Archive Report: A macroscopic appraisal of the lithic assemblage from the Mesolithic upland scatter site at Climpy, near Forth, South Lanarkshire

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ABSTRACT

The research comprises of a detailed macroscopic analysis of a predominantly chert assemblage from the Mesolithic upland scatter site at Climpy, near Forth, Lanarkshire. This has involved the creation of databases using Access™.

Firstly, the assemblage has been analysed to show the character of the assemblage. Secondly, a detailed technological and attribute analysis is undertaken of those pieces which have not been modified by retouch or edge damage, i.e. those artefacts that do not have any attributes save for the primary technological reduction process. Thirdly, a detailed analysis of the secondary technologies adopted to determine the method of retouch.

The focus is primarily to offer an insight into the character of settlement, industry and the function and use of an upland site during the Mesolithic in Lanarkshire.

CONTENTS

SECTION 1: A MESOLITHIC UPLAND SCATTER SITE

INTRODUCTION

The Mesolithic upland scatter site at Climpy, near Forth, South Lanarkshire was excavated and recorded over five phases of work carried out by the Glasgow University Archaeological Research Division 'GUARD' from 1997 to 1999. An excavation report was prepared (Innes and Duncan nd.) including an analysis of the lithic assemblage undertaken by Eland Stuart. The report was submitted to the *Scottish Archaeological Journal* but was rejected during the editorial process (Dr. N. Finlay pers comm.).

This section will set out the aims and objectives of the research together with the methodologies adopted to analyse the lithic assemblage from Climpy. There will be a concise summary on the temporal framework for the Mesolithic in Scotland. The importance of the site at Climpy is considered within a brief review of the historical framework of research into the Mesolithic in Scotland with a focus on the recent survey work locating upland sites in Lanarkshire. There is a concise description of the upland palaeoenvironment of Scotland during the Mesolithic period

All radiocarbon dates are calibrated unless otherwise stated.

METHODOLOGY

The databases of the lithic assemblage will follow the analytical methodology and terminologies devised and adopted by Drs. Nyree Finlay and Bill Finlayson for the *Southern Hebrides Mesolithic Project* (Finlayson *et al* 2000) which enhanced the research design used by Dr. Caroline Wickham-Jones (1990) in analysing the lithic assemblage from Kinloch on the island of Rùm. The system of classification and the definition of terms used are set out at Appendix 1. The databases were created using *Access* 2007™ and can be found at Appendices 2 to 6, inclusive.

Each artefact has been given a unique catalogue number. The assemblage has been analysed to show the character of the assemblage, the find location and the context from which it was recovered.

To determine if Climpy was a location where primary knapping was undertaken a refitting study was carried out in an attempt to establish how many, if any, of the artefacts could be refitted.

A detailed technological and attribute analysis was then undertaken of those pieces which were not modified by retouch or edge damage, i.e. those artefacts that do not have any attributes save for the primary technological reduction process. A similarly detailed analysis of the secondary technologies adopted at Climpy to resolve the extent and method of retouch and also ascertain if edge damage has arisen through use, or as a result of knapping or post depositional factors.

The meticulous nature of the methodological process of analysing a lithic assemblage is reflexive. Whilst separate studies of the attributes of the types of artefact are undertaken the information gleaned has to be continually cross referenced to determine that the interpretation of the assemblage is coherent and as far as possible provides a secure basis to achieve the set aims and objectives of the research project (Finlayson *et al* 2000).

There is a comparanda of the assemblages from Climpy and Glentaggart (Ballin and Johnson 2005) which is another Mesolithic upland scatter site in Lanarkshire.

AIMS AND OBJECTIVES

The principal aims and objectives arising from the macroscopic analysis of the lithic assemblage from Climpy will seek to establish

- Source and quality of raw materials
- Lithic technology used
- The skill of the knapper
- Spatial distributional analysis of the assemblage
- Function and use
- Date of the occupation(s).

CHRONOLOGY OF THE MESOLITHIC IN SCOTLAND

There is a gap of c.1000 years from the end of the Loch Lomond Stadial at c.9600BCE and the first evidence for the settlement of Scotland. The earliest date comes from the chert scatter site at Cramond, near Edinburgh at 8400BCE (Saville 2008, 211). There is a slightly later date from the upland scatter site at Daer Reservoir in Lanarkshire at 8550-7950BCE (Finlay 2008). These dates demonstrate that the coast and interior of Scotland were settled at the same time (Finlay *et al* 2003, 105). The assemblages from both sites have chert as the predominant raw material with narrow blade or geometric microliths, which on the basis of an English model, signify the Late Mesolithic (Finlay 2008). The transition from broad blade or non-geometric microliths is thought to demarcate the Early Mesolithic from the Late Mesolithic. In England this is generally considered to be c.6700BCE (Saville 2004, 11). The assemblage from Glentaggart hints at the possibility of an Early Mesolithic broad blade phase of occupation (Ballin and Johnson 2005). This makes the assumption that Scotland follows the English model (Finlay *et al* 2003, 113).

The end date for the Mesolithic is more problematical. Generally the Neolithic in Scotland is considered to commence at c.4000BCE. During the later stages of the Mesolithic there is a move away from platform blade to bipolar flake production. There is evidence where microliths, for so long considered the *leitmotif* of the Mesolithic, are absent from some sites (Finlay *et al* 2003, 108). The 'Obanian' non-microlith Mesolithic shell middens on Oronsay may have been occupied into the latter centuries of the 4th millennium BCE (Switsur and Mellars 1987, 142-144). Radiocarbon dates from Carding Mill Bay, Oban suggested that the site was occupied at some point from 3660-3370BCE [4765±65 OxA-3739] (Ashmore 2004, 150).

HISTORY OF RESEARCH: EAST: WEST AND INLAND: COASTAL

When Lacaille published his synthesis of the Stone Age in Scotland in 1954 based on the known archaeological record in 1952 (Lacaille 1954, Figure 58) there were approximately 70 to 80 sites considered to be Mesolithic. Less than 20 had been excavated (Morrison 1996, 12), one of which was the inland scatter site at Woodend Loch, near Coatbridge (Davidson *et al* 1951). Some of the assemblages were contaminated with later material, others were annotated as ‘stone age’ where subsequently it was established that there was no evidence to support a Mesolithic date (Morrison 1996, 12). By 1980 there were approximately 300 Mesolithic sites in Scotland (Morrison 1980, 171). As the end of the first decade of the 21st century approaches there are substantially more known Mesolithic sites.

For a number of years research in the West of Scotland focused on the shell midden sites of the ‘Obanian’ and the lithic scatters sites on the Hebridean Islands of Rùm, Jura and Islay. There has been a number of large research projects focused on the West of Scotland [e.g. Mellars 1987; Mithen 2000a; Mithen 2000b; Hardy and Wickham-Jones 2002] (Finlay 2003, 102). During 2004 the University of Reading (2006) set up the *Inner Hebrides Archaeological Project* to locate Mesolithic and Neolithic settlements on Coll, Tiree and in the north-west of Mull. In the East of Scotland research was centred on the course of the river systems such as the Dee and the Tweed. These foci are in part due to the visibility of sites in coastal and agricultural locations. Until recently there was only modest endeavour to undertake survey of the interior of Scotland. The peat cover and harsh terrain of the uplands make survey more problematical (Finlay *et al* 2003; Finlay 2008).

Since 2000 the survey work undertaken by teams of fieldwalkers from Biggar Museum Archaeology Group and local societies in Lanarkshire have found and excavated upland sites of major importance (Finlay 2008). For example, seven Mesolithic scatter sites have been located in the vicinity of Daer Reservoir (Ward 2004) and another at Howburn near Biggar (Saville *et al* 2007). A multi-phase scatter site at Weston in South Lanarkshire produced radiocarbon dates from burnt hazel recovered from the base fill of a pit of 7030-6550BCE [SUERC-6467; GU-13037] (Ward 2006, 15). Rescue archaeology also makes a contribution with scatter sites at Climpy (Innes and Duncan nd.) and Glentaggart (Ballin and Johnson 2005).
The importance of the scatter site at Climpy is crucial as a component in what Finlay (2008) describes as the emerging character and use of these upland sites. They are generally situated near lochans and small water courses and may have been settled seasonally or functioned as camps as people travelled from the coast to these inland locations (Finlay 2008).

PALAEOENVIRONMENT

At the end of the Loch Lomond Stadial c.9600BCE (Warren 2005, 26) there was a rapid increase in mean temperature rising by as much as 1ºC per decade. The temperatures continued to rise reaching an optimum at c.7800BP (Ballantyne 2004, 30). This warm dry Boreal period by the onset of the wetter conditions of the Atlantic period that persisted for almost two millennia (Warren 2005, 47). There was, however, a brief deterioration of the climate for a period of approximately 200 to 400 years from c.6200BCE (Tipping 2004, 49). Ballantyne (2004, 30) makes the point that our understanding of the climatic conditions of Scotland from c.7800BCE is based on limited evidence.

The post-glacial tundra of Scotland was transformed with birch colonising the south by c.9500BCE and covering most of Scotland by 8000BCE. Hazel similarly could be found almost all over Scotland by 8000BCE. Oak although it is slower to spread was also to be found throughout southern Scotland by that date with elm by 7500BCE (Edwards and Whittington 2003, 66-67).

By 8000BCE the landscape of the southern and central belt of Scotland would have comprised of mixed woodland with oak dominant. In the upland areas there would have been a greater proportion of birch and hazel (Warren 2005, 54). The woodlands were not densely forested areas but would have consisted of a number of diverse habitats including open glades (Tipping 2004, 46).

SECTION 2: CLIMPY: DISCOVERY, EVALUATION AND EXCAVATION

INTRODUCTION

This section will briefly outline the geographic location of the site at Climpy and the solid and drift geologies of the immediate vicinity. Consideration is given to the circumstances that lead to the discovery of the site. The site reports and records will be reviewed to delineate the evaluation and excavation methodologies for the recovery of the lithic material from the main scatter areas and the contexts in which they were found.

GEOGRAPHIC LOCATION

The site of Climpy, formerly referred to as Hare Hill, at 280m OD (Ordnance Datum) is situated 800m south-west of the village of Climpy in the uplands of South Lanarkshire (NGR: NS 9229 5463; Figures 2.1 and 2.2) and approximately two kilometres to the north-west of Forth (Duncan 1997a; 1997b).

The site, a penannular turf-banked enclosure is 250m due east of the summit of Whaup Howe situated on level ground overlooking the valley of the Abbey Burn which is to the south-east. The landscape gently falls away from the south-west to the north-east (Duncan 1997b) affording the site good visibility of the local landscape (Innes and Duncan nd).

The present landscape supports rough pasture and comprises of poorly drained non-calcareous gleys underlying blanket peat [Figure 2.3] (Duncan 1997b).

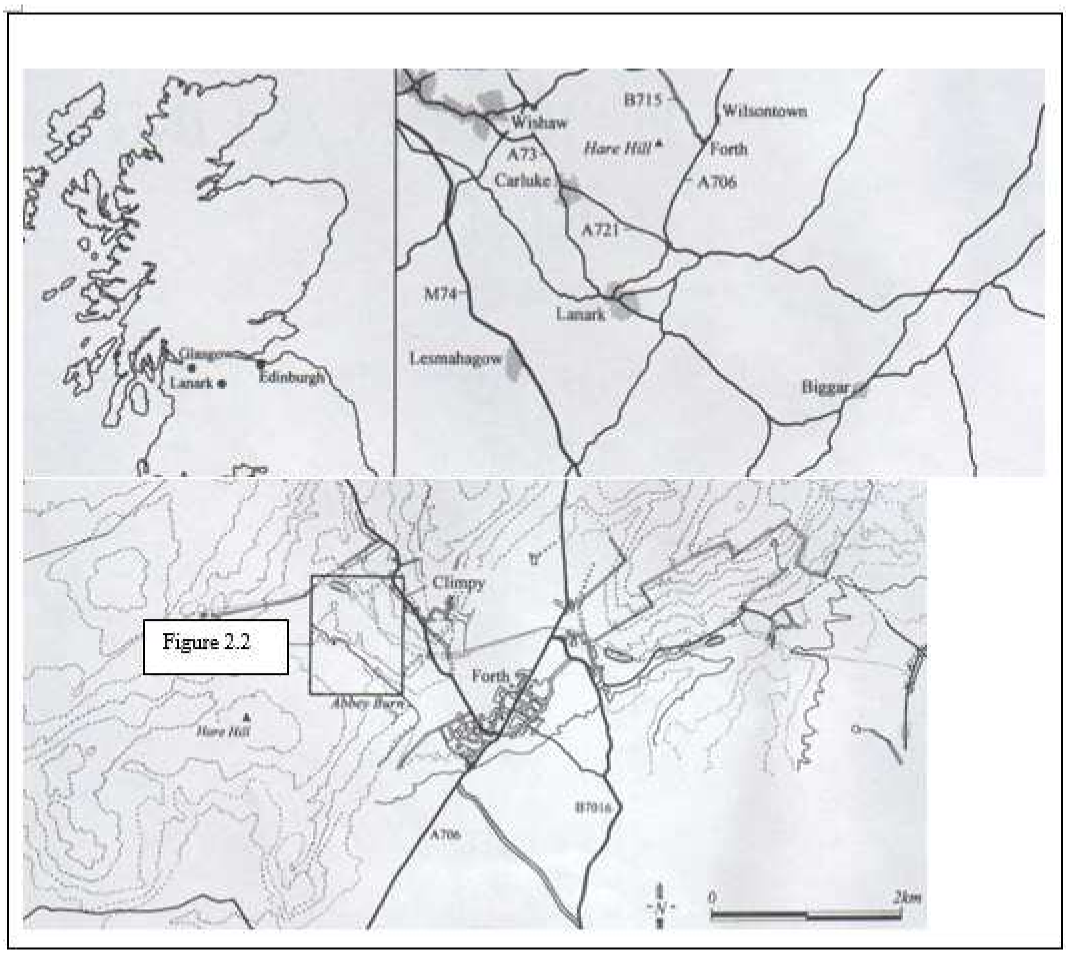


Figure 2.1: Broad geographic location of the site (adapted from Duncan 1997b, Figure 1).

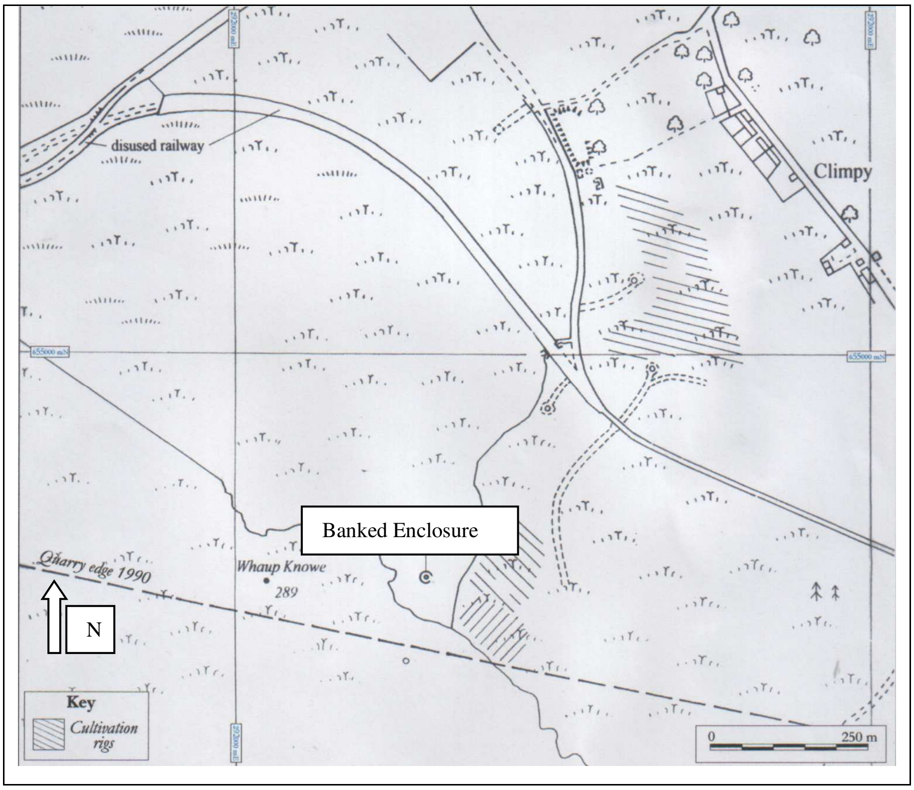


Figure 2.2: The site within the landscape (adapted from Duncan 1997b, Figure 2).

Figure 2.3: Photograph taken from the south-west of the turf-banked enclosure and landscape. © GUARD.

GEOLOGY

The site is situated with a geological landscape north of the Southern Uplands Fault in the Midland Valley where much of the solid geology comprises of Carboniferous rocks. In the area of South Lanarkshire where the site of Climpy is located the solid geology is of the Carboniferous limestone coal group. Within the Carboniferous limestone there are nodules and beds of chert (Ordnance Survey 1951a; Scottish Geology 2008) which is a hard and fine grained form of silica formed from the remains of silica rich radiolarian organisms (Gillen 2003, 222).

Radiolarian chert is generally green, grey or black (Owen *et al* 1999). The majority of the assemblage from Climpy comprises of greenish grey and dark greenish grey chert. Until such time as the chemical signature of the sources of chert is ascertained then it is not possible to categorically tie in any assemblage to any particular source (Warren 2007, 146-147). Prior to the formation of blanket peat covering the area outcrops of chert or surface nodules may have been visible in prehistory.

The drift geology is hidden by blanket peat although adjacent areas comprise of boulder clay or glacial till deposited from the melting ice sheets (Ordnance Survey 1951b; Gillen 2003, 224). Duncan (1997b) noted that the drift geology consisted of glacial till.

DISCOVERY

The turf-banked enclosure was identified during a walkover survey undertaken by GUARD in 1997 as part of a desk based assessment arising out of an application to extend a licence for open cast coal extraction. The proximity of the quarry edge to the site can be seen at Figure 2.4.

Figure 2.4: Photograph showing the proximity of the coal extraction quarry edge to the turf-banked enclosure. The lithic scatter areas are located on the far side of the enclosure. © GUARD.

The archaeology within the immediate vicinity of the monument comprised of cultivation rigs and sites relating to activity within an early modern industrial landscape (Duffy 1998). There are limestone quarries, coal mines and shafts, a disused trackway and a dismantled railway which had been used for the movement of mined minerals (Duncan 1997b; Duncan 2000).

There is a paucity of recorded pre-historic sites within the surrounding area save for a few stray finds. A barbed and tanged flint arrowhead, a leaf shaped arrowhead and a flint flake were recovered from Easter Heathland Farm and Haywood Farm, Forth (Forestry Commission 1977, 381). Chert and flint artefacts including an arrowhead were found at Mountainblaw Farm (Cleland and McCutcheon 1974, 229; Forestry Commission 1975, 333). A tanged arrowhead was recovered at Haywoodhead Farm, Forth (Forestry Commission 1975, 333). This suggests Late Neolithic and Bronze Age activity within the local landscape.

ARCHAEOLOGICAL EVALUATION

The complete excavation of the site was undertaken in two stages. In 1997 following the desk based assessment and walkover survey (Duncan 1997a) an archaeological evaluation was carried out. This was to investigate the turf-banked enclosure to ascertain the character and condition of the structure and also to determine a date for its construction and use. Secondly, there was a requirement to determine if there were any archaeological remains within the immediate vicinity of the enclosure. Thirdly, as assessment was to be carried out to establish what would be the requirements for the complete excavation of the site and preserving its integrity by record (Duncan 1997b).

The evaluation involved the excavation of the south-east quadrant of the turf banked enclosure (Figure 2.5). This area was approximately 60m² and incorporated part of the land surface outwith the bank. Four slot trenches were opened to the north and north-east of the enclosure to establish if there was any archaeology within the immediate locality. The evaluation uncovered a number of features and layers within the enclosure and stone concentrations beneath the bank collapse. A number of lithic artefacts were recovered from the fill of the northerly of the two stone concentrations and the area to the north-east outwith the collapsed bank. Lithic material was also recovered from the square metre nearest to the enclosure for both slot trench 1 and slot trench 2 (Duncan 1997b).

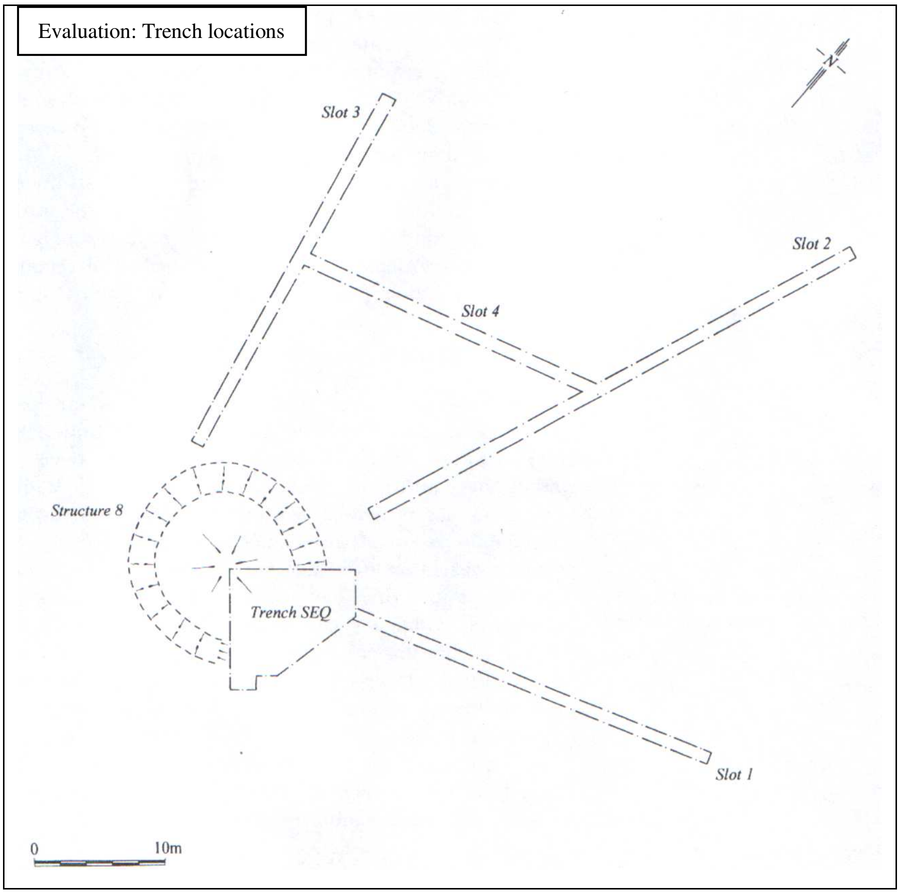


Figure 2.5: Plan of the trench and slot trench locations for the evaluation carried out in 1997 (after Duncan 1997b, Figure 3).

The artefacts were recovered by hand using a trowel. For those artefacts found *in situ* three dimensional co-ordinates were taken using a Total Station.

The evaluation could not ascertain the chronology and function of the turf banked enclosure. However, the recovery of lithic artefacts from the evaluation trench and two of the slot trenches determined that there was archaeology within the immediate locality of the enclosure. The evaluation suggested that the extent of the lithic scatter may have been only partially revealed and was probably Mesolithic in character. The discovery of the lithic scatter further strengthened the case for the preservation of the site by record (Duncan 1997b).

Evaluation: Context and recovery

The turf (1000) and peat (1001) were removed from the area to the north-east of the bank (Figure 2.5) to reveal a layer of dark black grey organic clay (1002) which covered the whole of the evaluation area. Underlying the peat was an artefact rich layer of mid-brown clay sand (1003) which overlay the glacial till (1030). The construction of the bank overlay and cut into (1003) [Figure 2.6]. Beneath (1002) was the lower bank material consisting of block peat/clay (1004) which overlay the fill (1045) of the stone concentration (1027).

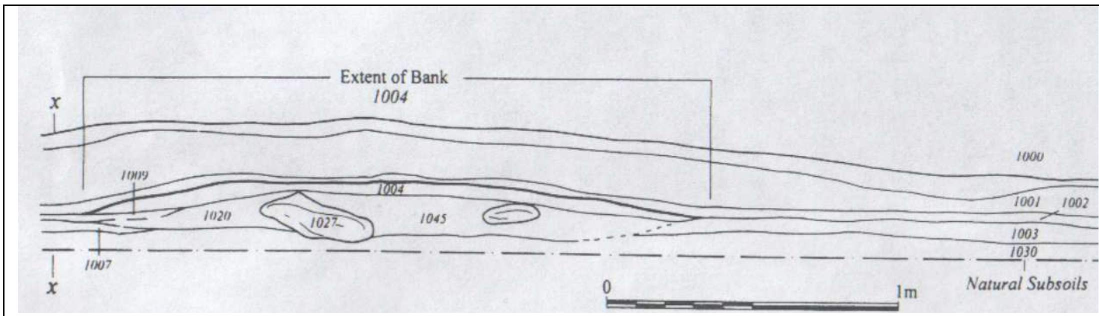


Figure 2.6: Abridged section drawing of the northern baulk of the evaluation trench (after Duncan 1997b, Figure 5).

Small finds were recovered from six contexts (Table 2.1). However, the small find from (1009) which was situated within the enclosure (Figure 2.7) was a naturally fractured stone of indeterminate material. A chert chunk was recovered from a sample of (1009).

A piece of clinker was recovered from the interface of (1002) and (1003). All of the chipped stone was chert. There were three artefacts recovered from (1004) comprising of a chert flake with post depositional edge damage and two items of small fraction debitage. Seven artefacts were found within the fill (1045) of the stone concentration (1027). There were four pieces of small fraction debitage together with a flake, blade and a chunk all of chert.

Context	*Number*	*Legend*
1002	1	Dark black grey organic clay
1003	62	Mid-brown clay sand with lithics
1004	3	Block-peat/clay (lower bank material)
1009	2	Mid-brown orange occupation layer
1045	7	Fill of stone concentration (1027)
1048	14	Mid-brown clay sand containing lithics (same as 1003)

Table 2.1: Contexts from which lithics were recovered during the 1997 evaluation (adapted from Duncan 1997b).

