ALTOGETHER ARCHAEOLOGY

A MESOLITHIC SETTLEMENT AT COW GREEN RESERVOIR, UPPER TEESDALE

EXCAVATIONS, AUGUST 2015

PRELIMINARY REPORT

Dr. Rob Young

LOTTERY FUNDED

CONTENTS

Altogether Archaeology

Altogether Archaeology, largely funded by the Heritage Lottery Fund, was a community archaeology project conceived and managed by Paul Frodsham for the North Pennines AONB Partnership. It ran (including a pilot phase) from December 2011 to November 2015, and attracted 580 registered volunteers who took part in a wide range of projects throughout the North Pennines, including survey and excavation of prehistoric, Roman, medieval and post-medieval sites, and the survey of complex multi-period archaeological landscapes. All fieldwork was delivered in partnership with professional archaeological contractors, with 'on the job' training and supervision provided as an essential element of all fieldwork. As well as raising the capacity of local groups to undertake research, the project made a genuine contribution to our understanding of the North Pennines historic environment, thus contributing to future landscape management. Following completion of the project, a number of volunteers set up an independent group, retaining the name Altogether Archaeology. Details of this group, which welcomes new members, are on its website:

www.altogetherarchaeology.org.uk

The Cow Green Mesolithic Settlement excavation was module 5a of the Altogether Archaeology project. This report presents the provisional results of the excavation which took place from 1st – 9th August 2015. Fieldwork was directed by Rob Young, with overall project direction by Paul Frodsham.

The Cow Green site lies on land owned by Northumbrian Water plc, who provided financial support for the excavations which is gratefully acknowledged.

This report was written by Rob Young and edited by Paul Frodsham. It will be made publicly available on the Altogether Archaeology website, along with reports on all work completed during the Altogether Archaeology project and subsequently by the Altogether Archaeology Group. These reports can be downloaded from:

https://www.altogetherarchaeology.org/reports.php

1. BACKGROUND AND INTRODUCTION

In the early summer of 2015 Lance Moore discovered Mesolithic flint and chert material eroding from an old land surface, sealed beneath peat, on the side of the reservoir at Cow Green (NY 81492 29854), at a height of 490 metres OD (Figs.1-3).

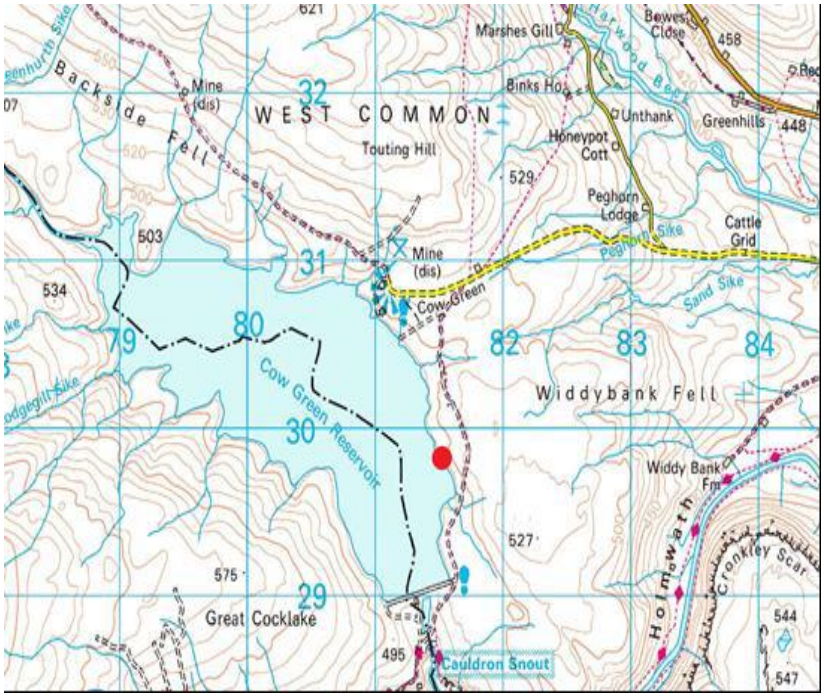

Fig 1: Location of site on edge of Cow Green Reservoir (OS base map © Crown Copyright, Durham County Council LA100049055, 2016).

Fig. 2: General view of location of Cow Green Site on end of spur in middle distance.

Fig. 3: Location of the Cow Green site (black dot towards the top-right corner) before final flooding of Cow Green Reservoir. (Photo reproduced from Clapham 1978).

He recovered a number of small clearly worked pieces of lithic material and, realising their potential importance, he reported them to the Finds Liaison Officer for NE England, Ellie Cox. She recorded the discoveries (Fig.4) and confirmed that the lithic artefacts were of later Mesolithic date. The finds were reported to Clare Henderson (then Senior Archaeologist, Durham County Council), who brought them to the attention of Paul Frodsham (at the time the *Altogether Archaeology Project* Manager with the North Pennines AONB Partnership).

Fig. 4: Photographs of some of the finds made by Lance Moore (Photos: E. Cox).

An initial site visit was arranged on 4th June 2015. This was attended by Rob Young, Paul Frodsham, Lance Moore and Ellie Cox. A subsequent site meeting was held by Paul Frodsham, with Martin Furness (Reserve Manager - North Pennine National Nature Reserve) and Karen Purvis (Land Management and Conservation Adviser, Natural England) on 17th June and discussions were also held with Northumbrian Water and Raby Estates relating to site access and other practical matters pertaining to further research on the discoveries. The meeting on June 4th confirmed the nature of the site, and its immediate threat through erosion of the reservoir bank.

As well as being within the North Pennines AONB, (Fig.5), the site also lies within the Moor House National Nature Reserve and it also falls within the Upper Teesdale Site of Special Scientific Interest (SSSI). The latter is an extensive 14,365ha upland site, containing a number of nationally rare species and habitat types, as well as a rich variety of representative habitats and associated plant and animal communities.

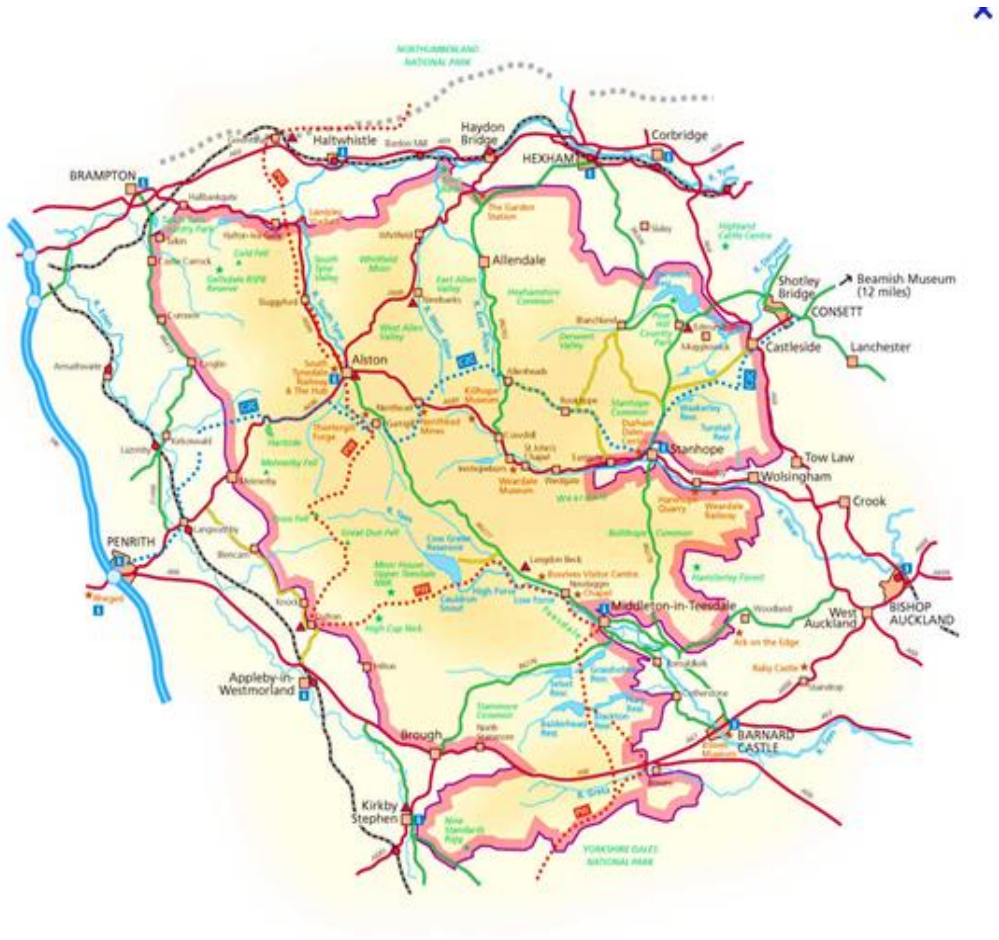

Fig. 5: Location of Cow Green Reservoir within the North Pennines AONB (© North Pennines AONB Partnership).

The site is also part of the Moor House – Upper Teesdale *Special Area of Conservation* (SAC) as it represents the least damaged and most extensive tracts of typical M19 (*Calluna vulgaris – Eriophorum vaginatum*) blanket mire in England.

Following discussion with landowners (Northumbrian Water and Raby Estates) and tenants (the Moor House-Upper Teesdale National Nature Reserve), a detailed Project Design (Frodsham 2015) was drawn up for archaeological investigation of the site by volunteers from the North Pennines AONB Partnership's *'Altogether Archaeology'* project.

More artefacts were found by Lance Moore at Cow Green than at any of the sites recorded by Johnson and Dunham in the immediate area of what is now the reservoir (see discussion below), and the potential of the site to produce stratified prehistoric lithic material, in association with dateable organic deposits, has proved to be high. The site's location, at what seems to have been an old spring head (see Fig. 10), is a classic one for later Mesolithic sites in the North Pennines and on the North York Moors. As discussion of the palaeo-environmental context of the site (below) indicates, it may also have been close to the contemporary tree line.

The excavation reported on here was essential from a 'rescue' perspective. The site was, and still is to some extent, in imminent danger of being completely eroded into the reservoir. The work was also the first intentional excavation of an *in - situ* later Mesolithic site in the North Pennines area.

As the discussion below indicates, the work has the potential to give us detailed information about seasonal occupation of the North Pennines uplands, the procurement of important lithic raw materials in the later Mesolithic period and the range of tasks that might have been carried out on the site. The results of the excavation will complement the information from the main river valleys of the North Pennines outlined below, and the work will significantly enhance our understanding of human activity in the area some seven or eight thousand years ago.

