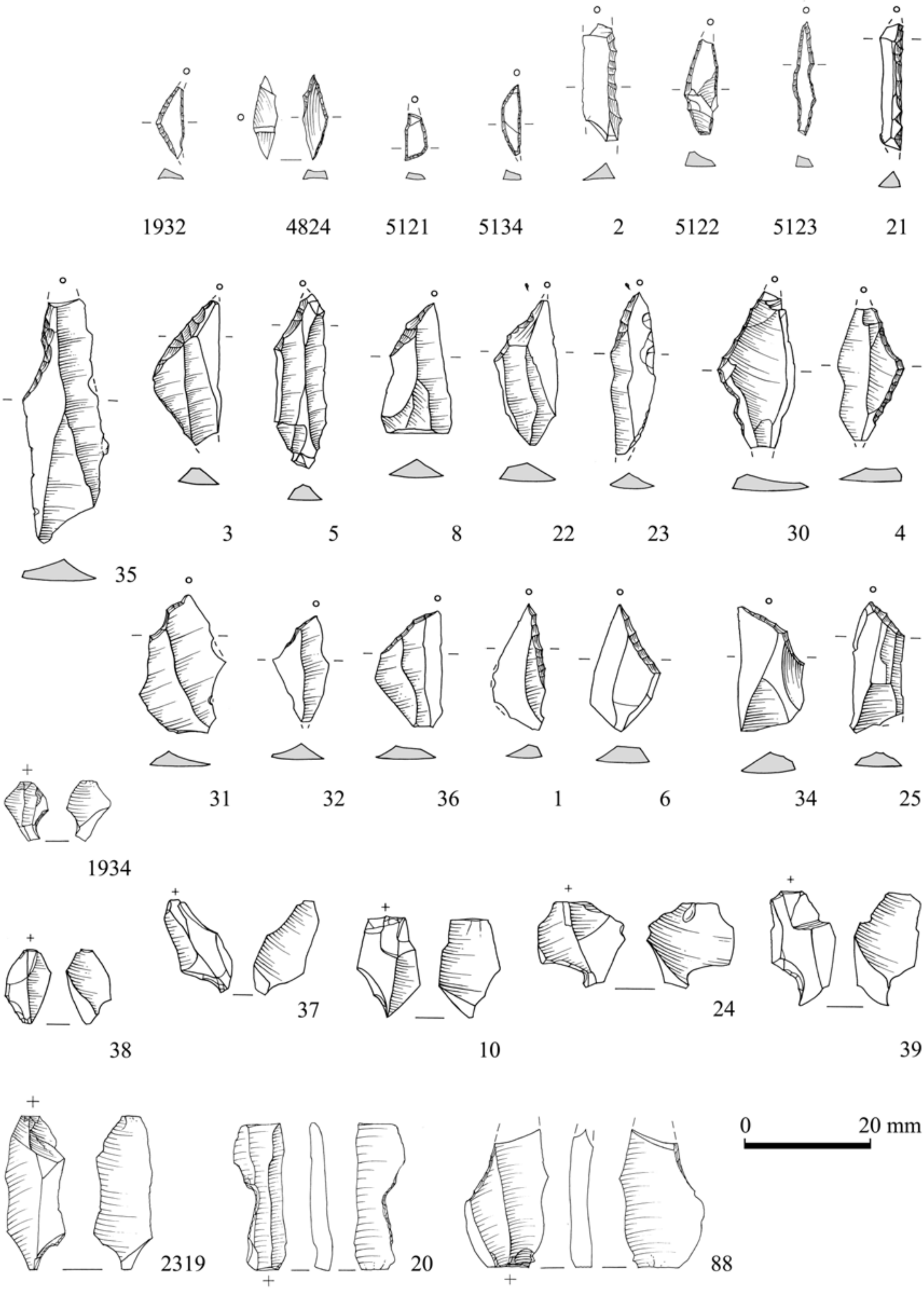
Illus 30 Microliths (photo: NMS)

of the tools are based on flakes, with blades forming a comparatively small proportion of the tool blanks (*c* 10%). The remainder of the tool blanks includes small numbers of discarded cores, chunks, pebbles and indeterminate pieces.

