MH14: SERF Archive Report: Lithics

Introduction

There are 15 lithics recovered from the MH14 excavations at Millhaugh cairn (cf. Brophy 2014) in 2014, and 39 from fieldwalking undertaken in 2016.

Methodology

The methodology, type and attribute terminologies employed for the analysis of the primary and secondary technologies follows the format devised and adopted for the Southern Hebrides Mesolithic Project (Finlayson et al. 2000). This augmented the research design used for the analysis of the lithic assemblage from the site at Kinloch on Rùm (Wickham-Jones 1990), derived from earlier terminologies and technological classifications (Tixier et al. 1980), and subsequently enhanced (Inizan et al. 1999). This format lends itself to the incorporation of later prehistoric forms such as projectile points, 'knives', certain types of scrapers and Post-Medieval gunflints (cf. Wright 2012b). The database for the typological and technological analysis of the lithics uses Access™ 2016.

Primary Technology speaks to those initial procedures of the chaîne opératoire relating to the choices made in the selection and the obtaining of appropriate raw material, the reduction strategies, the production of blanks, e.g. flakes and blades through to the discard of cores. The knapping reduction strategies undertaken in the past are determined by reference to the detailed analysis of the characteristics and attributes of the cores and debitage products recovered during archaeological fieldwork (Finlay et al. 2000a, 553; Woodman et al. 2006, 78).

Secondary Technology refers to the later stages of the chaîne opératoire, which considers the process of the modification of blanks, their utilisation and discard. Following the removal of a blank from a core, modification is generally achieved by the application of pressure to the edge of the blank. In the case of scrapers, the modified edge functions as the working edge. However, that may not be the case for all retouched artefacts. For example, the modification may be undertaken to facilitate hafting (Finlay et al. 2000b, 571; Wickham-Jones and McCartan 1990, 87). Invasive and inverse retouch are generally particular features of secondary modification during the Neolithic and Bronze Age periods (Ballin 1999 and others).

For individual lithics, the first number is the catalogue reference followed by the small finds number.

Raw Materials

The solid geology comprises Sheriffmuir Sandstone. The drift geology underlying Millhaugh is glaciofluvial sheet deposits, comprising glacial till (sands and gravels) [Figure 1].

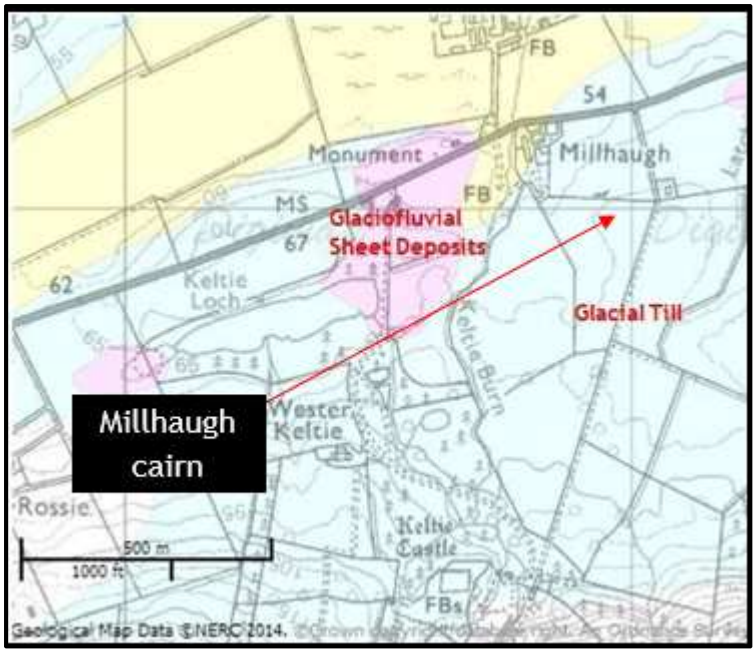

Figure 1: Drift geology in environs of Millhaugh cairn (Digimap® ED*i*NA Geology Roam online resource; © NERC/Crown copyright database right).

There is a greater percentage frequency of flint and agate from the excavations in comparison to the fieldwalking assemblage (Figure 2).