2. RESEARCH CONTEXT. EARLY PREHISTORY IN THE NORTH PENNINES.

2.1 Late Upper Palaeolithic and Early Mesolithic (c.15,000 – 7,000BC)

During warmer interludes during the last Ice Age it is probable that occasional bands of hunters crossed the North Pennines in search of woolly mammoth and other prey animals, but such episodes were probably few and far between and it is perhaps unlikely that significant evidence of a human presence in the uplands from these early times will ever be found. At the end of the Ice Age, as the land reappeared from beneath the ice sheets from about 12,000 years ago, the North Pennines landscape was one of open tundra with few trees. Occasional hunting parties must have wandered into the area from time to time in search of wild cattle, horse, giant deer, elk, reindeer and smaller prey, as well as fish in the rivers and wild nuts and fruits. These people probably congregated into large camps in the lowlands during the winter, and left very little evidence of their seasonal presence in the uplands.

Evidence relating to the changing landscape comes from palaeo-environmental work (in this instance mainly pollen analysis) and this is discussed in more detail below. The careful analysis of pollen grains in peat deposits can give us a good idea of changing vegetation patterns over time, which can be linked to archaeological remains, to give an idea of developing relationship between people and the environment since the end of the Ice Age. Such work is particularly important in trying to understand the Mesolithic, for which archaeological evidence is sparse.

In the North Pennines, some, possibly Late Upper Palaeolithic (c13,000 – 10,000BC) flint material, has been discovered by Tim Laurie on the terraces of the Tees at Towler Hill near Lartington in Teesdale (Coggins *et al.,* 1989).

There are two places in Upper Teesdale from which Early Mesolithic material (c. 10,000 – 7,000 BC) has been recovered; Towler Hill (Lartington) and Staple Crag, near Wynch Bridge on the south side of the Tees opposite Bowlees (Coggins *et al.,* l989). At the latter site more than 200 pieces of worked flint and chert, along with a couple of shale beads, were recovered from the eroding river bank (now protected by a stone revetment wall). The flint appears to be from Yorkshire, though the chert is probably of local origin (Fig. 6). The full extent of the site at Staple Crag is unknown, but it may well be that in the Early Mesolithic period people congregated here for a few weeks each year and occupation was probably linked to the seasonal exploitation of salmon and other riverine resources. Occupation activity may have gone on for several centuries at what was probably a preferred location in the contemporary landscape.

2.2 Later Mesolithic (c. 7,000 – 4,000 BC)

Evidence for human activity in the North Pennines during the Later Mesolithic (c. 7,000 – 4,000BC) is far from prolific, but much more common than that from earlier periods. From 1910 up to the present, researchers recorded Mesolithic material from various locations in Weardale and Teesdale (Egglestone, 1909-1910, 1911-1912a, 1911-1912b; Trechmann, 1905; 1912 ; Fell and Hildyard, 1953, 99; Fell and Hildyard, 1956). Hildyard's catalogue of sites formed the basis for the present author's fieldwork in Weardale over 20 years later.

As part of research for a PhD at the University of Durham, the present writer re-examined all of the extant flint and stone material from the Wear Valley and carried out a programme of field-walking in the area (Young, 1984; 1987) (Figs. 6, 7, 8, and 9). The late Denis Coggins produced an excellent summary of his own multi-period fieldwork in Teesdale (1986), and Tim Laurie has published review of early postglacial settlement data from the Tees and Swale Valleys (1984). In 1989 Coggins, Laurie and Young collaborated in a review of the late Upper Palaeolithic and Mesolithic of the North Pennine dales. This was an attempt at a comprehensive review of what was known about the early prehistoric period in the North Pennine area, concentrating in particular on Weardale and Teesdale. In 2002 Young reviewed the evidence for the Palaeolithic and Mesolithic periods in the north of England (Young, 2002).

Mesolithic material is known from excavations in the North Pennines, but invariably this has been recovered by chance during the excavation of sites of later periods. In 1997, for example, Coggins and Fairless produced the report on their excavations at the multi-period site of Middle Hurth Edge in Teesdale (Coggins and Fairless 1997). Here, a later Mesolithic flint assemblage was documented in a secondary context, from the make-up of the mound from this site (Young 1997). Similarly, an assemblage of Mesolithic flint was recorded from the earliest levels of excavation on the medieval castle at Barnard Castle (Young 2007).

In 1999 a further later Mesolithic assemblage, consisting of over 200 pieces of flint and chert, was recovered from beneath Romano-British levels during excavations at the Iron Age/Romano-British site of Bollihope Common, near Stanhope (Co.Durham) (Young, Webster and Newton, 2006, 2011 and *forthcoming*). Lithics from a Mesolithic settlement were also recovered during the excavation of a Bronze Age burial mound by Newcastle University on Birkside Fell, north of Blanchland, in the mid 1990s (Tolan-Smith 2005). Most recently, during excavations at the early Bronze Age cairn site of Kirkhaugh near Alston, famous for the pair of gold tress-rings found there, an assemblage of later Mesolithic flint was recovered, again in a secondary context, from the scraped up material of the burial mound (Young, *forthcoming*).

Clearly there is growing material evidence for a substantial human presence in the North Pennines in the later Mesolithic period. The Cow Green site is a further reflection of the nature of that early settlement.

Of particular importance in the current discussion is the information contained in Johnson and Dunham's seminal work on the *The Geology of Moor House: A National Nature Reserve in North-East Westmorland* (1963). Written and published well before the commencement of construction of the Cow Green Reservoir in 1967, Chapter 17 discusses *'The Prehistory and Human Occupation of the Reserve'* and the authors record the recovery of later Mesolithic material from five locations in the high uplands of the reserve to the west of the site at Cow Green.

All of the material recorded by Johnson and Dunham was found in a similar relationship to the overlying peat as those finds from Cow Green. The artefacts were recovered directly at the interface between the natural mineral soil and the overlying peat, and in terms of typology and raw materials, these finds seem very similar to the newly discovered material from the reservoir site.

The finds from Hard Hill (NY 727331) (Johnson and Dunham, 1963, 156) are of particular importance because here the lithic material, which is similar to the Cow Green finds, was recorded in association with two wild cattle (aurochs) horn sheaths. Pollen associated with the peat in the horn sheaths indicated that the finds can be placed at the end of the Atlantic (pollen zone VIIa) climatic phase, right at the end of the later Mesolithic.

Undoubtedly there is much more evidence of Mesolithic activity preserved beneath the peat at numerous locations throughout the North Pennines, but finding it is, to a large extent, reliant on chance. The material only becomes visible when the overlying peat is eroded, and the chances of someone capable of recognising Mesolithic material wandering by while a site is thus exposed are not great.

From the available evidence it would appear that much of the Mesolithic activity throughout the North Pennines relates to temporarily occupied campsites, some of which may have been occupied only once, perhaps for a few days, while others may have been returned to on numerous occasions over several years or even centuries. These sites would probably have been located to facilitate specific tasks within specific areas of the landscape at particular times of the year. These tasks would almost certainly have included hunting and fishing and the gathering of fruits, nuts and other plant foods. Procurement of other resources such as stone for tool manufacture was also probably carried out from these sites. This idea will be further developed in the general discussion below.

2.3 Environmental Context

In 1997 Kathryn Pratt's Durham University PhD entitled *Development of Methods for Investigating Settlement and Land-use using Pollen Data: A Case-study from North-east England, circa 8000 cal. BC - cal. AD 500* indicated the scale and detail of environmental reconstruction work that has taken place in the uplands of the north east of England. Of obvious importance, in the present context, is the range of palynological research that has been carried out in Upper Teesdale and in particular the pollen diagrams from Valley Bog on the Moor House Nature Reserve (Chambers, 1974; 1978) and Widdybank Fell (Red Sike and Tinkler's Sike) (Turner et al., 1973). The results from these sites give us a great insight into the landscape context of the Cow Green Site.

Johnson and Dunham (1963, 143-147) and Chambers (1974, 96 – 97; 1978) have suggested that around Cow Green and the Moor House Reserve the woodland that developed at the end of the Late Glacial Period remained relatively open throughout the whole of the post-glacial period. Chambers has stressed the fact that the vegetation at the time is probably best seen as a mosaic of woodland, areas of peat and grassland.

The upper limit of the closed forest in Teesdale has proved difficult to estimate due to the superabundance of seemingly local pollen in many diagrams. Squires (1971, 43) has suggested an upper limit of 365m though it must be stressed that there was probably considerable local variation in the amount of woodland present (see Squires, 1970, 174-184).

The full spread of woodland has been C14 dated to 4252 +/-70 cal BC (6202+/- 70 BP SRR 107) in the vicinity of Wheelhead Moss (NY 807 304) to the NW of the Cow Green site, some 2,800 years later than the maximum spread of woodland in the lowlands of County Durham (Chambers, 1978).

For the Pre-Boreal – Boreal period (c. 8350-5050 cal BC), Turner et al. (1973) document the spread of hazel, elm, oak and pine into the uplands, pointing out that pine was a late arrival in areas above c. 500m. The extent of tree cover in the area in this period probably varied considerably over short distances giving rise to a rich variety of available habitats (Chambers, 1974, 97). In the following Atlantic phase (c. 5050 -3050 cal BC) deciduous forest continued to develop and, as a result of increased wetness, alder proliferated. Blanket peat began to form over large areas and Johnson and Dunham (1963, 136-140) have recorded peat up to 4.00m thick on the slopes of Moor House which began to form at this time. At the time of the Atlantic forest maximum, tree pollen frequency contributed between 30-50% of the total pollen spectrum on the Teesdale diagrams (Turner et al, 1973). Areas of the exposed sugar limestone to the south of the Cow Green Mesolithic site may well never have had any tree cover, forming open areas of potential grazing land within the forest mosaic.

In the North Pennine uplands, prior to the Atlantic-Sub-Boreal transition as indicated by the Elm Decline, we have a picture of an open environment, with an upper limit of the closed forest above which was probably more open, scrub type land - what Prof. Ian Simmons has called the ‘tonsure’ effect.

Mesolithic campsites, such as the one under study, were probably located on the tree line, at the junction between woodland and open ground.

Within this varied range of terrestrial habitats red deer, roe deer, wild boar and wild cattle (Aurochs) would have flourished. Beaver and a range of fish types would also have flourished in the river Tees.