Microliths, microburins, and related forms (illus 30–31)

In total 32 microliths, including fragments, and 14 microburins were recovered, along with seven microlith-related pieces. The microlithic pieces are distributed across sub-types as in Table 11, which also indicates context and subdivides the pieces by raw material.

The microliths are clearly dominated by obliquely blunted points (illus 31), most of which are plain (Table 12) and also fairly small (Tables 13–14). One of the baked mudstone pieces (CAT 35; illus 31) is particularly interesting, as this is the only large obliquely blunted point. Although broken, the surviving dimensions of the piece (length 38mm; weight 1.3g) are still far in excess of the values for the other microliths. Two of the triangular microliths (CAT 4 & 30; illus 31) approach the isosceles form, and contrast markedly with the site's three small, scalene pieces (CAT 1932, 4824 & 5122; illus 31), one of which (CAT 4824) is atypically made transversely on a flake fragment. Two microliths (CAT 5121 & 5134; illus 31), blunted on both arc and chord, are crescents, one (5121) more sub-angular than the other, whereas the site's other possible crescent (CAT 51) is fragmented at either end and thus regarded as unclassifiable. The assemblage also includes one edge-blunted type with a fine point



Illus 31 Microliths, microburins and related forms: CAT 2, 21, 35, 3, 23, 30, 34, 37, 10, & 2319 are baked mudstone, the others are chalcedonic silica (drawn by Marion O'Neil)

(CAT 5123; illus 31) and an atypical edge-blunted form (CAT 21; illus 31).

Eleven microliths were not classifiable within the generally accepted standard microlith typologies (e.g. Clark 1934a, Jacobi 1978; cf Butler 2005 for an overview). However, most of these are broken implements, with four being potential fragments of obliquely blunted pieces (CAT 7, 33, 997 & 1296), two possible fragments of small triangular microliths (CAT 9 & 2746), and one seems to be the terminal of a small bilateral point (CAT 5224).

With such a small number of clearly classifiable forms, possibly spanning a broad chronological range, it is difficult to draw firm conclusions. However, it

Table 11 Microliths, microburins, and microlith-related forms

Type	C31	C36	C36 base	C40	C41	Totals	Type Totals
MICROLITHS							
Obliquely blunted points – chalcedony	–	–	1	4	4	9	
Obliquely blunted points – mudstone	–	–	1	2	1	4	13
Isosceles triangles – chalcedony	–	–	–	–	1	1	
Isosceles triangles – mudstone	–	–	–	1	–	1	2
Scalene triangles – chalcedony	2	–	–	1	–	3	3
Crescents – chalcedony	1	1	–	–	–	2	2
Edge-blunted – mudstone	–	–	–	–	1	1	1
Bilaterally edge-blunted – chalcedony	1	–	–	–	–	1	1
Unclassified fragments – chalcedony	1	1	–	2	1	5	
Unclassified fragments – mudstone	1	1	1	1	1	5	10
MICROLITH TOTALS	**6**	**3**	**3**	**11**	**9**	**32**	**32**
MICROBURINS							
Chalcedony	–	2	1	6	1	10	
Mudstone	1	–	–	2	1	4	
MICROBURIN TOTALS	**1**	**2**	**1**	**8**	**2**	**14**	**14**
MICROLITH-RELATED							
Chalcedony	–	–	1	2	1	4	
Mudstone	–	1	–	1	1	3	
MICROLITH-RELATED TOTALS	**–**	**1**	**1**	**3**	**2**	**7**	**7**
Totals – chalcedony	5	4	3	15	8	35	
Totals – mudstone	2	2	2	7	5	18	
GRAND TOTALS	**7**	**6**	**5**	**22**	**13**	**53**	**53**

