New mesolithic finds from the Lower Greensand near Petworth, West Sussex, and their wider affiliations

Andrew David
and Robert Kowalski

Recent fieldwalking of an under-explored portion of the Rother Valley south of Petworth, West Sussex, has identified at least three large scatters of lithic material, adding to the substantial corpus of similar finds from elsewhere in the Weald, often over sandy substrates. Of the approximately 6660 flints examined in detail, a couple may be late upper palaeolithic in date, but it is argued that the majority is mesolithic, with an overlay of later prehistoric material. This article concentrates on the mesolithic component and argues that this belongs to the Horsham phase of this period, characterized by a distinctive microlith assemblage including basally-retouched points, estimated to date somewhere within or near the 8th millennium cal BC. A range of other tool types, including core axes/adzes and scrapers, are also described and the assemblages are discussed in their wider geographical context, not least that of northern France, where some typological parallels open the possibility of contemporary contact across a widening English Channel. Later material (neolithic and Bronze Age) is recorded in outline only as a pointer to future potential.

INTRODUCTION

Since the publication of Grahame Clark's seminal assessment, *The Mesolithic Age in Britain* (1932), the Weald of south-east England has attracted much attention, both in the literature and in the field, stimulated, as was Clark, by a density of rich surface scatters scarcely equalled elsewhere in the country. These scatters were noted to be especially profuse on the sandier soils of the Lower Greensand and many of them included very distinctive, basally-retouched microliths thought to be representative of a regionally specific 'Horsham Culture' (Clark 1933; Woodcock 1973).

Subsequent reviews (e.g. Jacobi 1978; Holgate 2003; Conneller and Pope forthcoming) and data from additional fieldwork have been able to expand and refine the record but it remains the case that the chronological framework upon which this depends is still very limited (Conneller, Bayliss *et al*. 2016).

Evidence for mesolithic sites of this type continues to be found, and here we report on the mapping of three lithic scatters located on the northern side of the western Rother valley, near Petworth, West Sussex, an area of the Lower Greensand where relatively few finds have so far been reported. While these scatters cannot be accurately dated, nor offer much insight into the livelihoods they represent, typological comparison at least suggests they include a significant Horsham signature and can be drawn into future assessments of this period. We also take the opportunity to record finds of both earlier and later periods (upper palaeolithic to neolithic and Bronze Age) from the same area.

BACKGROUND

The lithic material reported upon below is the product of a wider field reconnaissance undertaken intermittently since 2007 by Robert Kowalski in the area south of Petworth, between Tillington and Hesworth. Fields have been informally prospected for surface finds as and when they became available, depending upon the agricultural cycle and landowner and tenant consents – hence something of a random sample of this part of the Lower Greensand landscape.

The total area casually examined amounts to about 69h (Fig. 1), of which 45h have been walked more systematically and on repeat visits. The recorded location of many finds is generalized to a site or field, but a substantial number (in excess of

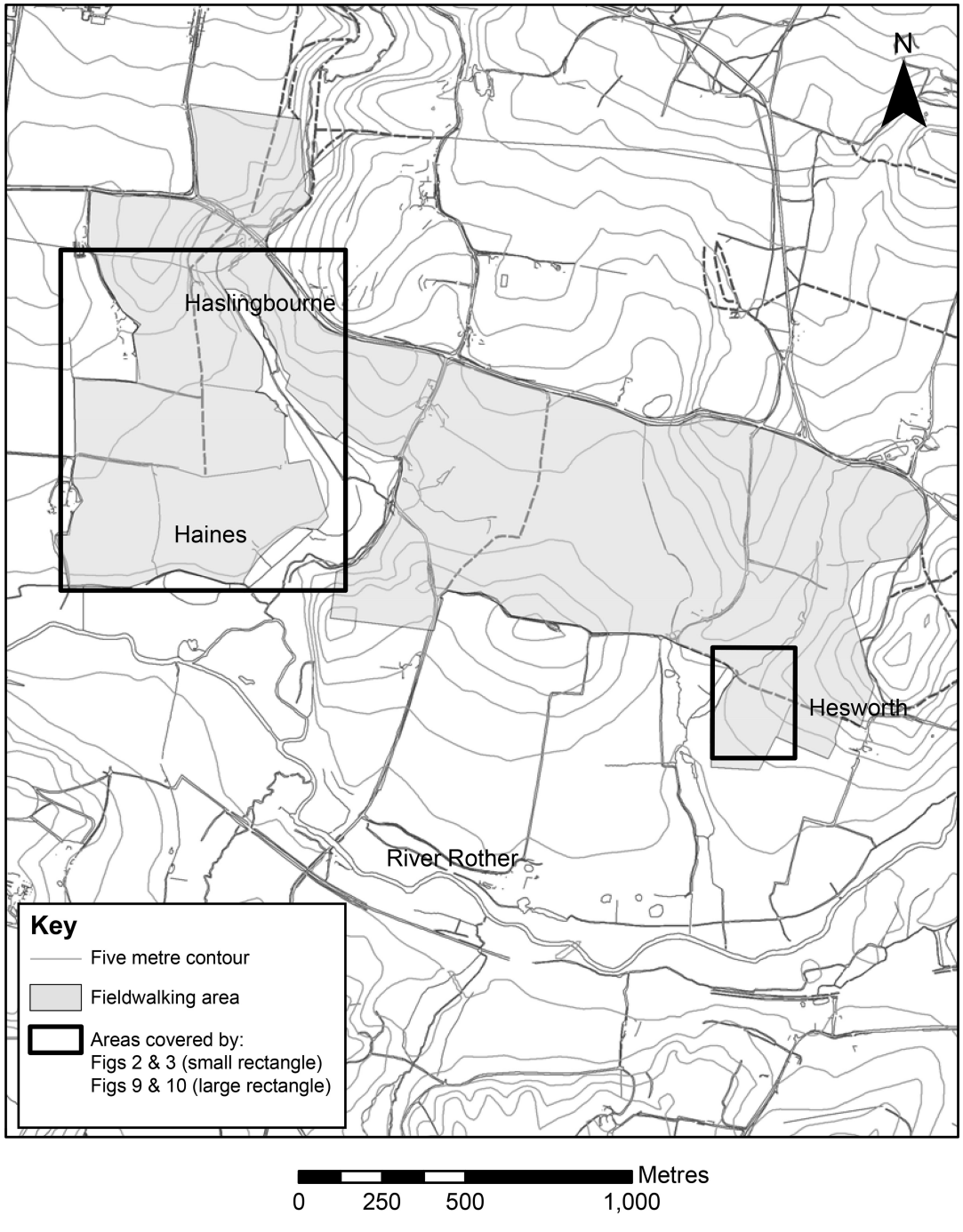

Fig. 1. The study area, showing the extent of field reconnaissance and the location of Hesworth, Haines and Haslingbourne. Ordnance Survey © Crown copyright and database rights 2019.

60%) have been located to resolutions of ~ +_5–7m with hand-held GPS.

Finds from the overall study area have been quite prolific, from isolated pieces to denser scatters. Typological assessment indicates a very wide range of probable affiliations, potentially from the lower palaeolithic to the Bronze Age, but the majority seems to be mesolithic or later. It is our intention here to focus on three of the more intensively examined scatters where mesolithic material is concentrated, at Hesworth, Haines and Haslingbourne (Fig. 1). Our emphasis will be on the first of these, where recording was the most detailed.

HESWORTH

This artefact scatter, to the west of Hesworth Common, is spread over a gentle east–west spur of cultivated land leading down to a small tributary of the West Rother. The view from the higher ground here (25m–30m OD) extends southwards over the larger Rother valley, to the South Downs escarpment some 5km away. The solid geology is sandstone and mudstone (Fittleworth and Pulborough members of the Lower Greensand; Aldiss 2002; BGS 2017), overlain by freely draining, slightly acid loamy soils (Farewell *et al.* 2011).

The scatter was initially recognised during informal reconnaissance when some of the artefact locations were recorded by GPS. This was then followed up during 2014–17 by successive episodes of collection by both authors over a grid of 10m x 10m squares. The artefact distributions are illustrated in Figs 2 and 3 where the grid collection is supplemented by previous GPS-recorded finds.

RAW MATERIALS

The worked stone is invariably of flint and this is usually semi-transparent, black to grey, with some more opaque grey and white material. Surviving cortex suggests that much of this may be from clay-with-flints deposits on the downs or from other secondary deposits nearer to hand. There is no clear evidence for extraction directly from the native chalk, nor from beach deposits, although some gravel-derived flint may be present.

Nodules from clay-with-flints can be of very good quality for knapping and this is reflected amongst some of the artefact material. However, nodule size seems to have been limited, with very few minimally flaked nodules (rather than cores) recorded, and none exceeding 10cm in diameter. The topsoil on the site includes frequent pieces of somewhat weathered, stained and thermally-damaged flint which is sometimes difficult to tell apart from artefacts when it is apparent that some of this 'natural' material may also have been exploited or at least tested. No non-flint cherts appear to have been used.