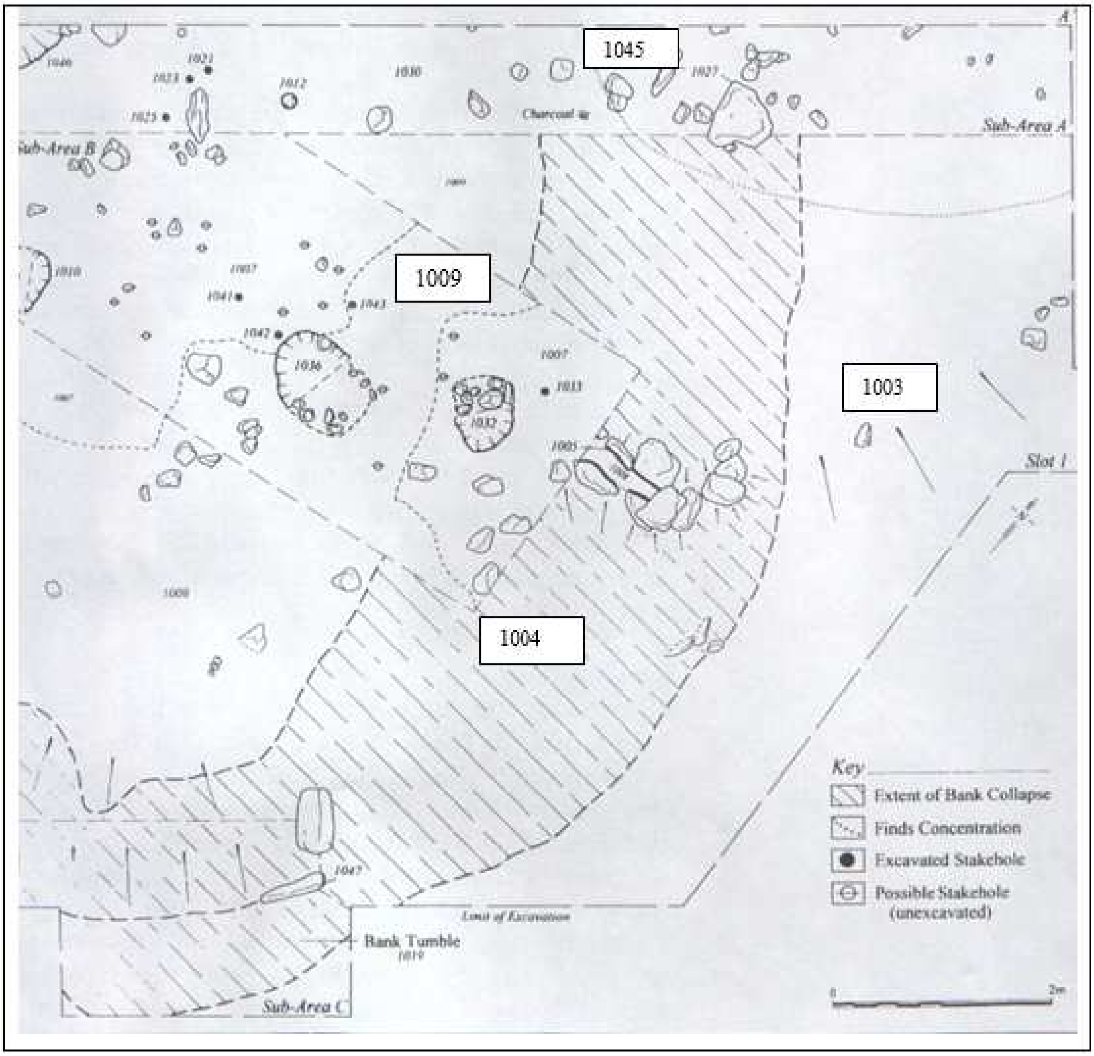


Figure 2.7: Post excavation plan of the evaluation trench showing those contexts from which the majority of the lithics were recovered (after Duncan 1997b, Figure 4).

ARCHAEOLOGICAL EXCAVATION

The complete excavation of the site was undertaken in 1999. Firstly, to resolve those issues left unanswered from the evaluation. Secondly, there was a requirement to determine the parameters of the lithic scatter. Thirdly, there was a necessity to ascertain if there was a relationship between the bank and those features both beneath and inside it and to the lithic scatter, and finally to preserve the site by record (Duncan 2000).

It was noted in a draft of the research design for the excavation that wet sieving was to be preferred for the sieving of spoil (Duncan nd.). However, there were concerns about a viable and suitable water source and consequently all spoil was dry sieved.

The trench was opened using a mechanical excavator with a toothless ditching bucket. It was sub-divided into four quadrants with each being named (Figure 2.8). During the initial cleaning back of the trench it was noticed that there appeared to be two discrete areas of lithic scatter, i.e. a North Scatter Area and a South Scatter Area (Figure 2.8) within a 99m² area. A grid comprising of 1m² was laid out over this area. The lithic rich context (1003) was to be excavated in three spits. Each spit was 3-5cm in depth. For each spit the north-west and south-east quadrants of each one metre grid were excavated by hand using trowels with the artefacts given three dimensional co-ordinates using a Total Station. The north-east and south-west quadrants of each one metre grid were bulk sampled by the excavation team and the lithics later recovered by sieving (Duncan 2000).

The minimum find spot resolution for the majority of the lithics was within a 50cm² grid. The initial interpretation of two discrete scatters was subsequently altered to four during the post-excavation process: lithic Scatters A, B and D to the north and Lithic Scatter C to the south [Figure 2.8] (Innes and Duncan, nd).

During the course of the excavation, and within the North Scatter Area, there were four stakeholes and two scoop (Figure 2.9) features which may have been contemporaneous with one or more of the lithic scatters.

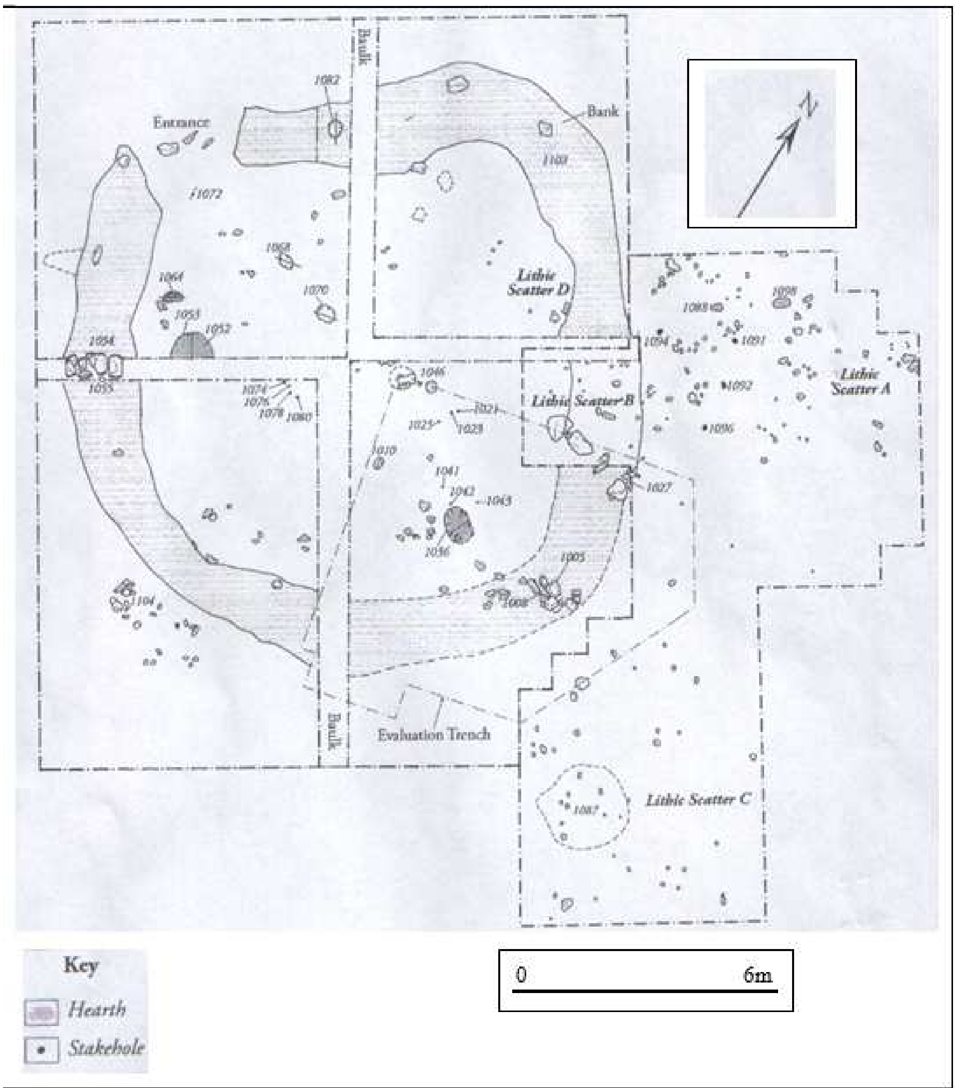


Figure 2.8: Plan of the excavations undertaken in 1999 superimposed over the evaluation trench from 1997 (adapted from Duncan 2000, Figure 5).

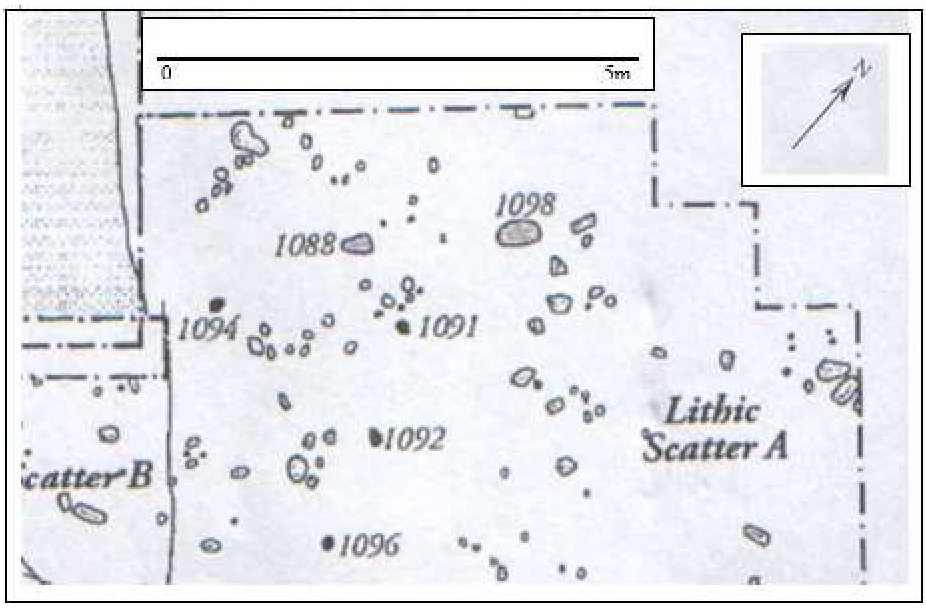


Figure 2.9: Plan of trench detailing the archaeological features. [1094], [1092], [1091] and [1094] are stakeholes [1088] and [1089] are hearths or locations for camp fires (adapted from Duncan 2000, Figure 5).

SUMMARY

The lithic scatter would have remained undiscovered had it not been for the impending destruction of the landscape within the immediate vicinity of the site due to a proposed extension to a licence for open cast coal extraction. This exemplifies the problem of discovering Mesolithic sites in an upland landscape covered by blanket peat and why to date so little is known about the diversity of the human experience in these upland locations in Scotland (Finlay *et al* 2003, 114). Furthermore, when the proximity of the edge of the open cast to the site is considered (Figure 2.4) one is left to wonder if the lithic scatter was part of a wider complex of occupation lost to modern industrial activity. For example, the upland scatter site at Coomb rig in the Daer Valley was severely disturbed by modern forestry, and the features associated with the lithic scatter at Weston, South Lanarkshire were truncated by ploughing (Finlay 2008).

The evaluation and excavation undertaken in 1997 and 1999 respectively were conducted in a professional and systematic manner. There may be an issue with lithic recovery given the sieving technique adopted and this will be discussed more fully in the next section.

SECTION 3: CLIMPY: SPATIAL DISTRIBUTION

INTRODUCTION

The lithic scatter was arbitrarily split by GUARD into a South Scatter Area and a North Scatter Area, following the excavations carried out in 1999. During the post excavation analysis conducted by GUARD the North Scatter Area was sub-divided into three discrete areas based on the spatial distribution of cores [Figure 2.8] (Duncan 2000).

The distributional analysis which was undertaken in July 2008 focused on three main themes. Firstly, to establish if the lithics recovered from the South Scatter Area represent a discrete scatter of one episode of knapping activity confined to (1087), the context from which the majority of lithics were recovered, or is there evidence for more than one knapping event. Secondly, to ascertain if there is more than knapping event within the Northern Scatter Area and the importance of the archaeological features. Thirdly, there is an attempt to discover if it is possible to determine the relative chronology of the knapping episodes.

Generally, a primary knapping location may be determined by the refitment of debitage to cores or where debitage products can be refitted (Inizan *et al* 1999, 96). None of the flakes and blades could be refitted nor could they be refitted to cores (section 4). Accordingly, the focus for the distribution analysis has principally centred on the locations where concentrations of cores and small fraction debitage were recovered.

The spatial distribution tables (Figure 3.1) used to show the spatial distribution of the lithics within a 1m² grid is based on the main scatter excavation area shown in Figure 2.8. The grey tone determines the area outwith the main scatter area. The x and y axes notations to the tables are consistent throughout which enables the spatial distribution of artefacts to be placed within the main scatter area even though only part of the pro forma distribution table may be shown.

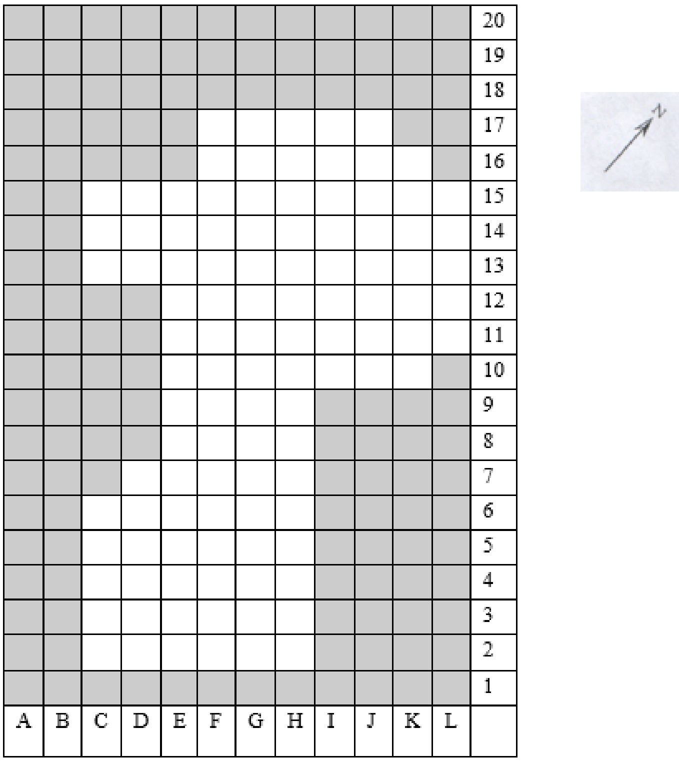


Figure 3.1: Pro forma distribution table showing 1m² grids from which lithics were recovered. The table is based on the main scatter area excavated in 1999 shown at Figure 2.8. The grey scale demarcates the area outwith the main scatter area.

DISTRIBUTIONAL ANALYSIS

EVALUATION

During the 1997 evaluation the majority of the small finds were recovered from (1003) and (1048). The latter context was identical to the former and referred to the mid-brown clay sand layer and was distinguished from (1003) only because it was within slot trench 2. 16 worked lithics were found within (1048) comprising of seven items of small fraction debitage, six chert flakes, one chert blade, one scalene triangle microlith and a microlith fragment. 64 pieces were recovered from (1003) including a fragment of a scalene triangle microlith together with a bipolar core and a flake platform core (Figure 3.2; Table 3.1).

Chert	Number
Chunk	4
Flakes	32
Blades	8
Small fraction	41
Cores	2
Microliths	2
	89

Table 3.1: Lithic artefacts recovered from evaluation analysed by blank.

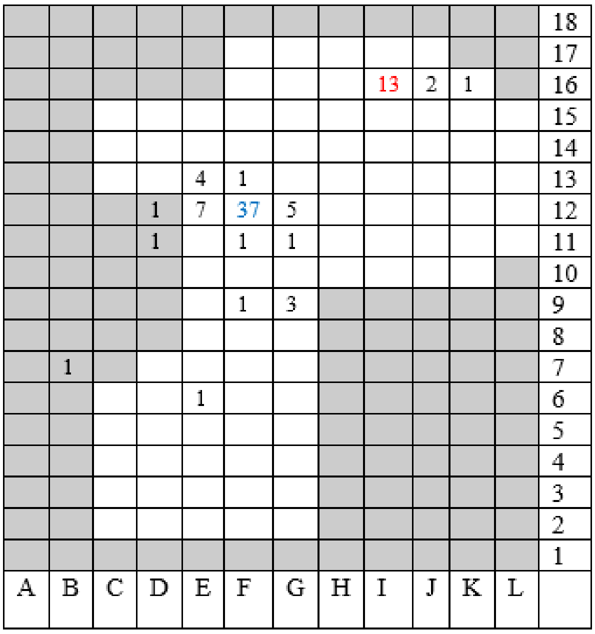


Figure 3.2: 1m grid showing the location and numerical frequency of finds from the evaluation undertaken in 1997. Red and green indicate that the number of finds includes microliths and cores, respectively. Blue indicates those locations where cores and microliths have been recovered from the same grid.

The land surface represented by (1003) appeared to be largely undisturbed (Innes and Duncan nd). For those contexts overlying (1003) the soils seemed to have developed naturally from the time of the occupation to the excavation of the site. The small finds from (1045) and (1004), contexts associated with construction and collapse of the bank, have been interpreted as being re-deposited [Figure 2.7] (Innes and Duncan nd).

EXCAVATION

There were 749 small finds recorded during the 1999 excavation. 730 of which were recovered either from the overall scatter area (Figure 2.8) or within 3m in any direction of that area. Those items included 14 cores and 33 microliths. The artefacts found outwith that area will be subjected to a separate analysis below.
The majority of the small finds were recovered from (1003). However, it was noted when excavating the South Scatter Area that there was a dark silty matrix (1087) in which most of the lithics were found (Figure 2.8). 702 of the 730 small finds can be allocated to the spit excavation from which they were recovered (Table 3.2). The numerical distribution of artefacts recovered where a grid location is known is shown at Figure 3.3. There were two pieces of small fraction debitage recovered from the fill (1089) of a scoop feature [1088] located in the north scatter area (Figure 2.9).

	No. of Small finds	%
Spit 1	321	45.7
Spit 2	285	40.6
Spit 3	96	13.7
Total:	702	

Table 3.2: Numerical and percentage frequency of small finds from 1999 spit excavations of (1003).

				1								20
												19
												18
						2	5	3			1	17
					1	34	59	8	14	2		16
				1	1	30	42	167	22			15
		3	1	3	3	9	4	4	5	1		14
				3	27	5	4	3			1	13
		1				2					1	12
				1	2			2	2			11
					3	2		1	1		1	10
					2	4						9
1					5	7	2					8
			1	1	4	3	2					7
		1	2	8	5	2						6
		1	23	6	3	1						5
		4	15	16	8	2						4
		4	9	11	3	1	2					3
			4	1			1					2
												1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.3: 1m grid showing the location and numerical frequency of finds from the spit excavations undertaken in 1999. Red and green indicate that the number of finds includes microliths and cores, respectively. Blue indicates locations where cores and microliths have been recovered from the same grid.

DISTRIBUTIONAL ANALYSIS: SOUTH SCATTER AREA

The South Scatter Area has previously been interpreted as equating to the context (1087) from which the majority of the artefacts were recovered (Figure 3.4). This dark silty matrix was noticed and recorded during the excavation of spit 2 (Duncan 2000). The first question has to be concerning the interpretation of context (1087). The method of excavation determined that there were no section drawings for this context and there are no interpretations offered in any of the GUARD reports (Duncan 2000; Innes and Duncan nd.). It is possible that (1087) is a build-up of dark silty material within a naturally occurring depression of (1003).

The artefacts found within the area of (1087) were recovered from all three spits (Figure 3.4). Those items recovered from spit 1 would have been from (1003). The percentile recoveries from spits 1, 2 and 3 were 55%, 34% and 11%, respectively. This contrasts with those items recovered from the extended area (1003) where finds found in spit 1 were (84%) and spit 2 (16%). To suggest defining a scatter area on this information is not without problems. It may assume that the ground was even and the spits were excavated at a uniform depth, which is known not to be case. If there was a slight depression within the described area (1087) then may account for the lack of recovery of artefacts from spit 3 over the extended area. Due to the pressures of time constraints spot levels were not taken before and after the excavation of each spit

(Duncan 2000). It is appropriate to look at the character of the lithics recovered from the extended area (1003) in comparison to those found in (1087) [Table 3.3].

Artefacts recovered from extended area (1087) and (1003)

	Total	Bipolar	%
Flakes	57	24	42.1
Blades	7	1	14.3
Chunks	10	3	30.0
Small fraction	92		
Cores	5	1	20.0
Microliths	5		
	176	29	

Artefacts recovered from (1087)

	Total	Bipolar	%
Flakes	34	14	41.2
Blades	2	1	50.0
Chunks	7	2	28.6
Small fraction	38		
Cores	2		
Microliths	5		
	88	17	

Artefacts recovered from (1003)

	Total	Bipolar	%
Flakes	23	10	43.5
Blades	5		
Chunks	3	1	33.3
Small fraction	54		
Cores	3	1	33.3
	88	29	

Table 3.3: Comparative analysis of lithic material, including numerical and percentage frequency of bipolar products from the extended area and broken down for those artefacts recovered from 1087 and 1003.

					3	7						9
					6	7	2					8
			1	1	5	3	2					7
		2	2	9	5	2						6
		2	23	6	3	1						5
		4	15	18	8	2						4
		4	9	11	3	1	2					3
			4	1			1					2
												1
												0
												-1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.4: 1m grid showing the location and numerical frequency of finds from the spit excavations undertaken in 1999. Artefacts with grid location but without a spit reference have been included. Red and green indicate that the number of finds includes microliths and cores, respectively. Blue indicates locations where cores and microliths have been recovered from the same grid. The area shaded yellow roughly equates to the area of (1087).

All of the artefacts are chert except for a flint flake (464) from grid D3. This piece appears to be of a later period to the Mesolithic and will be discussed with those artefacts recovered from outwith the principal scatter area. What is particularly interesting is the similarity in the bipolar component of the flakes from (1087) and the extended area (Table 3.3). Neither of the cores from (1087) and only one of five cores from the extended area is bipolar (523).

It is possible to create a considerable amount of debitage in one hour (Finlay 2008). A few flakes or blades even an occasional core or microlith do not necessarily constitute a knapping area or a knapping episode. The concentration of finds may be a result of larger pieces of debitage could be curated, or kicked around as people walked over the area, or gathered together and deposited away from a habitable or task related area. Firstly, it has been argued that it would be less likely for small fraction to be moved unless it was gathered together with larger pieces of debitage for re-deposition (Newcomer and Carlin 1987, 35). Where the occupation surface is undisturbed the pieces may have been excavated from where they fell. If people or animals were walking over the site the size of the pieces may suggest that they could have been simply be trampled into the soil. This would not necessarily lead to breakage because the pressures required to break artefacts of less than 1cm under foot would be significant. A study was conducted on the trampling of pottery sherds and it was found that once they were fragmented to a certain size they would be no further breakage by treading on the artefactual remains due to the shallow curvature of the pieces (Dr. E. Campbell pers. comm.; Campbell 2007, 9). The small fraction debitage from the South Scatter Area is shown at Figures 3.5 to 3.7, inclusive.

					2	2						9
					4	4	2					8
					2	1	1					7
		1	1	2	1	2						6
			7	4	2							5
			1	4		2						4
		4	3	3	2		1					3
			3	1			1					2
												1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.5: 1m grid of the South Scatter Area showing the location and numerical frequency of small fraction debitage from the spit excavations undertaken in 1999. The area shaded yellow roughly equates to the area of (1087).

												9
												8
												7
		1		5	2							6
		1	1									5
		3	4	2	3							4
			1	1								3
												2
												1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.6: 1m grid of the South Scatter Area showing the location and numerical frequency of small fraction debitage from the spit 2 excavations undertaken in 1999.

					2	2						9
					4	4	2					8
					2	1	1					7
		1	1	2	1	2						6
			7	4	2							5
			1	4		2						4
		4	3	3	2		1					3
			3	1			1					2
												1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.7: 1m grid of the South Scatter Area showing the location and numerical frequency of small fraction debitage from the spit 1 excavations undertaken in 1999. The lithics were recovered from (1003) overlying (1087).

In addition, to the small fraction debitage recovered from the spit 2 excavation there were flakes, blades and chunks recovered from (1087) with one microlith found in D4 and two in E3. The material recovered from spit 1 was from (1003) [Figure 3.7]. Two cores and one microlith were found in E3 and one microlith was recovered from E4. Numerically there was as much small fraction debitage recovered from the spit 1 excavations in the area covered by F7 to F9 and G7 to G9 as there was from (1087). A core was found in F7 (Figure 3.8; Table 3.4).

					3	7						9
					6	7	2					8
			1	1	5	3	2					7
		2	2	9	5	2						6
		2	23	6	3	1						5
		4	15	18	8	2						4
		4	9	11	3	1	2					3
			4	1			1					2
												1
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.8: The numerical frequency of artefacts recovered from the spit excavations in 1999. Area in orange shows the possible extension to South Lithic Scatter. Area covered by F7 to F9

and G7 to G9 in mauve. Red and green indicate that the number of finds includes microliths and cores, respectively. Blue indicates locations where cores and microliths have been recovered from the same grid.