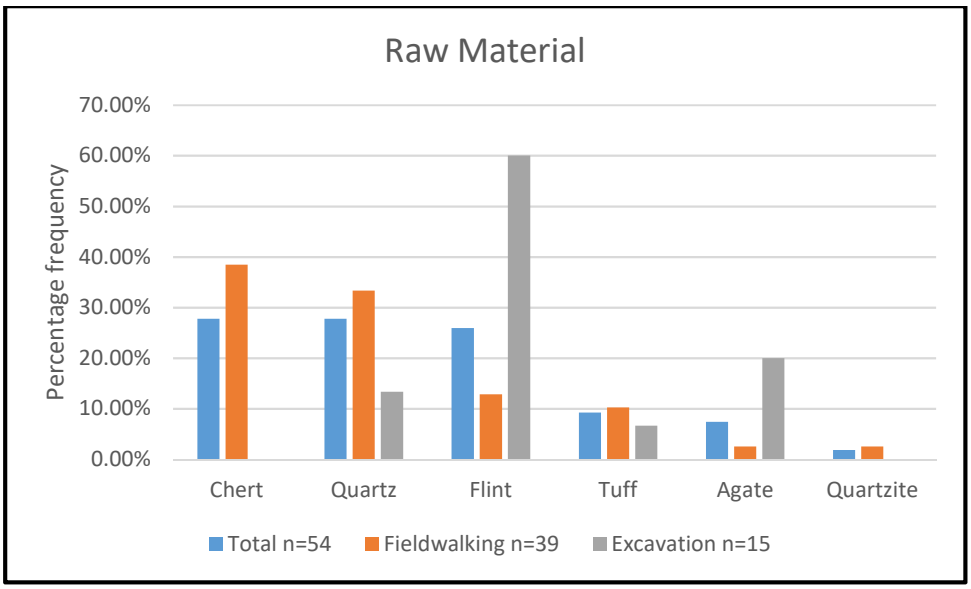

Figure 2: Percentage frequency of raw materials in total and from the excavation and fieldwalking.

There are no known local sources of chert (Wickham-Jones and Collins 1977, Figure 2). The British Geological Survey for the Midland Valley notes the occurrence of quartz, chert and andesitic tuff in the Scone Sandstone Formation, i.e. parent unit of Sheriffmuir Sandstone (after Phillips 2007, 8-9). There are nodules of chert in dressed sandstone, e.g. the dovecote at Green of Invermay and at Invermay House on the Invermay Estate. It is possible that flint, quartz, chert, agate and quartzite eroded out of the solid geology and/or glacial till (after Wickham-Jones and Collins

1977, 7). 21 lithics present with cortex, of these six are flint. The cortex variants are pitted (76.19%) and smooth/hard (23.81%), which suggests that the raw materials derive from fluvio-glacial riverine deposits.

Character

Table 1 shows the character of the assemblage. Other than flakes and modified pieces none of the other lithic types associated with stonecraft are present in the excavated assemblage (Figure 3).

There are six primary pieces comprising four flakes, a tested split pebble and a scraper (1118). The majority of flakes and blades are tertiary (71.05%); secondary 18.42%. All of the blanks are irregular. There is a pattern between the excavated and fieldwalking assemblages in the fragmentation analysis of the blanks where relatively few are complete (Table 2). In addition, there are broad common differences in the percentage frequency for evidence of anvil support across the two modes of recovery (excavation 50.00% and fieldwalking 40.00%).

The four non-specific platform cores are from fieldwalking: two chert and one each of flint and quartz.

The modified pieces comprise:

- five scrapers, three of flint (1101/14702; 1110/14711; 1114) and one each of quartz (1118) and tuff (1122);
- one flint ‘knife’ (1113/14716); and
- one fragment of a Group VI polished stone axe.

	Total	Chert	Quartz	Flint	Tuff	Agate	Quartzite
Tested Split Pebbles	3	1	1	1			
Chunks	2	1	1				
Cores	4	2	1	1			
Flakes	29	7	9	5	3	4	1
Primary	4	2			1		1
Secondary	7	1	2	3		1	
Tertiary	18	4	7	2	2	3	
Primary regular							
Primary irregular	4	2			1		1
Secondary regular							
Secondary irregular	7	1	2	3		1	
Tertiary regular							
Tertiary irregular	18	4	9	2	2	3	
Blades	6	4	2				
Primary							
Secondary							
Tertiary	6	4	2				
Primary regular							
Primary irregular							
Secondary regular							
Secondary irregular							
Tertiary regular							
Tertiary irregular	6	4	2				
Small Fraction	3			3			
Modified	7		1	4	2		
Total	54	15	15	14	5	4	1

Table 1: Character of the assemblage.