Table 12 Microliths – obliquely blunted point types

Obliquely blunted type	C31	C36	C36 base	C40	C41	Totals
LHS plain – chalcedony	–	–	–	3	2	5
LHS plain – mudstone	–	–	1	1	1	3
RHS plain – chalcedony	–	–	–	1	2	3
RHS plain – mudstone	–	–	–	1	–	1
LHS with opposed retouch – mudstone	–	–	1	–	–	1
Totals	**–**	**–**	**2**	**6**	**5**	**13**

should be noted that most of the microliths derive from the lower contexts, and that these levels include all the obliquely blunted and isosceles pieces, whilst the small geometric microliths are mainly from elsewhere in the stratigraphy (C40, 36 & 31). There is a slight preference for chalcedony as the raw material for microliths. Contrasting the typology, raw material and context did not produce any absolute trends, other than for the baked mudstone microliths to be larger than their chalcedony counterparts.

The 14 microburins (illus 31) are also mainly in chalcedony, and they are mostly from the lower contexts (Tables 11 & 13–15). Thirteen are proximal

Table 13 Dimensions of complete, and near complete (+), microliths and microburins of chalcedony

Catalogue number	Context	Type	Length in mm	Breadth in mm	Thickness in mm
1	41	Obliquely blunted	19.9	8.2	2.3
5	41	Obliquely blunted	27.1+	8.1	2.6
6	41	Obliquely blunted	20.0	10.7	2.6
8	41	Obliquely blunted	20.3	10.8	2.6
25	40	Obliquely blunted	21.1	8.2	2.2
31	40	Obliquely blunted	21.9	13.5	2.1
32	40	Obliquely blunted	16.5	8.3	2.4
36	40	Obliquely blunted	17.8	10.4	1.8
22	36 base	Obliquely blunted	24.9	9.7	2.9
4	41	Isosceles triangle	20.9+	10.5	2.1
1932	40	Scalene triangle	11.1+	4.4	1.6
4824	31	Scalene triangle	13.6	3.5	1.5
5122	31	Scalene triangle	14.8+	4.8	2.2
5134	36	Crescent	10.8	3.1	1.5
5121	31	Crescent	7.3+	3.4	1.2
5123	31	Bilaterally edge-blunted	17.3	3.5	2.6
		Mean	**17.8**	**7.6**	**2.1**
3111	41	Microburin proximal	9.3	8.8	1.8
38	40	Microburin proximal	11.6	6.8	2.6
39	40	Microburin proximal	17.5	10.3	2.9
1933	40	Microburin proximal	5.4	6.9	3.1
1934	40	Microburin proximal	9.0	6.9	2.0
2226	40	Microburin proximal	7.7	5.1	1.9
24	36 base	Microburin proximal	13.5	13.6	3.3
590	36	Microburin proximal	8.1	9.4	2.4
591	36	Microburin distal	9.5	3.3	1.9
		Mean	**10.2**	**7.9**	**2.4**

Table 14 Dimensions of complete, and near complete (+), microliths and microburins of baked mudstone

Catalogue number	Context	Type	Length in mm	Breadth in mm	Thickness in mm
3	41	Obliquely blunted	22.4+	10.8	2.6
34	40	Obliquely blunted	19.5	10.3	3.1
35	40	Obliquely blunted	38.1+	13.0	3.5
23	36 base	Obliquely blunted	25.8+	6.9	2.2
30	40	Isosceles triangle	24.9+	12.0	2.6
		Mean	**26.1**	**10.6**	**2.8**
10	41	Microburin proximal	15.2	9.6	2.5
37	40	Microburin proximal	16.1	7.8	2.3
2319	40	Microburin proximal	23.9	9.2	2.6
		Mean	**18.4**	**8.9**	**2.5**