Chert	Total	Bipolar	%
Flakes	11	3	27.2
Blades	3	1	33.3
Small fraction	16		
Cores	2	1	50.0
	32		

Table 3.4: Artefacts recovered from the evaluation and spit excavations for covered by F7 to F9 and G7 to G9.

Secondly, taphonomy must be considered to determine if the artefacts recovered from (1003) and (1087) were residual. If (1087) was an occupation layer within a shallow depression then it may follow that the context may broadly equate to one or more knapping episodes. The context that overlies (1087) is (1003). If it was assumed that the build-up of (1003) was gradual then the lithic material from (1003) may have related to a later knapping episode. It is, however, possible that soil creep or heavy rainfall may have determined that the artefacts were moving down a slope from where those artefacts were originally manufactured (Lucas 2001, 149). At Woodend Loch (Davidson *et al* 1951), although not noted in the excavation report, the lithics recovered from the water's edge of the loch at the base may have moved, due to taphonomic factors, down the slope of Woodend Farm Hill. When compared the density levels per square metre for the North Scatter Area are compared to the South Scatter Area (Figure 3.3) it may be that some of the artefacts had been washed down from the North Scatter Area.

DISTRIBUTIONAL ANALYSIS: NORTH SCATTER AREA

The Northern Scatter Area, with reference to Figure 3.3, can be loosely defined as being from row 10 through row 17, inclusive. There were six archaeological features found within the North Scatter Area comprising of four stakeholes and two scoops (Figure 2.9).

The scoop [1088] was shallow with regular sides and a flat base. It was irregular in shape (east-west 35cm; north-south 16cm). The fill (1089) comprised dark to mid-grey silt clay with small stones and flecks and small lumps of charcoal of indeterminate origin or type, and two pieces of small fraction debitage. The second scoop [1098] was similar in profile to [1088] although it was slightly more oval in plan (east-west 35cm; north-south axes 20cm). The fill (1099) consisted of dark grey brown organic fine sand silt with occasional flecks of birch wood charcoal (Duncan 2000; Innes and Duncan nd); no lithics were recovered from (1099).

The four stakeholes, [1096] 'stakehole 1', [1092] 'stakehole 2', [1091] 'stakehole 3' and [1094] 'stakehole 4', are all circular in plan with diameters ranging from 4cm to 5cm with pointed rounded bases. Each of the stakeholes has a depth of 6cm save for [1096] which is 4cm. The fill (1095) of [1094] comprised of a dark brown silt with flecks of heather charcoal. The fill (1090) of [1091] is similar to that of (1099) although without charcoal inclusions. The section of [1092] suggests that a stake may have inclined 40º to the north (Duncan 2000).

Scatter Area A

The evaluation highlighted a potential knapping location 'Scatter Area A' to the south-east of the area with the highest density of lithics recovered (Figure 3.9).

												14
				4	1							13
			1	7	37	5						12
			1		1	1						11
												10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.9: 1m grid showing the location and frequency of finds from the evaluation undertaken in 1997. Blue indicates that cores and microliths have been recovered from the same grid. Area in pink denotes possible Scatter Area A.

There were 96 chert artefacts with grid locations recovered during the evaluation and excavation (Table 3.5). Six of the lithics recovered from E12 and F12 came from the fill (1045) of stone concentration (1027) and have been classified as re-deposited (Duncan 1997b). Those items comprise three pieces of small fraction debitage, a flake, a bipolar blade and a bipolar chunk. Cores were recovered from F11 and F12 and the microliths from F12 and F13.

	Chert	Bipolar	%
Blades	8	5	62.5
Flakes	32	6	18.8
Chunks	6	3	50.0
Cores	3	2	66.7
Microliths	3		
Small fraction	38		
	90		

Table 3.5: Table showing the character of the artefacts recovered from Scatter Area A.

Scatter Area B

The evidence of the evaluation may suggest that the knapping at Scatter Area B (Figure 3.12), roughly encompassing rows 14 through 17, was broadly contemporary with the events that took place in Scatter Area A (Figures 3.10 and 3.11).

												18
												17
								13	2	1		16
												15
												14
				4	1							13
			1	7	37	5						12
			1		1	1						11
												10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.10: 1m grid showing the recovery and frequency of finds from the evaluation undertaken in 1997

		3	1	3	3	9	4	4	5	1		14
				3	27	5	4	3			1	13
		1				2					1	12
				1	2			2	2			11
					3	2		1	1		1	10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.11: 1m grid showing the location and frequency of finds from the spit excavations undertaken in 1999. Red indicates location of microliths. Green indicates the location of cores.

F	F	G	G	H	H	I	I	J	J	
										17N
										17S
	1		14	6	5	3	8	2	2	16N
		11	9	42	6	3	7	9	2	16S
		6	30	14	13	25		11	3	15N
		2	3	9	5	28	15	8	1	15S
		3	3	2	1	1	3	2	2	14N
		2	1	1		3		1		14S
		1	4		1					13N
				1	1					13S

Figure 3.12: For the spit excavations each 1m² grid was sub-divided into four 50cm² grids, i.e. NW, NE, SW and SE. Where possible each find was given a 50cm² grid reference either through recovery by excavation or from the later sieving of bulk samples. This figure shows the location and frequency of finds where a grid reference was available. The stake holes are located within G13NE 'stakehole 1', H14NW 'stakehole 2', H15NE 'stakehole 3' and F16SE 'stakehole 4'. The

scoop features were found within H16NW and I16NE. The maximum diameter of the stake holes was 5cm.

From the analysis of the lithic distributions for all material (Figure 3.12) and small fraction debitage for spits 1, 2 and 3 (Figures 3.13 to 3.16 inclusive) it is possible that two of the stakeholes 4 formed a wind break structure. It may have set up between stakehole 4 (F16SE) and stakehole 2 (H14NW). The line between these two features appears to form the southern boundary of the lithic scatter. There are no indications from the distribution analysis for the potential use of stakeholes 1 (G13NE) and 3 (H15NE).

A hypothesis could be proffered that a temporary wind break was set up between stakehole 4 and stakehole 1 to provide shelter for the lighting of the camp fires or as a rack for cooking materials.

												18
						2	2				1	17
						3	33	3	7			16
					1	17	17	78	7			15
		1		1		5	2	2	2	1		14
				3	6	3	3	3				13
						1					1	12
				1				1	2			11
					1	1		1	1			10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.13: 1m grid the recovery and frequency of small fraction debitage from all spit excavation in 1999 where grid co-ordinates are known for Scatter Area B.

												18
						2	5	3			1	17
					1	34	59	8	14	2		16
				1	1	30	42	167	22			15
		3	1	3	3	9	4	4	5	1		14
				3	27	5	4	3			1	13
		1				2					1	12
				1	2			2	2			11
					3	2		1	1		1	10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.14: 1m grid the recovery and frequency of all lithic material from spit excavations in 1999 where grid co-ordinates are known for Scatter Area B.

												18
						2	1				1	17
						3	20	3	5			16
							10	6	2			15
		1				5	1	1	2	1		14
				3	3		3					13
						1					1	12
				1				1	2			11
					1	1		1	1			10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.15: 1m grid the recovery and frequency of small fraction debitage from spit excavation 1 in 1999 where grid co-ordinates are known for Scatter Area B.

												18
							1					17
						10	8		1			16
				1		14	7	54	5			15
				1			1					14
					3	3		3				13
												12
												11
												10
A	B	C	D	E	F	G	H	I	J	K	L	

Figure 3.16: 1m grid the recovery and frequency of small fraction debitage from spit excavation 2 in 1999 where grid co-ordinates are known for Scatter Area B.

There were 430 lithic artefacts recovered from Scatter Area B where grid co-ordinates were either known or ascertained from Total Station readings (Table 3.6). 98.4% of the pieces were chert.

	Total	Chert	Bipolar	%	Flint
Small fraction	204	204			
Blades	45		1	2.2	5
Flakes	133	131	31	23.3	2
Chunks	19	19	7	36.8	
Cores	7	7	1	14.3	
Microliths	22	22			
Total:	430	423			7

Table 3.6: Analysis of the lithics recovered from Scatter B by blank and indicating the numerical and percentile of bipolar products.

Turf-banked enclosure

The turf-banked enclosure was approximately 14m in diameter with a width of between 1.5m to 2.4m. The bank had collapsed and decayed. The features within the enclosure appeared to be random and suggested more than one period of occupation. Samples of carbonised birch were taken from two interior features and provided calibrated radiocarbon dates at 2σ of 600-400BCE (GU-12534) and 1700-1520BCE (GU-10382). The first pit dated to the Early Iron Age and the second to the Early Bronze Age. The bank may have been dated to later prehistoric activity or may have been built in the medieval or Post-Medieval periods. There was no stratigraphic evidence to relate the interior features to the bank. The interior may have had repeated short episodes of occupation over a considerable period of time (Innes and Duncan nd).

There were 23 recorded small finds from the interior of the enclosure of which 17 were worked stone, three pieces were thermally fractured and three items were natural (Table 3.7). Three of the flint artefacts were burnt; two flakes and the indeterminate blank. The other lithic artefacts were fresh. The lithic material was recovered from diverse locations within the interior.

The greenish black flake core (412) had three platforms with a dominant cortical platform. It had been extensively worked and was probably abandoned due its size. There was an oblique truncation (415) with two of the edges partially retouched. It was fashioned from a light brown flint. There was no flint microliths found within the turf-banked enclosure.

The two fresh flint flakes appear to be post-Mesolithic. One of the pieces with a sickle gloss had a facetted butt and showed evidence of edge damage possibly through use. The artefact had been struck from a simple platform with a feathered distal termination. The other piece was missing the proximal end with an irregular distal termination. Both of the burnt flint flakes had edge damage. One piece, also thought to be from a later period, presented with a pot-lid fracture; the edge damage to the left hand side was post depositional. The second artefact had a heat spall and exhibited fresh edge damage. There was a bipolar regular flint flake (464) recovered during the spit 1 excavation from the South Scatter Area (D3) which also appeared to be post-Mesolithic.

The five chert flakes when compared to the flint examples were quite unremarkable. They were dark greenish grey in colour and unmodified. Two of the pieces were bipolar and three were struck from a simple platform. The chert artefacts would not have looked out of place had they been recovered from the main scatter area.

The single quartz flake (414) had been struck from a simple platform with the core having been anvil supported. There was a considerable amount of natural quartz shatter recovered from within the main scatter area. However, this is the only worked quartz artefact recovered from Climpy.

	Total	Chert	Flint	Quartz
Natural	3	3		
Thermal	3	1	2	
Cores	1	1		
Flakes	10	5	4	1
Secondary	5	2	2	1
Tertiary	5	3	2	
Secondary regular	3		2	1
Secondary irregular	2	2		
Tertiary regular	3	1	2	
Tertiary irregular	2	2		
Blades	3	1	2	
Secondary regular	1	1		
Tertiary regular	2		2	
Indeterminate	1		1	
Primary irregular	1		1	
Small Fraction	1	1		
Tertiary irregular	1	1		
Microlith	1		1	
Total:	23	12	10	1

Table 3.7: Character of the small finds found outwith the main scatter area.

The analysis of the lithic material from within the turf-banked enclosure could not add to the interpretation offered by Innes and Duncan (nd). The artefacts were recovered from various locations within the enclosure. The oblique truncation could possibly date to the Mesolithic. It is probable that the other artefacts spoke to the later periods of occupation.

DISCUSSION AND CONCLUSION

The distributional analysis considered the North Scatter Area and the South Scatter Area independently. This is not ideal but without any common point of stratigraphic reference it was not possible to ascertain whether the knapping episodes in South Scatter Area preceded, post-dated or were contemporaneous with the occupation of the North Scatter Area.

The interpretation of the North Scatter Area and the South Scatter Area is particularly fraught. The difficulty of relying on the spit excavations to determine episodes of activity assumes that they are indicators of behavioural units. They were no more than arbitrary levels and, therefore, lack the integrity from which to interpret episodes of occupation. The lithic material from the South Scatter Areas may simply relate to a palimpsest of random scatters of various events with erosion and other taphonomic factors accounting for the apparent concentration of finds, which is suggested by the composition of the assemblage from this area.

There is neither a stratigraphic relationship between the features in the North Scatter Area nor the features and the lithic material save for that they were cut into the context (1003) from which the artefacts were recovered. A review of the evidence of structural features from a number of Mesolithic sites in Scotland helpfully compiled by Wickham-Jones (2004) has not aided the interpretation of the archaeological features at Climpy. It is possible that the scoops are the remains of camp fires and the stakeholes represent what was once a windbreak structure (Duncan 2000). It is also possible that the stakeholes may have had alternate uses, e.g. as racks associated with cooking, or they were not contemporary with Mesolithic activity.

A possible interpretation from the spatial distribution of the lithic material from the North Scatter Area makes two assumptions which need to be considered. Firstly, the features appear to be contemporaneous with the lithic material on the basis that they seem to create boundaries to the area within which the artefacts were recovered from Scatter Area B. The debitage from knapping appears to have gathered against the windbreak. Secondly, recovery of lithic material from the evaluation (Figure 3.10) may indicate that Scatter Area A and Scatter Area B were broadly contemporaneous and may comprise of a single phase primary knapping area. The term ‘single phase’ follows Saville (2008, 212) and does not necessarily imply only one visit to the site. There may have a number of visits over a relatively short period of time.

Conversely, in stripping away the assumptions the North Scatter Area may have simply been a similar palimpsest to the South Scatter Area. The features, either singularly or in combination, may have been contemporary with certain random knapping events and not with others. The higher density of lithics per $1m^2$ in the North Scatter Area may reflect a either a higher incidence or relatively prolonged periods of episodic occupations where in situ knapping was undertaken. These issues are discussed further in section 4.

SECTION 4: CLIMPY: PRIMARY TECHNOLOGY

INTRODUCTION

The term 'Primary Technology' speaks to those procedures relating to the choices made in the selection and the obtaining of appropriate raw material, 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 (Woodman *et al* 2006, 78).

The methodology employed for the analysis follows the format devised and adopted for the *Southern Hebrides Mesolithic Project* (Finlayson *et al* 2000) which built upon the research design used for the analysis of the lithic assemblage from the site at Kinloch on Rùm (Wickham-Jones 1990).

This section presents a typological analysis and a detailed investigation into primary technological attributes of the lithic assemblage from the Mesolithic occupation of the site at Climpy. The analyses will seek to determine:

- The character and condition of the lithic assemblage,
- the possible source of raw material and attempt to establish the choices that may have been available in the utilisation because of the working quality of those materials,
- the dominant and lesser primary technologies and ascertain what products the people were seeking to manufacture, and how the quality of the raw material may have impacted upon those choices,
- whether there are indicators to the level of skill employed in the reduction of raw material,
- what the Mesolithic craft working kit at Climpy may have comprised of,
- if Climpy was a site where the primary knapping of material was undertaken.

A refitting study was conducted to determine if any of the flakes and blades could be refitted to the chert cores. From areas where cores were recovered, flakes and blades were initially separated by colour and condition to match the core characteristics. The attempt to refit flakes and blades and those debitage products to individual cores proved fruitless. There was also an unsuccessful attempt to refit individual blanks.

LOCATION AND RECOVERY

There were 839 pieces recorded as small finds from the evaluation and excavation and 70 pieces of naturally fractured quartz recovered during the spit excavations from the main scatter area (Table 4.1) which are discussed briefly below. There were 20 artefacts recovered from outwith the main lithic scatter area and they are discussed separately in the preceding section.

For the purposes of this section the chipped stone assemblage from the main scatter area amounts to 785 pieces (Table 4.2). 89 (11.3%) from the evaluation and 696 (88.7%) artefacts recovered from the excavation. There were seven chert artefacts deemed by GUARD (Duncan 1997) to have been re-deposited in the fill (1045) of a stone concentration (1027) which was associated with the construction and collapse of the turfed-bank to the enclosure. 778 artefacts were recovered from what GUARD (Duncan 1999) described as a largely undisturbed land surface. There were no anvils or hammerstones recovered from the site.

	Total	Chert	Flint	Quartz	Qz	Ch
Natural/unmodified	104	27		73	1	3
Pebbles	9	8				1
Chunks	95	19		73	1	2
Cores	16	16				
Chunks	47	47				
Flakes	266	254	11	1		
Primary	21	21				
Secondary	135	128	6	1		
Tertiary	110	105	5			
Primary regular	3	3				
Primary irregular	18	18				
Secondary regular	45	41	3	1		
Secondary irregular	90	87	3			
Tertiary regular	37	32	5			
Tertiary irregular	73	73				
Blades	106	98	8			
Primary	2	2				
Secondary	28	26	2			
Tertiary	77	71	6			
Primary regular	1	1				
Primary irregular	1	1				
Secondary regular	19	17	2			
Secondary irregular	9	9				
Tertiary regular	55	49	6			
Tertiary irregular	21	21				
Indeterminate	1		1			
Primary	1		1			
Primary irregular	1		1			
Small Fraction	369	368	1			
Primary	8	8				
Secondary	43	43				
Tertiary	318	317	1			
Total:	909	810	21	74	1	3

Table 4.1: Character of the recorded small finds from the evaluation and excavation and quartz recovered from the spit excavations. There were five pieces of clinker recorded as 'shale' and these items have not been included in the tabular analysis. Legend: quartzite (Qz); chalcedony (Ch).

	Total	Chert	Flint
Cores	15	15	
Chunks (>10mm)		47	47
Flakes	253	248	5
Primary	21	21	
Secondary	127	125	2
Tertiary	105	102	3
Primary regular	3	3	
Primary irregular	18	18	
Secondary regular	41	40	1
Secondary irregular	86	85	1
Tertiary regular	35	32	3
Tertiary irregular	70	70	
Blades	102	97	5
Primary	2	2	
Secondary	27	25	2
Tertiary	73	70	3
Primary regular	1	1	
Primary irregular	1	1	
Secondary regular	18	16	2
Secondary irregular	9	9	
Tertiary regular	52	49	3
Tertiary irregular	21	21	
Small Fraction (<10mm)	368	367	1
Primary	8	8	
Secondary	43	43	
Tertiary	317	316	1
Total:	785	774	11

Table 4.2: Character of the chipped stone assemblage from the main scatter area.

RAW MATERIAL

Chert makes up 98.6% of the chipped stone assemblage. The chert appears to derive from sub-angular tabular blocks although there is some water rolled pieces. This may imply that the raw material was either harvested from outcrops, or pieces selected from a number of tabular blocks of raw material naturally fractured from those outcrops. It is possible that the chert was also harvested from erratics. The cortical surface or skin is predominantly smooth and hard and those artefacts with a pitted surface tend to be bipolar products, which may suggest a differential selection policy or period of reduction.

There are 305 fresh chert flakes, blades and chunks of which 153 is banded chert. 86.3% is dark greenish grey in colour with the remainder comprising of greenish grey (7.2%) and grey (6.5%). The plain chert is also predominantly dark greenish grey (65%). The other pieces are grey (13.8%), greenish grey (11.8%), and black (2.6%) and assorted others (6.8%). The percentage of dark greenish grey flakes, blades and chunks of chert and banded chert is 75.7%.

The only other raw material within the chipped stone assemblage from the main scatter area is flint (1.4%). There are only four pieces with cortical remains which probably originated from beach pebbles, having been brought to the site in a reduced state.

Quality of the raw material

In order to classify the quality of the raw material a random sample of 238 of the chert artefacts was undertaken using flint as a benchmark to demarcate a good quality raw material which produces a clear fracture with a smooth ventral surface. 61 (34%) of the dark greenish grey chert was classified as good. The figures for the greenish grey and grey chert were 18 (78%) and 9 (32%), respectively. The grey material had the highest incidence of poor quality (53.6%) and the greenish grey the lowest (11.1%). The majority of the grey debitage had bands of black inclusions creating fracture planes. The dark greenish grey chert, even when banded, produced a reasonably clear fracture. 24 of the 30 fresh chert microliths were dark greenish grey in colour which suggests that although not the best quality raw material it may have been more abundant.

Condition

87.6% of the chert artefacts are fresh; 7.4% are weathered and 5% burnt (Table 4.3). Nine of the 11 flint pieces are fresh and two burnt.

It is often difficult to determine if chert has been burnt (N. Finlay pers. comm.). The incidence of burnt pieces within the assemblage may therefore be understated. Experimental work was carried out on the raw materials found during the excavations at Kinloch on Rùm. It was found that after burning only 11% of the pieces would have been categorised as having been burnt. The majority of the items did not present evidence of heat spalling, crazing or change to white (Finlayson 1990, 53).

	Total	Fresh	Burnt	Weathered
Cores	15	13	1	1
Chunks	47	29	14	4
Flakes	248	222	10	16
Primary	21	18		3
Secondary	125	112	6	7
Tertiary	102	92	4	6
Primary regular	3	2		1
Primary irregular	18	16		2
Secondary regular	40	37	1	2
Secondary irregular	85	75	5	5
Tertiary regular	32	30	1	1
Tertiary irregular	70	62	3	5
Blades	97	84	7	6
Primary	2	2		
Secondary	25	24	1	
Tertiary	71	59	6	6
Primary regular	1	1		
Primary irregular	1	1		
Secondary regular	16	15	1	
Secondary irregular	9	9		
Tertiary regular	49	43	4	2
Tertiary irregular	21	15	2	4
Small Fraction	367	330	7	30
Primary	8	5	1	2
Secondary	43	39		4
Tertiary	316	286	6	24
Total:	774	679	39	57

Table 4.3: Condition of the chert assemblage.

38 of the 39 of the burnt pieces have a location reference. 81.6% are from the North Scatter Area; South Scatter Area 18.4%. The highest densities of burnt pieces were located in grids I15 (21.1%) and F13 (10.5%) of the North Scatter Area. The only burnt core was recovered from the South Scatter Area (E3).

Quartz

All 73 pieces of natural quartz recovered from the overall scatter area appear to be rolled and naturally fractured or possibly fire cracked. 70 items have size dimensions of less than 10mm. The distribution of the quartz pieces broadly equates to the locations of high artefact density.

Flint

There were 11 flint items recovered from the overall scatter area, nine of which had a location reference; two from the South Scatter Area and seven from the North Scatter Area. The character, condition and size dimensions of the flint pieces are shown at Table 4.4. The piece with the largest dimensions (464) appears to be post-Mesolithic in character and similar to those flint blanks recovered from within the turf-banked enclosure which suggests it is probably residual.

Character/Condition	Total	Fresh	Burnt
Flakes	5	5	
Secondary	2	2	
Tertiary	3	3	
Secondary regular	1	1	
Secondary irregular	1	1	
Tertiary regular	3	3	
Blades	5	4	1
Secondary regular	1		1
Tertiary regular	4	4	
Small fraction	1		1
Tertiary irregular	1		1
Total:	11	9	2

Blade size dimensions (n=4) mm	Length mm	Width mm	Thickness
Average	15.0	4.25	2.5
St. Deviation	2.0	1.5	1.0
Mode	16	3	3
Maximum	16	6	3
Minimum	12	3	1

Flake size dimensions (n=5) mm	Length mm	Width mm	Thickness
Average	23.6	13.6	4.4
St. Deviation	6.3	5.4	0.5
Mode	n/a	16	4
Maximum	31	19	5
Minimum	16	5	4

Table 4.4: Character, condition and size dimension of flint pieces.

Flakes

All of the five flakes have diffuse bulbs and are fresh and complete; two with edge damage. 80% of the flakes are regular. The length range is 16-31mm; width 5-19mm. Two pieces are bipolar with the remaining three platform flakes.

Blades

Four of the blades have diffuse bulbs and are fresh, complete and struck from simple platform cores; one burnt piece has the proximal end missing. All five of the blades are regular. The length range is 12-16mm; width 3-6mm. One of the blades has retouch.

Chert

Core reduction

All of the cores are chert. The paucity of primary artefacts (7.1%) makes it difficult to determine opening strategies. Presumably, the chert blocks provided a reasonably flat cortical surface from which to open materials.

Cores

15 cores and core fragments were recovered, of which 11 are simple platform cores (73.3%). In addition, one greenish black chert flake platform core was found outwith the main scatter area. It is most common to associate narrow blade assemblages with cores where the predominant removal was blades. There were two cores which were non-specific, five blade cores and four flake cores. A point highlighted by Finlay *et al* (2000a, 556) is that the cores are characterised by the negative scars of the last removals prior to discard. Accordingly, the characterization of the cores may be unrepresentative of the majority of removals from these pieces.

On the basis of the spatial distribution analysis (section 3) the four bipolar cores (26.7%) appear to be contemporary with the platform cores. There are four platform cores (36.4%) with evidence for anvil support which suggests that a bipolar reduction strategy was not a temporal marker at Climpy. The bipolar cores were recovered from the South Scatter Area and the North Scatter Area (Figure 4.1).

13 of the cores were fresh, one burnt and one weathered. 12 of the 15 items were dark greenish grey in colour. There are 209 flakes and blades over 1cm and 27 microliths of a similar colour. This would suggest that if all of the flakes and blades were recovered from the site then each core produced 20 of those pieces. It is possible that the bipolar cores had originally been platform cores although there does not appear to be any evidence for this at Climpy. The average length of the flaking surface of the bipolar cores is almost the same as that for the platform cores (Table 4.4) which suggests that platform cores were not reduced further by bipolar reduction.

All of the cores, except for one burnt chert core, are of less than reasonable to poor quality. The character and quality of the flake and blade blanks implies that the cores recovered from the site were not producing the majority of these artefacts. It is possible that cores of a superior raw material were brought to the site with knapping equipment. The people who occupied Climpy during the Mesolithic may have used local raw material to attempt to avoid, until necessity determined, the use of the curated superior quality material. If the curated cores were used sparingly then it is possible that they were taken away and curated for future use. They may have been abandoned if blanks from better material were made elsewhere.

It may be argued that this interpretation can be justified when consideration is given of the likely causes for abandonment of the cores (Table 4.4). 66.7% of the cores were probably abandoned due to flaws in the raw material and severe stepping and hinging to the core face. Four cores (26.6%) may have been abandoned due to their size with one example (6.7%) where good platform angles could not be maintained.