Most of the artefacts (70%) are unpatinated. Where patination does occur, on pieces that are not simply calcined, it varies from a light blueish surface tint through to a dense and opaque creamy white skin which preserves 'fresh' unpatinated flint immediately below. The degree of patination, and its presence or absence, seems in most cases to be haphazard and unrelated to any chronological or typological variation within the artefact assemblage. The composition of the latter is presented in Table 1. Our working hypothesis is that it is predominantly early mesolithic, of the Horsham variety, which we will refer to below as middle mesolithic, with a lesser admixture of perhaps earlier (late upper palaeolithic) and certainly later (late mesolithic and neolithic-Bronze Age) activity.

DEBITAGE AND TECHNOLOGY

Very detailed technological analysis of the debitage has not been undertaken. It is nonetheless apparent that all phases of reduction are represented although, as noted above, the evidence for primary reduction is relatively limited, allowing the possibility that at least some initial core preparation took place elsewhere.

The debitage, as defined in Table 1, is comprised largely of flakes (55%), blades, bladelets and core rejuvenation flakes (16%), spalls, cores and unclassified fragments (28%) and a small number of tool-specific by-products (1%). The predominance of mostly hard-hammer secondary and tertiary flakes is not surprising, especially as there is probably an element of post-mesolithic flint-working (see below). The blades and bladelets represent more refined tertiary working, perhaps with occasional use of soft hammers.

Cores

There is significant qualitative variation amongst the cores, which reflects both raw material constraints and differing reduction strategies. Most are single- or double-platformed, but many (30% to 40%) are more crudely developed and/or polyhedral; 50% to

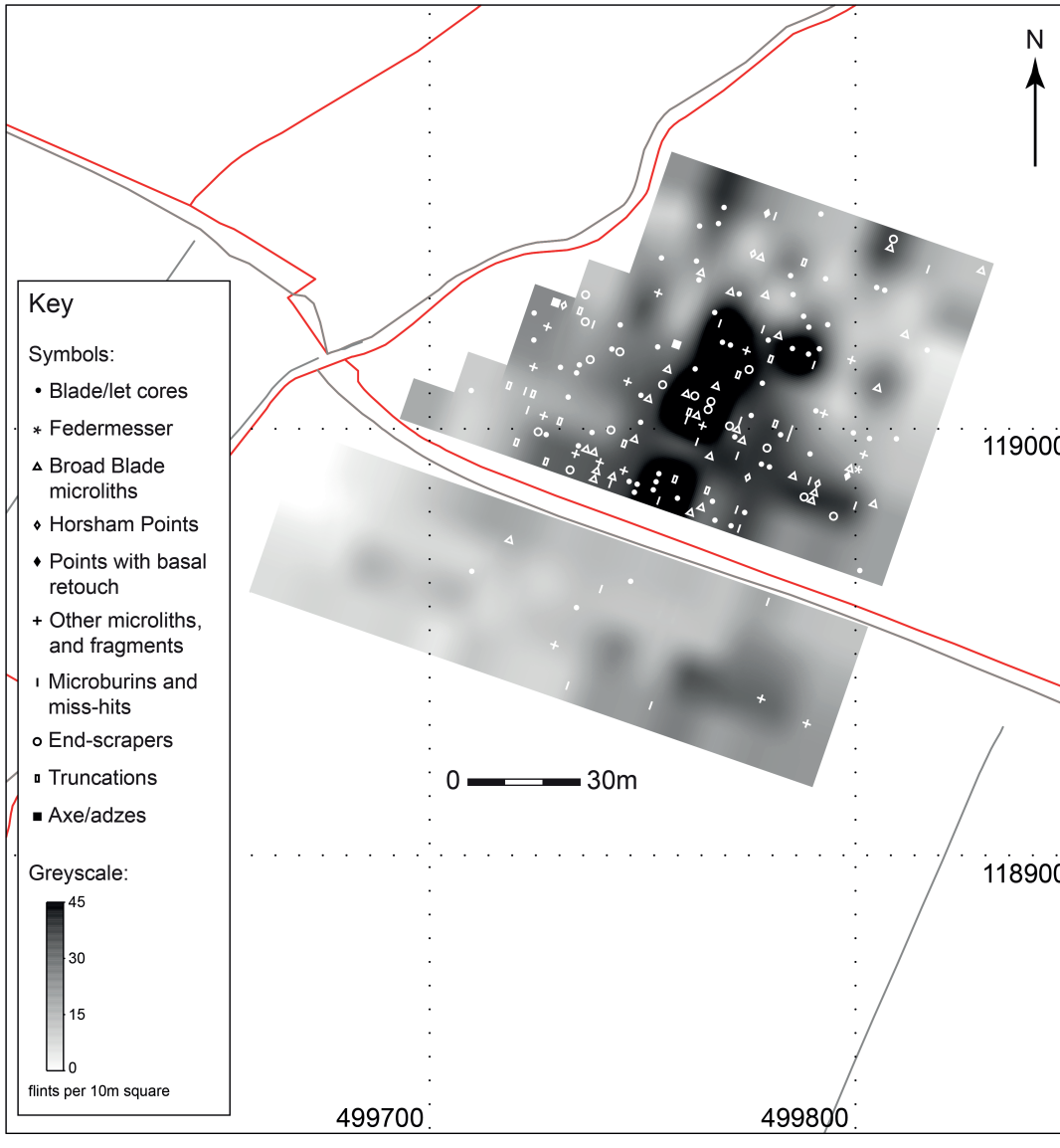

Fig. 2. Hesworth: distribution of late upper palaeolithic and mesolithic flint artefacts; the background greyscale indicates the overall distribution of all flint, as defined by a single season's collection (2017). Ordnance Survey © Crown copyright and database rights 2019.

60% of the platform cores are blade and/or bladelet cores, but the others have been worked primarily as flake cores.

Of course, core reduction creates a range of secondary and tertiary products but here it is particularly difficult to draw clear distinctions between those cores used mostly for blade rather than for flake production; there are surprisingly few of the well-developed pyramidal or cylindrical blade/bladelet cores most typically associated with mesolithic technologies (e.g. Fig. 4, 1 and 2).

Some cores have platforms at right angles to each other, a characteristic of the Horsham assemblages examined by Reynier (2005, 50–51),

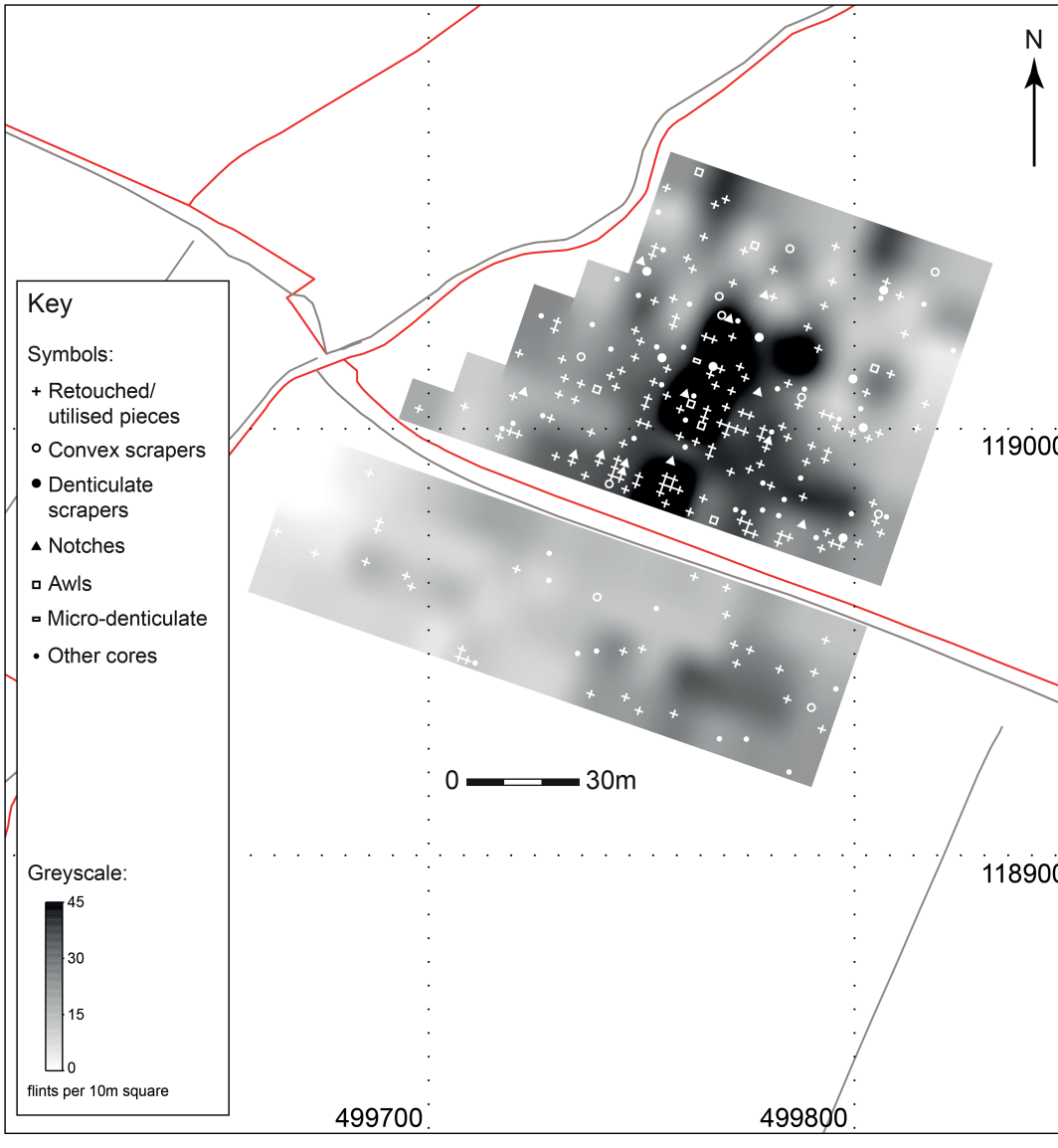

Fig. 3. Hesworth: distribution of ?neolithic and Bronze Age flint artefacts; the background greyscale indicates the overall distribution of all flint, as defined by a single season's collection (2017). Ordnance Survey © Crown copyright and database rights 2019.

but these are outnumbered by more irregular and polyhedral types. It is certainly tempting to associate these latter with post-mesolithic activity, including possible Levallois-type examples (Fig. 4.3). Cores were developed directly on nodules, as well as on fragments and chunky flakes. Heavily patinated fracture surfaces on some former nodules provided useful natural platforms.