Table 15 Microburin types

Microburin type	C31	C36	C36 base	C40	C41	Totals
Proximal LHS – chalcedony			1	3	1	5
Proximal LHS – mudstone	1			1	1	3
Proximal RHS – chalcedony		1		3		4
Proximal RHS – mudstone				1		1
Distal RHS – chalcedony		1				1
Totals	**1**	**2**	**1**	**8**	**2**	**14**

Table 16 Scrapers by type, context and raw material

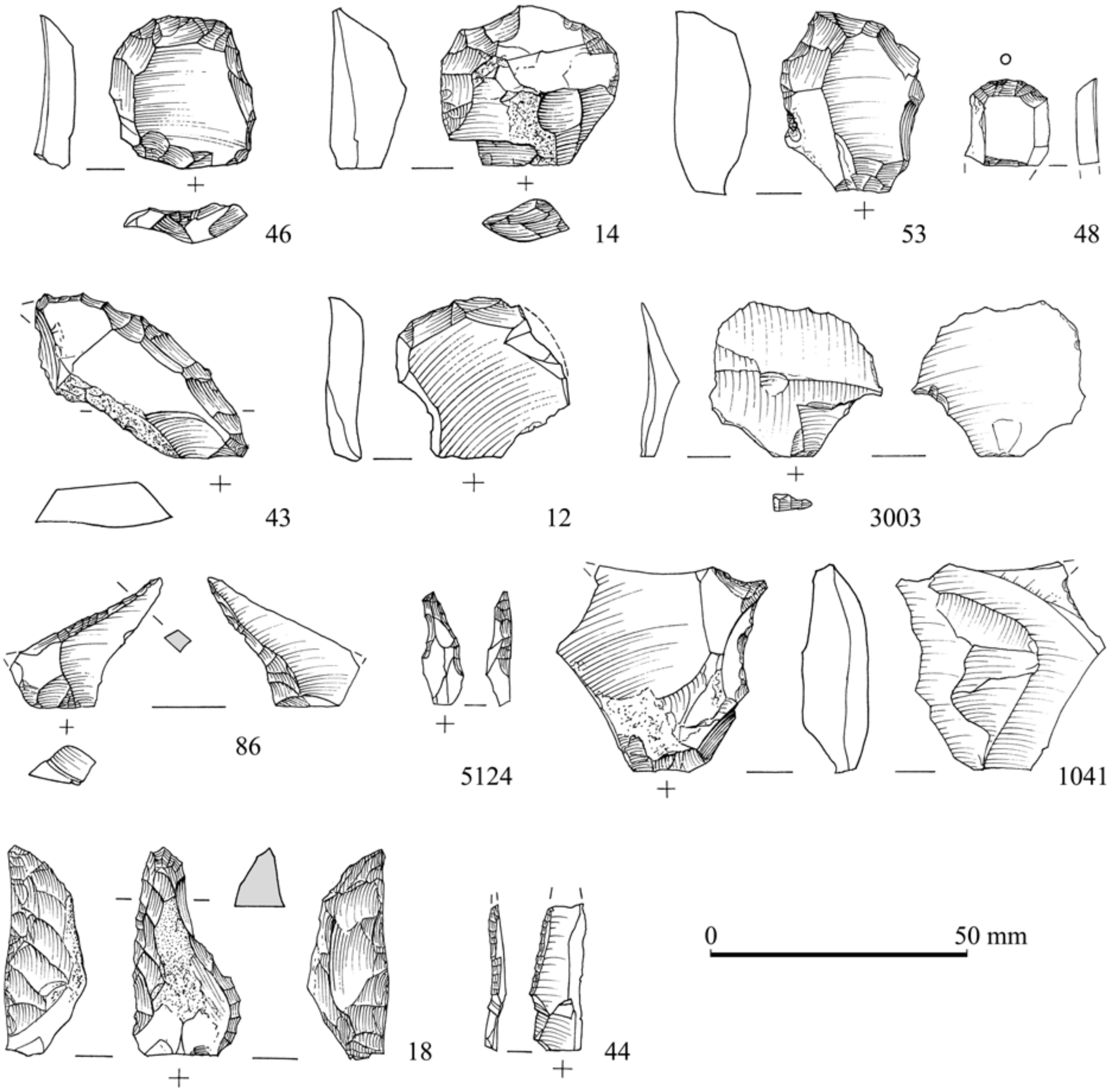
Type	C31	C36	Base of C36	C40	C41	Spoil-heap	Totals	Type Totals
End – chalcedony	1	3	–	2	–	1	7	
End – mudstone	2	1	–	–	–	–	3	10
Extended-end – chalcedony	–	2	–	–	–	–	2	
Extended-end – mudstone	1	–	–	–	–	–	1	3
Double-end – mudstone	–	1	–	–	–	–	1	1
Side – mudstone	2	–	–	1	–	–	3	3
Sub-disc – chalcedony	–	–	–	1	–	–	1	1
Atypical – mudstone	1	–	–	1	–	–	2	2
Totals	**7**	**7**	**0**	**5**	**0**	**1**	**20**	**20**