Two of the bipolar cores were bifacial which is defined by Inizan *et al* (1999, 130) where there are removals from two faces with a common edge. One of those cores was grey in colour and recovered from the North Scatter Area (grid F11). Four of the eight grey bipolar blades and flakes were found within the North Scatter Area.

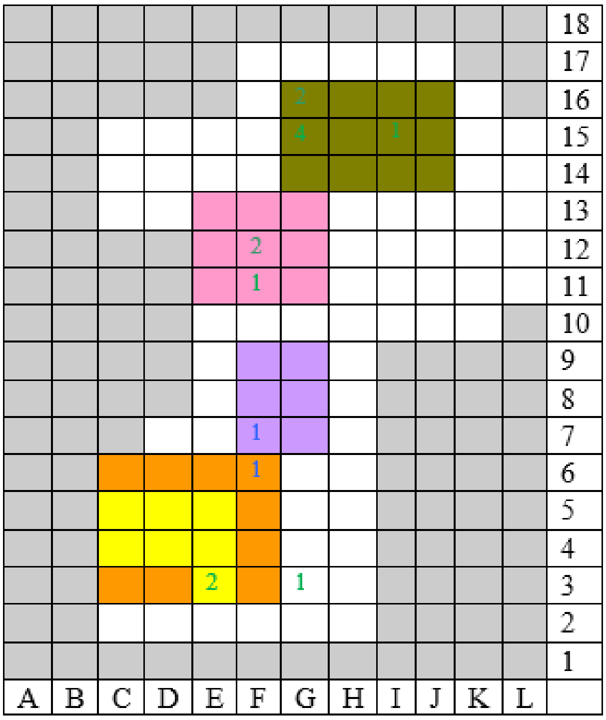


Figure 4.1: 1m grid location of cores recovered from the lithic scatters. South Scatter Area (1087); Scatter Area (1087) extended; Scatter Area; North Scatter Area: Scatter Area A; Scatter Area B. Bipolar cores were found in grids F6, F11, F12 and G16.

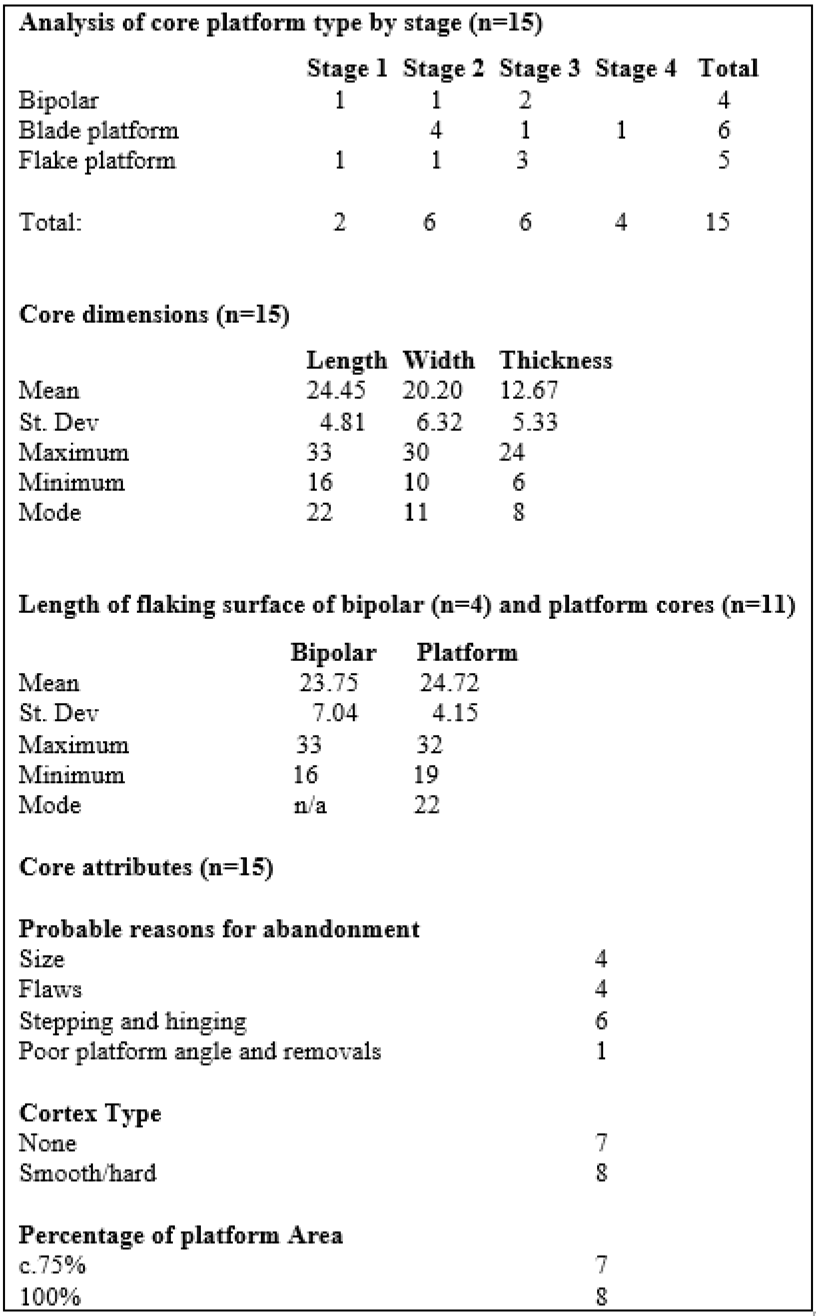
Figure 4.2: Top line left to right: flake platform core (165); flake platform core (522); blade platform core (556); mixed flake and platform core (592); flake platform core (593). Bottom line left to right: blade platform core (532); burnt good quality chert blade platform core (554); bipolar core (459); bipolar core (523); non-specific platform core (557). Scale 5mm.

Core Stage Analysis

The cores were analysed to measure the range of techniques adopted in the reduction of chert [Table 4.5] (after Finlayson *et al* 2000, 64-65). 15 stages were identified. It was not possible to determine the angularity of nine of the cores (60%). Five of the cores appear to be from a tabular source (33.33%) and only one appeared to be from an angular nodular source (6.67%). The dimensions of the cores are set out in Figure 3.7. The number of stages for both platform and bipolar reduction were broadly similar. The reorientation of the cores appears to have been chosen as a result of the previous event to start a new platform. All of the platform cores, save for two where only remnants of the platforms remained, had evidence of simple scrub platform preparation.

13 of the cores had diffuse negative bulb scars (86.67%) suggesting the use of an antler or soft hammerstone. Where visible, five cores had blades as the dominant removal and four with flakes. There were two cores where both flake and blade removals are substantially equal. This patterning does not reflect the higher incidence of flakes to blades within the assemblage. There were only eleven removals measurable on the cores due to the poor quality of the chert. The average length was 17.18mm with a range of 11-29mm (STDEV ±4.83mm). The average width of the removals was 9.91mm with a range of 5-20mm (STDEV ±4.09mm).

All of the cores had been extensively worked. 53.3% of the cores had their full perimeter worked. The perimeter of the remaining cores had at least 75% worked.



Analysis of core platform type by stage (n=15)

	Stage 1	Stage 2	Stage 3	Stage 4	Total
Bipolar	1	1	2		4
Blade platform		4	1	1	6
Flake platform	1	1	3		5
Total:	2	6	6	4	15

Core dimensions (n=15)

	Length	Width	Thickness
Mean	24.45	20.20	12.67
St. Dev	4.81	6.32	5.33
Maximum	33	30	24
Minimum	16	10	6
Mode	22	11	8

Length of flaking surface of bipolar (n=4) and platform cores (n=11)

	Bipolar	Platform
Mean	23.75	24.72
St. Dev	7.04	4.15
Maximum	33	32
Minimum	16	19
Mode	n/a	22

Core attributes (n=15)

Probable reasons for abandonment	
Size	4
Flaws	4
Stepping and hinging	6
Poor platform angle and removals	1
Cortex Type	
None	7
Smooth/hard	8
Percentage of platform Area	
c.75%	7
100%	8

Table 4.5: Core attributes.

Core rejuvenation

There were only three platform rejuvenation flakes (479, 503 and 767) which were recovered from the North Scatter Area. All three artefacts appear to be of good quality chert although of different material which may suggest different events. The flakes were removed with a side blow from the left taking an average 4mm of the platform surface flake direction indicating a pattern of core rejuvenation.

The overall frequency of plunging or overshot terminations on flakes was 5.1% with a higher incidence for platform reduction when compared to bipolar reduction. These flakes may have been accidental as a result of knapping error or deliberate to correct an accrual of material at the distal end of the core (Inizan *et al* 1999, 149-151; Donnelly nd.).

TECHNOLOGICAL ANALYSIS OF THE CHERT AND FLINT DEBITAGE

The majority of the chipped stone assemblage was a product of platform reduction. There is a substantial component of the bipolar reduction of chert which composed of four cores, 68 flakes, 11 blades and 16 chunks. There was one flint bipolar flake recovered from the sieving of spoil from grid I15. The frequency of bipolar products may be understated due to some pieces not presenting attributes associated with bipolar reduction.

Due to the relatively small size of the assemblage when compared with the number of artefacts recovered from mainland coastal and island locations, for example at Morton in Fife (Coles 1971) and Staosnaig on Colonsay (Mithen and Finlay 2000), it was decided to subject all of the artefacts to a detailed technological analysis with a sample strategy for bipolar pieces.

Flakes account for 32.22% of the overall assemblage. 8.3% are primary, 50.2% secondary and 41.5% are inner. Regular flakes account for 31.2% of these. 32.3% are secondary and 33.3% tertiary. 89.7% of the flakes were fresh; 3.9% burnt and 7.4% were weathered.

A blade technology is generally determined by the ratio of blades to flakes. The lamellar index put forward by Bordes and Gaussen (1970: referenced in Finlay *et al* 2000a, 561) set an arbitrary ratio of 20% as the minimum requirement to characterise the presence of a blade technology. The lamellar index is high at 23.9% and even higher for the assemblage if all 33 microliths were modified from blades (Table 4.6). The ratio of modified flakes that is those pieces with retouch and edge damage, to unmodified flakes is 1:23. If microliths are excluded the ratio for blades is 1:7.7.

	Microliths	
	Included %	**Excluded %**
All blades	**(n=102)**	**(n=69)**
Primary	2.0	2.9
Secondary	26.5	37.7
Inner	71.5	59.4
Percentage of categories PSI		
Primary regular	50.0	50.0
Secondary regular	66.7	65.4
Inner regular	71.2	75.6
All blades		
Fresh	87.3	85.5
Burnt	6.8	7.25
Weathered	5.9	7.25
Retouch	3.0	4.3
Retouch and edge damage	1.0	1.4
Edge Damage	5.0	7.2

Table 4.6: Character and condition of the blade assemblage modified to show the effect of the removal of microliths as blade blanks.

Chunks

Chunks present 6% of the assemblage. The primary and secondary pieces accounts for 76.6% of the chunks. The condition of the pieces expressed in percentage terms is fresh 61.7%, burnt 29.8% and weathered 8.5%.

Flakes

The majority of the flakes, other than bipolar products, were struck from simple platforms. Where there was only the remnant of a platform remaining these pieces have been assumed to have derived from simple platforms. For the purposes of the analysis those pieces where the proximal end is absent, and the artefacts do not have any attributes associated with a bipolar reduction strategy, these are deemed to have been struck from a platform. The incidence of cortical platforms was low, although there is a higher occurrence for bipolar products when compared to platform products. There is limited evidence for platform preparation; scrubbing of the platform edge was noticed on only 27 flakes. This represents 19.6% of the non-bipolar flakes (Table 4.10).

49% of the bipolar flakes were struck from unprepared platforms. There was evidence of crushed platforms on 28.6% of the pieces. 14.3% have cortical platforms. These particulars were taken from a sample of 59 of 68 artefacts (Table 4.10).

Regularity of flakes

There are 137 complete platform flakes of which 28.5% were regular. The frequency of regular bipolar flakes was 42.9%.

Flake dimensions

193 flakes were deemed to be complete for measurement (Table 4.7). The flakes struck from platforms tend to be slightly shorter in length compared to the bipolar products. The statistics show that the bipolar flakes are approximately 20% wider and relatively much thicker. This may be an indicator of the skill of the knapper and the efficiency of the platform reduction process.

The bivariate analysis of the measured flakes shows a dense concentration of artefacts in length from 10- 22mm and width from 5-15mm (Figures 4.3; 4.4 and 4.5).

	Length mm	Width mm	Thickness mm
Complete flakes (n=193)			
Average	15.48	11.50	7.64
Standard deviation	6.50	4.20	2.15
Mode	11	10	2
Maximum	46	26	15
Minimum	4	4	1
Platform (n=137)			
Average	14.07	10.96	3.25
Standard deviation	5.64	3.64	1.63
Mode	12	10	2
Maximum	38	22	11
Minimum	4	4	1
Bipolar (n=56)			
Average	18.92	12.84	5.11
Standard deviation	7.21	5.12	2.66
Mode	19	12	2
Maximum	46	26	15
Minimum	8	4	2

Table 4.7: Size dimensions of complete flakes with standard deviation and mode.

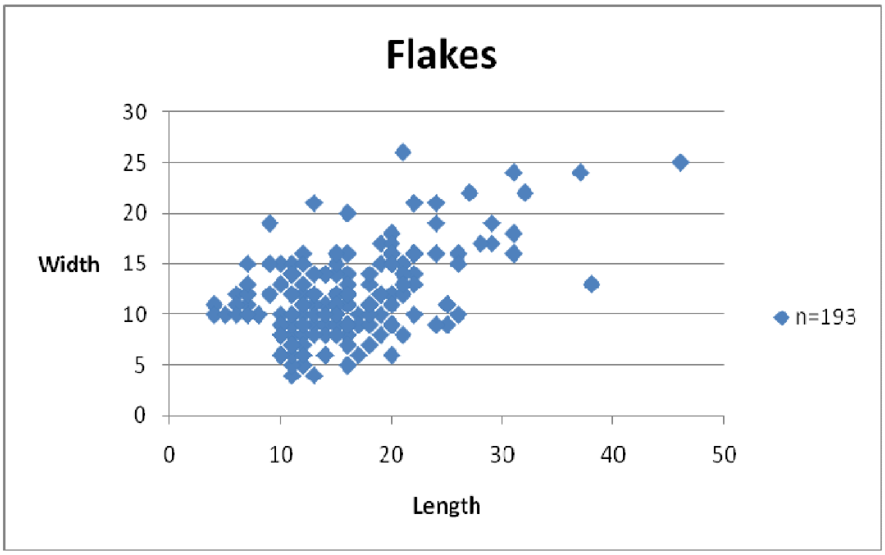


Figure 4.3: Analysis of the flakes deemed to be complete for measurement.

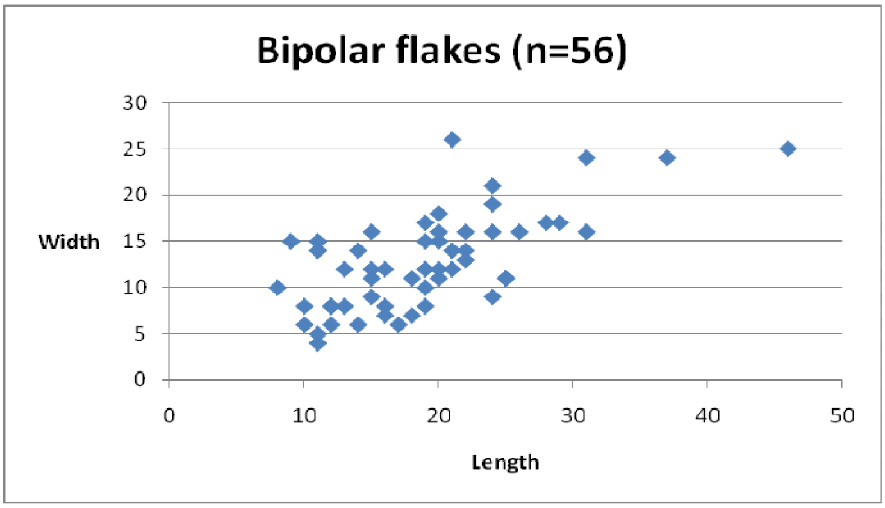


Figure 4.4: Analysis of the bipolar flakes deemed to be complete for measurement.

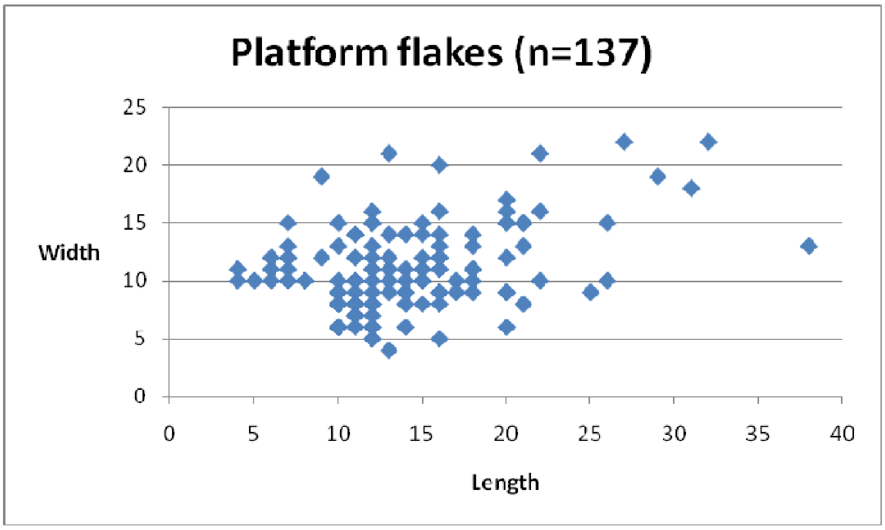


Figure 4.5: Analysis of the platform flakes deemed to be complete for measurement.

Flake fragmentation patterns

39.5% of the flakes are complete and 153 flakes (60.5%) broken (Table 4.8; Figure 4.6). The most common cause for the loss of part of the surface was where the proximal end was missing (32.7%), and secondly where there was spalling to the proximal end (44.4%). There are 17 artefacts where the width of the flake has been split or truncated throughout the whole or practically the whole length of the flake (11.1%).

	Bipolar	Platform
Complete	27	73
Proximal missing	12	38
Split/truncated width	8	9
Proximal spalling	17	51
Distal spalling	4	4
Distal missing		1
Medial fragment		7
Distal fragment		2
Total:	68	185

Table 4.8: Flake fragmentation analysis.

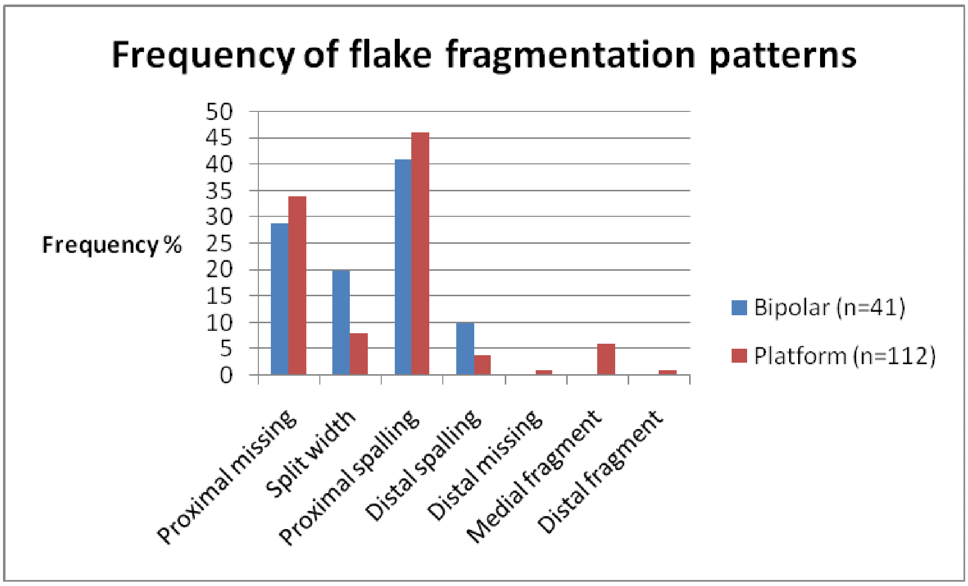


Figure 4.6: Chart showing percentage frequency of flake fragmentation patterns.

Platform breaks

The most common break character for platform products, where the proximal end of the flake is missing, is an abrupt termination (22.6%) [bipolar 13.2%]. In 67.7% (bipolar 33.3%) of those cases there was evidence of a stepped fracture as opposed to what appeared to be a clean snap. Erailleur scars were present on 28.57% of bipolar flakes and 32.8% of platform struck flakes. This would also suggest that preferred percussor was a soft hammer.

Distal terminations on flakes

The principal frequencies for the distal termination of flakes were jagged/irregular (34.4%), abrupt (32%) and feathered (26.5%). The incidence of abrupt and feathered terminations was greater for platform struck flakes (34.6% and 30.3%) than bipolar pieces (25% and 16.2%). The rate of jagged/irregular terminations for bipolar flakes, includes those items with crushing to the distal end, is statistically twice the frequency for platform flakes (54.4%: 27%). Plunging terminations account for 5.1% of all flakes (bipolar 2.9% and platform 5.9%). These overshot terminations appear to be knapping errors, possibly due to the quality of the raw material, as opposed to a deliberate core rejuvenation strategy (Figure 4.7).

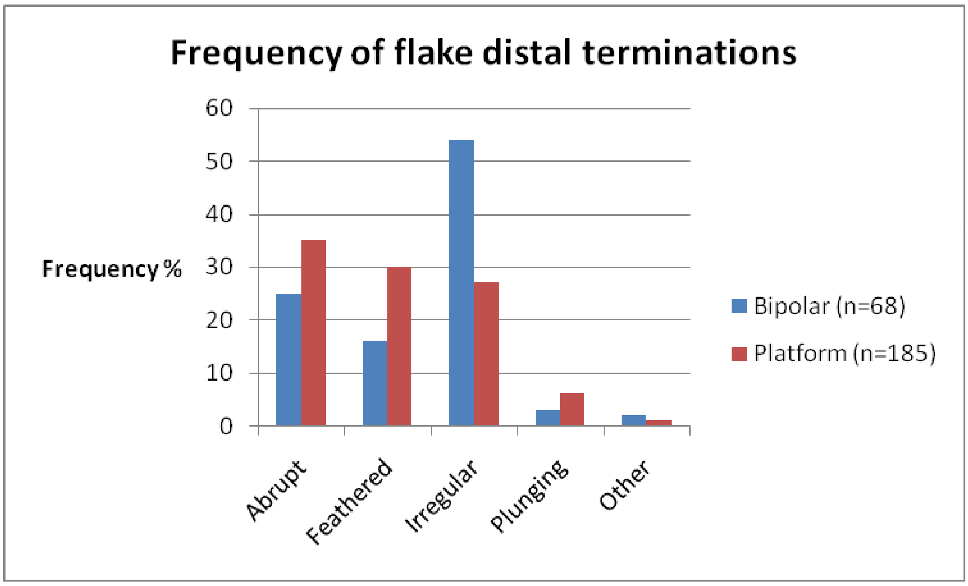


Figure 4.7: Chart showing percentage frequency of distal terminations.

Flake bulb types

A discernible bulb is present on 188 flakes (74.31%); the majority are diffuse (93.1%) with only a minor occurrence of pronounced bulbs (4.3%). There are five flakes (2.6%) where there is an irregular fracture to the bulb which may be due to the poor quality of the raw material (Table 4.9; Figure 4.8).

	Bipolar	Platform
Absent	18	47
Pronounced	2	6
Diffuse	46	129
Irregular fracture	2	3
Total:	68	185

Table 4.9: Bulb attribute analysis.

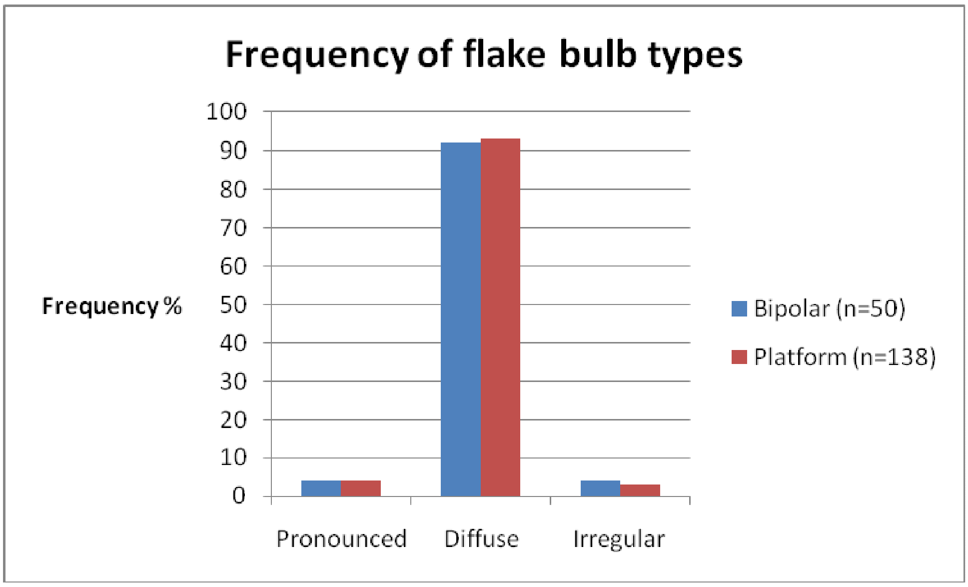


Figure 4.8: Chart showing frequency of bulb types.

Frequency and location of cortex on flakes

Cortex is present on 148 flakes [58.4%] (Table 4.10). The cortex on the bipolar flakes was predominantly pitted (81.6%) which contrasts with platform flakes where a smooth hard outer skin accounted for 92.9% of the artefacts. For the products of both reduction strategies there was no discernible difference to whether the cortex covered the lateral left or the lateral right of the artefacts. It was most common to find the cortical remains in a combination of locations (31.1%) with a higher incidence for bipolar flakes (40.8%) when compared to those struck from a platform (26.3%).