The single/double-platformed cores have an average 'height' (platform centre to apex) of 42.5mm, while the sub-set of specifically blade/bladelet cores are very marginally larger (43.9mm). Intact blades and bladelets derived from them have a significantly smaller average length (14mm, range 21–106mm, n =82), reflecting the influence of poor raw material on knapping success as well

Table 1. Hesworth assemblage, overall composition.

Hesworth lithic collection 2009–2017			**Grid**	**Casual**
Debitage	Flakes		2778	136
	Blades		343	40
	Bladelets		404	22
	Spalls		249	1
	Nodule		1	0
	Flaked nodules		19	3
	Nodule fragments		2	0
	Fragments		993	7
	Platform cores		67	17
	Polyhedral/other cores		46	4
	Core fragments		47	6
	Crested + core rej. Flakes		33	1
	Burin spalls?		4	0
	Axe sharpening flake		0	1
	Mis-hits		9	1
	Microburins		25	2
Tools	Microliths		48	14
	Utilised pieces	Utilised flakes	44	8
		Utilised blades	40	4
		Utilised bladelets	16	4
		Utilised frags	1	2
	Retouched pieces	Retouched flakes	43	11
		Retouched blades	12	0
		Retouched bladelets	16	0
		Retouched frags	14	3
	Retouched and utilised	Flakes	5	2
		Blades	4	0
		Bladelets	1	0
		Frags	2	0
	Truncations	Truncated flakes	2	1
		Truncated blades	11	0
		Truncated bladelet	1	0
	Microdenticulate (saw)		1	0
	Notched pieces		14	1
	Awls		7	0
	Fabricator		0	1
	Leaf-shaped arrowhead?		0	1
	Axe/adzes		2	1
	Scrapers	‘Denticulates’	8	1
		End-scrapers	19	4
		Convex/other scrapers	12	6
	Hammerstone		1	0
	Other tools		6	0
TOTAL	**Flint**		**5350**	**305**

as a high level of subsequent breakage in the cultivated topsoil. The latter may well account for the significantly greater average lengths of blades recorded at excavated 'Horsham' sites elsewhere in the south-east of England (33mm–35mm; Reynier 2005, 41).

Hammerstones, notably, are not well-represented, with only a single example of inferior flint (rather than a quartzite cobble, for example) being recorded; two battered cores also seem to have been used for hammering.

TOOLS

Most of these, 60%, comprise various flakes, blades and bladelets which bear at least some informal retouch or signs of damage and/or use. Most are fragmentary and represent casual use of debitage for a variety of purposes not easily attributable to any specific cultural period or activity. In some cases the physical modification may even be a spurious effect of mechanical damage while, conversely, it is also likely that utilised but unmodified and undamaged pieces have escaped recognition.

While it may be possible to place the use of blades and bladelets (27%, e.g. Fig. 5, 2–6, 12–16) and truncated pieces (4%, e.g. Fig. 5, 7–10) within a broadly mesolithic to early neolithic bracket it is not possible to be more specific. For the moment, we draw attention to a single retouched and pointed blade which differs in its robustness, scale and patinated condition from most other material from Hesworth. In these features it also differs very markedly from the microliths to be described shortly and might more readily be accepted as an example of a late upper palaeolithic knife or point of federmesser type (Fig. 5.1; Jacobi and Higham 2011, 226–8). This, and a comparable specimen from the Haines site, will be returned to below.

Microliths

There are 48 microliths (14.5% of all the tool types) but 19 are fragments and cannot be reliably classified further. In addition, there are 10 complete microliths and four fragments from earlier collection at the site, bringing the overall total to 62. Of these, and leaving aside the unclassified fragments, the predominant form is the obliquely-blunted point (52.5%), followed by the isosceles triangles (17.5%), Horsham and inversely retouched points (15%), with the remainder (15%) comprised of just one or two examples each of other shapes: convex-backed and straight-backed bladelets, and lanceolates (Table 2; Fig. 6).

Such a composition conforms very well with expectations for a Horsham-type assemblage, with the sample of obliquely-backed points being mostly small (average length 25.6mm), with left lateral retouch (Reynier 2005, 22). Significantly, there are no small scalene triangles suggestive of mesolithic activity later on, when these first appear in the region at around 7000–4500 BC (Garland and Anderson-Whymark 2016, 37). However, it is possible that the few straight-backed, convex-backed and lanceolate forms, together with some of the smaller microlith fragments might indicate activity at this time.

Scrapers

After microliths, the most frequently occurring tool type is the scraper (11.8%). Examples of these show considerable variety, from quite elegantly retouched end-scrapers (Fig. 7, 1–4) to miscellaneous rounder

Table 2. Hesworth assemblage, microliths.

Description	Class		Grid collection	Casual collection	Total
	Jacobi	Clark			
Obliquely-backed points	1a	A	17	4	21
Isosceles triangles	2a	D	3	4	7
OBP with pointed base	3b	C	1	0	1
Lanceolates	3c	B	1	1	2
Convex-backed bladelet	4	D	1	0	1
Straight-backed bladelets	5a	D	2	0	2
Horsham Points	10a	F	4	0	4
Inversely retouched at base	12c?	E	1	1	2
Unclassified fragments	–	–	18	4	22
Total			**48**	**14**	**62**

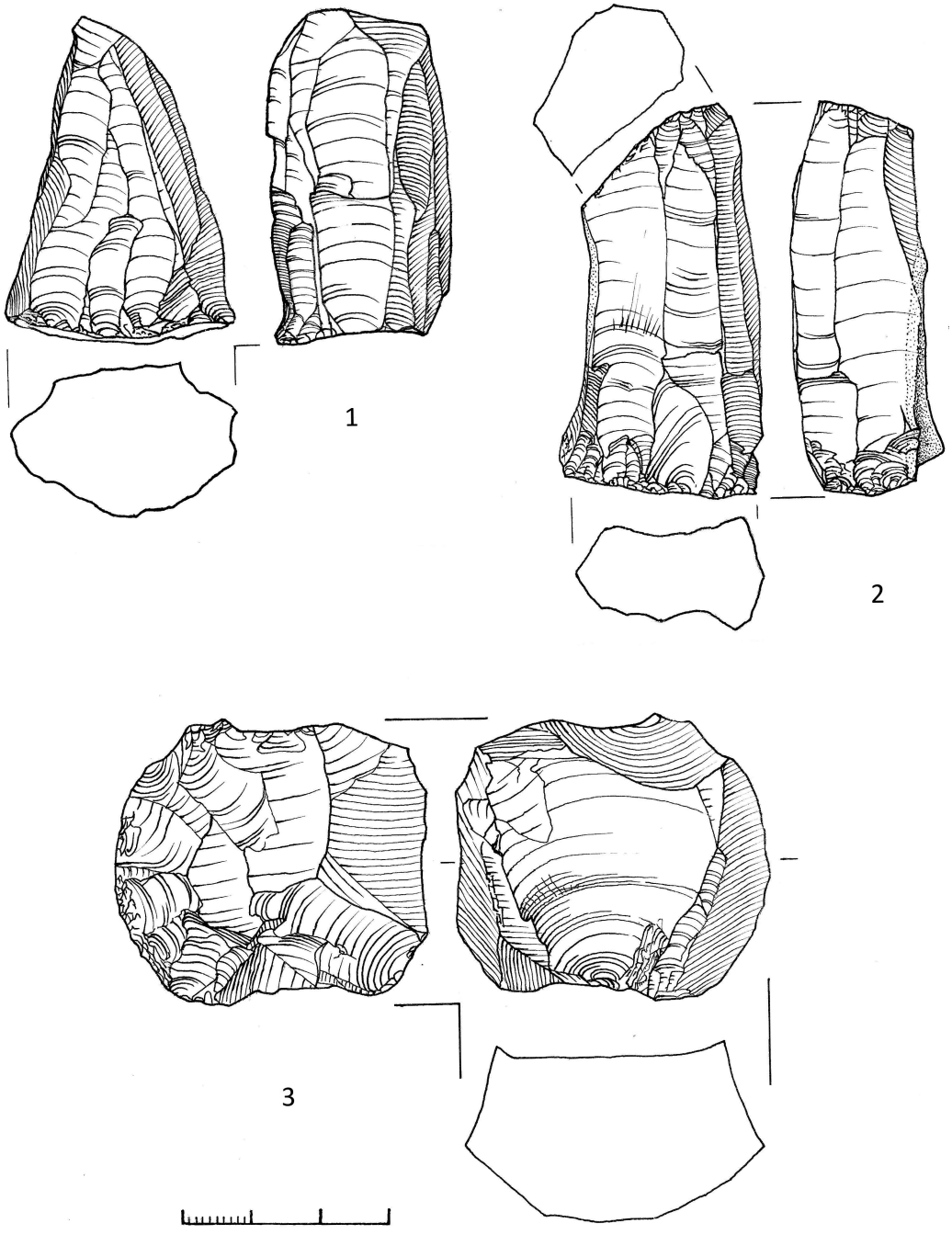

Fig. 4. Finds from Hesworth. 1, 2: platform blade/let cores; 3: discoidal/?Levallois-type core (scale in cm and mm).