Both red and roe deer prefer open woodland glades and forest verges where undergrowth is maximised (Grigson, 1978; Tilley, 1979; Prior, 1968; Tegner, 1951). Aurochs was probably a highly adaptive animal, being both a browser and a grazer (Grigson, 1978, 54) and wild boar are usually associated with closed forests and their ideal habitat is moist woodlands, especially mixed deciduous forest (Jochim, 1976). A wide range of seasonally available plant foods would also have been exploited at various points in the year.

An understanding of the ethology and behaviour of the major game animals is central to any attempts to model Mesolithic lifeways (*see below*).

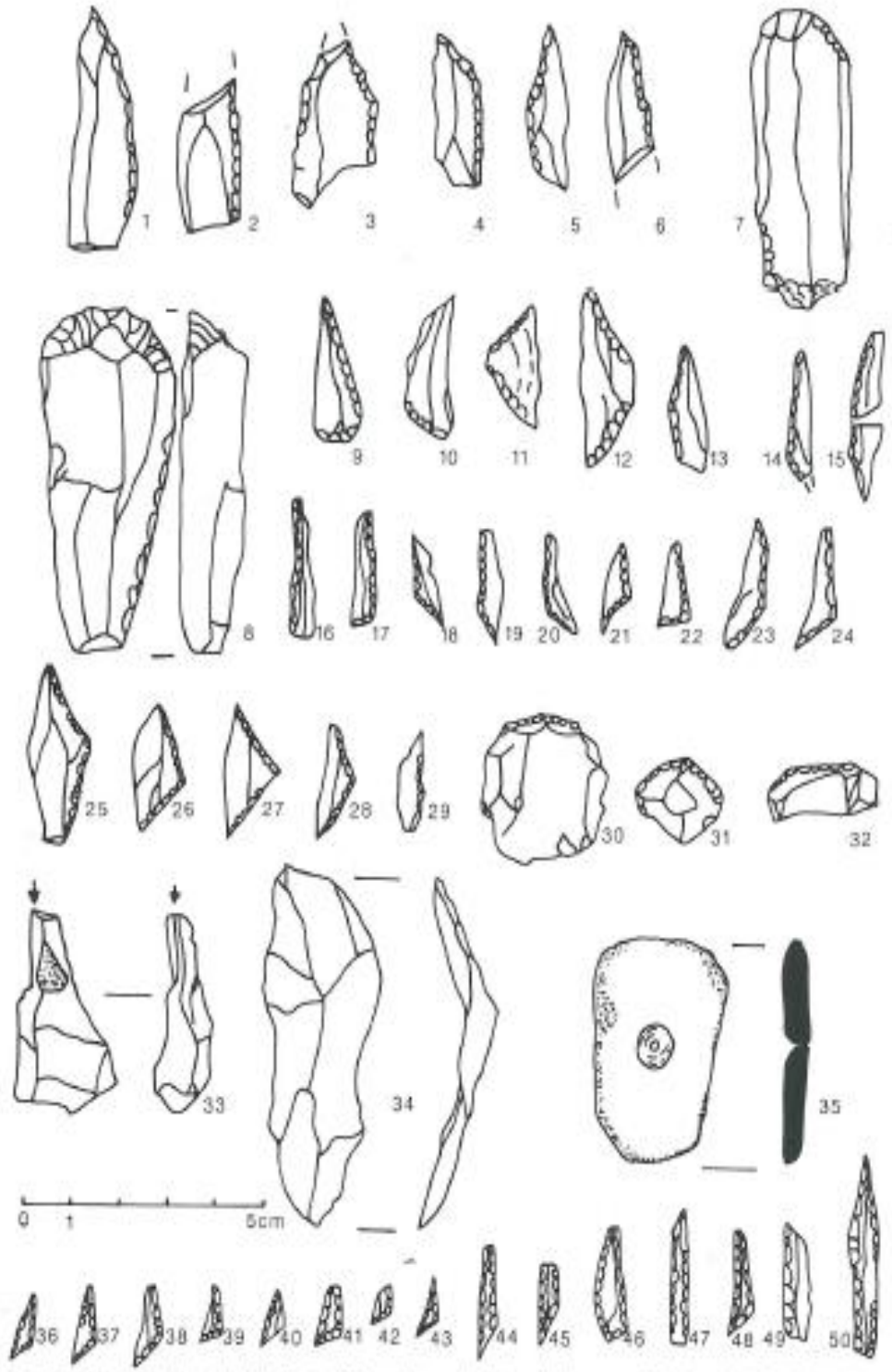

Figure 3 Lithic material from Teesdale. Towler Hill: steeply retouched points (1–6), scrapers (7–8), microliths (9–24); Staple Crag: microliths (25–29), scrapers (30–32), burin (33), blade (34), perforated shale 'bead' (35); Barningham High Moor: microliths (36–50).

Fig. 6: Lithic material from Towler Hill and Staple Crag. (from Coggins, Laurie and Young, 1989)

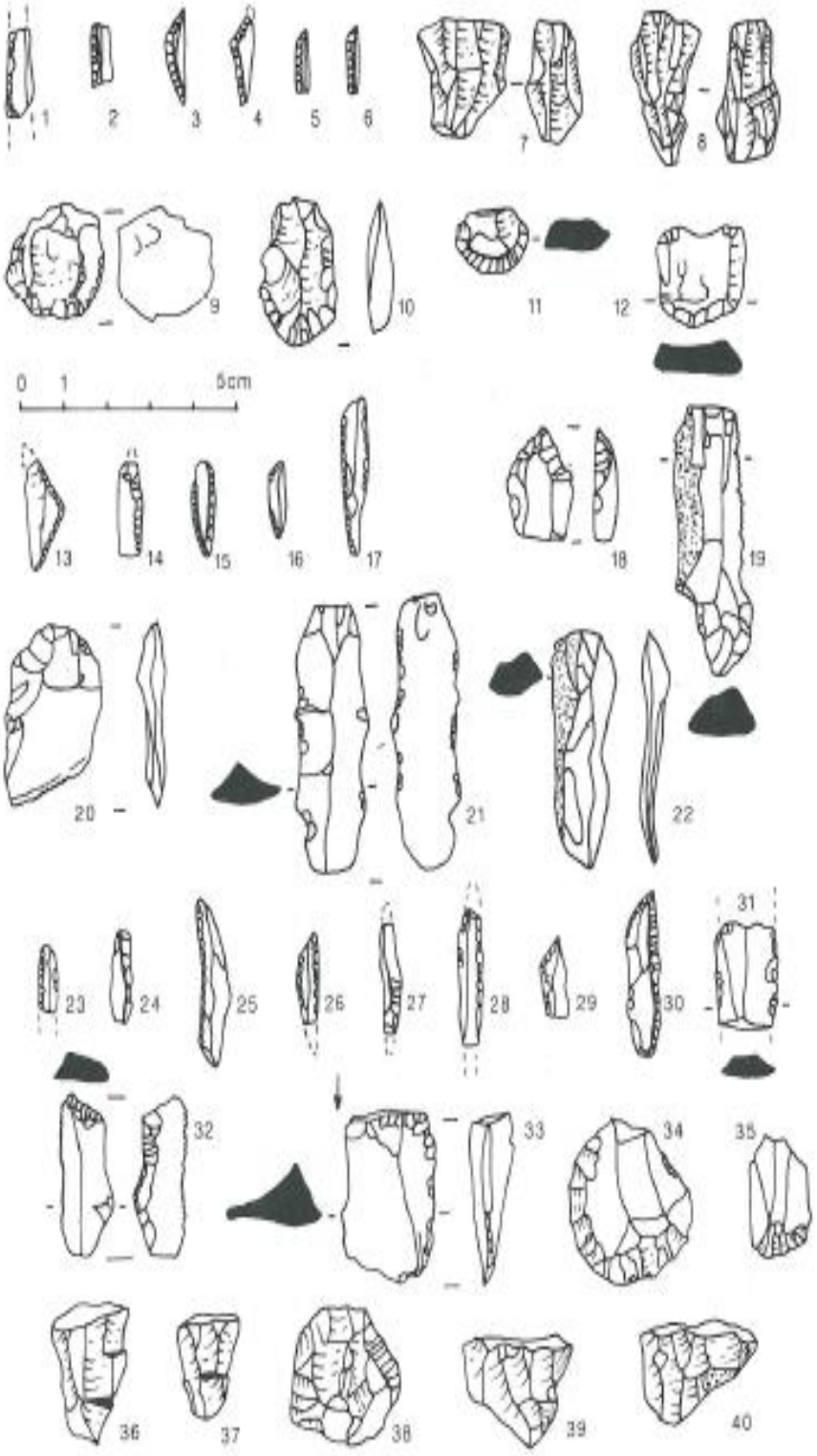

Figure 2 Lithic material from Weardale. Howel John, West Field: microliths (1–6), cores (7–8), scrapers (9–12); Bell's Quarry: microliths (13–17), piercer (18), serrated blades/flakes (19–20), utilized flakes and blades (21–22); Police Field: microliths (23–30), serrated blades/flakes (31–32), burin (33), scrapers (34–35), cores (36–40).