pieces, with eight having a notch on the left lateral side, and five on the right side (when orientated with the proximal end away from the analyst, and the dorsal face up; cf Martingell & Saville 1988, fig.1). One microburin is a distal specimen. The striking platforms are all plain. The presence of so many microburins in an assemblage including only 32 microliths (a ratio of *c* 1:2) is unusual, but does suggest that the production of microliths by microburin technique was the norm and indicates that the manufacture of microliths did indeed take place on-site. Although only a small sample, the baked mudstone microburins are notably larger than those in chalcedony.

The seven microlith-related forms include two obliquely blunted proximal bladelet segments (CAT 88 (illus 31) & 131), one notched bladelet which is probably an unsnapped microlith/microburin (CAT 20, illus 31), two notched bladelet segments with transverse breaks which are probably microlith/microburin miss-snaps (CAT 11 & 2227) and two tiny unclassifiable fragments with microlith-like retouch (CAT 2323 & 2784).

Scrapers (illus 32)

The 20 scrapers, which for the sake of completeness include one (CAT 45) recovered from the spoilheap, comprise 10 of baked mudstone and 10 of chalcedony (Table 16). Most (10 examples) are simple short end-scrapers on flakes, with convex retouch at the distal end. Three are extended end-scrapers, where the distal retouch continues on both lateral edges, although mostly without pronounced shoulders between working-edge and lateral sides. One double end-scraper (CAT 401) has convex scraper-edges at both terminals. In addition, the assemblage includes three side-scrapers (CAT 42, 43 & 47), one of which is an atypical example of elongated shape (CAT 43; illus 32), one sub-discoidal type (CAT 49) and two atypical scrapers (CAT 50 & 1131). Eighteen of the twenty scrapers (ten baked mudstone, eight chalcedony) are intact enough for measurement, giving mean dimensions of length 30.2mm, breadth 29.3mm and thickness 9.9mm. The length and breadth means for the baked mudstone scrapers are greater than those for the chalcedony examples (length 33.1mm and 26.6mm; breadth 33.0mm and 24.8mm respectively) but the mean thicknesses are the same. Four of the chalcedony and two of the baked mudstone scrapers are on flakes with faceted platforms, and two of the baked mudstone scrapers are on core rejuvenation flakes. In terms of distribution there is a clear concentration of the scrapers in the upper levels.