Flake dorsal scar patterning

The dorsal scar patterning showed that longitudinal (35.2%) and opposed (25.7%) removals were most common. Those artefacts showing the negative scars of crossed and multidirectional removals are 17% and 18.2%, respectively. There is a lower rate of longitudinal (25%) and crossed scarring patterns (8.8%), and a higher incidence of opposed (32.3%) and multidirectional (29.4%) removals on the bipolar products. The longitudinal (38.9%) and opposed (23.2%) scars are the most common patterning on the platform struck flakes where the prevalence of crossed and multidirectional removals is 20% and 14%, respectively (Figure 4.9).

Stepped and hinged attributes were present on 61.8% of the dorsal surfaces of bipolar products compared to only 31.9% on platform struck pieces (Table 4.10). This may suggest that the quality of raw material used for a bipolar reduction strategy may have been generally inferior to the raw material used for platform cores.

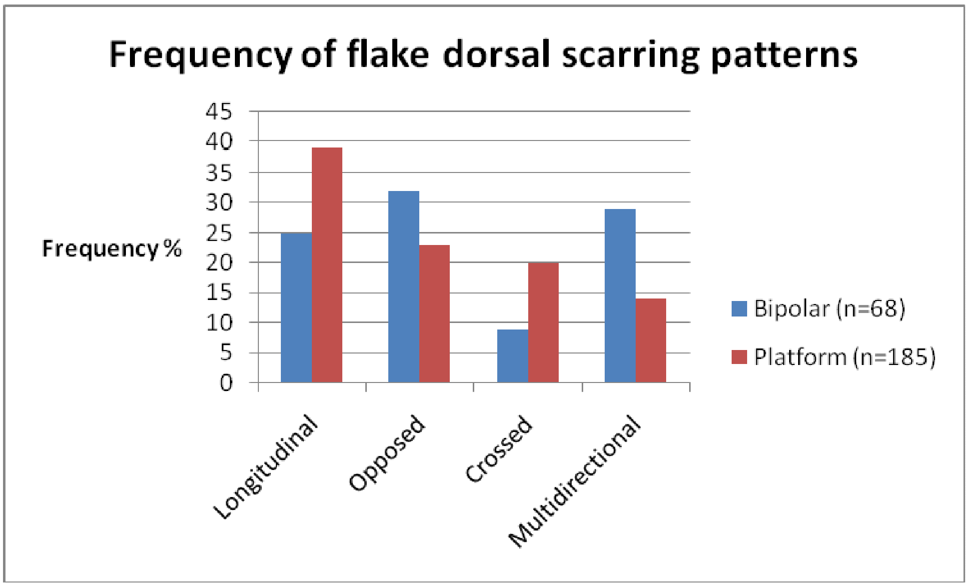


Figure 4.9: Chart showing percentage frequency of flake dorsal scarring patterns.

	Bipolar	Platform
Type of cortex		
Smooth/hard	9	92
Pitted	40	7
Total:	49	99
Location of cortex		
Proximal	4	5
Distal	5	10
Lateral left	6	25
Lateral right	8	23
Combination	20	26
Complete dorsal	6	10
Total:	49	99
Platform type		
Cortical	7	9
Simple	4	70
Simple remnant		56
Unprepared	24	
Indeterminate/absent	10	50
Crushed	14	
Total:	59	185

	Bipolar	Platform
Preparation		
Scrubbed		46
Anvil Supported		27
Dorsal Scar		
Absent	3	7
Longitudinal	17	72
Opposed	22	43
Crossed	6	37
Multi-directional	20	26
Total:	68	185
Dorsal		
Absent	26	126
Stepped	35	52
Hinged	6	5
Combination	1	2
Total:	68	185

Table 4.10: Technological attributes of chert and flint flakes.

Blades

A blade is defined as a flake which is twice as long as it is wide (Woodman *et al* 2006, 86). Both platform and bipolar reduction were used as deliberate strategies for the production of blades.

The same assumptions made regarding the classification of platform reduction are made for the analysis of the blade assemblage. There is only one blade with a cortical platform the remainder having either struck or deemed to have been struck from a simple platform. For bipolar products where the proximal end remained the statistical analysis showed that the majority of the blades were struck from crushed platforms

(50%). The artefacts removed from unprepared platforms and simple platforms were 37.5% and 9.1% respectively (Table 4.14).

Platform preparation was recorded on 31.1% of the complete blades (Table 4.14). This involved the scrubbing of the platform edge.

Blade dimensions

The size dimension character of the blade assemblage is broadly similar to the flakes (Table 4.11). Analysis shows a cluster of blades with a length range of 5-14mm and width of 2-6mm (Figure 4.11).

The overall regularity index of blades is 55.1%. It was unexpected to note that the frequency of regular bipolar blades was 81.8% compared to 50% for regular platform blades. The relatively low incidence of regular platform blades may suggest that the majority of artefacts recovered for modification were blades from a platform reduction strategy.

	Length mm	Width mm	Thickness mm
Complete blades (n=54)			
Average	16.87	6.94	2.98
Standard deviation	5.68	2.84	1.35
Mode	12	5	3
Maximum	30	13	8
Minimum	10	3	1
Platform (n=45)			
Average	15.67	6.38	2.75
Standard deviation	5.37	2.62	1.29
Mode	12	5	2
Maximum	30	12	8
Minimum	12	3	1
Bipolar (n=9)			
Average	22.89	9.78	4.22
Standard deviation	2.52	2.22	0.97
Mode	24	8	4
Maximum	27	13	6
Minimum	20	7	3

Table 4.11: Size dimensions of complete blades with standard deviation and mode.

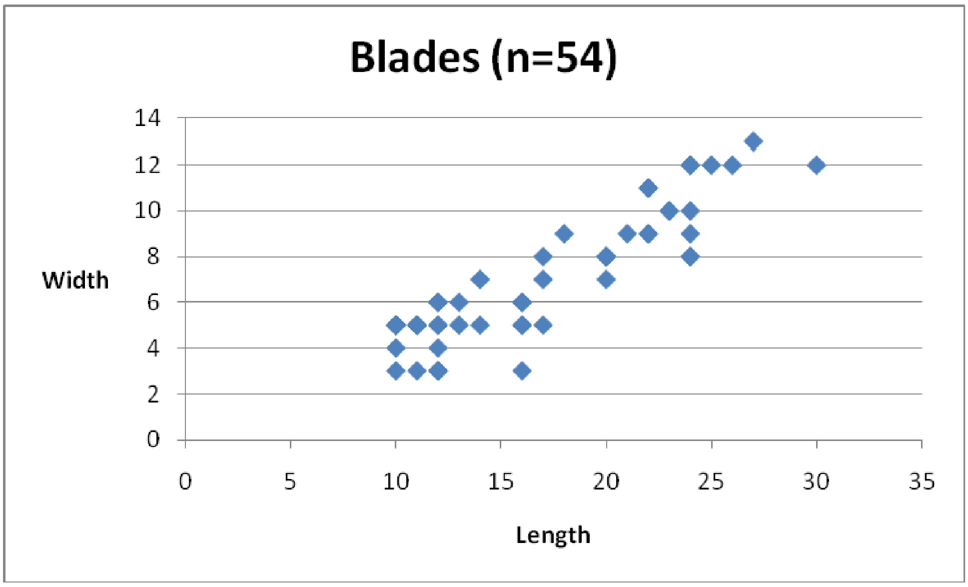


Figure 4.10: Multivariate analysis of the flakes deemed to be complete for measurement.

Blade fragmentation patterns

78.3% of the blades are complete almost twice the percentage for flakes (Table 4.12). The incomplete flakes (21.7%) have the proximal end missing with, in the main, an abrupt break. In seven cases the bulb had been partly removed (13%).

	Bipolar	Platform
Complete	9	45
Proximal missing	2	13
Total:	11	58

Table 4.12: Table showing the frequency of complete blades and those with the proximal end missing.

Distal terminations on blades

The main distal terminations are feathered (bipolar 9.1%; platform 56.9%), abrupt (bipolar 27.3%; platform 8.6%) and plunging (bipolar 18.2%; platform 3.45%). There was a slightly higher incidence of jagged/irregular terminations for the bipolar products (27.3%) compared to the platform struck blades [22.4%] (Figure 4.11).

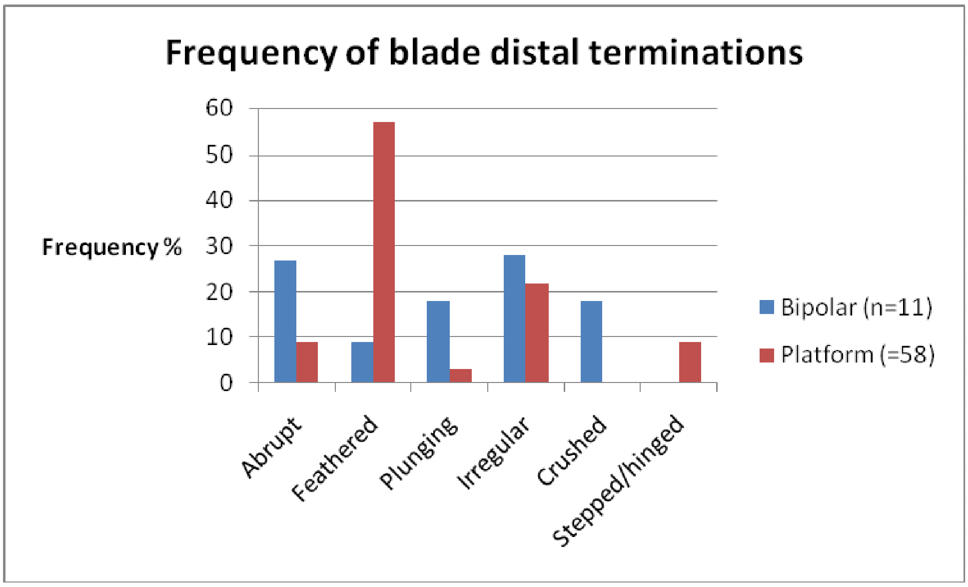


Figure 4.11: Chart of frequency of blade distal terminations.

Blade bulb types

All of the bulbs present are diffuse (Table 4.13) with 31.1% of the platform blades presenting erailleur scars and bipolar 22.2%.

	Bipolar	Platform
Absent	3	13
Diffuse	8	45
Total:	11	58

Table 4.13: Table showing the type of bulb where present.

Frequency and location of cortex on blades

37.7% of the blades are cortical. In all cases the cortex was smooth and hard. There was a considerably higher frequency of cortex on bipolar pieces (72.7%) compared to platform blades (31%). The cortex was principally to be found on the lateral left (26.9%), lateral right (23.1%) and in a combination of locations (23.1%). The rates of cortex solely located at the proximal and distal ends are 3.8% and 15.4% (Figure 3.25).

Blade dorsal scar patterning

Longitudinal (46.4%) and opposed (31.9%) dorsal scarring patterns are predominant. The bipolar products have opposed scars (54.5%), which contrasts with 27.6% for platform blades. The longitudinal scars are chiefly found on platform blades (53.4%); the incidence for bipolar blades was only 9.1%. The frequency for crossed and multidirectional patterning is 7.2% and 13% with statistically higher percentages for bipolar products. The rate of anvil supported platform blade removals is 19% (Table 4.14).

The dorsal surface of the bipolar blades has a frequency of 54.5% with stepped and hinged attributes when compared to 29.3% for platform blades. These rates are not dissimilar to the flake assemblage.

	Bipolar	Platform
Type of cortex		
Smooth/hard	8	18
Location of cortex		
Proximal		1
Distal	1	3
Lateral left	3	4
Lateral right	2	4
Combination	1	5
Complete dorsal	1	1
Total:	8	18
Platform type		
Cortical		1
Simple	1	15
Simple remnant		25
Isolated	3	
Indeterminate/absent	3	17
Crushed	4	
Total:	11	58

	Bipolar	Platform
Preparation		
Scrubbed		14
Anvil Supported		11
Dorsal Scar		
Absent	1	
Longitudinal	1	31
Opposed	6	16
Crossed	1	4
Multi-directional	2	7
Total:	11	58
Dorsal		
Absent	5	41
Stepped	6	16
Hinged		1
Total:	11	58

Table 4.14: Technological attributes of blades.

Small fraction

Small fraction debitage is defined as those pieces where the size dimensions are less than 10mm. Plain and broken pieces may represent the bi-product of primary knapping. Complete flakes may speak to removals due to scrub preparation while complete flakes with a curved profile may indicate debitage from secondary retouch (Woodman *et al* 2006, 86-87). Retouch chips are usually smaller than those items associated with primary knapping. Where overhang is removed from cores this generally produces blade chips or what may also be described as ‘core front chips’ (Newcomer and Karlin 1989, 34).

Character of small fraction

The general character of the small fraction debitage is shown at Table 4.15.

	Total	Chert	Flint
Chunks	58	58	
Secondary	10	10	
Tertiary	48	48	
Flakes	255	254	1
Primary	7	7	
Secondary	29	29	
Tertiary	219	218	1
Blade chips	55	55	
Primary	1	1	
Secondary	4	4	
Tertiary	50	50	
Total:	368	367	1

Table 4.15: General character of small fraction.

The small fraction debitage accounts for 46.9% of the assemblage. There are 368 pieces; 237 (64.4%) complete comprising of 189 flakes and 48 blade chips. There is a feathered termination to 50 (26.5%) complete flakes; 36 (75%) complete blade chips. A diffuse bulb is visible on 121 flakes and 15 blade chips.

The statistical analysis of the complete small fraction suggests that very small pieces of small fraction, i.e. less than 5mm in length were not recovered (Table 4.16). There were only 32 complete items measured with a length of less than 5mm including only eight at 3mm.

	Length mm	Width mm	Thickness mm
Complete (n=237)			
Average	6.53	4.68	1.53
Standard deviation	1.73	1.75	0.67
Mode	8	4	1
Maximum	9	9	4
Minimum	3	2	1

Table 4.16: Size dimensions of complete small fraction debitage with standard deviation and mode.

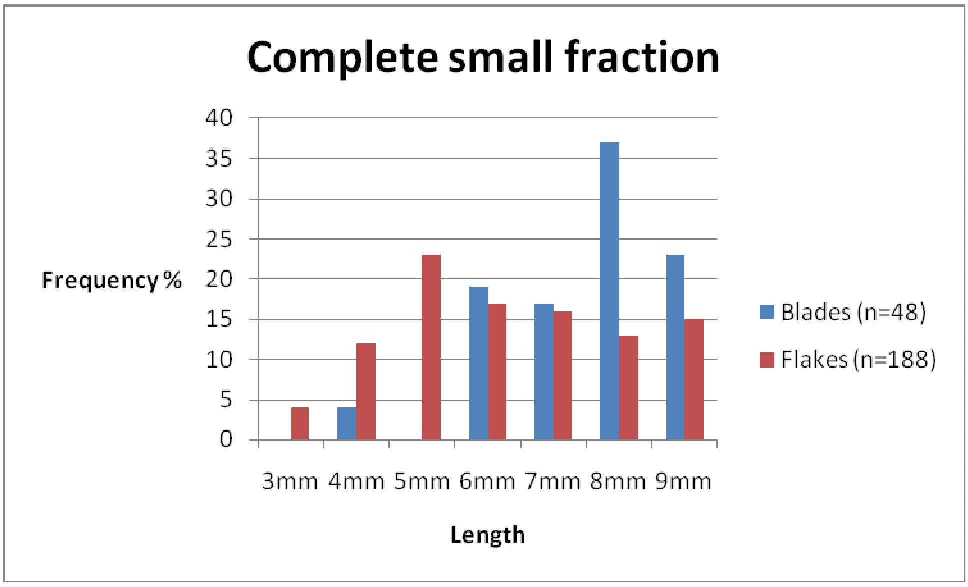


Figure 4.12: Percentage frequency of the small fraction debitage deemed to be complete for measurement analysed by length.

Recovery of small fraction

The potential bias in the recovery of small fraction adopting a dry sieving technique was highlighted in section 2. It was decided to consider the frequency of small fraction to total artefacts from a number of excavations [Table 4.17] (Wickham-Jones 1990, 103; Mithen and Finlay 2000, 362; Mithen and Finlayson 2000, 195: Mithen *et al* 2000, 275). A wet sieving technique was used for the recovery of lithic material from all sites save for Climpy.

	Staosnaig 1991	Gleann Mor	Bolsay Farm	Kinloch Rùm	Climpy
Total	6707	31243	66281	138043	785
Small fraction	3702	16488	31240	72857	368
Small fraction %	55.2	52.8	47.1	52.8	46.9

Table 4.17: Table showing the percentile recovery of small fraction debitage to the total chipped stone tool assemblage.

The mean average frequency of small fraction debitage to the total assemblages from the excavations, excluding Climpy, is 51.3%.

The evidence from the amount of small fraction debitage and its numerical proportion to the whole assemblage suggests that the recovery of lithic material from the site was of a good standard and not likely to bias the statistics of the assemblage. It is thought that the use of a wet sieving technique would have enhanced the recovery of very small pieces of debitage. However, the excavation team from GUARD would, had it been possible, preferred that technique to dry sieving.

DISCUSSION

This section will discuss those issues of interpretation arising out of the technological analysis of the assemblage to attempt to answer those questions set out in the introductory research design for this section.

The frequency of blades suggests the presence of a blade technology at Climpy during the Mesolithic occupation(s) of the site. The quality of the raw material of the cores is generally poor, although they were all extensively worked, which contrasts with the characteristics of a relatively high proportion of the debitage, e.g. the incidence of stepped and hinged attributes on the platform products may imply that the raw material used was at best of only a mixed quality. This may indicate that local sources of chert were utilized. However, there is a low incidence of primary flakes and blades. It is possible that the chosen local raw material was opened at the source location. This hypothesis in itself has difficulties. Firstly, if the material when opened was found to be of only a reasonable to poor quality why was it transported to the site? Secondly, where was the source of the raw material?

Consideration may have to be given to the proposition that the people who visited Climpy brought with them their knapping kit which may have comprised of soft hammers, anvils and prepared cores of good quality raw material. In order to minimise the use of the curated material local resources may have been utilised, thereby, ensuring that the curated items would only have to be used when it was deemed necessary. This would potentially account for the mixed raw material quality of the debitage and the poor quality of the discarded cores. When the people left it is suggested that they may have packed up and removed it to either their next destination or to a site nearby outwith the excavated area. If that was the case then what would have been left would have been debitage of a mixed quality and possibly only a low incidence of any abandoned previously curated cores. A burnt chert core recovered from the site was of good quality material and may have been a curated item which was worked out and discarded. The three platform rejuvenation flakes were of a quality not represented by all but one of the cores. The flakes were from different coloured materials and indicate different events.

The possible source for the procurement of any local suitable raw material was not identified during the excavation. Outcrops of chert may be hidden by blanket peat or they may have been lost to open cast coal extraction. Conversely, it is possible that material was selected from erratics either in close proximity to the site or chosen and opened during the journey and brought to Climpy.

The majority of the debitage was the product of simple platform reduction. The percussor was either an antler tine and/or a soft hammerstone. There were instances where the core had been anvil supported which is a determinant factor that the use of bipolar and platform reduction strategies were contemporaneous. However, without any sustainable vertical stratigraphic evidence, due to the lack of the integrity of the spit excavations, it is possible that the bipolar stages may represent the later re-use of earlier cores. However, it is probable that a re-use strategy was not adopted when the average flaking surface of bipolar cores at 23.8mm (STDEV ±7.0mm) is compared to platform cores at 23.5mm (STDEV ± 5.2mm).

The regularity of the complete platform flakes (28.5%) and blades (50.0%) was low when compared to the assemblages from the *Southern Hebrides Mesolithic Project*, although the assemblages from Staosnaig, Gleann Mor and Bolsay Farm and others did comprise of good quality flint. The analysis of the chert assemblage from Glentaggart does not give statistics for the regularity of debitage, save for a comment that the blades are regular (Ballin and Johnson 2005, 63). Ballin (pers. comm.) does not regard the regularity of flakes and blades as a meaningful component of technological analysis due to the potential bias where blanks may be struck from smaller nodules and be classified as irregular by size alone.

It is not thought that the rate of regularity was due to a lack of craft expertise on the part of the people who undertook the knapping of the material. The thickness of the blades and flakes, together with relatively low standard deviations, infer an efficient and uniform use of core material. It may be simply due to the mixed quality of the raw material or that a number of regular blanks were chosen to be modified or added to the craft working kit and taken away. For example, it may have been known to the people that raw material resources were either scarce or non-existent at their next location.

In contrast the regularity of the bipolar debitage was much greater (flakes 42.9%; blades 81.8%). The removals appeared to be controlled and although not as uniform as the platform products they did demonstrate a high level of skill for a technique that has, in the past, been assumed to be devoid of skill. A point highlighted by Hayden (1981). There are ethnographic studies where the people who use bipolar technology do not attribute any expertise to the strategy (Sillitoe and Hardy 2003). However, the lack of the acknowledgement of skill by people who work stone does not necessarily deny or obfuscate the existence of skill.

There could be any number of factors to explain these differences between the regularity index for platform and bipolar blades. For example, it may be a manifestation of removals from locally sourced inferior raw materials, or that the regular bipolar blades were simply too large and would have required more time and effort to fashion into microliths. The maximum width and thickness of the microliths is 7mm and 3mm respectively; only two (22.2%) of the regular bipolar blades fall within those parameters.

The abrupt terminations of many of the flakes and blades may have been due to the poor quality of raw material. It was considered that there may have been instances where pieces were broken underfoot. The study conducted by McBrearty *et al* (1998) focused on edge damage to chert artefacts caused by trampling and, therefore, was not directly relevant. None of the debitage presenting abrupt terminations could be refitted. The most probable explanation for the high incidence of abrupt terminations is considered to be the inferior quality of the raw material, although there would have been occasions where the cause may have been knapping error.

The smallest pieces which may have resulted from platform preparation; the scrubbing of the platform surface prior to detaching a blank may not have been substantially fully recovered. The chunks and larger complete flakes recovered may largely represent debitage from primary knapping with the pieces of less than 5mm relating to scrub preparation. The complete blade chips are possibly removals of overhang on cores.

Unlike the south Scatter Area the percentage frequency and character of small fraction debitage together with the discarded cores may suggest that the North Scatter Area was a primary knapping area. Against this is the paucity of primary debitage, the failure of the refitting study and the evidence that pre-formed cores of good quality material were brought to the site and locally sourced mixed quality raw materials were used for expediency. Whether these events were temporal markers cannot be ascertained.

CONCLUSION

The technological analysis of the primary technological characteristics of the assemblage suggests the presence of a platform blade industry at Climpy during the Mesolithic occupations of the site. There was also a contemporaneous element of bipolar reduction. The quality of the raw material of the cores when compared to the debitage suggested that good quality curated cores may have brought to the site. Local resources of poorer quality chert may have been utilised as an expedient measure to avoid, unless necessary, the use of curated material. The debitage demonstrated an efficient core reduction strategy. The incidence of abrupt terminations was principally thought to be due to the less than reasonable quality of the raw material.

The condition of the raw material, which was predominantly fresh and the lack of evidence for farming disturbance supports the interpretation that the artefacts were recovered from a largely undisturbed occupation ground surface.

The four individual scatter areas recognised by GUARD lack any individual integrity. The North Scatter Area at Climpy was probably a location for a single phase occupation, perhaps involving a number of visits, where in the main *in situ* knapping of the raw material was undertaken. There is insufficient evidence for a primary knapping designation for The North Scatter Area. The South Scatter Area represents a palimpsest of scatters from random events and taphonomic factors.

SECTION 5: CLIMPY: SECONDARY TECHNOLOGY

INTRODUCTION

This section will seek to characterise the secondary technology present within the assemblage at Climpy. Use wear analysis was not undertaken, although those artefacts presenting edge damage are considered macroscopically to determine if the edge damage was use induced or post-depositional.
The process of modification of blanks after flaking 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 the artefact to be fixed within a wooden haft as a projectile point (Wickham-Jones and McCartan 1990, 87).

The analytical methodology and type and attribute terminologies use the formats devised and adopted for the *Southern Hebrides Mesolithic Project* (Finlayson *et al* 2000) and for the analysis of the lithic assemblage from the site at Kinloch on Rùm (Wickham-Jones 1990).

LOCATION

There were 33 microliths recovered from the main scatter area of which 23 were complete and 10 were fragments. The artefact recovered from inside the turf-banked enclosure was an oblique truncation. Four of the complete microliths had signs of edge damage (580, 644, 720 and 1031).

Three flakes had been retouched, one of which also presented with edge damage. There were eight other flakes with edge damage. Five blades were retouched; two of those had edge damage. There were four other blades with edge damage.
The grid locations in which 32 of the microlith and microlith fragments were found is given at Figure 5.1. One complete microlith (800) could not be assigned a grid location.

Figure 5.2 shows the grid locations where retouched and edge damaged artefacts were recovered. One retouched flake (423) together with three edge damaged flakes (181, 406 and 616) and two edge damaged blades (107 and 451) could not be attributed to a grid location.

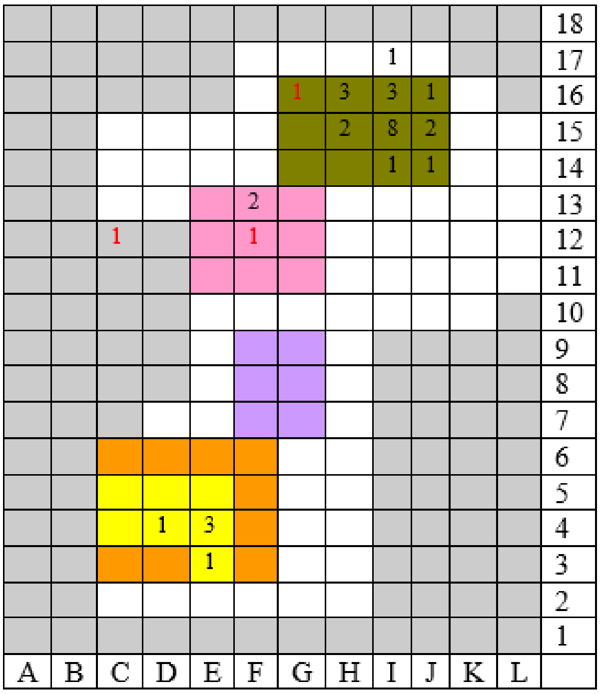


Figure 5.1: 1m grid location of cores recovered from the lithic scatters. South Scatter Area (1087); Scatter Area (1087) extended; Scatter Area; North Scatter Area: Scatter Area A; Scatter Area B. The fragments are highlighted in red. Fragments were also found in E4, F13, H16, I15 and I16.