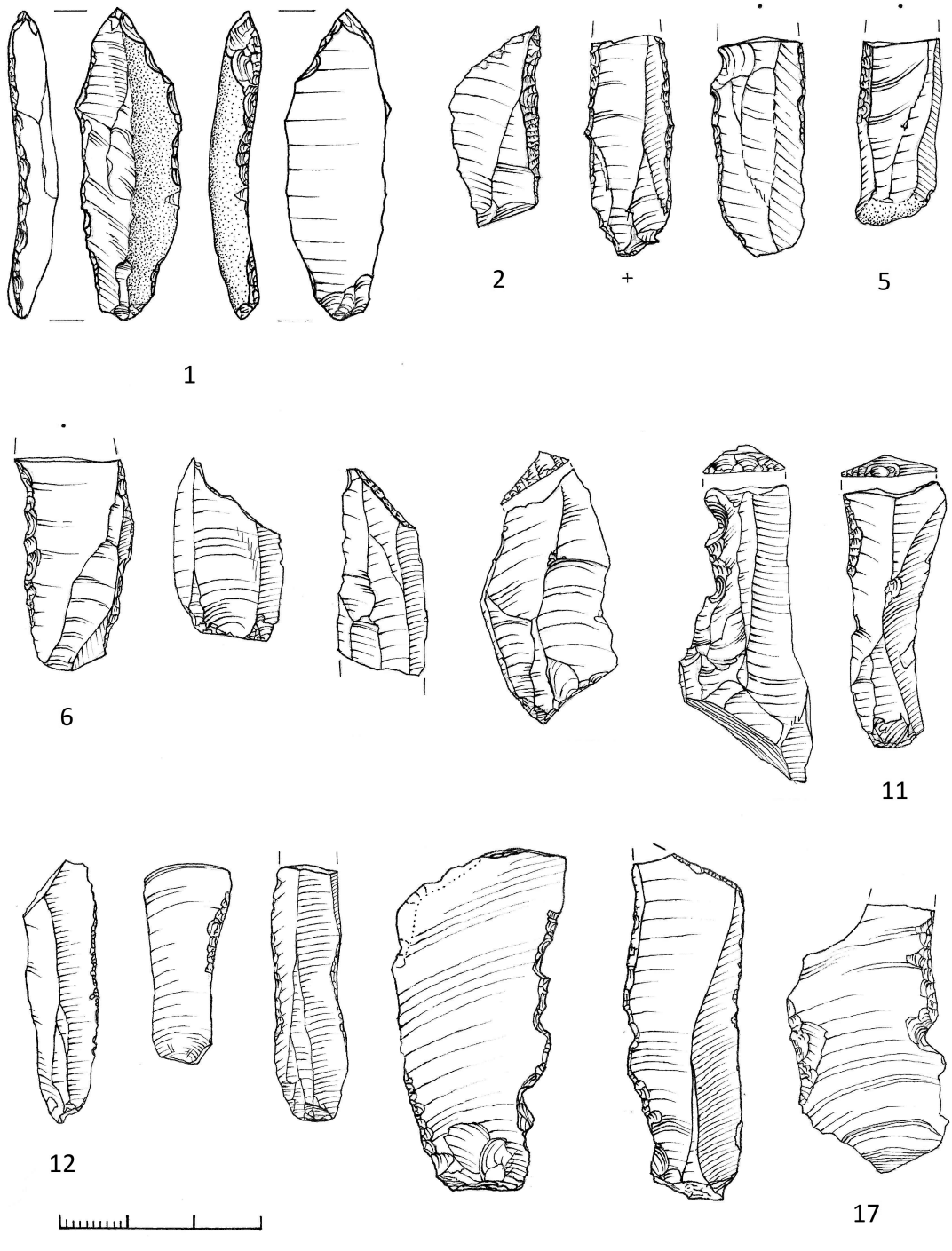

Fig. 5. Finds from Hesworth. 1: ?federmesser; 2–4: retouched blades and bladelets; 5, 6: retouched and utilised bladelets; 7–10: truncations; 11–16: utilised blades and bladelets; 17: utilised flake (scale in cm and mm).

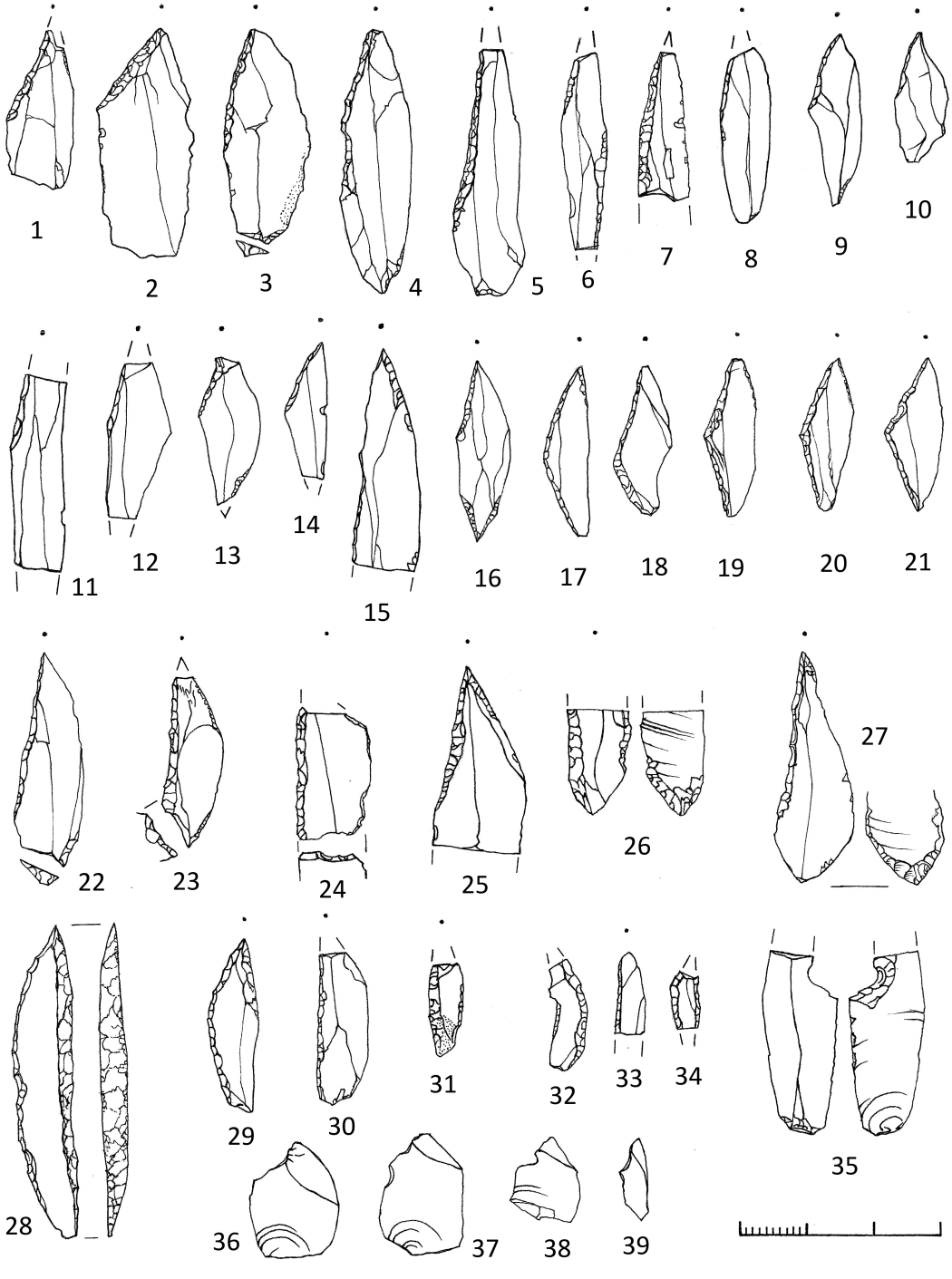

Fig. 6. Finds from Hesworth. 1–14: obliquely-backed points (OBPs); 15: possible OBP; 16: OBP with pointed base; 17–21 isosceles triangles; 22–25 Horsham Points; 26, 27: points with inverse basal retouch; 28, 29: ?lanceolates; 30, 31: straight-backed bladelets; 32–34 ?narrow-blade fragments; 35 miss-hit; 36–39 microburins (scale in cm and mm).