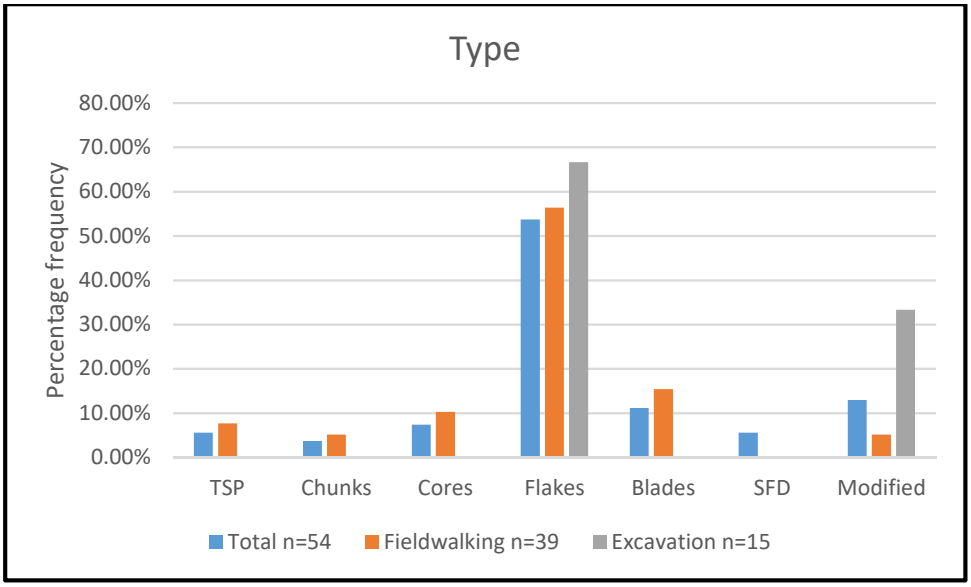

Figure 3: Analysis of the lithic assemblage by type and mode of recovery.

	Total	%	Fieldwalking	%	Excavation	%
Complete	8	22.85%	5	20.00%	3	30.00%
Proximal missing	6	17.14%	5	20.00%	1	10.00%
Distal missing	4	11.43%	4	16.00%		
Proximal fragment	1	2.86%	1	4.00%		
Distal fragment	6	17.14%			6	60.00%
Medial fragment	5	14.29%	5	20.00%		
Truncated width	5	14.29%	5	20.00%		
	35		25		10	

Table 2: Numerical and percentage frequency for fragmentation analysis for flakes and blades.

Condition

All of the pieces within the assemblage are fresh. The absence of burnt pieces is probably miss-stated. Experimental work undertaken on flint indicated that some burnt pieces would not be classified as such due to the absence of burnt attributes (Finlayson 1990, 53).

Primary technology

A quartz tested split pebble and chert chunk are the product of a bipolar reduction strategy. All of the remaining blanks indicate platform reduction. Generally, bipolar blanks will be under-represented because not all debitage products will present with attributes associated with a bipolar reduction strategy (after Kuijt *et al*. 1995, 117). There is evidence for anvil support in the production of blanks. The practice refers to the placing of the platform core on an anvil for support to facilitate blank removals. It suggests that platform and bipolar reduction strategies may have been coeval (cf. Wright 2012a).

Two of the non-specific platform cores are flake cores (1129; 1132). Table 3 sets out the technological analysis of the cores. It is difficult to draw out meaningful analysis from such a small sample size.

	Quartz (1118)	Flint (1129)	Chert (1132)	Chert (1134)
Type	Non-specific	Non-specific	Non-specific	Non-specific
Platform type	Cortical	Plain	Plain	Plain
Platform #	2	1	3	4
Average angle	75°	80°	85°	70°
Predominant removals	Indeterminate	Mixed	Mixed	Mixed
Negative bulb	Pronounced	Diffuse	Diffuse	Diffuse
Maximum scar length	Indeterminate	21mm	13mm	19mm
Maximum scar width	Indeterminate	4cm	9mm	14mm
Scar #	>3	7	7	14
Reason for abandonment	Indeterminate	Size	Loss of angle	Stepping & angle
Original pebble size	Medium	Indeterminate	Indeterminate	Indeterminate
Angularity of pebble	Sub-rounded	Indeterminate	Indeterminate	Indeterminate
Stages	2	1	3	4
Platform utilisation	50%	100%	75%	75%

Table 3: Technological analysis of the platform cores.

There are 16 blanks where it is possible to determine the bulb of percussion. 11 have a diffuse bulb with one having an associated lip attribute. There are with pronounced lips and three flat bulbs with lips.