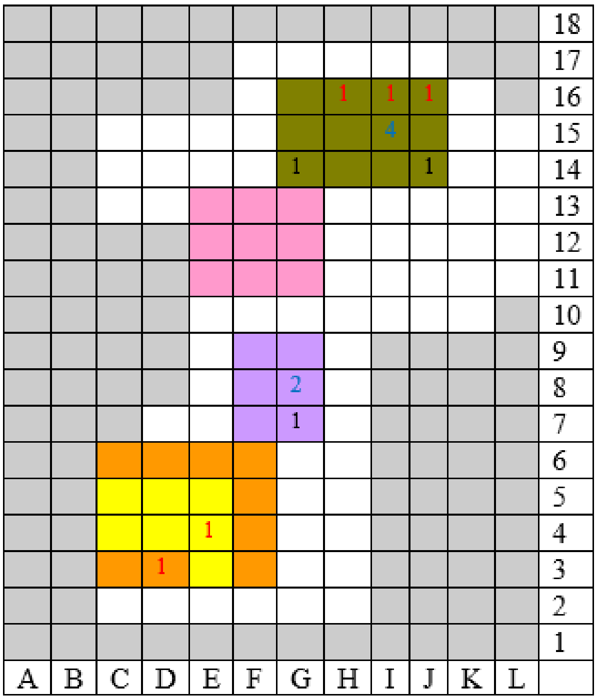


Figure 5.2: 1m grid locations were retouched and edged damaged artefacts were recovered from the lithic scatters. South Scatter Area (1087); Scatter Area (1087) extended; Scatter Area; North Scatter Area: Scatter Area A; Scatter Area B. The retouched pieces are highlighted in black. Edge damaged artefacts are shown in red. Blue indicates that retouched and edged damaged pieces were recovered from the same grid.

Two scalene triangle fragments were recovered during the evaluation (169) from (1003) and (310) from (1048). The remaining microliths and microlith fragments were found during the spit excavations

.

GENERAL CHARACTER

The general character and profile of the secondary technology is shown at Table 5.1.

Overall Scatter Area	**Total**	**Chert**	**Flint**
Microliths	23	23	
Microlith fragments	10	10	
Denticulated	3	3	
Misc. retouched	3	3	
Scraper	1	1	
Scraper fragment	1		1
Edge damaged	12	12	
Total:	53	52	1
Enclosure	**Total**	**Chert**	**Flint**
Oblique truncation	1		1
Misc. retouched	1		1
Edge damaged	4		4
Total:	6		6

Table 5.1: Secondary technology: character of modified pieces.

The percentage frequency of retouched pieces recovered from the overall scatter area is 5.2%; edge damaged 1.5%.

MICROLITHS

The microlith may be considered to be the principal component in composite tools (Finlayson 2004, 225). The majority of the complete microliths (78.3%) and microlith fragments (80%) were manufactured from a dark greenish grey chert.

One scalene triangle (781) and the leaf point (441) were fashioned from a good quality greenish grey chert. There was also an indeterminate grey chert microlith (579) and a black chert needlepoint (1032). The remaining complete microlith was a scalene triangle (720) of burnt chert. All of the artefacts were made from good quality raw material, save for one dark greenish grey scalene triangle (817) which presented spalling due to an inherent fracture plane. The quality of the raw material does not fit with the generally less than reasonable to poor quality of the cores recovered from the site implying that the microliths were produced elsewhere.

All of the microliths and microlith fragments have been subjected to a detailed typological classification and technological analysis. There were five types of microlith and microlith fragments recovered (Table 5.2). The percentage frequency of complete microliths and scalene triangles are given at Figures 5.3; size dimensions Table 5.3.

	Complete	
Fragments		
Indeterminate	1	2
Backed bladelet	1	1
Scalene triangle	17	7
Crescent	1	
Needle point	2	
Leaf point	1	
Total:	23	10

Table 5.2: Typological classification of microliths and microlith fragments.

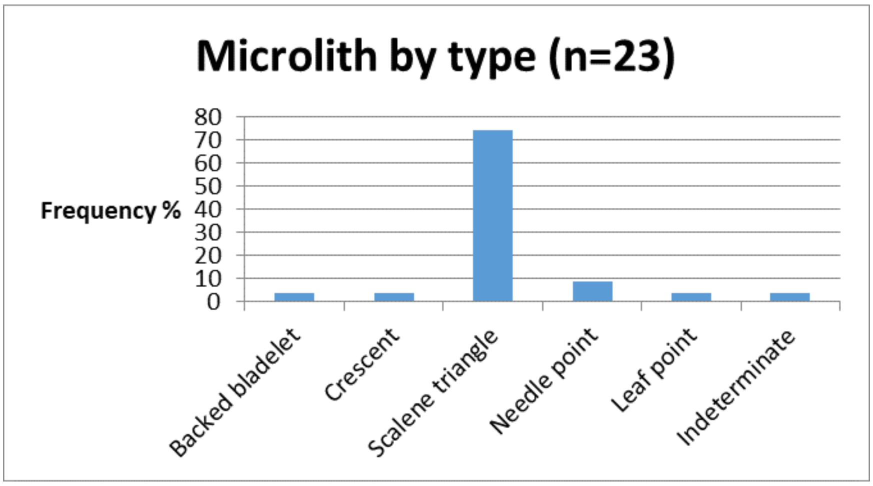


Figure 5.3: Percentage frequency of microliths by type.

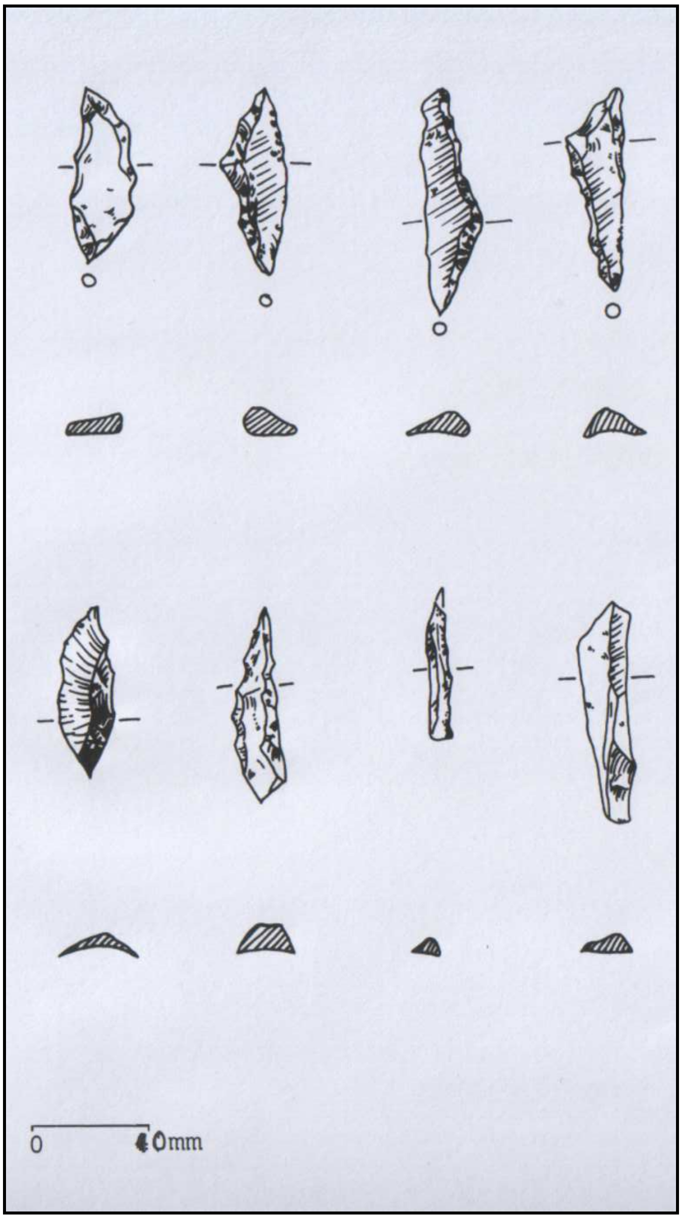


Figure 5.4: Top line left to right: scalene triangles 781, 800, 768 and 608. Bottom line left to right: Leaf point 441, Needle point 1064, Needle point with broken tip 1032 and Backed bladelet 439. © Alice Watterson.

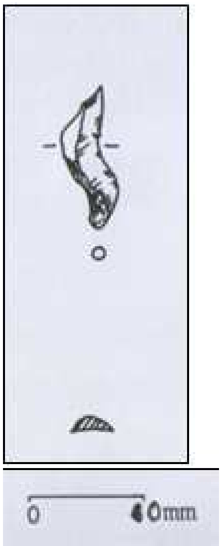


Figure 5.5: Crescent 468. © Alice Watterson.

Complete microliths	Length	Width	Thickness
Average	14.83	4.70	2.13
Standard deviation	2.98	0.63	0.46
Mode	11	5	2
Maximum	19	6	3
Minimum	11	3	1
Scalene triangles	**Length**	**Width**	**Thickness**
Average	14.76	4.89	2.06
Standard deviation	3.17	0.49	0.43
Mode	11	5	2
Maximum	19	6	3
Minimum	11	4	1

Table 5.3: Size dimensions of complete microliths and scalene triangles.

Generally the retouch to the microliths is a fine direct retouch. There was evidence of stepped and *enclume* retouch to a scalene triangle (800). Another four microliths exhibited *enclume* retouch (439, 727, 768 and 1064). There were incidences of scalar retouch (1031) and pieces which presented both fine and scalar retouch (579, 608 and 720). Only one of the microliths (727) revealed evidence of inverse retouch which was found on left hand side from the distal end to the lower medial. Inverse retouch is an unusual feature in Mesolithic assemblages (Ballin and Johnson 2005, 80). It was interesting to note that a chert flake (701) also presented with inverse retouch. There was proximal spalling with a diffuse bulb of percussion. The ventral face has a more pronounced rippling than generally other debitage with that attribute present. The fine inverse retouch is to the right hand side of a shallow concave edge at the medial.

Microlith type

Scalene triangle microliths dominates the assemblage (73.9% of all complete microliths and 70% of microlith fragments).

Figure 5.6: Scalene triangles with angle in top quarter bulb at bottom. Top line left to right: 304, 608, 720, 722 and 800. Bottom line left to right: 726, 1031 and 1086. Scale 5mm.

Figure 5.7: Scalene triangles with angle in bottom quarter bulb at base 507, 552, 580, 644, 727, 768, 781, 817 and 1150. Scale 5mm.

Figure 5.8: Backed bladelet 439, Leaf point 441, Crescent 468, Indeterminate 579, Needle point 1032 and Needle point 1064. Scale 5mm.

Attribute analysis of complete microliths

The attributes of the complete microliths are shown at Table 5.4.

Curvature Dorsal (CD)	
Straight	1
Irregular	1
Shallow	1
Curved	1
Sub-angular	8
Angular	11
Curvature Ventral (CV)	
Straight	2
Curved	2
Sub-angular	5
Angular	15
CD/CV	
Straight/straight	1
Irregular/straight	1
Shallow/curved	1
Curved/curved	1
Sub-angular/sub-angular	3
Sub-angular/angular	6
Angular/sub-angular	1
Angular/angular	9

Angle position	
None	2
Bottom quarter	10
Middle	1
Top quarter	10
Base morphology	
Bulb present	7
Break snap	3
Burin snap	3
Angled/curved	10
No. of retouched sides	
One	1
Two	9
Three	11
Four	2
Point	
None	15
Clear spur	6
Double sided	2

Table 5.4: Attributes of complete microliths.

Dorsal and ventral curvature

The dorsal and ventral curvatures evaluate the form of retouch to the microliths. The assemblage comprises chiefly of angular and sub-angular attributes.

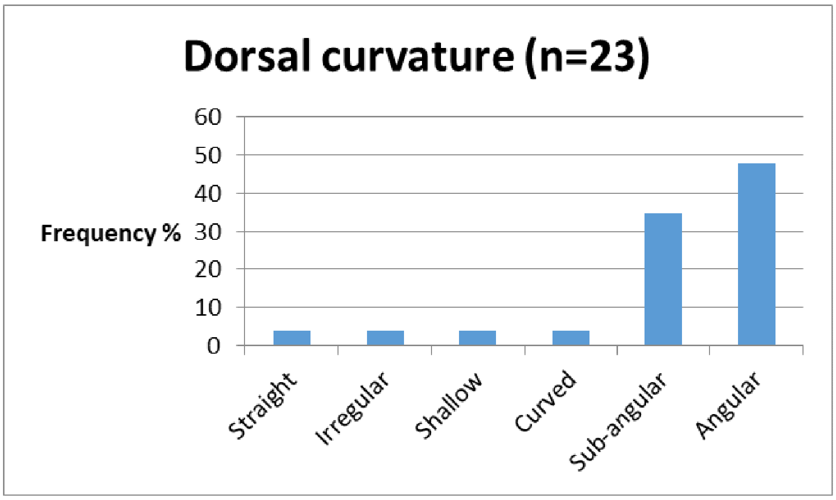


Figure 5.9: Percentage frequency of dorsal curvature attributes.

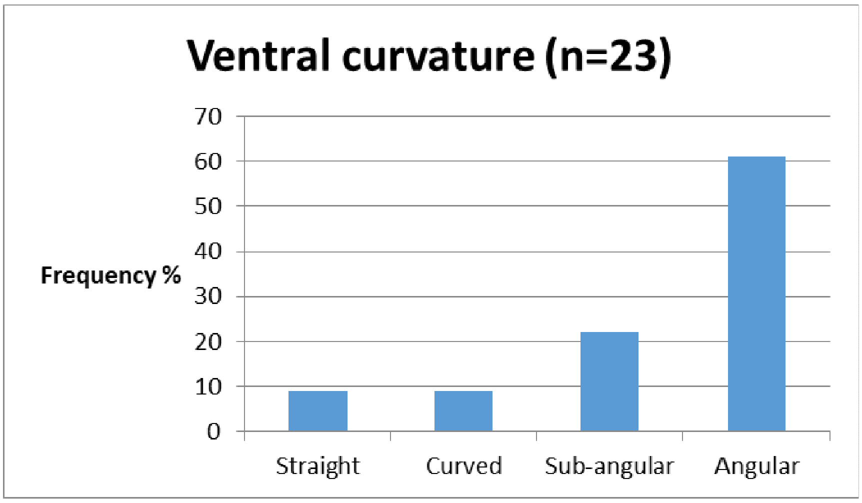


Figure 5.10: Percentage frequency of ventral curvature attributes.

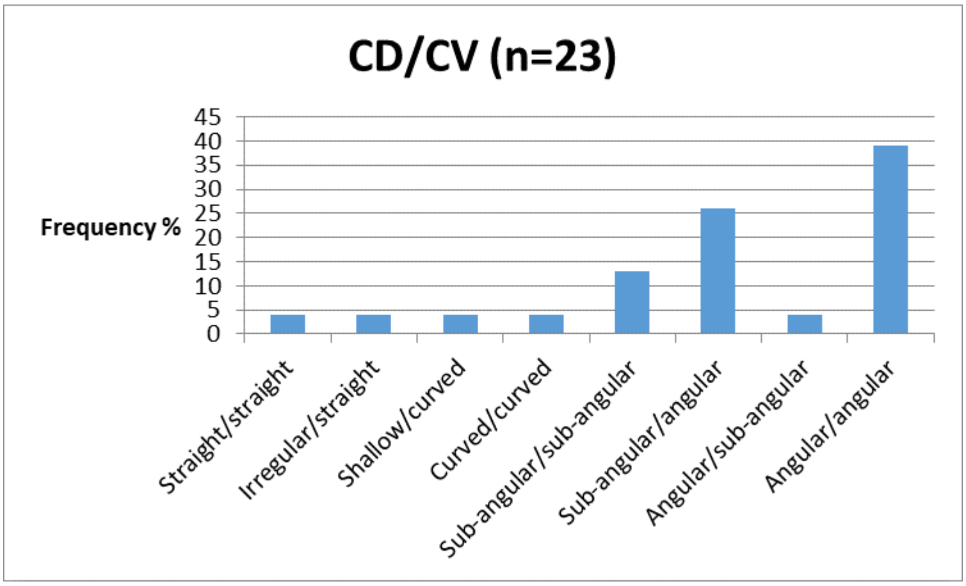


Figure 5.11: Percentage frequency of combinations of dorsal and ventral curvature.

Angle position

43.5% of the microliths have the angle position in the top quarter with the same percentage frequency for this attribute to be located in the bottom quarter. Only two pieces (8.7%) have no angle and the remaining artefact has the angle position situated in the middle. The statistical analysis reflects the dominance of scalene triangles.

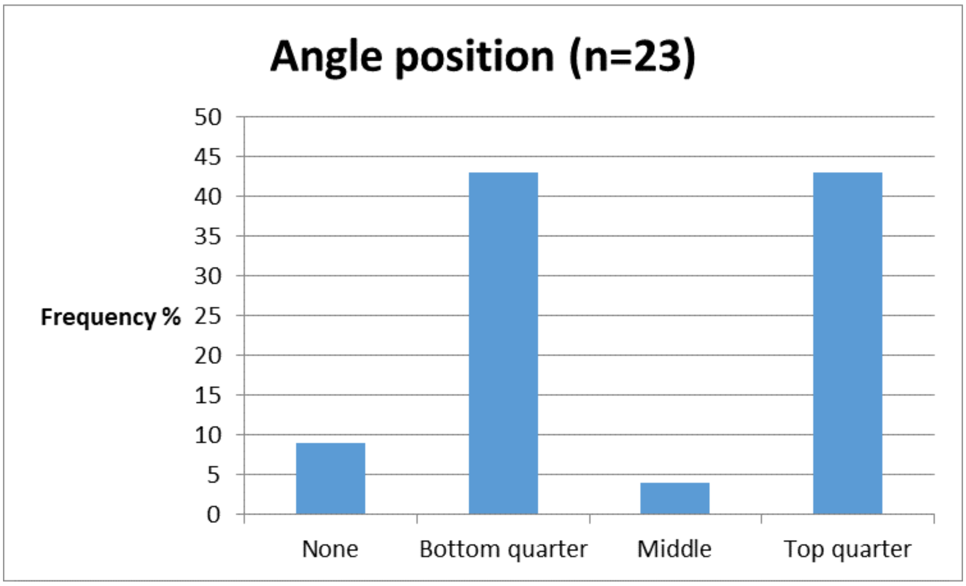


Figure 5.12: Percentage frequency of angle position attributes.

Basal Morphology

The angled/curved basal attribute (43.5%) is the most common attribute of basal morphology. A bulb is present on 30.4% of the complete microliths.

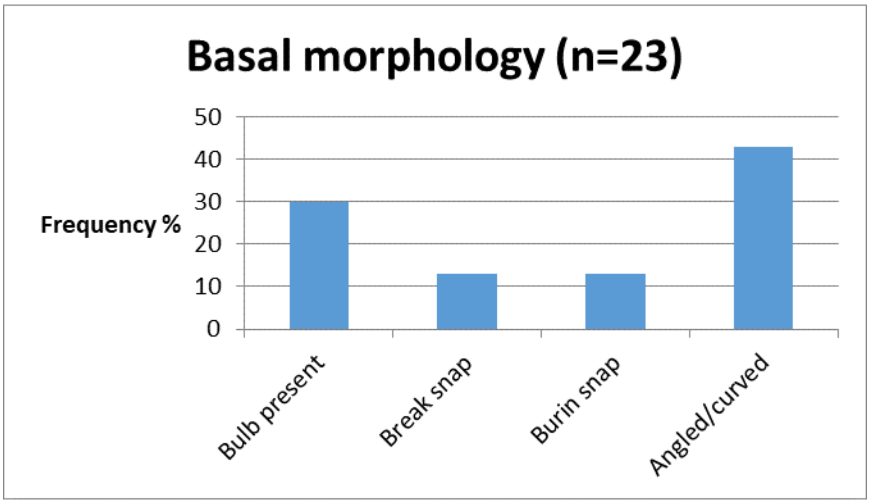


Figure 5.13: Percentage frequency of basal morphology attributes.

Number of retouched sides

It is assumed that the blank prior to modification was rectangular in shape and, therefore, four edges were potentially capable of being retouched. 47.8% of the microliths have retouch to three sides, 39.2% to two sides and 4.3% to one side. All four sides presenting retouch accounted for 8.7% of the microliths. Only one microlith (781), a scalene triangle, exhibited continuous retouch around the entire circumference.

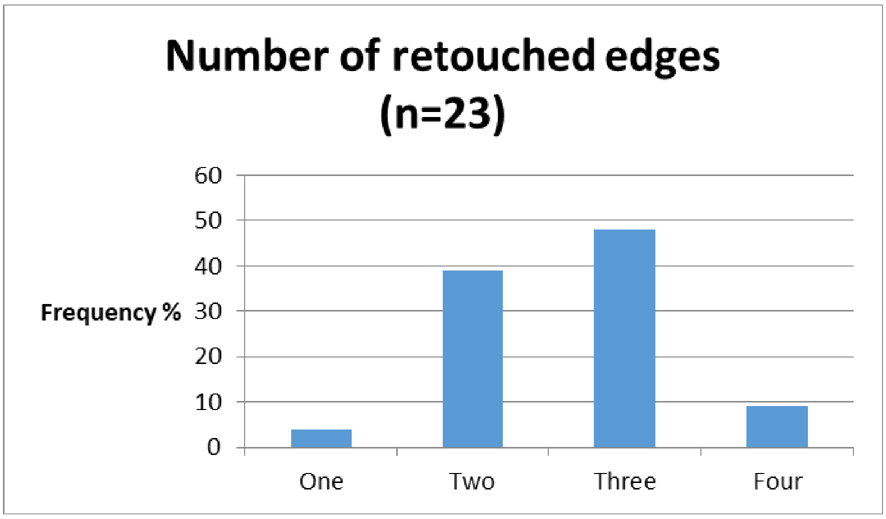


Figure 5.14: Percentage frequency of number of retouched sides.

Point character

65.2% of the complete microliths do not have a retouched point. A clear spur is identified in 26.1% of the artefacts. There were only two microliths (8.7%) with double sided retouch to a point.

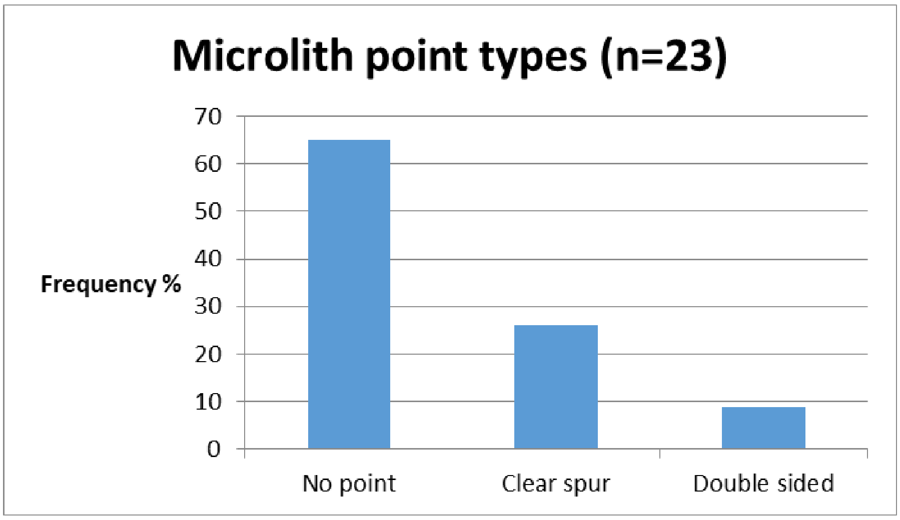


Figure 5.15: Percentage frequency of point types.

Microlith fragments

There are fragments of seven scalene triangles, one backed bladelet and two which could not be classified (Figure 5.16). The types of microlith fragments are shown at Table 5.5.

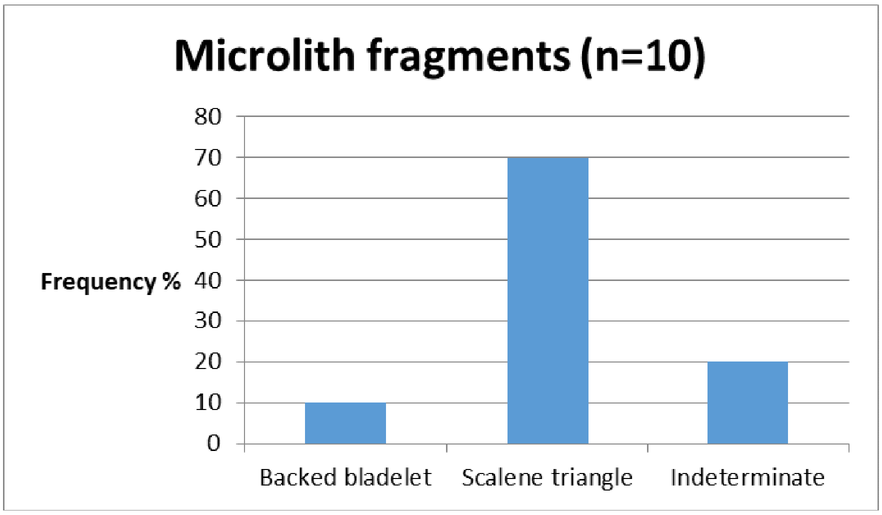


Figure 5.16: Percentage frequency of microlith fragments by type.