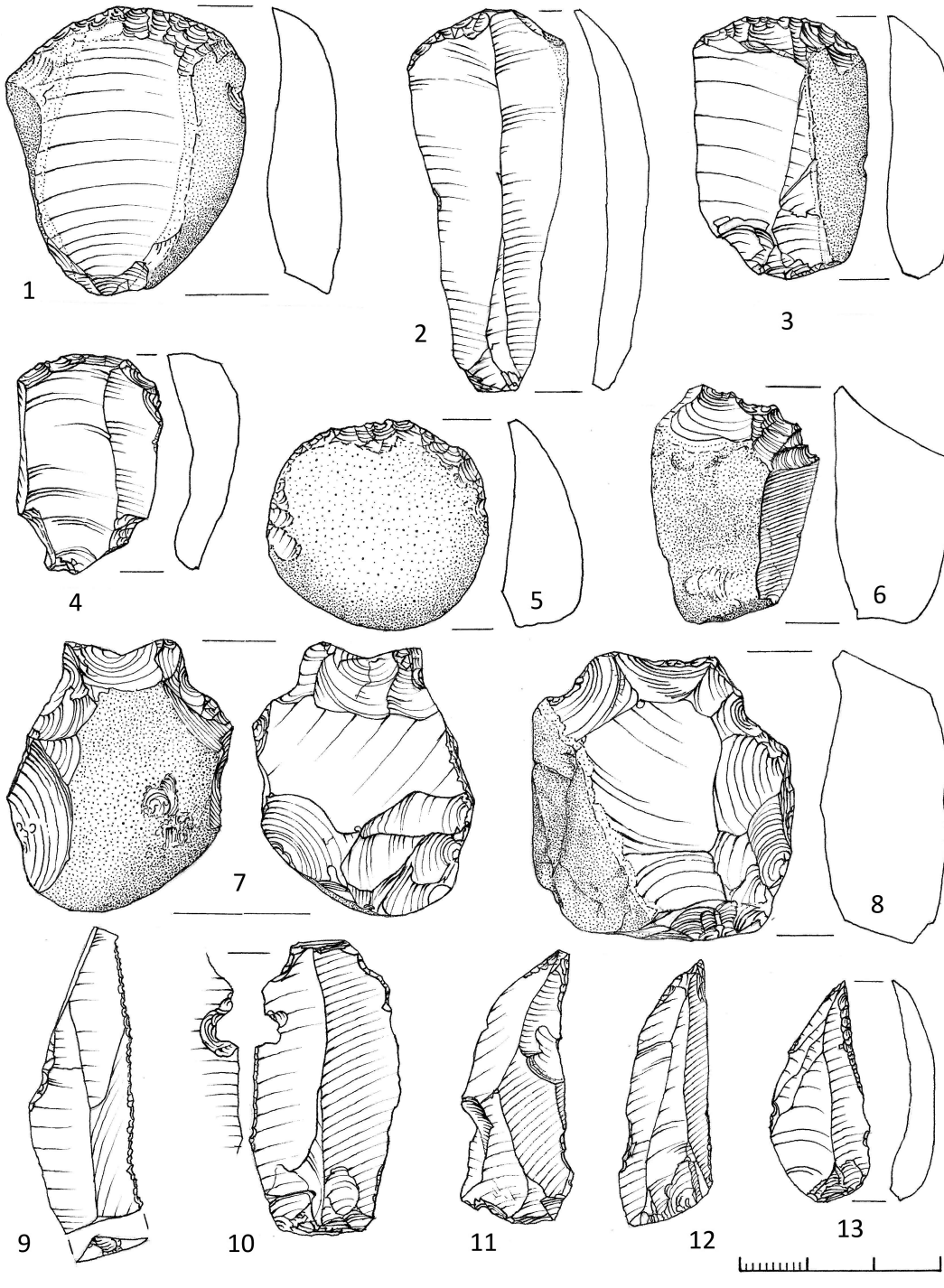

Fig. 7. Finds from Hesworth. 1–4: end-scrapers; 5: convex scrapers; 6–8: denticulate scrapers; 9: microdenticulate; 10: notched piece; 11–13: awls (scale in cm and mm).

forms (Fig. 7.5) and much chunkier types, some of which are heavily denticulated (Fig. 7, 6–8).

The small number of scrapers that are neatly made on the ends of blades are very probably mesolithic or earlier in age. Most, however, are made on the ends or around the edges of flakes and, while some of these may well also be mesolithic, they cannot be reliably discriminated from others of neolithic or Bronze Age date (although early Bronze Age 'thumbnail'-type scrapers are absent). This caveat aside, it is worth noting that scrapers predominate amongst standard Horsham assemblages and that these generally include many 'short end' and 'nosed' forms (Reynier 2005, 22).

While 'nosed' scrapers are not certainly represented at Hesworth, it can be suggested that a proportion of the 18 'convex and other scrapers' are contemporary with the microliths, a speculation supported by comparison with the large Horsham-type assemblage excavated at Rock Common nearby (SU 130 139; Harding 2000, fig 10, and see below).

A curiosity amongst the scraper group, as defined here, are the denticulates (e.g. Fig. 7, 6–8). These are usually large and thick primary flakes, parts of the perimeter of which have been indented by coarse secondary flake removals or notching to create a characteristically toothed outline. The larger and thicker denticulated pieces may, indeed, more resemble cores than they do tools and the distinction in such cases is not clear.

However, clear examples of deliberate denticulation are widespread, even prolific, in later mesolithic industries throughout western Britain (David 2007) and are recorded also in broadly contemporary assemblages from eastern counties, including the Weald (Jacobi and Tebbutt 1981, Fig. 10, 1–3). While such tools are not yet formally recognised as a standard component of Horsham-type assemblages, our examples from Hesworth, if they are not additions from later in time, suggest that this should be a consideration.

Other tools

Returning to other recognised formal tool types, notched pieces are the most numerous of the remainder (4%; e.g. Fig. 7.10), followed by a number of variously pointed 'awls' (Fig. 7, 11–13). None of these are helpful chronologically but, like the single microdenticulate (Fig 7.9) would not be out of place alongside Horsham Points.

Similar, in this respect, are the two broken and one complete core axe/adzes and single axe/adze sharpening flake (Fig. 8). A broken, leaf-shaped arrowhead is indicative of post-mesolithic activity in the vicinity and serves as a reminder that a proportion of the tools and debitage may also be neolithic or later.

HAINES AND HASLINGBOURNE

While these sites have not been the subject of grid-collection they have, nonetheless, been walked intensively and repetitively and many of the finds ascribed individual NGRs. Comprehensive plotting of debitage has not been possible, but distribution plots of tools and cores (Figs 9 and 10) show a near continuous spread of finds over a distance of about 2km, resolving into two major concentrations at either end.

The northernmost of these, about 6h in extent, straddles the Haslingbourne Stream but is mostly concentrated on the rising ground on its westward side. Downstream to the south, at Haines, the second cluster is of about the same size and is situated on more level ground. close to a spring and perched a few metres above the floodplain where the Haslingbourne steam joins the western Rother.

Preliminary viewing of the finds from these sites highlights a strong likeness to the mesolithic component as described above for Hesworth. However, it is also very clear that this is compromised by the admixture of a substantial number of neolithic and Bronze Age artefacts and debitage, more so than is apparent at Hesworth. For the moment, therefore, we are limiting our comparisons to the definitively mesolithic material from all three sites, focusing on the sample of microliths, and we speculate again on the possibility of a small upper palaeolithic contribution.

Only a preliminary record of both the earlier and later prehistoric material from Haines and Haslingbourne is presented here. However, there can be little doubt that these collections would repay more detailed attention in future, preferably supported by new investigative fieldwork. There are at least two artefacts of lower/middle palaeolithic origin which we describe in a separate note [This volume – pp 265–9].