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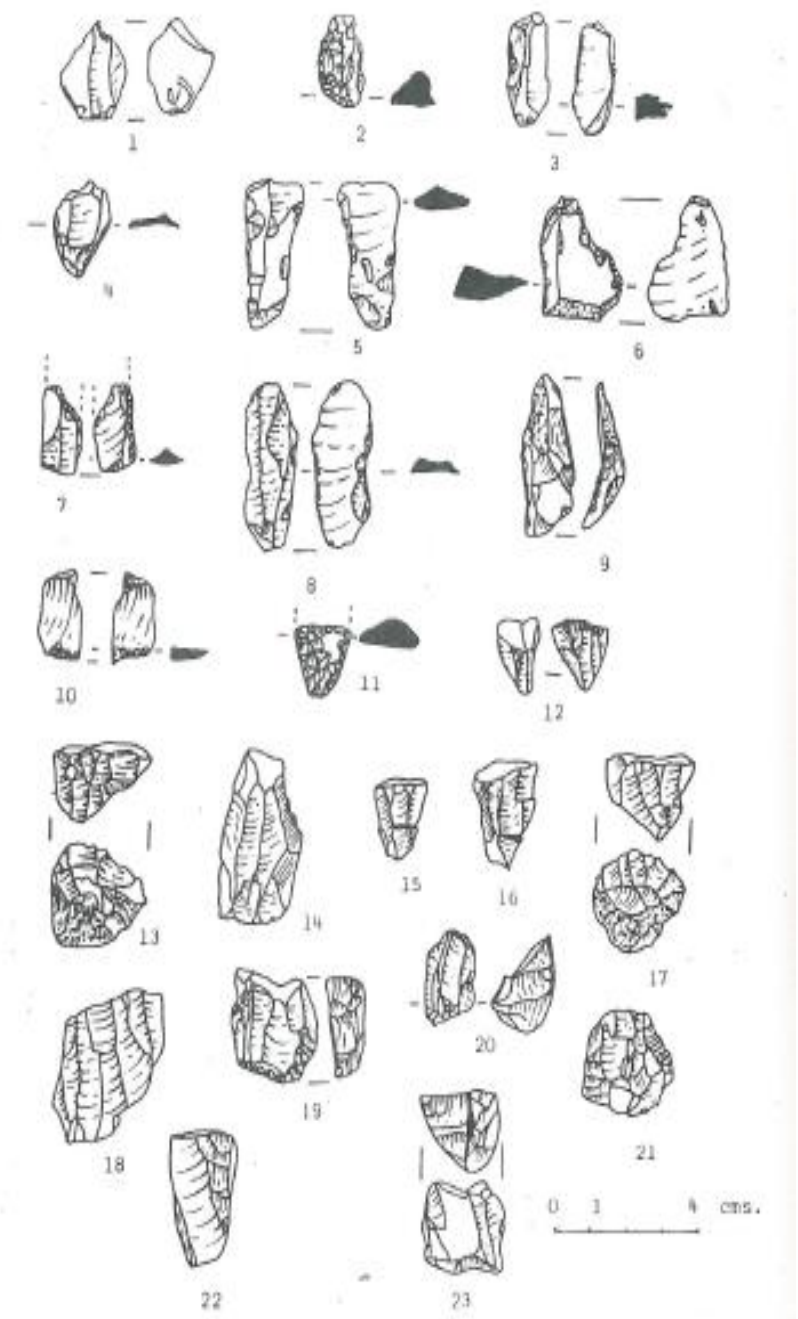
Fig. 7: Later Mesolithic material from various locations in Weardale (from Coggins, Laurie and Young, 1989).



IV.70 Lithic material from Howel John West Field and Police Field (F125, F126).

Fig. 8: Later Mesolithic Material from Howel John West Field and Police Field, Weardale (from Young, 1987).

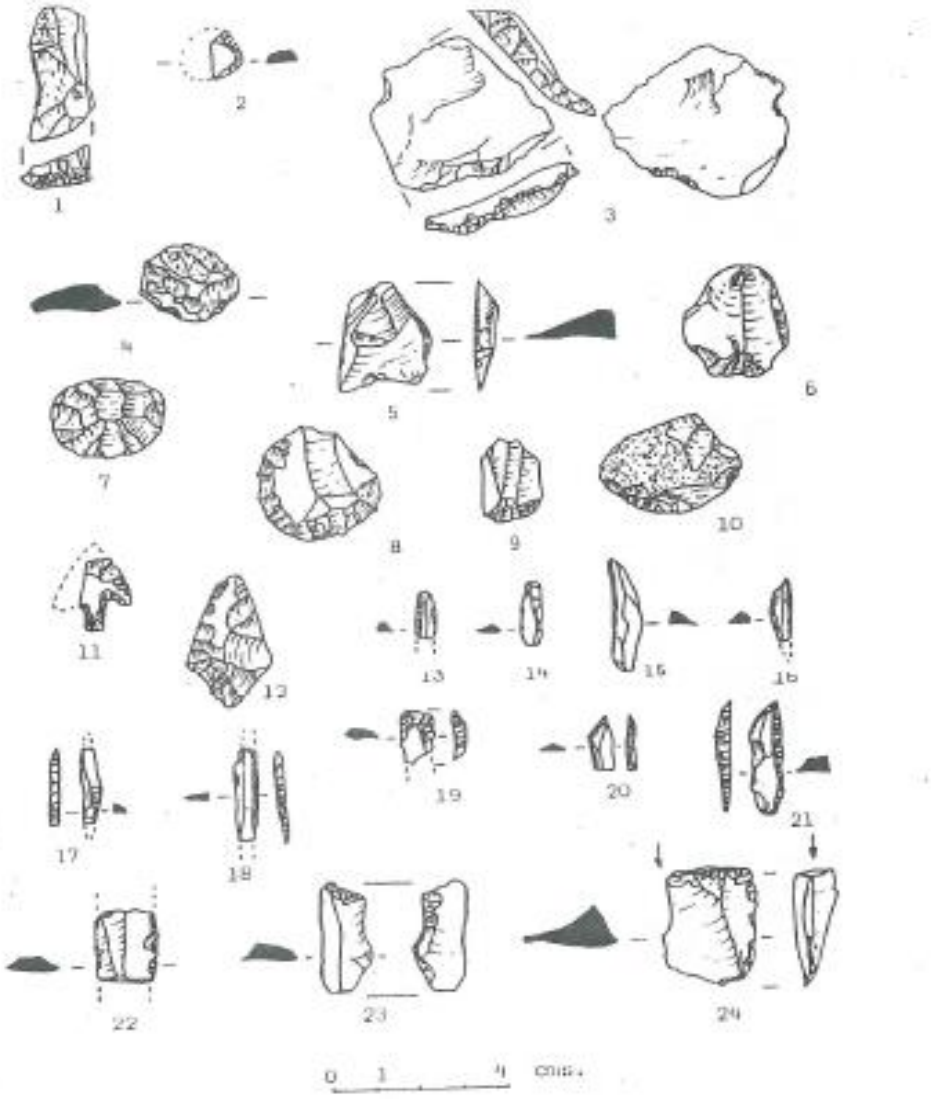


Fig. 9: Later Mesolithic material from Police Field, Eastgate, Weardale (from Young, 1987).

3. THE EXCAVATION: RESEARCH AIMS AND OBJECTIVES

The initial project design, produced in accordance with English Heritage/Historic England's *Management of Research Projects in the Historic Environment (MoRPHE)* guidelines (English Heritage 2006, revised 2015) set out, in detail, the main research aims of the project. These can be simply listed as follows:

i) To recover as much information as possible about the site and its Mesolithic occupants.

ii) To assess:

a) the original extent of the site.

b) the nature of the lithic assemblage.

c) the form of the site, together with evidence for its development over time.

d) the chronology of the site.

e) the nature of any features, such as hearths, pits or post-holes, that may be present.

f) the nature of the surrounding environment before, during and after the occupation of the site.

It was hoped that information gathered about the nature and condition of the site would be of potential use in the location and study of other Mesolithic sites in the surrounding landscape and further afield.

Thus, a further broad-based and overarching aim was to help inform Mesolithic studies throughout the North Pennines.

4. EXCAVATION METHODOLOGY

As stated in the introduction, Lance Moore had discovered the lithic material at Cow Green, eroding from a ‘cliff’ line, above the reservoir. The majority of the material was recovered from an erosion channel, probably formed by surface water run-off from a series of nearby sink holes in an area which the 1st Edition Ordnance Survey map coverage suggested may have been the source of several freshwater springs.

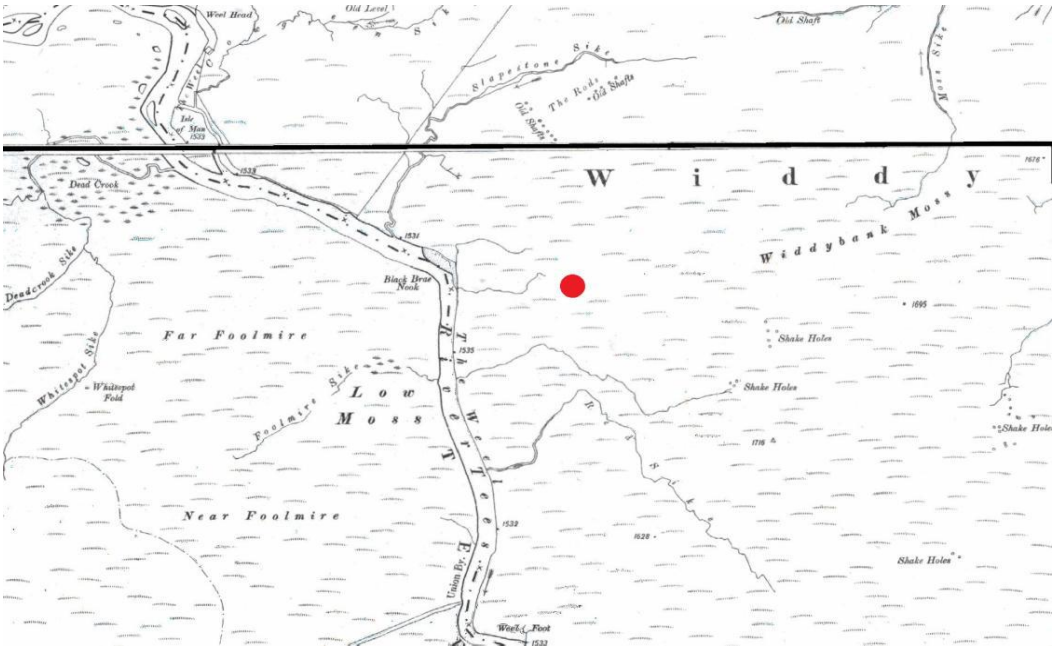


Fig. 10: 1st Edition OS map showing location of Cow Green site in an area of spring heads above former course of the River Tees.

Lithics were also recorded from immediately beneath the overlying peat, further south along the cliff line from this gulley. As a result, an initial excavation trench measuring 10m x 5m was laid out to take in the erosion gulley and to cover the general area of the lithic spread down the cliff edge. It proved impossible to extend the trench to the north because of the presence of the sink holes. To try and ascertain the extent of the lithic spread to the south, along the cliff edge, a series of four 1m x 1m test pits was laid out at 2m intervals to the south of the southern edge of the main excavation trench. The test pit results are discussed separately below (Fig. 11).