Fragment type	
Medial and distal	5
Distal	3
Proximal and medial	2
Total:	10

Table 5.5: Microlith fragment types.

50% of the pieces were medial and distal fragments; 30% were distal and 20% proximal and medial. The basal morphology was principally due to a break snap (80%) and there were two fragments with a bulb present (20%). 70% of the fragments had retouch to two sides and 30% to one side.

The fragments can be classified on the basis of the retouched edges. 30% were backed on one side and 20% were backed on both sides. 30% had two angled/curved backed edges with 20% having two backed edges converging to a point. 80% of the fragments presented with a snap fracture. The most common type of beak was angled (50%) followed by a straight break (30%). It appeared that in each case the break occurred during the manufacturing process.

OTHER RETOUCHED PIECES

The descriptions of other retouched pieces are set out below in Table 5.6.

Figure 5.17: Retouched pieces. Top line left to right: 423, 455, 515, 701 (ventral surface) and 804. Bottom line left to right: 815 and 1230/1231. Scale 5mm.

1. Miscellaneous retouch: Chert Flake (423). Regular: tertiary. Miscellaneous scalar retouch is present on left hand side from the distal end to lower mesial. Use induced edge damage. Burination scar at proximal end.

2. Miscellaneous retouch: Chert blade (455). Regular: secondary. The blade has been modified at one end. There is post depositional edge damage.

3. Denticulated: Chert flake (515). Regular: tertiary
The flake presents denticulated miscellaneous retouch to left hand side at medial.

4. Miscellaneous retouch: Chert flake (701). Irregular: tertiary
Inverse retouch to left hand side at medial. Refer to discussion.

5. Concave side scraper: Chert blade (804). Regular: secondary. The blade, of good quality chert, shows evidence of having been anvil supported. There is scalar retouch to blunt left hand side from proximal to medial to create a shallow concave scraping edge. The edge damage appears to be use induced.

6. Scraper fragment: Flint blade (815). Regular: tertiary.
Similar in form to platform rejuvenation flakes 479, 503 and 767. Side blow removal. A scraper rejuvenation removal.

7. Denticulated: Chert blade (1230). Regular: secondary.
This may be the detached point of 1231. The pieces do not refit but may possibly conjoin. Due to this uncertainty they have left in database and analysis as two items.

8. Denticulated: Chert blade (1231). Regular: tertiary.
The right hand side is denticulated. There has been retouch to part of the dorsal ridge. The butt trimmed has been trimmed and there is scalar edge damage.

Table 5.6: Retouched pieces.

Oblique truncation

There was only one oblique truncation (415) recovered from the site and it was found outwith the main scatter area. The flint artefact presented a bulb, and there was partial direct retouch to the left hand side extending from the proximal to the upper medial. There was partial scalar edge damage to the right hand side at the upper medial.

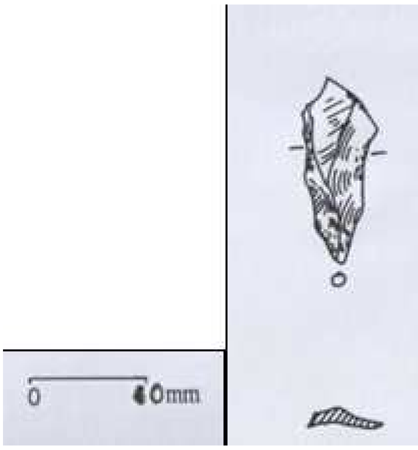


Figure 5.18: Dorsal surface of oblique truncation (415). © Alice Watterson.

EDGE DAMAGE

There are 12 pieces with edge damage (1.5%) of these there are two chert flakes (181, 585) and one chert blade (747) with post-depositional edge damage. A number of items can only be classified as having edge damage (107, 406, 451, 533, 616, 780 and 1216). Another piece with a proximal burination scar (621) can also similarly be classified as edge damaged (519). Edge damage to one chert flake (621) was as a result of a bipolar manufacturing strategy.

SECONDARY TECHNOLOGY DISCUSSION

There are 41 pieces (5.2%) presenting secondary modification recovered from the main scatter area (Table 5.1). This appears to be a comparatively low percentile frequency. Ballin and Johnson (2005, 70) suggest that the percentage of retouched pieces does not usually exceed 4% of debitage products excluding small fraction. A higher percentage is generally associated with sites where there was either no or a paucity of knapping activity. The pieces from Glentaggart (see Section 6) with secondary modification comprise 12% of the assemblage although this figure may have been exaggerated by inconsistent sieving (Ballin and Johnson 2005, 70). The percentage of retouched pieces to the whole of the assemblage is 7.4%. The frequency of retouched pieces from the sites considered by the *Southern Hebrides Mesolithic Project* varied from 1% to 4% (Finlay *et al* 2000b, 571).

Scalene triangles dominate the microlith assemblage (Figure 5.2). 30 of 71 microliths from Cramond could be type classified of which 16 (53.3%) were scalene triangles; *Southern Hebrides Mesolithic Project* 50-65% (Finlay 2000b) and Auchareoch 45% (Affleck *et al* 1988, 48). At Fife Ness the crescent microlith was the dominant form (Wickham-Jones and Dalland 1998). However, Finlayson (2004, 224) specifically notes the close continuity in the form of microliths. It is only the angularity of the scalene triangle which distinguishes it from a crescent. These narrow blade assemblages, following an English model, were seen as a temporal marker between Early and Late Mesolithic assemblages. The boundary between the earlier broad blade assemblages and the later narrow blade has been conventionally set at c.8700-8650BP (Saville 2004b, 205). Recent research implies that this model may be unsustainable within the Mesolithic contexts of Southern Britain (David and Walker 2004).
The situation in Scotland during the Mesolithic was clearly distinguishable from the English model. The assemblage from Morton in Fife comprised of both broad and

narrow blade microliths within a Late Mesolithic context (Coles 1971). This placed the site at Morton centre stage in the discussion about the presence and the chronology of the Early Mesolithic in Scotland (Saville 2004a, 11). However, a preliminary report on the lithics from the inland site at Howburn near Biggar in South Lanarkshire consists of a predominantly broad blade assemblage hinting at Early Mesolithic occupation (Saville *et al*, 2007, 44). The Early Mesolithic assemblages from England at Star Carr, Horsham and Deepcar (Reynier 2005, 18-22) have similarities to the assemblage from Howburn (Saville *et al*, 2007, 44).

The earliest dates from Southern Britain for predominantly scalene triangle assemblages range from 8000-6200 BC (Barton and Roberts 2004, 346; David and Walker 2004, 317). Saville (2008, 211-213) notes that the date for the occupation of Cramond at c.8400 BC is the earliest date for a narrow blade assemblage in Britain. He goes on to consider, albeit on the evidence of Cramond alone although Daer should be included, if narrow blade assemblages originated in Scotland.
The evidence from Climpy for the size of blanks selected from which microliths were made is slight, only one scalene triangle (768) has a hinge termination (L 19mm, W 5mm and Th 2mm). Two other pieces are of similar dimensions (727 and 439) except that the width of the artefacts was fractionally less at 4mm.

Finlay *et al* (2000b, 582-583) considered in detail the two methods of construction of the microlith form and in particular the manufacture of scalene triangles. The form of the scalene triangles appears to generally conform to the technological analysis undertaken on the scalene triangles from the *Southern Hebrides Mesolithic Project* (Mithen 2000a; 2000b) and at Kinloch at Rùm (Wickham-Jones 1990). Firstly, the blank is backed on the right hand side with a short angle established across the proximal end. The backing would ensure that the break would be in the correct direction to remove or modify the bulb. All of the nine examples from Climpy with the angle in the bottom quarter were backed on the right hand side (Figure 5.6). Secondly, the distal ends of the blanks were removed using a burin or break snap. There were no microburins recovered from Climpy. It appears that the cortical remains to the distal end or an irregular termination to the distal end may not have been straightforwardly removed by backing. There are eight scalene triangles that are backed on the left hand side where the angle is situated in the top quarter (Figure 5.5). The thickness of the blank together with the position of the arris will effectively control the extent and the nature of retouch, thereby, influencing the form of the scalene triangle and any *enclume* retouch. Whether the scalene triangle is backed on the dorsal to the left hand side and the distal or the right hand side and proximal end is governed by the orientation of the piece during the manufacturing process. It is possible that the presence of both forms of scalene triangles indicates different temporal events but also speaks to handedness of the knapper and the choices made with regard to the form of the microlith (Finlay 2003b, 173).

There is a particularly intriguing microlith of indeterminate type (579; Figure 5.19) of grey chert which highlights a situation where the perceived construction standard is not adopted. The ventral face was gently rippled and both the dorsal and ventral curvature pattern was angular. The angle was positioned in the bottom quarter with an angled/curved basal morphology. Four of the edges had been retouched. The bulb had been removed and the edge had been modified with fine direct retouch. There was scalar retouch to the right hand side from the proximal to the lower medial. The distal end was not removed by a burin or break snap. Instead it appears that the cortical distal end of the blank was to have been removed by backing. The retouch from the lower medial to the distal end had not removed the entire cortex which is only visible when looking at the ventral surface. There was direct scalar retouch to the left hand side from the distal end to the lower medial. It may be that the blank was originally conceived to a scalene triangle after modification. The backing to the right hand side conforms to the manufacturing standard where the bulb has been removed or modified. The perceived reduction in the length of the piece may have accounted for the distal end not having been removed by a break snap. The failure of the retouch to remove the cortex may have led to the piece being discarded.

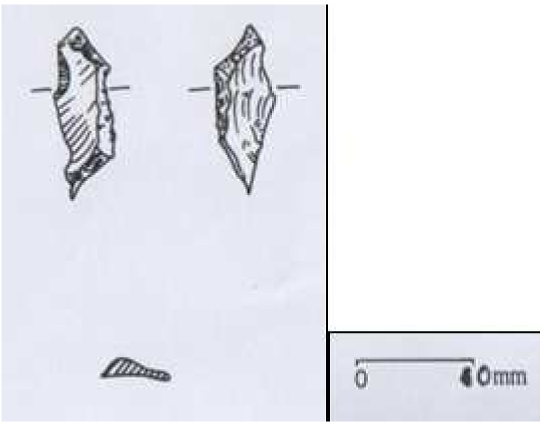


Figure 5.19: Left dorsal surface and right ventral surface (579). Cortex is visible at distal end form ventral surface. © Alice Watterson.

A miscellaneous retouched piece (701) exhibits inverse retouch which is generally not associated with Mesolithic assemblages.

CONCLUSION

The narrow blade assemblages from upland sites in the North Yorkshire Moors and Pennines tend to have one predominant form of microlith (Radley *et al* 1974; Affleck *et al* 1988). The dominance of the scalene triangle in the assemblage from Climpy is also recognised at the upland site of Auchareoch on the Isle of Arran (Affleck *et al* 1988, 47). Similar narrow blade assemblages are known from the inland sites of Starr, Loch Doon (Affleck 1986), Daer Reservoir (Saville 2004) and Smittons by the Water of Ken (Edwards 1996). The assemblages from these inland sites are in contrast to the coastal sites of Low Clone, Barsalloch (Affleck *et al* 1988, 55) and Littlehill Bridge, Girvan (MacGregor and Donnelly 2001, 7) and the inland site of Glentaggart (Ballin and Johnson 2005, 61) where there were either very few or no microliths recovered. The character of the microlith assemblage from Climpy may suggest that the people who occupied the site were principally concerned with the manufacture or retooling of scalene triangles. Finlayson (2004, 224) makes the point that microliths may have multiple functional uses and should not necessarily simply be classified as projectile points for hunting. They may have used for a wide range of craft related activities such as drilling and the processing of food resources (David 1998, 201). The retouch exhibited on the microliths show a diverse strategy of modification. There are pieces which demonstrate fine and scalar retouch sometimes on the same artefact. There is a relatively high incidence of *enclume* retouch which on one artefact accompanies stepped retouch.

The absence of microburins may suggest that microliths were not produced. Experimental work undertaken by Dr. Nyree Finlay (2003, 174) on the manufacture of microliths using a microburin technique determined that in 20% of cases there was no identifiable microburin. Accordingly, there may be evidence of microlith manufacture at Climpy in the form of microburins but without the necessary attributes to classify it as such.

The retouch to the microlith blank would have produced very small pieces of debitage with a curved profile and a maximum dimension of 3mm or less. The lack of diagnostic small fraction may have been due to recovery of lithic material using a dry sieving technique. However, it has been established that the recovery of small fraction was of a comparatively high standard and, therefore, it may be that microliths were neither produced nor retooled at Climpy but simply discarded.

It is possible that microliths may have been cached. The evidence from Ireland shows that caches in the Late Mesolithic often comprised of a small number of artefacts often in threes or multiples thereof (Finlay 2003, 90-91). At Climpy 18 microliths have find co-ordinates and none appear to have been found together.
The relatively low density of the microliths found within the North Scatter Area does not suggest a kill site. The assemblage from the upland site of Pule Bents in the Central Pennines comprises of 103 pieces of which 78 were microliths (rods 70; scalene triangles 7; point 1) and 14 microlith fragments with one oblique truncation. The topography of Pule Bents together with the concentrations of microliths, ethnographic analogy and evidence from a Danish site suggested a kill site, one of the rods exhibits evidence of impact fracture. The rods were interpreted as being too fragile to be hafted as a composite tool for the processing of foraged vegetable matter (Stonehouse 1997). A number of scalene triangle microliths were recovered from Seamer Carr in North Yorkshire. Although there were recovered *in situ* they are thought to be an associated grouping. One of the microliths was found to have a residue and wax and pine resin which may have acted as a hafting agent. Another grouping of 19 rods was also recovered from Seamer Carr. Nine pieces, some of them in opposable pairs were recovered with traces of decayed poplar or willow. Radiocarbon dates at 2σ were recorded at 7540-6670BCE (HAR-5789; 8020±90 BP). There were no other contemporary finds from Seamer Carr. Without any evidence to the contrary the groupings of the microliths were considered to be components for arrows (David 1998).

The paucity of scrapers, other tool forms and artefacts displaying use induced edge damage may suggest that if any processing of materials was undertaken at Climpy then the tools may have been taken away as part of a craft working kit.
These issues and their relevance to the interpretation of the function and use of the site at Climpy are dealt with in Section 7.

SECTION 6: THE LITHIC ASSEMBLAGES FROM CLIMPY AND GLENTAGGART: A COMPARATIVE ANALYSIS

INTRODUCTION

The inland Mesolithic scatter site at Glentaggart has been chosen for the comparative analysis because of the paucity of upland sites comprising of chert assemblages. Other sites with chert assemblages such as Daer have not yet been published. Glentaggart was excavated in 2001. The analysis of the lithic assemblages was undertaken by T. B. Ballin and M. Johnson and published in the Journal of the Lithics Studies Society in 2005. This section will provide a comparative analysis of the scatter sites at Glentaggart and Climpy.

The location, geology, circumstances of discovery and the methodology of excavation relating to the recovery of the chipped stone assemblage from Glentaggart will be briefly reviewed.

The comparative analysis of the two assemblages is limited because the full excavation report for Glentaggart has yet to be published. The analysis is, therefore, only in the broadest of terms. The discussion will focus principally on the interpretation of the assemblage from Glentaggart and attempt to ascertain the implications, if any, which may affect the interpretation of the assemblage from Climpy.

GLENTAGGART

Location

The site of Glentaggart is situated on a comparatively level plateau at c.240m OD approximately 330m to the south east of Kennox (NS 7989 2663; Figures 6.1 and 6.2; Ordnance Survey 2008) in the uplands of South Lanarkshire. Kennox Water is c.180m due west of the site (Ballin and Johnson 2005).

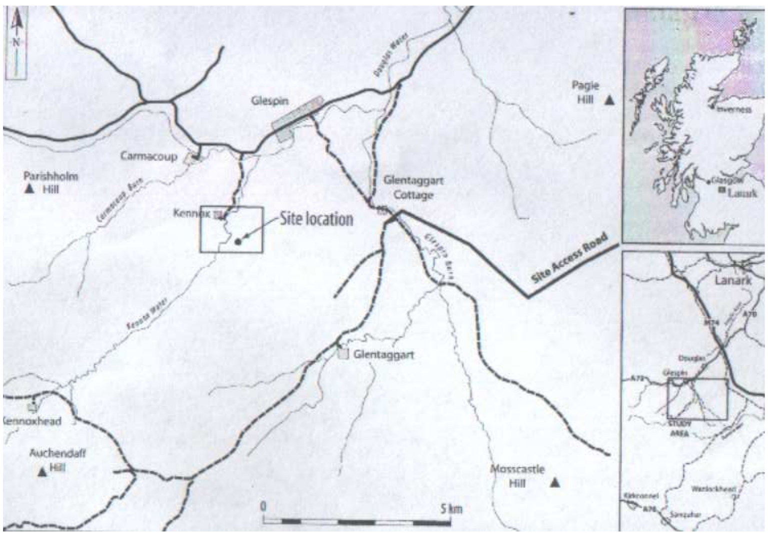


Figure 6.1: Broad geographic location of site (after Ballin and Johnson 2005, Figure 1).

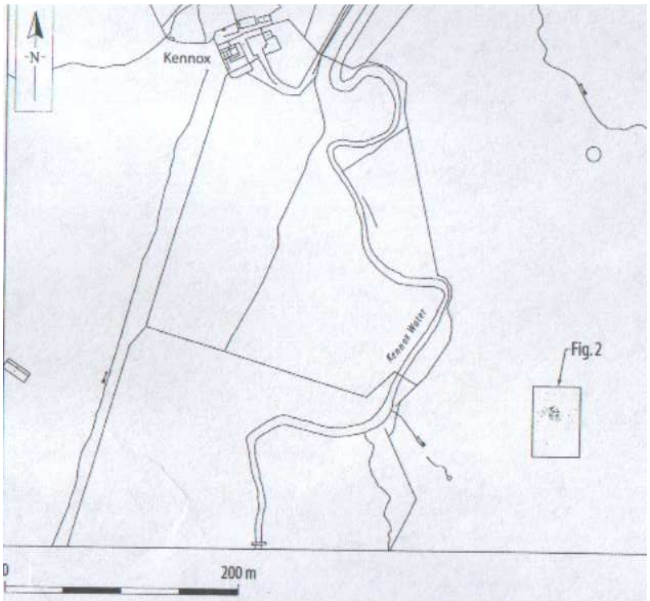


Figure 6.2: The site is shown notated as Figure 2 (after Ballin and Johnson 2005, Figure 1).

Geology

The solid geology comprises of the Carboniferous limestone group with drift geology of boulder clay (Ordnance Survey 1951a; Ordnance Survey 1951b).

Discovery

The circumstances of discovery are almost identical to that of Climpy. A penannular turf banked enclosure was identified during a walkover survey undertaken by CFA Archaeology Ltd as a result of an application by Scottish coal Company Ltd for an opencast coal licence (Ballin and Johnson 2005, 57-60).

Archaeological excavation

The turf banked enclosure was 12m across from north to south; 6m E-W. The structure had an entrance to the north with the bank c.1m extant. There was a central pit within the enclosure. Charcoal samples from the pit are dated to 420-660CE [Poz-10277-9, Poz-10281-3] (Ballin and Johnson 2005, 58-60).

A number of pieces of worked stone were recovered from the bank that were considered to have re-deposited within the soil and turf gathered from the immediate vicinity in the construction of the bank. None of the soil from the bank was sieved (Ballin and Johnson 2005, 60, 63).

A series of 50cm² test pits were excavated within a 5m² grid. Some of the lithics were recovered by dry sieving and others from the wet sieving of bulk samples.

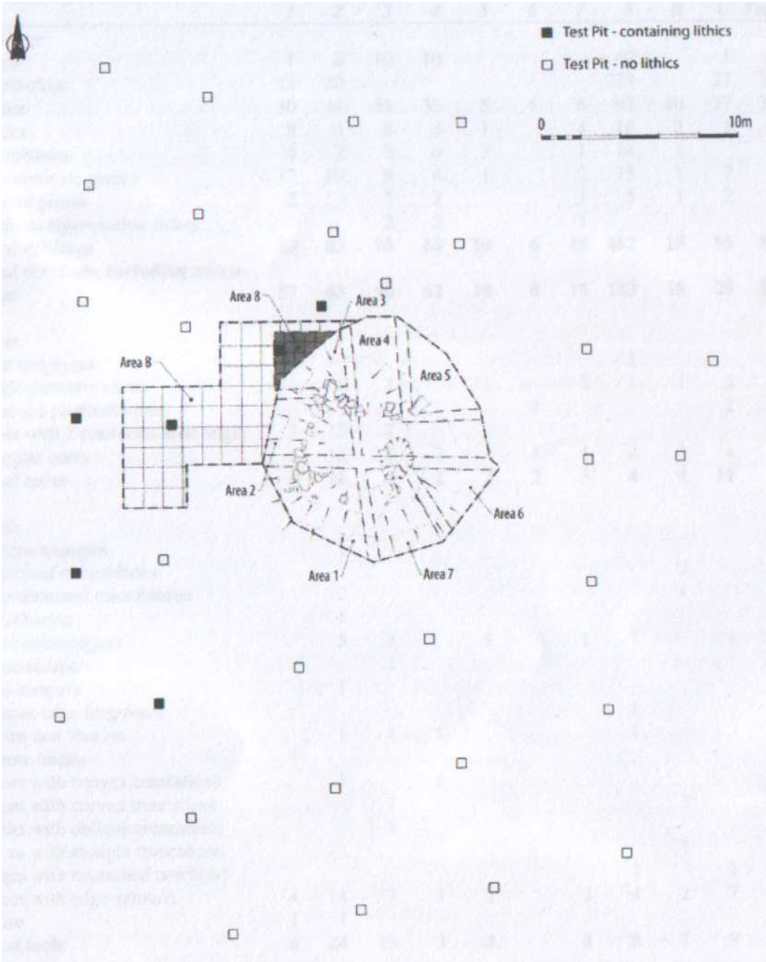


Figure 6.3: Plan showing the location of test pits and principal trench. Area 8 to the north west of the enclosure is shaded (after Ballin and Johnson 2005, Figure 2).

A principal trench was opened using a 1m ² grid (Figure 6.3). The chipped stone was recovered by dry sieving with bulk samples wet sieved. Area 8 was subject to a more detailed examination because of the density of lithics recovered. 50cm² grids were set up with of all of the soil bulk sampled. The wet sieving was conducted using a 1mm mesh. 47% of the chipped stone assemblage was recovered from Area 8 (Ballin and Johnson 2005, 60).

COMPARATIVE ANALYSIS

Raw material

There were 1008 pieces of chipped stone recovered from Glentaggart. 99.8% of the assemblage comprises of a bluish green radiolarian chert (Climpy 98.6%). There was a core and a putative struck flake both of chalcedony. The quality of the chert for working, like Climpy, was generally of a less than reasonable to poor quality. Approximately 25% of the assemblage has a fresh powdery cortex in contrast to Climpy where the outer surface of the chert is predominantly smooth and hard (Ballin and Johnson 2005, 61-63).

It was noted that fresh powdery corticated chert can be found within the immediate vicinity of the site suggesting that the raw material may have harvested from local sources supplemented by abraded pebbles (Ballin and Johnson 2005, 62-63).

Character of the assemblages

The character of the chipped stone assemblages is shown at Table 6.1; percentile frequency at Figure 6.4.

	Glentaggart	Climpy
Cores	48	15
Flakes	302	247
Blades	82	64
Chunks/Indeterminate	61	47
Crested pieces	15	
Platform rejuvenation	5	3
Small fraction <4mm	354	8
Small fraction 4-9mm	64	360
Tools	77	41
Total:	1008	785

Table 6.1: The character and numerical frequency of the chipped stone assemblages from Glentaggart and Climpy.

There are only three primary pieces from Glentaggart (0.3%); Climpy 3.9%. This suggested that the initial preparation of raw material had taken place elsewhere possibly at the source location (Ballin and Johnson 2005, 63).

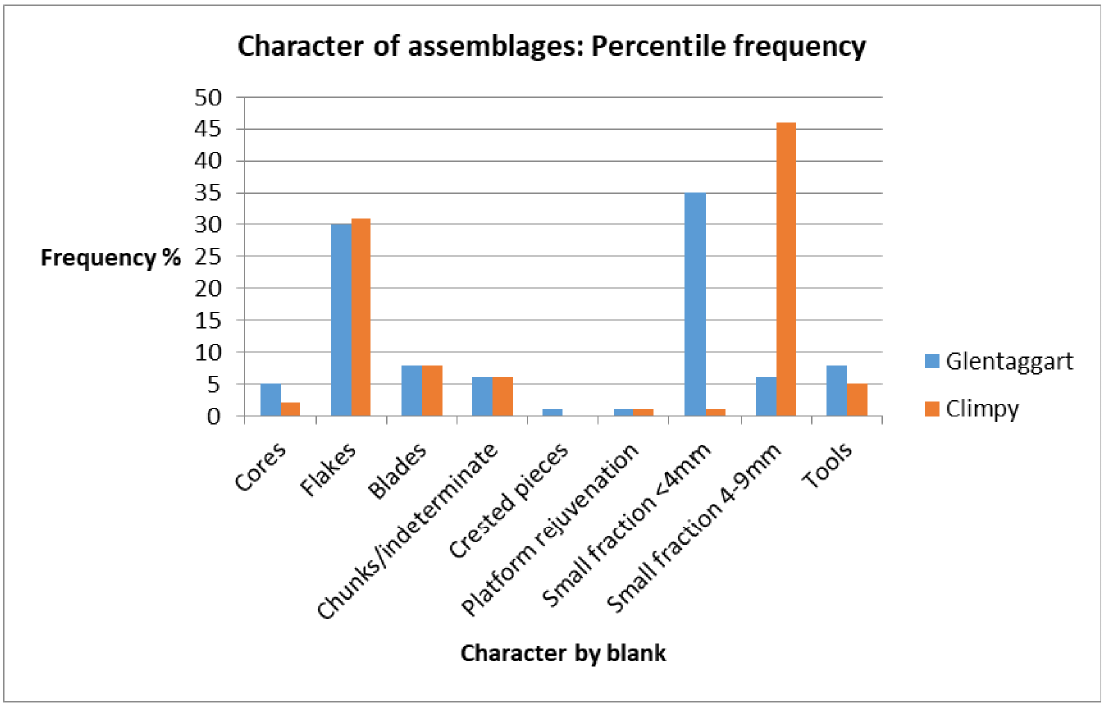


Figure 6.4: Percentile frequency of the chipped stone assemblages.