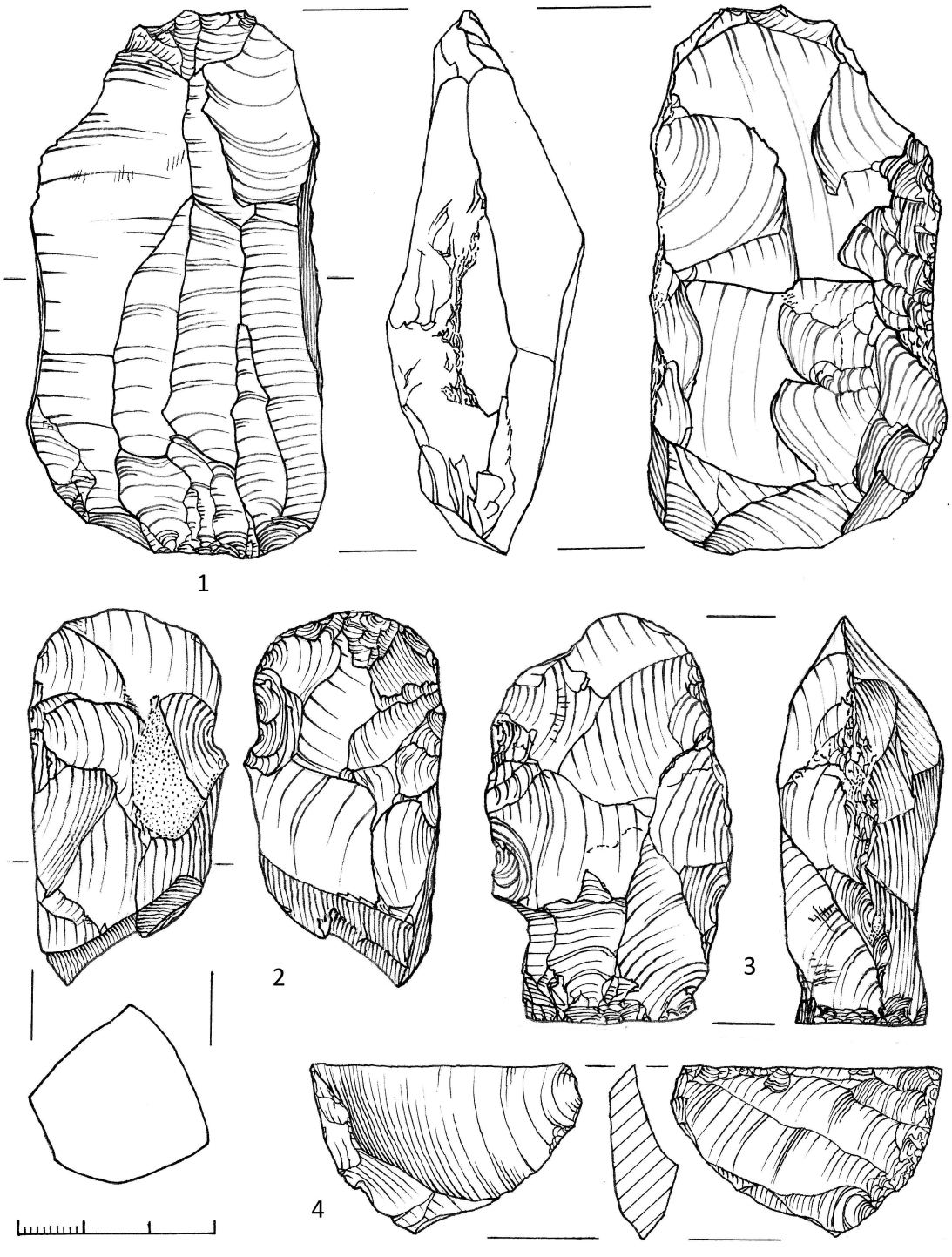

Fig. 8. Finds from Hesworth. 1–3: core axes; 4: axe-sharpening flake (scale in cm and mm).

Table 3. Haines and Haslingbourne assemblages, diagnostic items, excluding some categories that are still unclassified (+); (?) indicates possible additional unrecognized items. The potential federmesser from Haines is classified as a retouched blade.

Haslingbourne and Haines lithic collection			**Haines**	**Has.**
Debitage	Flakes		17+	4+
	Blades		7+	3+
	Bladelets		19+	7+
	Spalls		3	+
	Nodule		+	+
	Flaked nodules		+	+
	Nodule fragments		+	+
	Fragments		+	1+
	Platform cores		230	67
	Polyhedral/other cores		53	46
	Core fragments		18	6
	Crested + core rej. Flakes		8+	3+
	Burin spalls?		1+	2+
	Axe sharpening flake		1+	+
	Mis-hits		3	1
	Microburins		4	1
Tools	Microliths		71	34
	Utilised pieces	Utilised flakes	13+?	2+?
		Utilised blades	5+?	1+?
		Utilised bladelets	2+?	3+?
		Utilised frags	?	?
	Retouched pieces	Retouched flakes	21	4
		Retouched blades	2	1
		Retouched bladelets	3	0
		Retouched frags	3	0
	Retouched and utilised	Flakes	7	?
		Blades	1	?
		Bladelets	?	?
		Frags	?	?
	Truncations	Truncated flakes	1	0
		Truncated blades	0	1
		Truncated bladelet	0	0
	Notched pieces		6	2
	Awls		2	6
	Fabricators		3	0
	Axe/adzes (incl frags of)		3	5
	Polished flint axe frags		5	0
	Arrowheads	Leaf-shaped	4	4
		Transverse	3	4
		Barbed and tanged	7	5
		Other	2	2
	Scrapers	‘Denticulates’	13	5
		End-scrapers	7	0
		Convex/other scrapers	148	76
	Hammerstones (frags)		0	2
	Other tools		10	1
TOTAL	Flint		**706+**	**299+**

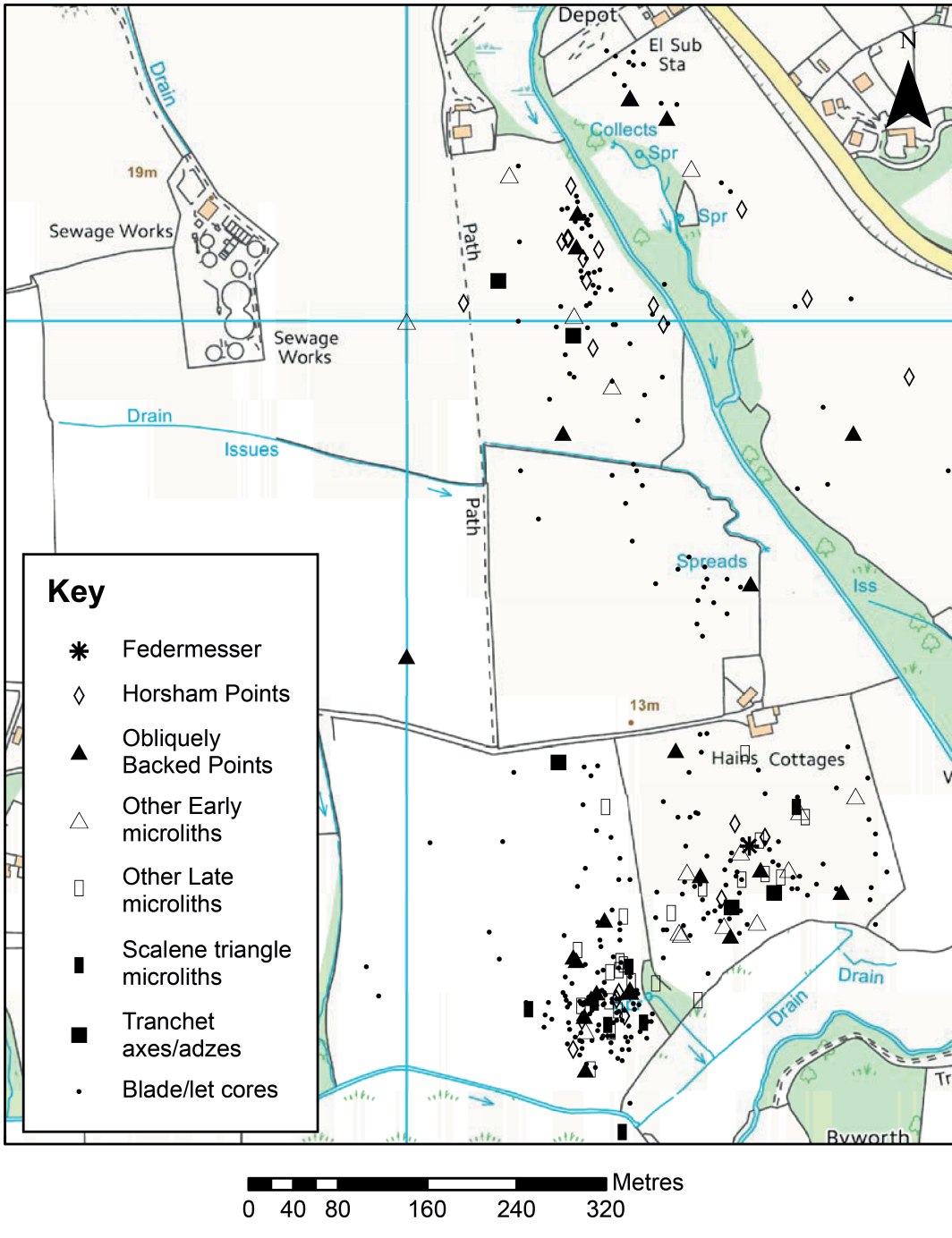

Fig. 9. Map of Haines and Haslingbourne showing distribution of earlier flint artefacts (?late upper palaeolithic and mesolithic). Ordnance Survey © Crown copyright and database rights 2019.