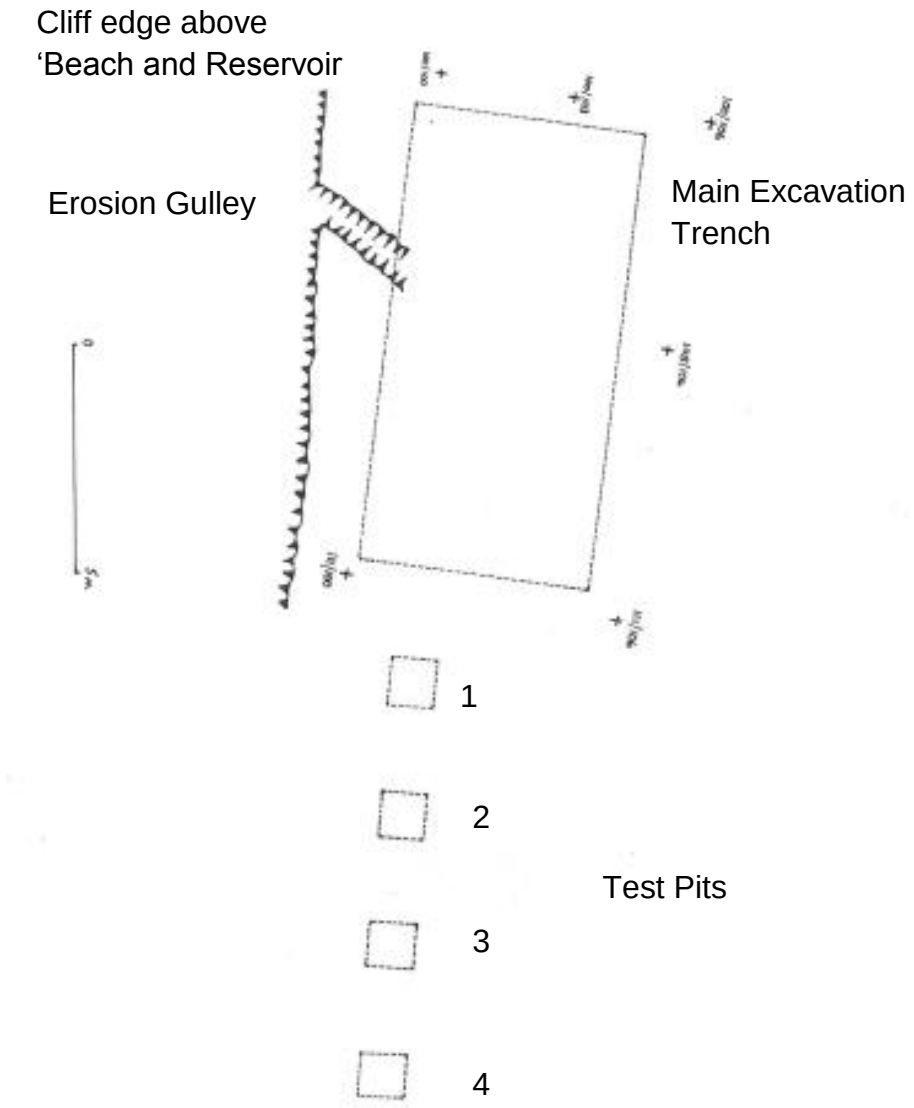


Fig. 11: Trench and Test Pit layout. (North to top of page)

In full accordance with the conditions of the consent granted by Natural England, taking into account the high ecological importance of the site, removal of vegetation and peat and its ultimate reinstatement was closely regulated. Vegetation (heather and turf) was cut into manageable turves and lifted by hand, with as much peat still adhering to the roots as possible. These turves were stored close to site, on a tarpaulin sub-base, and care was taken to ensure they did not dry out. The underlying peat was also lifted by hand and stored on a tarpaulin sub-base for the duration of the excavation (Figs. 12, 13, 14).

Fig. 12: Laying out the tarpaulin before excavation

Fig. 13: Initial heather and peat removal commenced by Lance Moore

Fig. 14: Peat removal in progress

All of the excavation was carried out by hand, using standard archaeological procedures (Fig. 15). Given the nature of the excavated subsoil and its waterlogged condition it was not possible to sieve the excavated material.

On the eastern (upslope) side of the site the peat depth varied from c. 50cms -35 cms while on the western (downslope) side of the trench, immediately above the cliff edge, overlying peat ranged in depth from c. 35cms to approximately 10cms in the area of the erosion gulley. Peat was removed using spades to a depth c. 10cms above the surface of the preserved grey/fawn/brown, sandy, mineralised, old land surface.

Fig. 15: Excavations in progress (bags mark locations of lithic finds awaiting collection).

As the section drawings and photographs in both the main excavation trench and the test pits show (cf. Figs. 16, 20, 25-28) the peat itself showed clear divisions into thin brown, oxidised, layers, possibly indicating periodic stand still phases in peat growth and rich, black, highly humified peat deposits. The final c. 10cms of peat was removed using trowels and hand shovels. Lithc material was encountered at the immediate interface between the peat and the mineralised soil (1) and some 1-2cms below that interface (Fig. 16). The mineralised soil of the ‘old land surface’ ranged in thickness from 3-7cms across the site. This soil, in turn overlay the sticky, dark brown, natural boulder clay surface. This surface also exhibited broken stone at the interface with the mineral soil. (Figs. 18 and 19) and this was the level at which the excavation was terminated.

Fig. 16: The nature of peat and mineralised soil stratigraphy

Fig. 17: Final Site Plan in preparation

*Fig. 18: Natural clay surface beneath mineral soil – extent of excavation after final planning. (Trench edges distorted by camera lens) (© S. Eastmead***).**

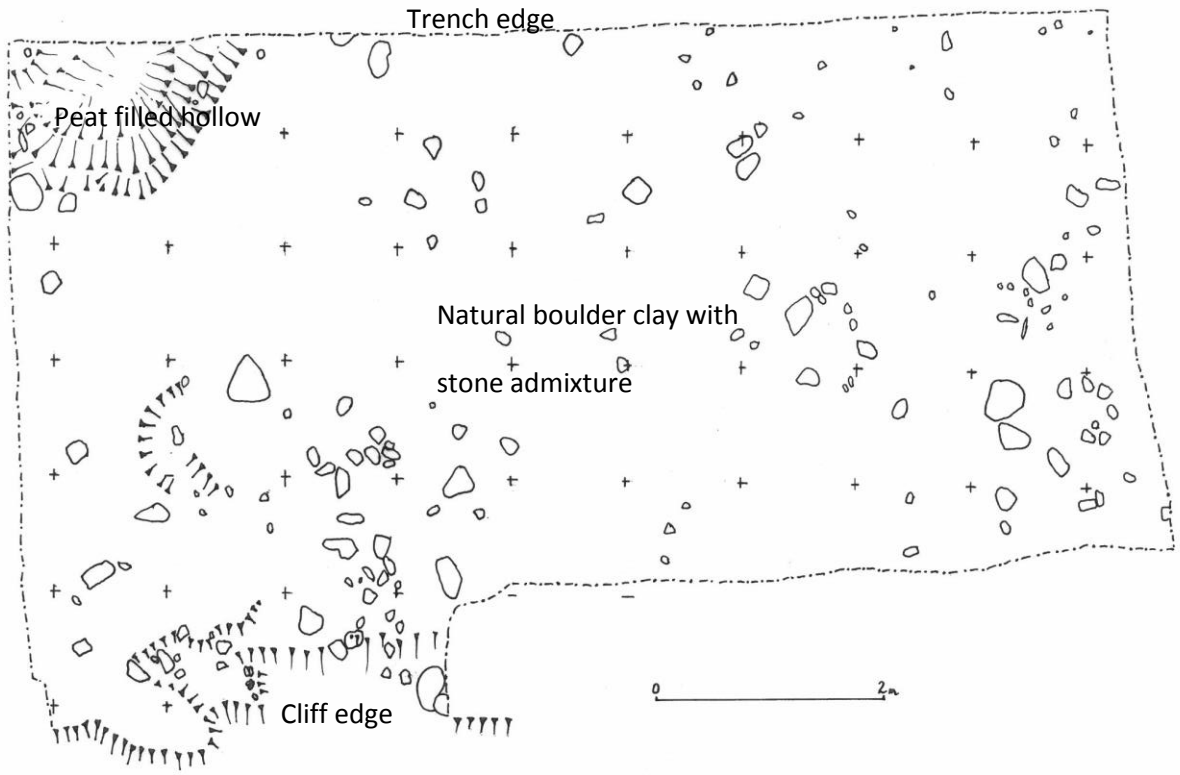


*Fig 19: Final excavation plan (North to left of page***)**

In the north east corner of the excavation trench a peat filled depression was encountered. This ran into the section at this point and was some 95cms deep at its deepest, visible, point, on the west facing trench section edge (see Figs 18, 19 and 20).

The peat infilling was variegated with alternating brown and black peat lenses, and the mineralised sub soil seemed to dissipate around the edge of the feature (see Fig. 20). It had no other filling other than peat, though one microlithic piece of flint was recovered from the very bottom of the depression. It did not appear to be a humanly excavated feature and may well be an in-filled sink hole or possibly an ancient tree throw pit. Dr. David Evans (Dept. Of Geography, Durham University) has suggested that the feature may be a collapsed late glacial geomorphological feature. Two columns of peat, including samples of the underlying boulder clay surface were taken from the base of this feature and these await detailed analysis and possibly radio-carbon dating.

Each piece of lithic material recovered in the course of the excavation was given an individual grid reference, based on the site grid, and it was also recorded in terms of depth, relative to a temporary bench mark set up for the site. In the final analysis these data will be used to produce distribution maps of various artefact forms across the excavated area and this should help to facilitate the identification of discrete areas of possible task/tool specific human activity on the site. This work is on going with colleagues at the University of Newcastle upon Tyne.

The site was backfilled by hand (Fig. 21).

Fig. 20: Peat filled depression in the NE corner of the trench.

Fig. 21: Backfilling in progress

5. THE ‘BEACH’ SURVEY

As material had obviously been eroding from the cliff face for some time, volunteers also undertook the survey of an area 10m wide extending from the base of the cliff below the site out to the reservoir waterline (Figs. 22 and 23) . This produced the range of artefacts set out in Table 4 below.

Fig. 22: Beach survey in progress

Fig. 23: Beach survey in progress

6. THE TEST PITS

A series of four 1m x 1m test pits was laid out at 2m intervals to the south of the southern edge of the main excavation trench (Fig. 11). These were designed to examine the overall extent of the Cow Green site. It was impossible to lay out test pits to the north of the excavated area due to the proximity of a series of shakeholes. The stratigraphy within the test pits was similar to that observed in the area of the main excavation. (Figs. 25-28) and, when lithic material was recorded, it was recovered from a similar stratigraphic position to material recorded in the main trench.

Lithic material was recorded from Test Pits 1, 2 and 4.