Illus 32 Scrapers, piercers, edge-trimmed bladelet and miscellaneous retouched piece: CAT 46, 43, 12, & 44 are baked mudstone, the others are chalcedonic silica (drawn by Marion O'Neil)

Piercers (illus 32)

The assemblage includes 10 piercers (Table 17). These are predominantly on chalcedony and it may be that chalcedony was specifically preferred as a better raw material for this tool type. However, the greater propensity for the somewhat softer baked mudstone to become damaged may mean that breakage of projections has hampered the identification of piercers in this material. Only one of the piercers (CAT 3003; illus 32) has a projection formed by true 'propeller' retouch (i.e. retouch of one edge by dorsal retouch and one by ventral retouch), whereas most of the piercers have a point – of varying degrees of robustness – formed by retouch from the ventral face only. The most elaborate example (CAT 86; illus 32) has an elongated tip formed by blunting retouch on one edge, with minimal trimming at the tip of the opposed edge, which has otherwise been blunted by previous retouch from the crest. This piercer, and even more so a small bladelet with dorsal bilateral blunting retouch (CAT 5124; illus 32), have similarities with *mèche de foret* drill bits (Jacobi 1980, 154). The other, less elaborate, piercers are mostly serendipitous exploitation of natural projections, with lesser or greater enhancement.

Edge-trimmed flakes and blades

This category includes artefacts with visible modification on part or all of one or both lateral edges, but which do not fit any other formal tool categories. In a few cases, the modification may be edge-damage

Table 17 Piercers: context and raw material type

Material	C31	C36	Base of C36	C40	C41	Totals
Chalcedony	2	3	–	2	1	8
Mudstone	–	2	–	–	–	2
Totals	2	5	0	2	1	10

caused by use or 'trampling', but most are probably true tools. In the majority of cases these pieces have one sharp unmodified edge, and they may have functioned as knives. However, separating true edge-trimmed pieces from edge-damaged pieces with any degree of certainty would require microscopic use-wear analysis.

The 14 pieces included in this category have varying morphologies, but include, *inter alia*, two fragmentary, but substantial, baked mudstone blades from C41 (CAT 1165 & 3946; illus 28), and one baked mudstone bladelet from C31 (CAT 44; illus 32), the semi-abrupt edge-retouch of which exposes the black interior through the altered grey-coloured surface. This indicates that the modification considerably post-dates the production of the blank.

Miscellaneous

In total, 51 artefacts with some apparently deliberate modification lay outwith the formal tool categories. In many cases this was due to fragmentation. In several instances, such as the notched pieces, it is difficult to ascertain that the modification is deliberate rather than accidental. However, one of these pieces is a well-executed tool with extensive and careful bilateral retouch on a stout chalcedony flake (CAT 18 from C36; illus 32). It does not appear to have functioned as a piercer and it is too thick to be regarded as a knife, but it is clearly an intentionally designed tool.

4.7 Discussion of the lithic artefacts

The typological composition of this lithic assemblage suggests a general date entirely within the Mesolithic period, with later diagnostic pieces being absent. However, in view of the wide spread of radiocarbon dates from the contexts which produced this assemblage, and in particular the post-Mesolithic dates for some of the bevel-ended bone tools, it cannot be ruled out that the basically Mesolithic lithic collection includes a small amount of later intrusive material.

The range of the Mesolithic radiocarbon dates, the disparate nature of the stratigraphic components, and the dumped character of the main deposits, suggest that the assemblage may represent accumulation over an extended period during the Mesolithic. The earliest of the radiocarbon dates is 7590 BP (OxA-4994), which is well within the Later Mesolithic as currently defined. The Early Mesolithic as known from England and Wales (e.g. Reynier 2005) has never been satisfactorily radiocarbon dated in Scotland, where even the earliest dates are associated with assemblages of Later Mesolithic narrow-blade type (Saville 2008). However, Early Mesolithic broad-blade assemblages clearly exist, albeit frequently with some admixture of later material. These assemblages include Morton Site A in Fife, and Glenbatrick Waterhole Site G1 and Lussa Bay, both on Jura (Coles 1971; Mercer 1970; 1974a; also see Saville 2004a).