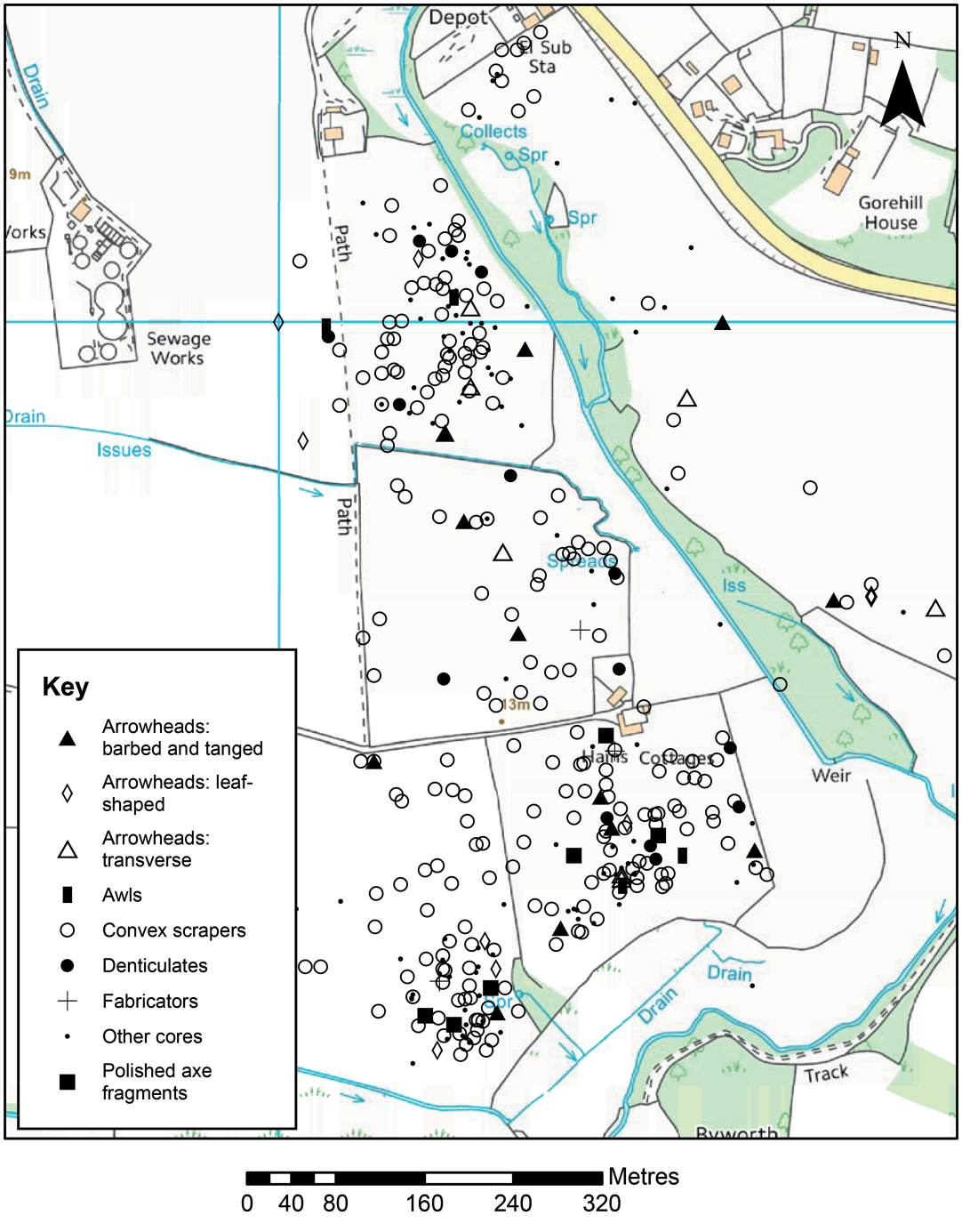

Fig. 10. Map of Haines and Haslingbourne showing distribution of later flint artefacts (neolithic and Bronze Age). Ordnance Survey © Crown copyright and database rights 2019.

RAW MATERIALS AND CORES

The raw materials in use at both sites are indistinguishable from those at Hesworth. The only element of debitage so far examined in any detail are the cores, and these too share broadly the same range of characteristics as described above. There are differences, however. The platform cores at Haines and Haslingbourne are on average somewhat smaller (36.7 mm and 37.4mm) than those from Hesworth (42.5mm) and the proportion of non-platform (polyhedral and 'other') cores is markedly greater at Haslingbourne (40%) and Hesworth (37%), than at Haines (18.7%). This confirms that all three sites include core reduction technologies that post-date the mesolithic, as is evident from the accompanying tool inventories at both Haines and Haslingbourne (Table 3), although less emphatically at Hesworth (see above).

TOOLS

Microliths

The preponderance of blade and bladelet cores at Haines and Haslingbourne, as at Hesworth, is accompanied by a correspondingly large representation of microliths (Figs 11 and 12). The composition of microlith-types from all three sites has been set out in Table 4, which highlights shared as well as divergent features. Simple, obliquely-blunted points are significant in all three, as are basally-retouched points, two microlith shapes that are definitively associated together during the Horsham phase of the local middle mesolithic (Jacobi 1978; Reynier 2005).

This phase can also include more elaborate obliquely-blunted and bi-truncated points, as well as isosceles triangles, lanceolate and convex-backed pieces. Some of these are also present in small numbers at all three sites, although isosceles triangles, prominent at Hesworth, are noticeably absent from Haines and Haslingbourne. The Haines assemblage is distinguished by the presence of small scalene triangles (seven, or 16% of microliths) which, with some of the other smaller geometric shapes and a considerable number of fragments of this type, suggest activity later here in the mesolithic period than may be the case at either Haslingbourne or Hesworth.

Scrapers

The most abundant tool type at both sites is the convex scraper. As suggested above for Hesworth, while many of these could be quite at home within the mesolithic inventory, and not out of place within a Horsham context, these cannot be singled out from amongst the many others that may be

Table 4. Haines and Haslingbourne microliths.

Description	Class		Haines		Has.		Hesworth	
	Jacobi	Clark	n	%	n	%	n	%
Obliquely-backed points (OBPs)	1a	A	12	27.3	7	25	21	52.5
OBP with ret on leading edge	1b	A	2	4.5	1	3.6	-	-
Isosceles triangles	2a	D	-	-	-	-	7	17.5
Bi-truncated trapeze	2b	C	3	6.8	-	-	-	-
Bi-truncated rhombic	3a	C	-	-	3	10.7	-	-
OBP with pointed base	3b	C	-	-	-	-	1	2.5
Lanceolates	3c	C	3	6.8	3	10.7	2	5
Convex-backed bladelet	4	D	2	4.5	-	-	1	2.5
Straight-backed bladelets	5a	D	3	6.8	-	-	2	5
Scalene triangles	7a	D	7	15.9	-	-	-	-
Lunate	9	D	1	2.3	-	-	-	-
Horsham Points	10a	F	5	11.4	12	42.9	4	10
	10b	F	4	9.1	2	7.1	-	-
	10c	F	2	4.5	-	-	-	-
Inversely retouched at base	12c?	E	-	-	-	-	2	5
Unclassified (narrow-blade?)	-	-	15	-	-	-	-	-
Unclassified fragments	-	-	12	-	6	-	22	-
Total			**71**	99.9	**34**	100	**62**	100