Test pit 1 produced 11 pieces of chert including one blade fragment. Test Pit 2 produced 17 pieces of chert including one possible core fragment and four detached bulbar ends. Test Pit 4 produced one detached bulbar end from a chert flake.

Clearly the lithic scatter extends for at least 12m south of the main trench, though the main focus was within the excavated area.

Fig. 24: Test pits under excavation

Fig. 25: Test Pit 1 from W.

Fig. 26: Test Pit 2 from W

Fig. 27: Test Pit 3 from W

Fig. 28: Test Pit 4 from W

7. THE FINDS – ANALYSIS AND DISCUSSION

7.1 RAW MATERIAL

A total of 1921 pieces of flint, chert and other lithic material was recorded in the course of the excavation and beach survey. 1258 pieces were recovered in the course of the excavation and 663 pieces came from the beach.

This can be broken down as follows:

RAW MATERIAL	No.	% TOTAL FINDS
Chert	1838	95.67%
Flint	58	3.01 %
Natural Stone	25	1.30 %
TOTAL	1921	99.98% (100)

Table 1: Raw Material from Cow Green

The nature of the raw material recovered from the excavation can be further classified as follows:

RAW MATERIAL	No.	% Total Finds
Grey/White Chert	988	78.537
Light Grey Chert	6	0.476
Grey Chert	104	8.267
Grey/Brown Chert	29	2.305
Burnt Chert	25	1.987
Dark Grey Chert	50	3.974
Quartzite	1	0.079
Natural Stone	24	1.907
Grey Flint	21	1.669
White Flint	4	0.317
Dark Grey Flint	1	0.079
Light Grey Flint	1	0.079
Fawn Flint	4	0.317
TOTAL	1258	99.993 (100)

Table 2: Raw Material from Excavation

636 pieces of chert came from the beach along with 27 pieces of flint.

7.2 POTENTIAL SOURCES OF RAW MATERIAL

Young, (1985; 1987) has reviewed potential sources of flint and chert in the North-east of England. Almost 96% of the raw material recovered at Cow Green was chert, with flint making up just over 3% of the assemblage. This high proportion of chert is exceedingly rare on later Mesolithic sites in the North Pennines area.

Chert, like flint, is a silicate, the essential components of which are silicon and oxygen. Both flint and chert are aggregates of microscopic quartz crystals which are found in calcareous sedimentary rocks. Flint occurs in chalk, and chert occurs in carboniferous limestone, though chalk is in fact a very pure type of limestone. As Hind has pointed out ‘Flint, as defined by its parent material, is occasionally more 'cherty' than some high quality cherts, which are 'flinty' in their intrinsic properties, especially the potential for a clean conchoidal fracture’ (Hind, 1998).

The form in which chert occurs is extremely varied, a consequence of the many different processes which lead to its formation in sedimentary rocks. The main categories are 'stratified' (or 'bedded') chert, 'nodular' chert, and 'patchy chert' (where the boundary of the chert body is indistinct), though frequently these types are difficult to distinguish. The colour and texture of chert also varies both between and within chert beds or bodies.

Chert is readily available in the Carboniferous deposits of Weardale, a fact acknowledged by Fell and Hildyard (1953, 108) and an examination of the available geological literature shows the frequency of chert occurrence. Dunham (1948, 19, 22, and 34) for example, indicated that the Scar Limestone, exposed to the west of the Burtreeford Disturbance, and also in the area between Blackdene and Belling; the Four Fathom Limestone, (which is regularly exposed in the dale) and the ‘lime plate’ which occurs in Swinhope and around the headwaters of the Bollihope Burn, may all carry chert.

Nearer the site itself, Johnson and Dunham (1963, 156) have indicated the presence of black banded and grey /buff chert in the Four Fathom Limestone, particularly in the vicinity of Swindale Beck Head, below Knock Fell, on the southern boundary of the National Nature Reserve at the head of the Tees Valley. Chert is also available in the Carboniferous rocks of Swaledale and Arkengarthdale to the south of the Cow Green site (Laurie, 2003; Eastmead, 2013).

Given the location of the Cow Green Site in the upper Tees valley, on a potential Mesolithic ‘routeway’ connecting the NW (Cumbria) with Teesdale and the County Durham/Yorkshire lowlands, some chert may have come across from the uplands of eastern Cumbria. Cherry has pointed out that, in this area, chert makes up over 60% of later Mesolithic assemblages. He also notes that most of the flint in eastern Cumbria may have come from outcrops on the Antrim coast of Ireland or it may have

been recovered from beach pebble deposits on the Cumbrian coast (Cherry, 2014, 24-27).

As Young has shown, flint is available in the till and glacial gravel deposits of the east of County Durham (1985; 1987), but the grey mottled flint, present on many North Pennines Later Mesolithic sites, may have come from the chalk lands of Yorkshire.

How these various raw materials were acquired by later Mesolithic hunters and gatherers at Cow Green probably relates to the way in which people moved through the landscape in the process of their daily, weekly, monthly and yearly subsistence rounds. We will return to the implications of resource availability in the discussion below.

7.3 TYPOLOGY

The artefact types recovered from both the excavation and the beach survey can be tabulated as follows:

ARTEFACT TYPE	**COMPLETE**	**BROKEN**	**TOTAL**	**% TOTAL ARTEFACTS**
Cores	37	19	56	4.538
Primary Flakes	2	2	4	0.324
Secondary Flakes	26	12	38	3.079
Inner Flakes	253	172	425	34.440
Scrapers		1	1	0.081
Microliths	8	18	26	2.106
Blades/Blade-Like Flakes	33	30	63	5.105
Micro-Blades/Bladelets	32	38	60	4.862
Retouched/Utilised Pieces	2		2	0.162
Burin Spall	4		4	0.324
Retouched and Tanged Pieces		1	1	0.081
Drill Bits	2		2	0.162
Blade Segments	73		73	5.915
Flake Segments	6		6	0.486
Core Rejuvenation Flakes	38		38	3.079
Detached Bulbar Ends	87		87	7.050
Detached Distal Ends	48		48	3.889
Chunks and Chips	287		287	23.257
TOTAL	941	293	1234	99.00 (100)

Table 3: Artefacts from excavation (not including natural stone recovered during the excavation).

Artefact type	Flint	Chert	Other	% Total Artefacts
Microliths	1	8		1.35
Scrapers	-	5		0.75
Cores	-	20		3.00
Primary Flakes	-	2		0.30
Secondary Flakes	1	23		3.61
Inner Flakes	7	127		20.21
Blades/Blade-Like Flakes	1	30		4.67
Micro-Blades	7	36		6.40
Retouched/Utilised Pieces	3	6		1.35
Core Rejuvenation Flakes	-	21		3.16
Detached Bulbar Ends	4	29		4.97
Chunks and Chips	2	292		44.34
Blade Segments	-	37		5.58
Burnt Flint	1			0.15
Hammerstones	-	-	1	0.15
TOTAL	27(4%)	636 (96%)	1	100

Table 4: Artefacts from Beach Survey

Table 5 (below) amalgamates the recovered data from both episodes of fieldwork at the Cow Green site.

Artefact type	**TOTAL**	**% Total Artefacts**
Cores	76	4.0
Primary Flakes	4	0.2
Secondary Flakes	62	3.3
Inner Flakes	559	29.0
Scrapers	6	0.3
Microliths	35	1.8
Blades/Blade-Like Flakes	125	6.6
Micro-Blades/Bladelets	113	6.00
Retouched/Utilised Pieces	11	0.6
Burin Spall	4	0.2
Retouched and Tanged Pieces	1	0.05
Drill Bits	2	0.1
Blade Segments	110	5.6
Flake Segments	6	0.3
Core Rejuvenation Flakes	59	3.1
Detached Bulbar Ends	120	6.3
Detached Distal Ends	48	2.0
Chunks and Chips	581	30.6
TOTAL	1897	100

Table 5: Amalgamated totals for artefacts from beach survey and excavation.

No detailed metrical or spatial analysis of the recovered material is included in this report. A detailed evaluation of this information is in preparation and will form the core of the final report on the project.

The relative proportions of flint and chert recovered at Cow Green are in marked contrast to the percentages of raw materials present on Later Mesoilithic sites in Weardale. Here, grey, mottled, flint, of possible Yorkshire origin, makes up between 60-100% of the raw materials present on 40 sites studied by the present author. Chert comprises only 2-4% of the raw material present on these sites. The one exception to this situation in Weardale is the assemblage recovered from Greenhead Plantation, where chert made up some 27% of the exploited raw material. Chert does, however, show a marked increase in use in the following Neolithic and Bronze Age periods.

The situation in Weardale is, again, totally different to that which is observable in Teesdale. At the early Mesolithic site of Staple Crag, chert made up almost 25% of the archaeological assemblage, while flint constituted 72% of the material recovered. Percentage representation of chert in later Mesolithic assemblages in Teesdale is, generally, much higher than that recorded on later Mesolithic sites in Weardale. At Spring Heads, on Barningham High Moor, chert made up only 2.7% of the lithic assemblage, however, at Ravock Mire, in a similar location, chert comprised 70% of the archaeological material. The higher representation of chert on the Teesdale sites may reflect the greater ease of obtaining chert from the Carboniferous outcrops in the dale. Again this is a point to which we will return below.

7.4 TECHNOLOGY

The low representation of primary flakes in the assemblage, would suggest that primary knapping, and actual core preparation, was not heavily represented in the material recovered at Cow Green. The 76 recorded cores (57 complete, 17 shattered) are all well worked and some exhibit hinge fractures on worked faces, suggesting that the cores were discarded when they became too small for efficient working. (Figs.30 and 31)

Both soft and hard hammer percussion techniques were utilised within the assemblage. An examination of extant bulbs of percussion, platform types and distal terminations on flakes can be used to gain an insight into these various technological processes. The majority of extant butts are plain and diffuse bulbs of percussion would indicate the use of soft hammers. Pronounced bulbs of percussion would also indicate the use of hard hammer technology.

Only two hinge/step terminations were observed on detached flakes, suggesting the high degree of skill on the part of the knappers at the site.

The lack of butt faceting on flakes is also of interest here. As Whittaker has outlined, faceting is a method for removing platform irregularities (1995, 101) and it can also be used to change exterior striking platform angles, helping to lengthen flake removals. The lack of this technique at Cow Green is likely to be a product of the nature of the raw material being exploited. The predominance of plain butts and the scarcity of cortical butts in the assemblage would, again, imply that the cores from which the material was being removed were well worked.