The dorsal scars on 31 blanks indicate 54.84% removals from single platform cores, 38.71% from multidirectional cores, and one each with scarring indicating opposed and crossed platforms. The cores in the assemblage represent one each of single, opposed, crossed and multidirectional forms (Table 3). The dorsal surface on 58.06% are free from step and/or hinge terminations. This indicates a reasonably low level of knapping errors in the reduction strategy, and achieved without any evidence of scrub preparation to the core prior to the detachment of the blanks.

Secondary technology

Scrapers

- Flint convex scraper (1101/14702) recovered from (14702). The bulb of percussion is removed. There is direct, scalar, semi-invasive retouch to the left hand side from the medial to distal end. The retouch creates a convex scraping edge.
- Flint sub-angled scraper (1110/14711) recovered from (14701). Direct, scalar, semi-invasive retouch to the proximal and the right hand side creates a sub-angled scraping edge. Stepped direct, scalar, semi-invasive retouch to the left side from the median to distal end creates a convex scraping edge.
- Flint concave scraper (1114) recovered from (14701). Inverse, scalar, short retouch at median of the right side creates a concave scraping edge.

Inverse, scalar, semi-invasive retouch to the right and left sides below the median and the distal and creates a sub-angled scraping edge.

- Quartz convex scraper (1118) recovered during fieldwalking. Inverse, scalar, short retouch to the left hand side from the proximal to the distal creates a shallow convex scraping edge. The quartz is coarse grained.
- Tuff long convex scraper (1122) recovered during fieldwalking. Perfunctory, direct, scalar retouch to the proximal end a convex scraping edge.

Fragment of polished stone axe (1108/14709)

- A fragment of a small Group VI polished stone axe. The blade is complete and the artefact as present measures 31mm by 39mm; thickness 18mm.

Flint 'knife' (1113/14716)

- Perfunctory inverse, scalar removals to the distal end of a flake creates a cutting edge. A fine cutting edge results from the removal of the bulb of percussion. Pitted cortex at the right hand side facilitates the safe handling of the 'knife'.

Recovery location of the lithics

Fieldwalking

Figure 4 details the recovery location from the fieldwalking. The majority of the finds are to the west and the east of the Millhaugh cairn.