Condition

There are no pieces classified as burnt from Glentaggart (Climpy 5.2%) although it is noted that burnt items may not present with diagnostic attributes (Ballin and Johnson 2005, 63).

Core reduction

Apart from two cores described as discarded rough outs the remaining 46 pieces from Glentaggart are simple platform cores (Climpy 11; 83.3%). 17 of the cores were single platform; 3 opposed. There were multiple platforms to 19 cores, including cortical platforms, and two cores had two platforms. Many of the single platform cores show evidence of scrub preparation and core trimming. The platforms to two cores are facetted. The majority of the cores were worked extensively despite the poor quality of the raw material. It is not possible to determine the predominant removal from the single platform and multi-platform cores although it appears that the opposable cores were blade cores. The inference from the Glentaggart report is that cores were abandoned due to size and flaws in the raw material. There were no bipolar cores recovered from Glentaggart [Climpy 4; 26.7%] (Ballin and Johnson 2005, 66-70).

There are 15 crested pieces within the Glentaggart assemblage classified as platform rejuvenation flakes. Three pieces at Climpy although 'crested like' could only be classified as platform rejuvenation flakes. The pieces from both sites appear to have been removed using a side blow.

Debitage analysis

Flakes

All of the flakes from Glentaggart were struck from platform cores (Climpy 73.1%). The percentile frequency of flakes is almost identical at 31% for Glentaggart and 30% for Climpy. Most of the flakes from Glentaggart were removed using a hard hammer (Ballin and Johnson 2005, 65) this is in direct contrast to Climpy where 93.1% of flakes were struck using a soft hammer.

The average dimensions of complete platform flakes from Glentaggart and Climpy is shown at Figure 6.2

	Glentaggart	Climpy
Length	19mm	14mm
Width	17mm	11mm
Thickness	6mm	3mm

Table 6.2: Average length of complete platform flakes from Glentaggart and Climpy.

Blades

The blades from Glentaggart were detached using a soft hammer (Ballin and Johnson 2005, 64). The dimensions of platform blades from the two sites are set out at Table 6.3.

	Glentaggart	Climpy
Average dimensions:		
Length	28mm	16mm
Width	9mm	6mm
Thickness	3mm	3mm
Length:		
Maximum	44mm	30mm
Minimum	12mm	12mm

Table 6.3: Size dimensions of complete blades from Glentaggart and Climpy.

The lamellar index for Glentaggart is stated at 16% although this appears to be calculated against all of the debitage (Ballin and Johnson 2005, 78). The index when only flakes and blades are considered is 21.4% (Climpy 23.9%). The figures are not directly comparable because the number of complete flakes and blades for the Glentaggart assemblage are not known.

The analysis of blades is classified according to the criteria set out by Wickham-Jones (1990, 73) where blades with a width exceeding 8mm 'blades' are distinguished from those of 8mm or less 'narrow blades and blade chips'. A comparison of blades is shown at Table 6.4 and Table 6.5. Seven (63.6%) of the blades and four (8.5%) narrow blades from Climpy are anvil supported.

	Glentaggart	Climpy	
	Platform	Platform	Bipolar
Numerical frequency:			
Blades	48	11	6
Narrow blades	34	47	5

Table 6.4: Numerical frequency of blades and narrow blades from Glentaggart and Climpy.

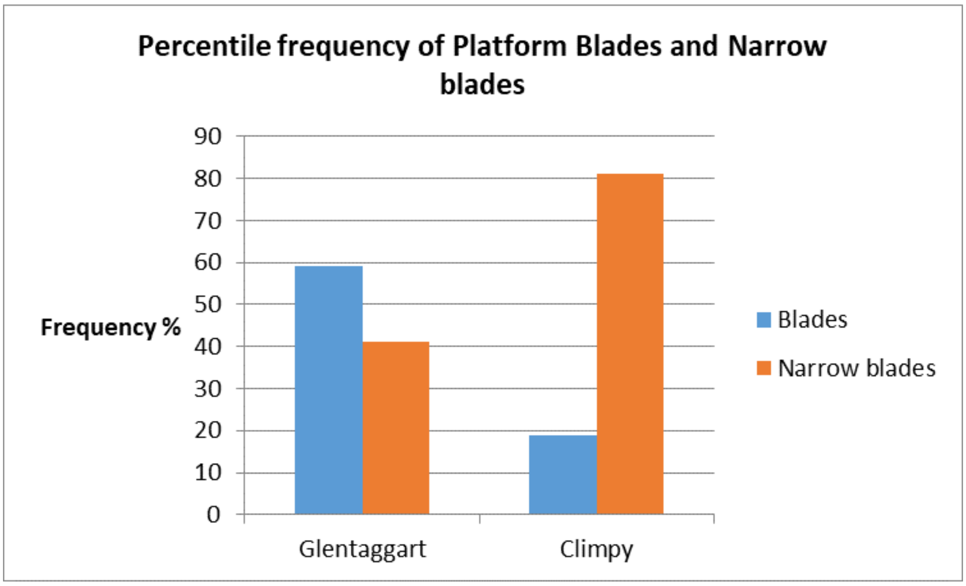


Figure 6.5: Percentile frequency of platform blades and narrow blades from Glentaggart and Climpy

Small Fraction

The character of the small fraction from Glentaggart has not been analysed save for size dimensions (Figure 6.6). The paucity of small fraction measuring 4-9mm was thought to be because most of the top soil and the soil from the bank were not sieved. The density of the smaller pieces in Area 8 has been interpreted as evidence for primary knapping (Ballin and Johnson 2005, 60, 82).

The small fraction accounts for 41.5% of the assemblage from Glentaggart (Climpy 46.9%).

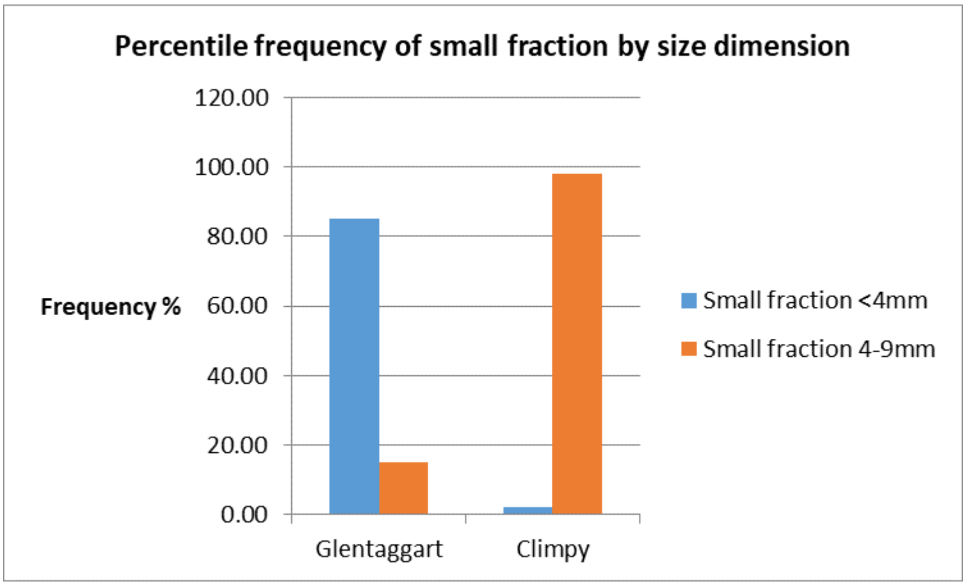


Figure 6.6: Percentile frequency of small fraction by dimension for Glentaggart and Climpy.

Retouched pieces

There are 77 pieces classified as 'tools' from Glentaggart. The comparative analysis with Climpy is set out at Table 6.5. The two items excluded from the table are pieces of ochre.

	Glentaggart	Climpy
Microliths	1	33
Microburins	1	
Microlith 'like'	5	
Scrapers	14	2
Burins	4	
Piercer burin	1	
Truncations	6	
Notched pieces	2	
Other retouched pieces	41	
Misc. retouch		3
Denticulated		3
Total:	75	41
Percentage frequency	7.4%	5.2%

Table 6.5: Numerical frequency of retouched pieces from Glentaggart and Climpy.

All of the items have direct retouch (Ballin and Johnson 2005, 80). There was one chert flake (701) with miscellaneous inverse retouch from Climpy. The presence of a microburin, albeit described as a failed piece, may suggest that blades were produced for the manufacture of microliths.

The microlith together with a number of the pseudo-microliths and the scrapers From Glentaggart portray evidence of use-wear (Ballin and Johnson 2005, 74-75).

DISCUSSION

The raw material for cores from both sites seems to be predominantly from tabular blocks of chert. At Climpy the evidence of the mixed quality of the debitage suggests that good quality pre-formed cores were brought to the site in addition to the utilisation of inferior local material. However, it appears that at Glentaggart people were utilising locally harvested poor quality raw material. The low frequency of primary flakes at both sites suggests that the initial opening of raw material took place elsewhere. Ballin and Johnson (2005, 78) propose that bipolar reduction were technologies were not used at Glentaggart because the chert may have been too soft. The dominant technology at Climpy was platform although the use of an anvil as support for some platform products suggests that bipolar and platform reduction were contemporaneous. The cores from both sites were extensively worked and generally discarded to flaws in the raw material and size. The latter not being so much in evidence at Glentaggart due to the lack of bipolar reduction. A soft hammer was used at Climpy and in contrast a hard hammer was used to detach flakes and the soft hammer for blades at Glentaggart.

Ballin and Johnson (2005, 82) propose that Areas 3 and 8 where locations were primary knapping was undertaken. This is largely determined by the density of micro-debitage (small fraction <4mm) recovered. The average number of debitage products and micro-debitage per 1m² from Area 8 was 20.3 and 30.6, respectively. The comparative figures from the North Scatter Area (Scatter Area B) at Climpy are 17.5 and 14.7. The small fraction debitage from Climpy is substantially all in the range of 4-9mm. Area 2 based on the number of tools recovered from that area was interpreted as a location for retooling (Figure 6.7).

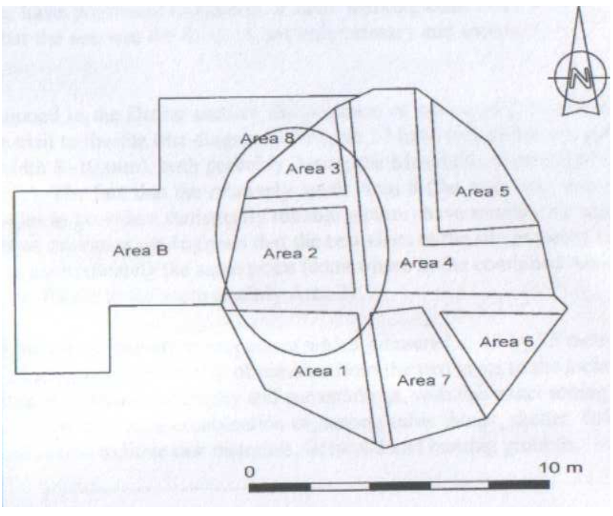


Figure 6.7: The approximate occupation area is highlighted broadly covering Areas 1, 2, 3 and 8 (after Ballin and Johnson 2005, Figure 15).

There are potentially problems with the classification of Areas 3 and 8 as a location for primary knapping. Firstly, the report is silent as to whether a refitting study was undertaken. Without being able to refit debitage and debitage to cores it is difficult to categorise a site as primary. Secondly, there is the paucity of primary flakes. Thirdly, the relative absence of small fraction may suggest that Glentaggart was not a location for primary knapping. The preponderance of micro-debitage may imply the secondary retouch and retooling of pieces. Generally, it is the larger pieces of small fraction that speak to an association with primary knapping. Fourthly, taphonomic processes do not appear to have considered for those materials recovered from the disturbed contexts overlying the undisturbed subsoil.

There was a blade industry at both sites. Ballin and Johnson (2005, 82-84) determined that the size dimensions of the blades indicate a temporal marker. The wider blades (>8mm) indicate an Early Mesolithic occupation which was followed by a Late Mesolithic occupation based on the blades with a width of less than 8mm. It was noted that it was only in the sub-soils that broad blades were recovered. Broad and narrow blades were recovered from the overlying soils. Graphs were drawn to show spikes at average blade widths of 6-7mm and 9-10mm. The blade widths, disregarding microliths and blade chips, from Climpy are shown at Figure 6.7 which demonstrates that 33% of platform blades have a width of 3mm (average 6.38mm; STDEV ± 2.62mm). According to this proposed schema this would situate the occupations at Climpy securely within the Late Mesolithic: based on the English model.

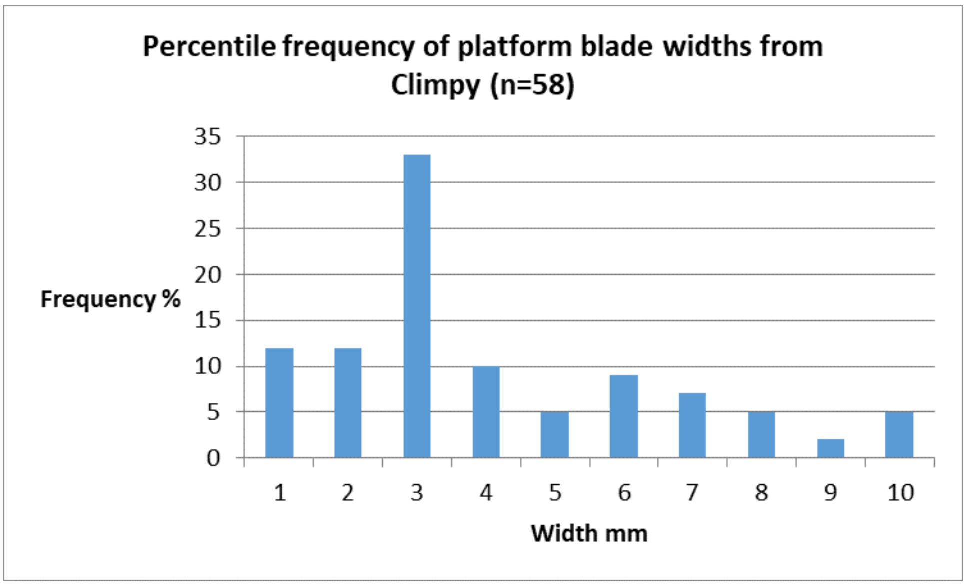


Figure 6.8: Percentile frequency of the width of platform blades from Climpy.

The average lengths of microliths from the types of Early Mesolithic assemblages from England (Reynier 2005, 18-22) are set out at Table 6.6. The average blade length from Glentaggart is 28mm (maximum 44mm; minimum 12mm). On the basis that the blank has to be longer than the microlith this may suggest a similarity to the Horsham type assemblages. However, the nature of the tool assemblage from Glentaggart with shortend scrapers the most dominant tool form is perhaps more akin to the Deepcar type assemblages. In England the Deepcar assemblages outnumber the Star Carr and Horsham assemblages by a ratio of 4:1. It is interesting that it is only Deepcar assemblages that are found at 200-300m OD (Reynier 1998, 178-179).

Type	Average length
Deepcar	33-38mm
Horsham	22-26mm
Star Carr	18-34mm

Table 6.6: Average length of microliths from Early Mesolithic assemblages from England.

The case for an Early Mesolithic occupation at Glentaggart would be strengthened, or otherwise, if an analysis were undertaken to determine what specific tool forms were associated with the broad blades recovered from the undisturbed subsoil. Furthermore, consideration should be given to the possibility that the broad blades from Glentaggart are due to the poor quality of the raw material.

However, to simply use the English model based on the width of debitage products and the size dimensions for microliths for the end of the early Mesolithic period in Scotland may not be appropriate (Finlay *et al* 2003). The date of the occupation(s) at Daer pushes back the perceived wisdom for the commencement of the Late Mesolithic according to the English model from c.6700BCE to c.8400BCE in Scotland. The quality of the chert utilised from the upland sites of Lanarkshire, such as Climpy, Glentaggart and Daer, is generally poor. The raw material may have had an impact on the size of useable blanks that could be produced. At Starr in Dumfries and Galloway flint from coastal resources was intensively used (Finlay 2008). A similar situation may be evident at one of the sites at Daer where flint/chalcedony microliths were recovered during the excavation (Saville 2004, Figure 10.19).
The upland sites of Lanarkshire may have wide interpretative significance for the Mesolithic in Scotland in redressing the imported bias of the English model.

CONCLUSION

The site at Glentaggart was probably a location for *in situ* knapping and the possible retooling of pieces from a number of occupations over an extended period of time. The assemblages suggest that blade industries were employed at both sites. The small fraction debitage recovered from Glentaggart highlights the lack of micro-debitage retrieved from Climpy and without such evidence it is not possible to conclude that microliths were retooled.

In contrast to Climpy microliths may have been produced at Glentaggart, however, that is based solely on the presence of one microburin. It is possible that other microburins are present but have not been recognised due to a lack of diagnostic attributes. There may have been processing tasks undertaken at Glentaggart. A number of the tools present evidence of use-wear.

The people who occupied Glentaggart appear to have utilised local raw material sources. The poor quality of the raw material is also evident from Climpy. However, unlike Climpy there is no evidence that good quality pre-formed cores being brought to the site to produce blanks. The absence of bipolar technology at Glentaggart was thought to be due to the soft quality of the locally derived chert. The differentiation of the assemblage between Early and Late Mesolithic episodes based on the English model has not been fully established. If that model is adopted then further research needs to be undertaken on the pieces associated with the broad blades recovered from the undisturbed subsoil. However, what may be more appropriate is to consider the contextualisation of the upland sites in Lanarkshire and what they inform us about the Mesolithic of Scotland before looking over the border to the south.

SECTION 7: CONCLUSION

INTRODUCTION

These concluding remarks will focus on the research questions posed by the principal aims and objectives as set out in Section 1.

The main aim of this research has been to undertake an extensive macroscopic analysis of the chipped stone assemblage from Climpy it is so easy to forget that the lithics are the individual archaeological signatures of the people who occupied the site during the Mesolithic. There is a brief outline of some of the wider perspectives relating to the interpretation of scatter sites which point to a requirement for further research.

SOURCE AND QUALITY OF RAW MATERIALS

The principal raw material of the chipped stone assemblage is chert. The quality of the raw material for a proportion of the debitage products does not match the generally poor quality of the discarded cores. It is likely that curated pre-formed cores were brought to the site which may have been used sparingly. Locally resourced poorer quality materials may have been preferred as an expedient measure to preserve the better quality curated cores. Chert was probably harvested from outcrops within the Carboniferous limestone coal group within the immediate vicinity of the site.

LITHIC TECHNOLOGY

The analysis of the chipped stone assemblage showed that although platform reduction was the principal strategy there was a substantial element of bipolar reduction. The use of these two technologies was contemporaneous. This was evidenced by attribute analysis which determined that an anvil was used as a support for a component of the platform reduced pieces. There were no anvils or hammerstones recovered from Climpy. The preferred percussor for platform and bipolar reduction was a soft hammer. The lamellar index suggests the presence of a blade industry.

There are a number of different forms of microlith within the assemblage. The most common type present is the scalene triangle. It is not unusual for one type of microlith to dominate assemblages during the Mesolithic period. There are different strategies of direct retouch. The majority of the pieces exhibit fine abrupt and enclume retouch. There are instances of scalar retouch on occasion in association with fine modification.

There is a low percentage frequency of non-microlith modified pieces and items presenting edge damage.

SKILL OF THE KNAPPER

The regularity of platform flakes and blades was low when compared to bipolar products. These rates of regularity are thought to be a manifestation of any lack of skill of the people who occupied Climpy. It is probably simply down to the poor quality of raw material which is apparent when the relatively high frequency of abrupt terminations to flakes and blades are taken into consideration.

The average thickness of flakes and blades from both reduction strategies suggests a proficient, uniform and standardized use of core material.

SPATIAL DISTRIBUTION

The distributional analysis showed that there two scatter areas to the site. There was no stratigraphic relationship between the South and North Scatter Areas.
The South Scatter Area is interpreted as a palimpsest of random events with taphonomic factors explaining the concentration of finds. The majority of the chipped stone assemblage was recovered from the North Scatter Area which was a location for a palimpsest of *in situ* knapping activity. There is insufficient evidence to support the case as place where primary knapping was undertaken.

FUNCTION AND USE

The presence of the remains of two camp fires or hearths and the evidence of a structure comprising of up to four stakeholes may suggest that Climpy was an upland camp site where the *in situ* knapping of materials was undertaken. The hearths may speak to different events within a single phase occupation comprising of more than one visit. The stakeholes may have been for a windbreak structure as they appear to form a boundary to the area of the highest concentration of finds. However, it cannot be categorically stated that the stakeholes and hearths are contemporary due to the lack of stratigraphic reference.

Whilst blades were produced at Climpy there is no direct evidence for the manufacture of microliths. There were no lithics with the necessary attributes to classify them as microburins. Climpy was probably a location for the retooling of microliths manufactured elsewhere. Although there was no small fraction micro-debitage recovered from the site this absence may have been due to the recovery methodologies adopted for the recovery of the finds or that the retooling of microliths produced debitage so fine it was impossible to detect.

Without any evidence to support an alternate interpretation it is possible that the occupations at Climpy were associated with hunting. The scalene triangle microliths may have been used as composite projectile points for an arrow (Figure 7.1). The presence of open glades within a forested environment as an attraction to grazing animals may have been conducive to hunting. In contrast, there was a paucity of microlith forms recovered from the upland scatter site at Glentaggart. The higher incidence of scrapers and other modified pieces may speak to the processing of materials. It is possible that Climpy was one location within a complex of sites where different tasks where performed. Those others sites may remain undiscovered or may have been lost to open cast coal extraction.

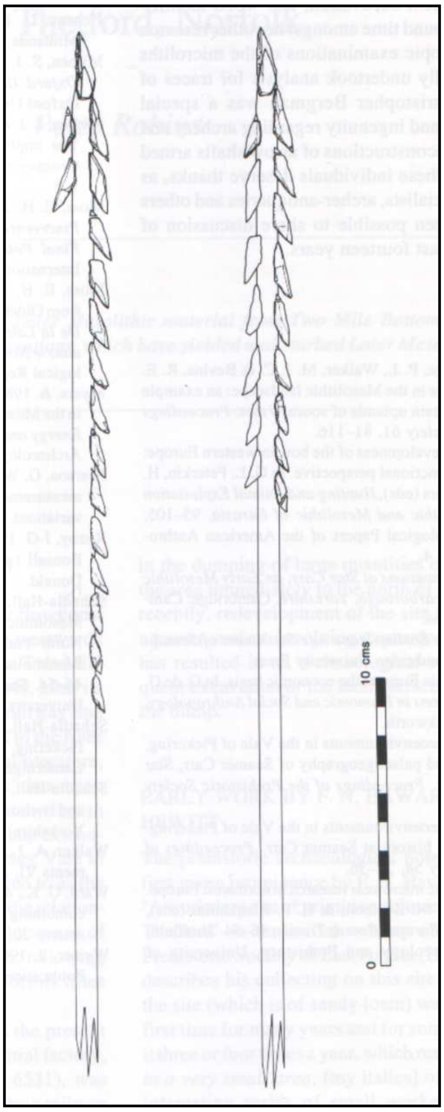


Figure 7.1: Interpretation of scalene triangle microliths hafted as an arrow (after David 1998, Figure 26.6).

DATE OF THE OCCUPATION(S)

There was no material recovered from the Mesolithic contexts at Climpy which were appropriate for radiocarbon dating. The narrow blade or geometric microliths suggest settlement in the Mesolithic period of Scotland (c.8400-4000BCE).

CONCLUSION

The site at Climpy offers a window into our understanding of the emerging function, diversity and use of upland sites during the Mesolithic in Scotland. Finlay (2008) makes the point that this understanding is being hindered by the delays in the publication of excavation reports.

The principal focus of this research project has been about the identification of the technologies used by the people of the Mesolithic at the scatter site of Climpy and what that detailed technological analysis can tell us about their occupation. This idea of a technology is a construct of archaeologists. The processes used in the past are necessarily reduced to abstract classifications for study. Technology has to be viewed in a wider sense and considered as a vehicle with which to tease out of the archaeological record the processes of social reproduction from a complex web of social relationships and acts across the landscape (Warren 2006, 13). The technology, in its restricted sense, obfuscates the meaning behind the procurement of raw material, the knapping process and the utilisation of the tools. It can divorce the material culture from identity and the complexity of social relations (Ingold 2000, 94; Warren 2006, 13-15).

Warren (2006, 18-20) notes that the stone tools are tied into the wider landscape through the tasks undertaken by people. By their actions space becomes place (Low and Lawrence-Zuniga 2003b, 2-6).

The procurement strategies and the technology associated with manufacture of the lithic assemblage are a small part of how the people understood and experienced the world in which they lived (Warren 2006, 26). The stone tools by themselves may not indicate the collective rights to place and territory (Finlay 2003a) although they may by being discarded at this location in the upland landscape.

It is within these wider perspectives that the writer's future research is grounded. In recent years, the Mesolithic period has been a vibrant and dynamic research focus in Scotland with a number of detailed regional studies. However, current approaches have veered away from more synthetic treatments of regional diversity and have tended to view the Mesolithic occupation of Scotland as homogenous. The proposed research will seek to redress this imbalance and explore intra-regional variation.
The research will comprise of a regional study of the Mesolithic material culture of Ayrshire and Lanarkshire, an area that has been largely neglected since the 1980s and will include a comparison between coastal and inland sites. In particular the following issues will be addressed:

- the definition of social territories and settlement patterns in the region,
- aspects of lithic technology, namely raw material difference and technological choices,
- the wider environmental context and whether the evidence supports sedentary occupation in key zones.

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