In the An Corran collection, special attention should be drawn to the broad blades, which correspond to the blades recovered at Morton, Glenbatrick, and Lussa Bay, as well as, outside Scotland, at sites such as Star Carr in Yorkshire (Clark 1954, figs. 38 and 45; Reynier 2005). The microliths are equally noteworthy, with the category being dominated by broad obliquely blunted points and isosceles triangles, which also dominate the microliths of Morton, Glenbatrick, and Lussa Bay (Saville 2004a), as well as Flixton and Star Carr (Clark 1954, fig.35; Moore 1950, fig.4; Reynier 2005). So the broad blades and broad microliths do suggest a possible Early Mesolithic aspect to the An Corran assemblage. On the other hand, the complete absence of burins (and any associated groove-and-splinter antler/bone working) at An Corran is particularly noteworthy as, in Britain, this tool type is generally associated with the Later Upper Palaeolithic and Early Mesolithic periods. The only Scottish locations where burins have been recovered in significant numbers are the Lateglacial sites at Kilmelfort Cave, Argyll (Saville & Ballin 2009) and Howburn, South Lanarkshire (Ballin et al 2010).

In the general Inner Hebrides area, most Mesolithic assemblages are dominated by Later Mesolithic artefact forms. This includes the finds from Kinloch, Rùm (Wickham-Jones 1990), various sites on Islay and Colonsay (McCullagh 1989; Mithen 2000), Camas Daraich on Skye (Wickham-Jones & Hardy 2004), and Sand on the mainland east of Skye (Hardy & Wickham-Jones 2007). All these assemblages are characterised by microblade technology and narrow microliths.

Unsurprisingly, the several lithic artefact concentrations identified around Staffin Bay during the Scotland's First Settlers Project revealed a spread of Mesolithic activity away from the rockshelter, though the almost equal use of baked mudstone and chalcedonic silica provides a contrast (Hardy & Wickham-Jones 2007: section 2.2.7). In addition to Camas Daraich, only one excavated Mesolithic assemblage from Skye has been published, namely that of Tote, near Skeabost, at the southern end of Loch Snizort Beag (Lacaille 1954, 299–300). Lacaille described the raw material as buckite or vitrified shale, but examination of the artefacts in the University Museum of Archaeology and Ethnology at Cambridge (by Alan Saville) has shown the material to be identical to the baked mudstone from An Corran. These artefacts, which include a single edge-blunted microlith and two substantial blades (Lacaille 1954, fig.135: 2–3 & 8), were recovered during the excavation of a cairn (Lethbridge 1920). The excavator described them as deriving from the primary cist, but it seems most probable that these artefacts were either excavated from a buried soil below the cist, or they may have been redeposited during the construction of the cist and cairn. Of the 'upwards of 150 flint and other flakes and two rude scrapers' mentioned in the original report (Lethbridge 1920, 135), only those pieces illustrated by Lacaille, and four others, are present in the Cambridge collection. The four unillustrated items include two of a translucent siliceous material, although this does not resemble the An Corran chalcedony.

Further consideration of the chronological position of the An Corran lithic assemblage is given in the final discussion, but one of the more significant results of the present analysis is the identification of baked mudstone and chalcedonic silica as additions to the already extensive repertoire of raw material exploited in early prehistoric Scotland (Saville 1994; Wickham-Jones 1986; cf Hardy & Wickham-Jones 2007). The properties of baked mudstone in particular are conducive to the production of large blades, more so than any other raw material available in Scotland, because of its availability in large angular blocks. However, since the excavation and preliminary publication of An Corran (Saville & Miket 1994a; 1994b), the association of baked mudstone with a potentially Early Mesolithic site has led some to the misconception that the use of this raw material may be diagnostic of the Early Mesolithic period – which it is not. Thus, at Home Farm, near Portree on Skye, a small baked mudstone assemblage of well-executed Early Bronze Age implements was recovered from a pit associated with a hengiform enclosure (Ballin forthcoming), and baked mudstone seems to have been one of the raw materials present in the small, probably mixed assemblage of lithic artefacts, including pieces with Mesolithic traits, recovered from the Rudh' an Dunain Cave on the west coast of Skye (Clark 1934b, 222, note 1; Scott 1934a).