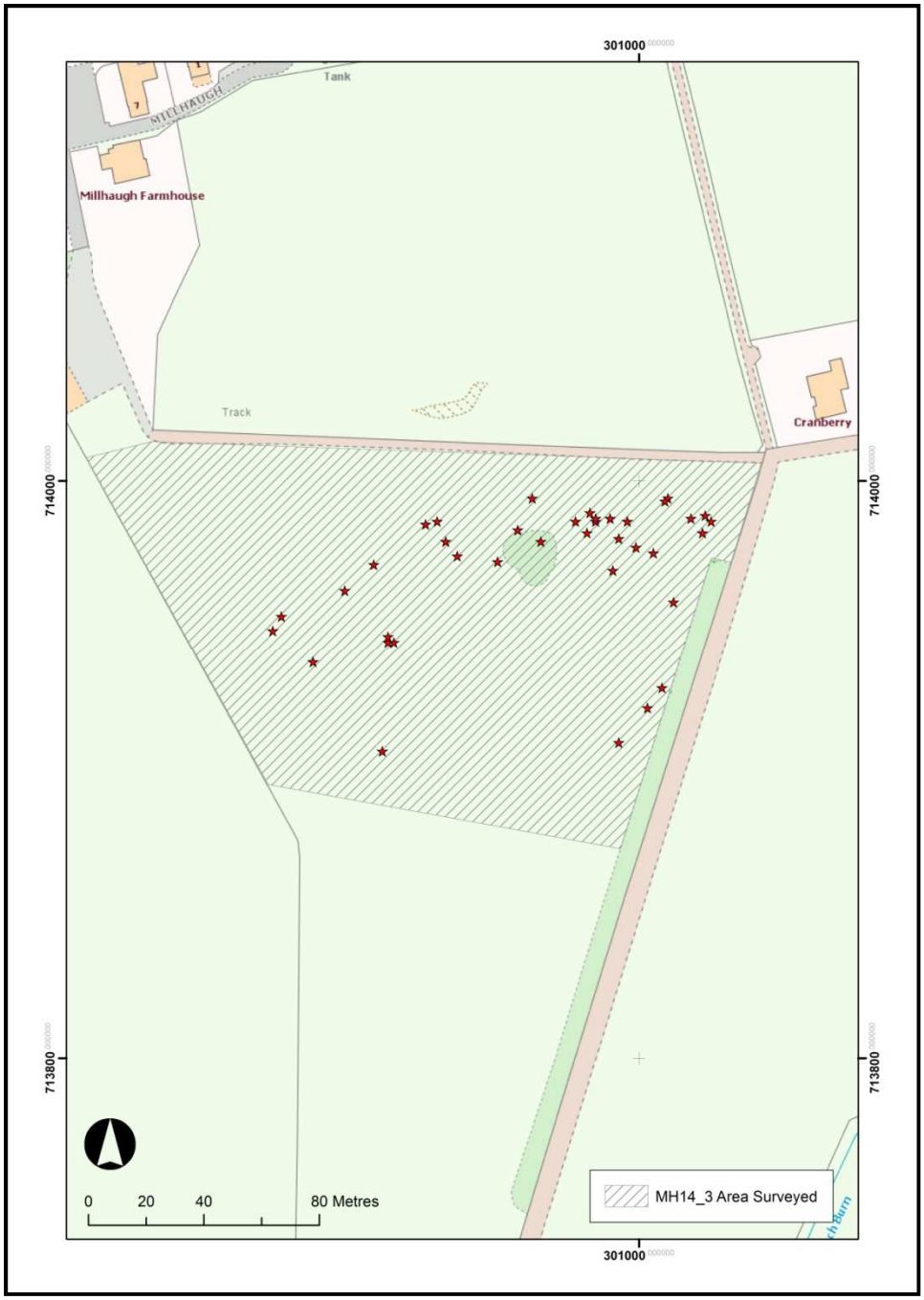

Figure 4: Recovery locations of lithics. Distribution map prepared by Dr Tessa Poller. The darker green within the highlighted survey area shows the location of the Millhaugh cairn.

Excavation

Top soil (14701)

- Flint concave scraper (1114).

Interface of top soil (14701) and underlying turf layer (14702)

- One fresh, tertiary, irregular, platform agate flake fragment with evidence for anvil support (1100/14701); and
- One piece of flint small fraction debitage (1111/14714).

Turf layer (14702)

- Flint convex scraper (1101/14702);
- One fresh, secondary, irregular, platform agate flake (1105/14706); and
- One fresh, tertiary, irregular, platform quartz flake fragment with evidence for anvil support (1112/14715).

Interface of turf layer (14702) and underlying deposit of boulders (14708)

- One fresh, secondary, irregular, platform flint flake fragment with evidence for anvil support (1103/14704); and
- One fresh, tertiary, irregular, platform quartz flake fragment with evidence for anvil support (1104/14705).

Kerb (14703)

- One fresh, tertiary, irregular, platform agate flake fragment (1102/14703).

Cairn material: deposit of boulders (14708)

- Fragment of polished stone axe (1108/14709);
- Two pieces of flint small fraction debitage (1105/14707; 1109/14710); and
- One fresh, secondary, irregular, platform flint flake fragment with evidence for anvil support (1107/14708).

Old land surface (14712) underlying cairn material

- Flint sub-angled scraper (1110/14711).

Old land surface (14722) underlying cairn material

- Flint 'knife' (1113/14716).

Summary

Apart from the fragment of polished stone axe (1108/14709), none of the lithics are diagnostic to an archaeological period. Two modified lithics (1110/14711; 1113/14716 were recovered from the old ground surface, which was the surface upon which the cairn was constructed. There is no evidence to support structured deposition and it is most likely that the artefacts are residual swept up in the material in the construction of the cairn. However, it is possible that the axe fragment was placed within the cairn material. There are a number of instances for the structured deposition of axe fragments, e.g. Group VI fragments from a pit at Carzield, Dumfriesshire (cf. Maynard 1993, 27). Single Group VI fragments have been recovered from a number of Early Neolithic pits; Maybole, Ayrshire (3780-3650 BCE [SUERC-18866]) (Becket and MacGregor 2012, 54-56); Snabe Quarry, Drumclog, South Lanarkshire (3766-3632 BCE [SUERC-50160]) (Kilpatrick 2015, 11), and the SERF excavations at Wellhill in 2015, where carbonised residue was dated to 3766-3652 BCE [SUERC-66247] (Brophy and Wright in prep). A flake from a Graig Lwyd, Penmaenmwar Group VII polished stone axe and a scraper made from a flake

from a Group VI axe were recovered from the surface at Cairnpapple, West Lothian (Piggott 1948, 102-103).

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3 September 2018

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