The presence of 110 blade segments, 6 flake segments, 113 micro-blades/bladelets, 125 blades/blade-like flakes and 120 bulbar and 48 distal ends snapped either transversely or obliquely from blades or flakes suggests that microlith manufacture was probably taking place at the site. In this context, the lack of micro-burins is noteworthy and this lack, along with the occurrence of detached bulbar and distal ends, can be paralleled at other sites in Teesdale and Swaledale like Frankinshaw

How, Barningham High Moor Arndale Springs, Frankinshaw Well, Spring Heads, Sleigill –Windeg, (The Hut), and Calvert Houses (Coggins, Laurie and Young, 1989, 172).

The 4 possible burin spalls present in the assemblage in the absence of burins themselves may also indicate either the manufacture or rejuvenation of these particular tool types.

7.5 ARTEFACTS

The 35 microliths, (1.8% of the total material recorded) in the assemblage are all of later Mesolithic type, chiefly scalene triangles and possible rod-like forms (Figs. 29 and 30). They can be closely paralleled at a range of sites in the Pennines e.g. the Teesdale and Swaledale sites of Briar Dykes, Teesdale (1.56% of the artefacts recovered), Middle Hurth, Teesdale (3.17% of the artefacts recovered), Spring Heads, Barningham Moor, Teesdale (10.39% total artefacts recovered), The Butts, Barningham Moor, Teesdale (16.22% total artefacts recovered), Sleigill-Windegg, (The Hut), Swaledale, (26% total artefacts recovered).

Weardale has also produced similar microlith forms (e.g. Howel John West Field (1.13% total artefacts recovered), Police Field, Eastgate (0.38% total artefacts recovered).

The 76 complete and fragmentary cores are mainly opposed platform, bi-polar, types, utilised in the production of both blades and flakes (Figs. 30-31). Again, they can be paralleled at most of the North Pennines sites referred to above.

The lack of other recognisable tool types at Cow Green e.g. only six scrapers (0.3 % total finds recovered), eleven retouched pieces (0.6% total finds recovered), and two drill bits (*meche de foret*) (0.1% total finds recovered) indicates that a limited range of tasks (in addition to microlith manufacture) were being carried out at the site, and this is further discussed below.

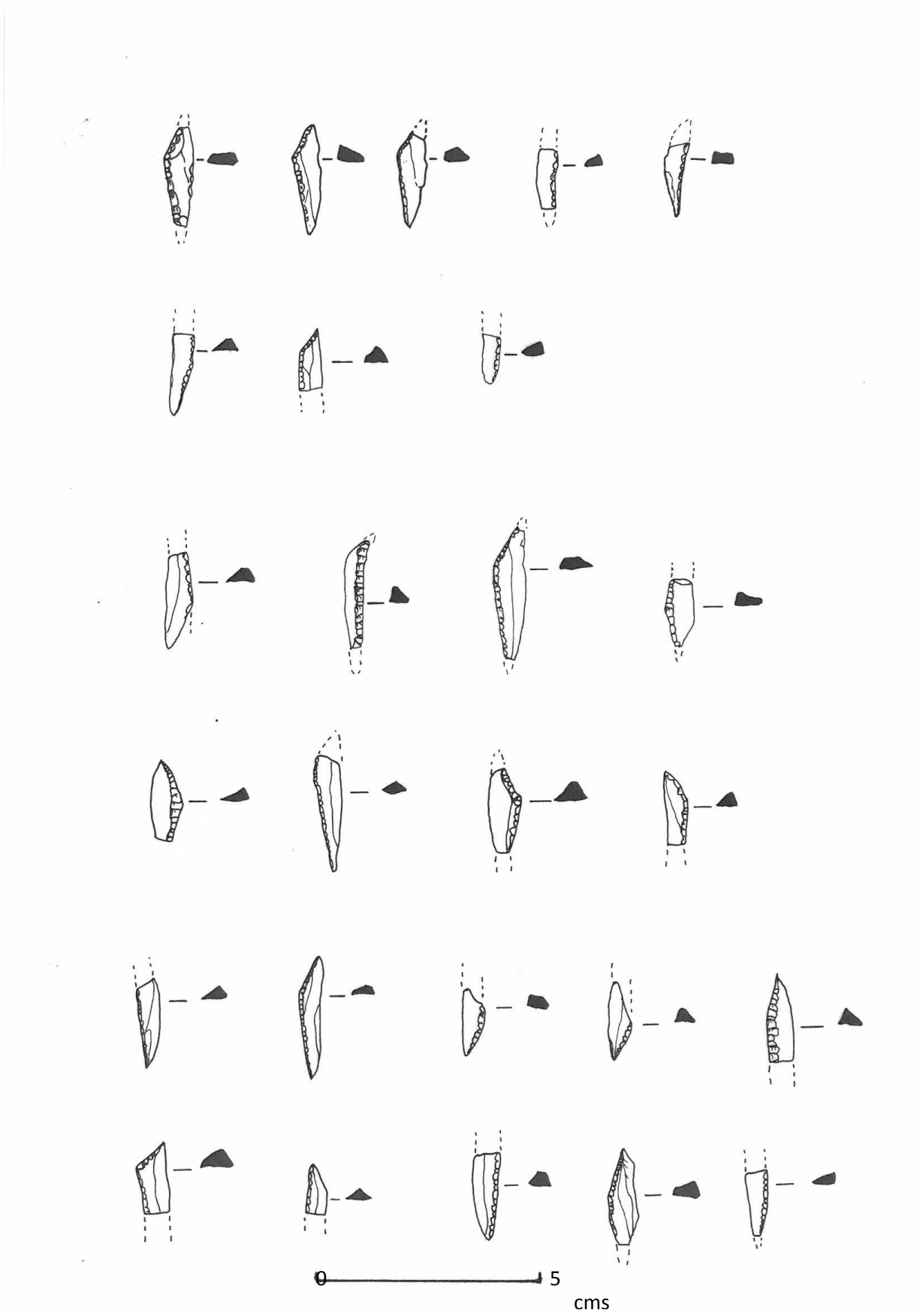


Fig. 29: Cow Green: selected microliths from beach survey and excavation

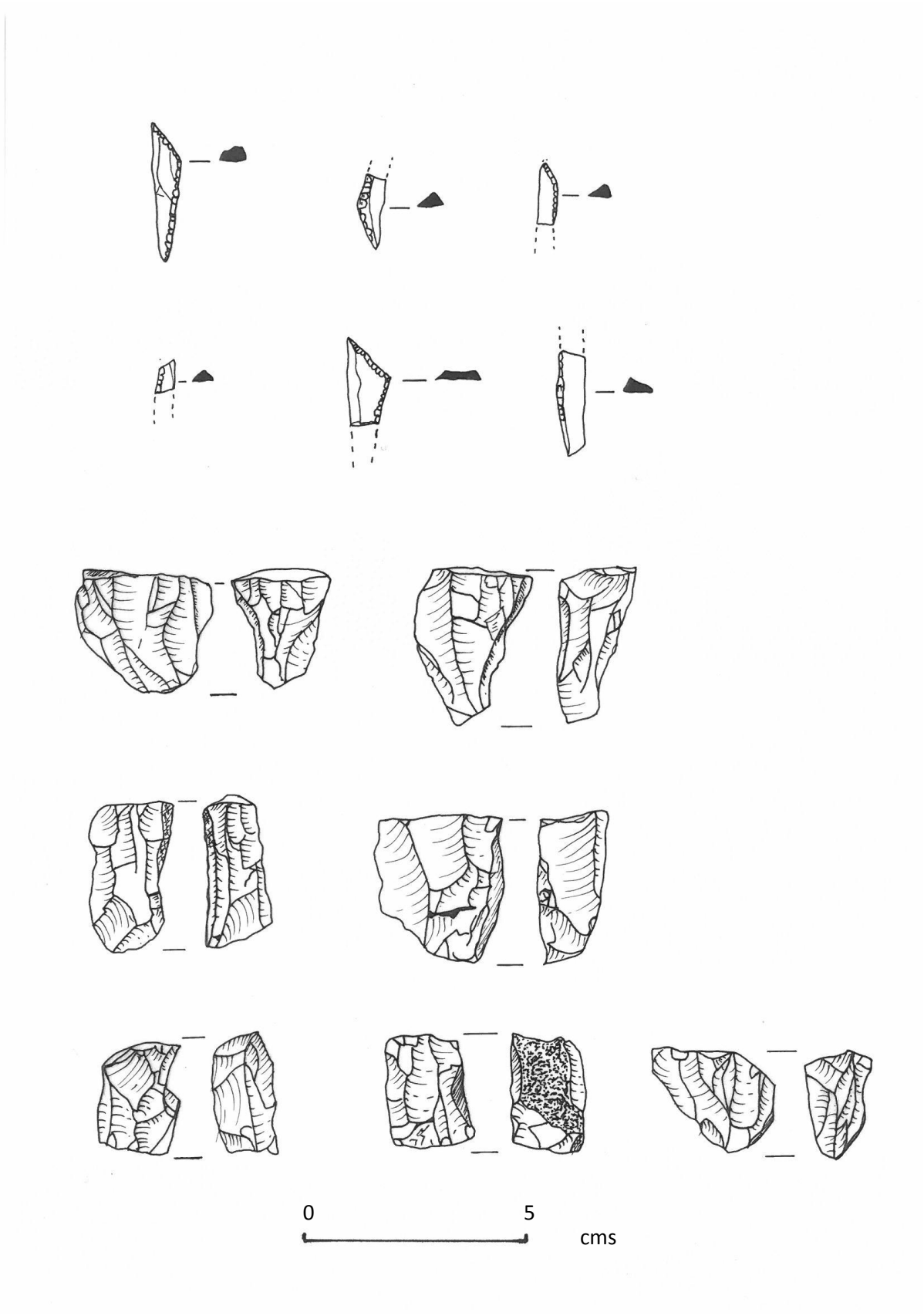


Fig.30: Cow Green: selected microliths and cores from beach survey and excavation

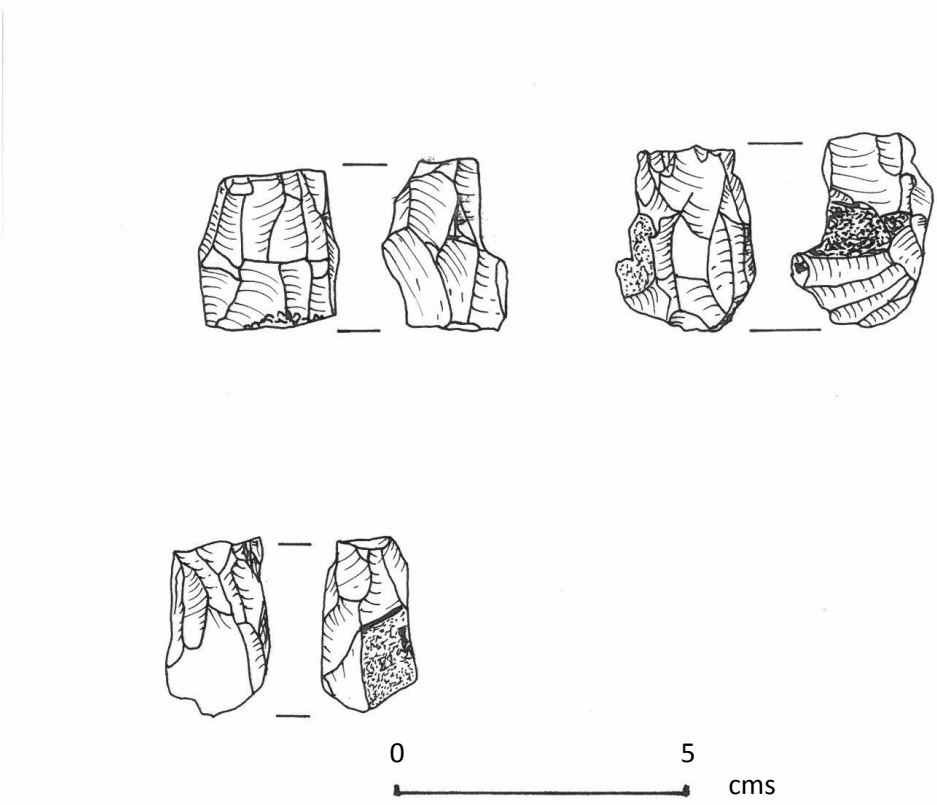


Fig. 31: Cow Green: selected cores from beach survey and excavation

8. GENERAL DISCUSSION

The site at Cow Green was clearly located at the head of an old spring line system on a low terrace above the River Tees. This position suggests that it may well have been located on a route-way or corridor of connection between the lowlands of Teesdale (and potentially North Yorkshire), through the North Pennines and into Cumbria.

The range of artefacts recovered at the site can be used to make an assessment of site function. Approaches using the presence or absence of certain artefact types to discuss the potential functional variation of both Early and Later Mesolithic settlement sites, has dominated aspects of writing on the British Mesolithic for over 30 years (e.g. Clarke, 1972; Mellars 1976; Jacobi, 1978, Young, 1987, 2003; Donahue and Lovis, 2006;Waddington and Passmore, 2012). The notion of observable, and usually hierarchical, variation in site function is also tied into the traditionally accepted view that British hunter-gatherers lived a highly mobile lifestyle.

This latter view is predicated upon the early work of Graham Clark (1972) and would see Mesolithic groups as highly mobile, living in lightly built shelters and following the seasonal movements of game animals such as those discussed above (Environmental Context). They may have utilised a well structured and ordered system of base camps and, usually, upland extraction camps. The latter are seen as activity areas located at specific points within the landscape to utilise and exploit targeted subsistence resources. These base camps, and logistically organised extraction camps, would necessitate the utilisation of specific, and sometimes restricted, assemblages of artefacts – in other words the right tools for the job.

As Waddington and Passmore have pointed out, this view of hunter gatherer lifestyle was reinforced by scholars such as Lewis and Sally Binford (1980) who drew analogies with hunter gatherer groups from mid-temperate latitudes in North America.

Of particular importance, in the present context, is the work of W.W. Fitzhugh among hunter-gatherers in Labrador. Based on both anthropological and archaeological observation, he has erected seven categories of ‘occupation’ site:

a) **A ‘gathering’ site** (i.e. meeting site) – used one to two times a year, at particular times of the year, by a large number of people.

b) **A base camp** – A smaller site than a) but which is a central focus during a portion of a particular season.

c) **An exploitation camp: intensive** – occupied by a single family over a variety of time periods in order to garner a variety of resources and thus exhibiting a wide assemblage of tools and a lot of debris

d) **An exploitation camp: light** – Occupied briefly by a family. The small amount of debris and narrow range of tool types suggests a narrow range of activities

e) **A bivouac** – A very short term, perhaps just overnight, campsite. Few structures and tools found.

f) **A specialised camp: internal** – A specialised activity camp within a band's territory e.g. quarries, chipping stations, religious sites. These are recognised by functionally specialised remains or structures.

g) **A specialised camp: external** – Specialised activity sites outside of a band's territory. These tend to be trading or procurement sites. (Fitzhugh, 1972, 137).

Waddington and Passmore have applied these approaches in an attempt to understand human seasonal movement in the uplands and lowlands of north Northumberland in the later Mesolithic period (Fig. 32). Variations on these models, using major river valleys and their tributaries as arterial routes, have been applied in the Tyne and Wear Valleys (Tolan-Smith, 1997; Young 1987) and they may well have application in the upper part of Teesdale. In light of this the Cow Green site can be interpreted as either a logistical camp or a specialist extraction site. In Fitzhugh's classification scheme Cow Green may have been an 'Exploitation Camp – light' and possibly not too dissimilar to the site depicted in the artists reconstruction below (Fig. 33), though obviously further from the river.

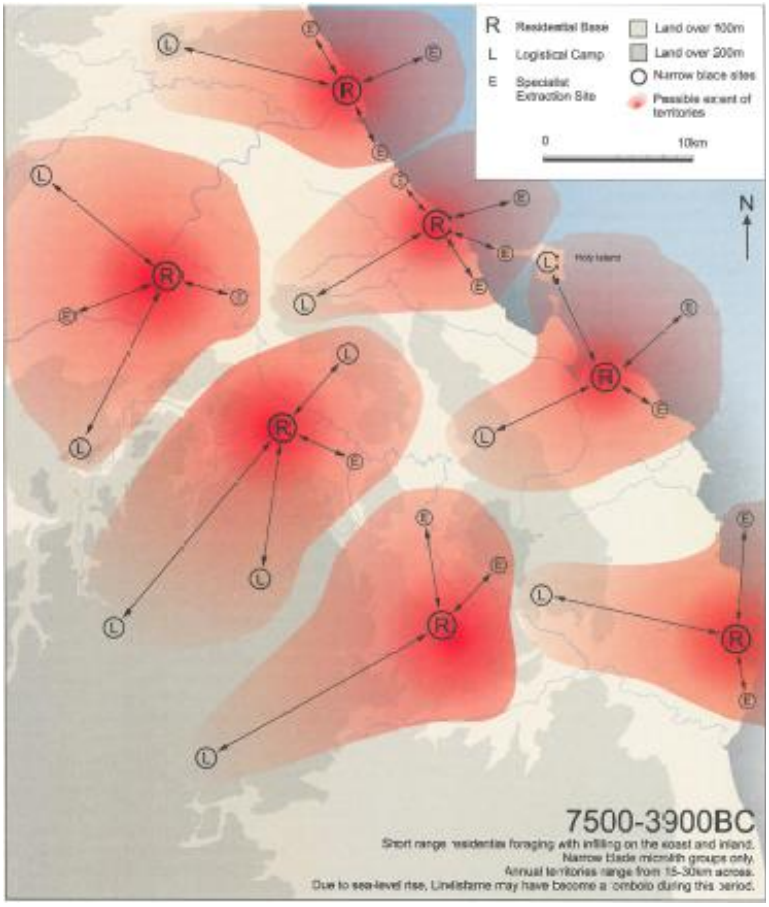


Fig. 32: Mobility model for upland/lowland Northumberland 7500- 3900BC (after Waddington and Passmore, 2012, Fig. 4.22, p. 139)

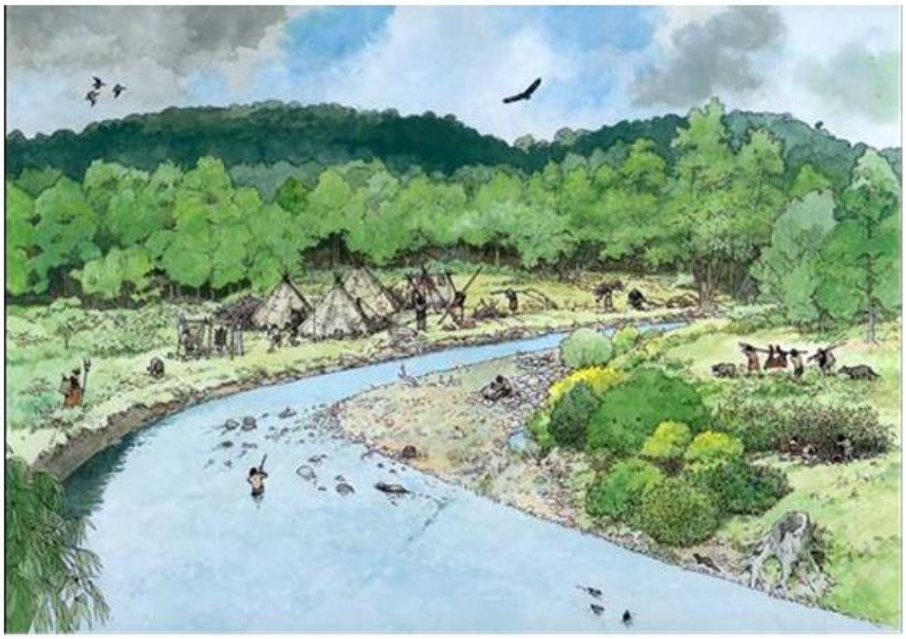


Fig. 33: Artists Impression of Later Mesolithic riverside encampment by Jim Proudfoot.

10. RECOMMENDED FURTHER WORK

This report represents an interim statement on the results of the Cow Green excavation. A full report must await the completion of post-excavation work, in particular:

1. Analysis of samples, including palaeoenvironmental analysis and C14 dating.

2. Analysis of peat cores, in particular pollen analysis.

3. Full spatial and further typological analysis of all lithic material.

4. Further work to integrate results with what is known of other Mesolithic sites from the North Pennines and elsewhere.

In addition, it would certainly be worthwhile to return to the site and complete the excavation of the NW corner of the main trench, where some deposits had to be reburied in situ due to lack of time, the result of atrocious weather at some points during the project (even though it was August) that made excavation completely impossible.

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