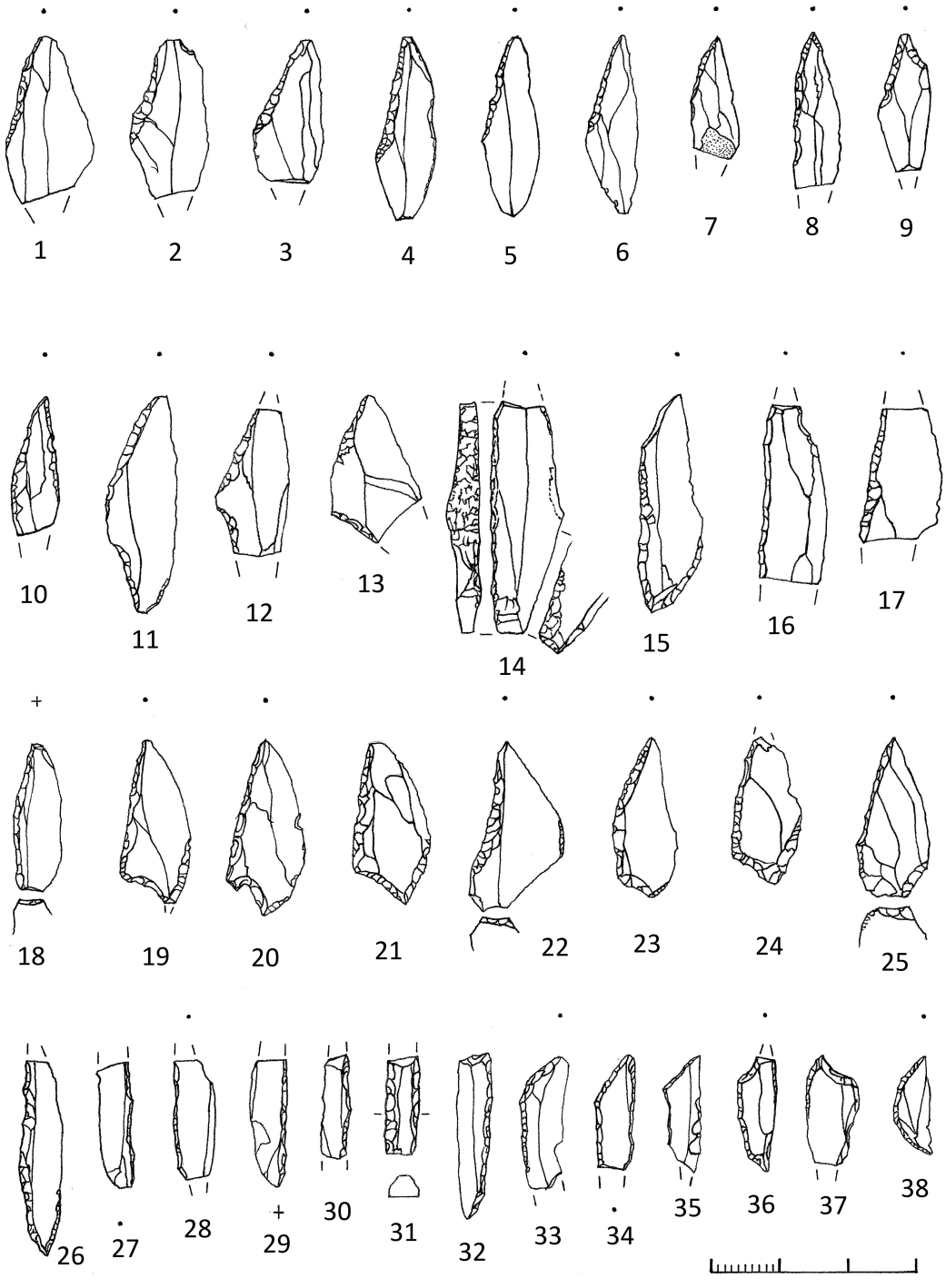

Fig. 11. Finds from Haines. 1–10: obliquely-backed points; 11–13: bi-truncated trapezes; 14–15: ?lanceolates; 16–17: broad-blade fragments; 18–25: Horsham Points; 26, 29: straight-backed bladelets; 27, 28, 30, 31: narrow-blade fragments; 32–37: scalene triangles; 38: lunate (scale in cm and mm).

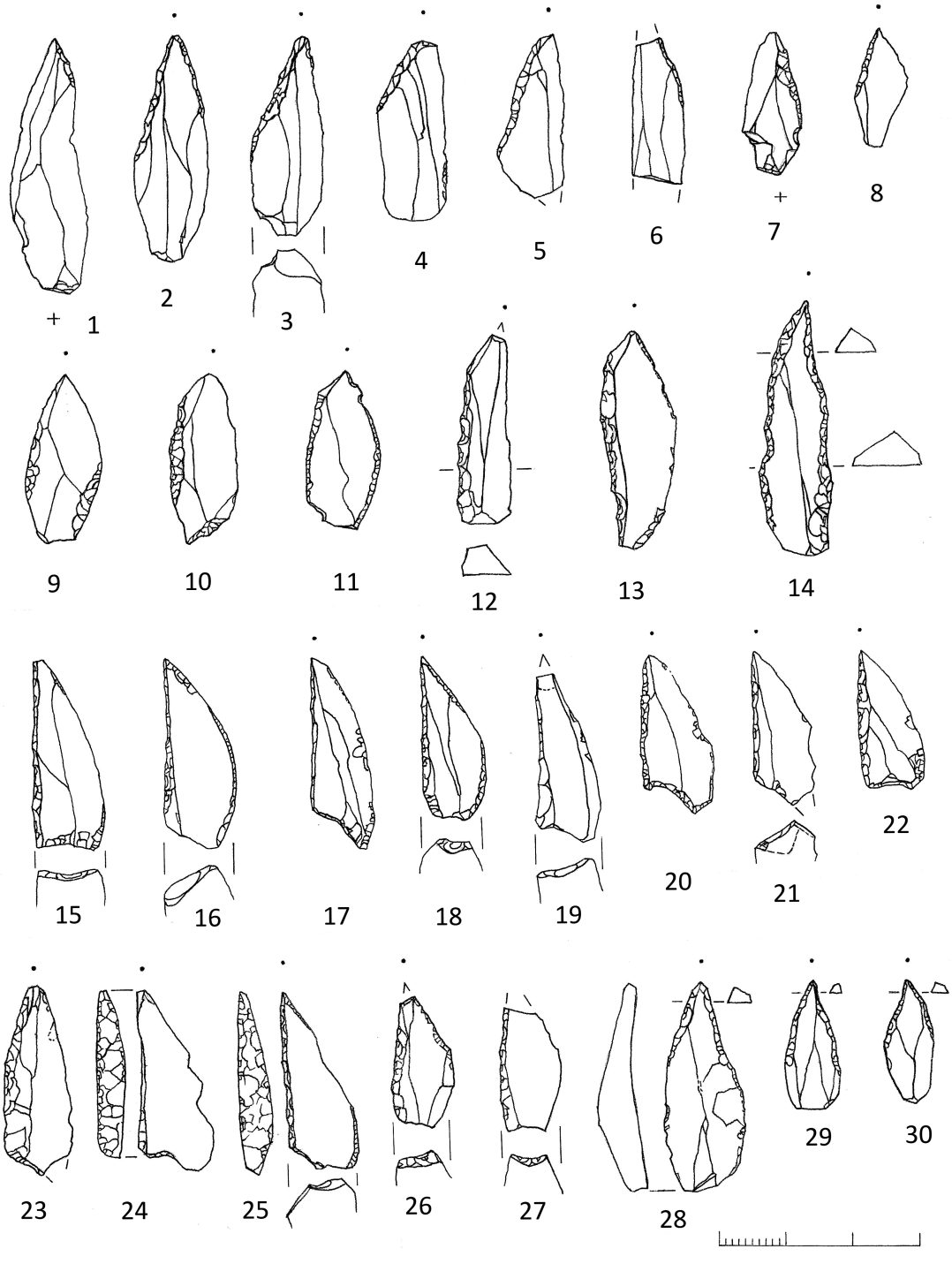

Fig. 12. Finds from Haslingbourne. 1–8: obliquely-backed points; 9–11: bi-truncated rhombic points; 12–14: ?lanceolates; 15–27: Horsham Points; 28–30: becs/awls (scale in cm and mm).

of later date. There are a few end-scrapers from Haines that may be more likely early mesolithic and both Haines and Haslingbourne have significant numbers of potentially mesolithic denticulate scrapers.

However, given the presence of so many flake cores and pressure-flaked projectile points as well as other tools from both sites (see below), it is likely that a significant proportion of the scrapers are neolithic and/or Bronze Age. There are no specifically small and rounded 'thumbnail'-types, but both sites have scrapers with neat inclined retouch typical of Bronze Age work.

The later reuse of mesolithic debitage has certainly taken place at Haines, at least, where unpatinated scraper retouch has been imposed over patinated flake surfaces (three instances). This exploitation of formerly discarded artefacts as raw material may be one amongst several reasons why some sites were revisited, contributing to their later perception as 'persistent places' (Barton *et al.* 1995).

Other tools

Apart from microliths, other distinctive mesolithic tool types present on both sites include core axes/adzes (e.g. Fig. 13.1) and at least one axe-sharpening flake. Such core tools seem to occur throughout the mesolithic in the south-east of England (for potentially later mesolithic examples see, for instance, Butler 2001; Barber and Bennell 2002) and their presence here with Horsham Points is therefore suggestive but cannot be taken as a definite association.

Also found at Haines, and harking back to a possible late upper palaeolithic presence echoing that mooted for Hesworth, is a single, large, patinated backed blade of federmesser type (Fig. 13.2).

Other formal tools so far identified at Haines and Haslingbourne include small numbers of awls, fabricators and notched pieces, any of which might be broadly mesolithic in date, although such pieces also commonly occur in later contexts. Less ambiguous, typologically if not technologically, is a blade core utilising the butt of a neolithic polished axehead from the Haines site (Fig. 14.1), as well as a series of indisputably later projectile points; both sites have about equal numbers of leaf-shaped, transverse and barbed and tanged arrowheads (Table 3; Fig. 14, 2–7), implying activity throughout the neolithic and into early Bronze Age (*c.* 4000 to *c.* 2500 cal BC). One of the barbed and tanged arrowheads, too, is clearly made on an earlier patinated flake/blade (Fig. 14.6). A single rounded ?quartzite hammerstone, perhaps used for stone-working, was found at Haslingbourne.

DISCUSSION

Despite the limitations of unstratified lithic material collected from the ground surface, these collections help expand knowledge of the distribution, character and general periods of prehistoric activity in an area with little previous record of study. This intermittent activity appears to have considerable longevity, evidenced by occasional finds of lower and middle palaeolithic artefacts, through to those of the Bronze Age.

Alongside the acquisition of typo-chronological information, the mapping of these finds by both grid-walking and individual GPS measurements provides additional information on density and distribution of sites in the local landscape. In the discussion which follows we firstly try and address the chronological position of these surface sites before comparing Hesworth with its closest excavated analogue, at Rock Common, and then consider their wider geographical context.

CHRONOLOGY

That individual distinctive finds can usefully add to knowledge is illustrated by the two backed blades of federmesser type. These deserve note as evidence for a final upper palaeolithic presence which is unusual in Britain outside caves and a small (but growing) number of open-air locations assumed to date to the Allerød chronozone (~14,010–12,890 BP; Pettitt and White 2012, 480–7).

Although there may well be other late glacial artefacts amongst the debitage from the sites described above, these are not reliably distinguishable from the more abundant mesolithic material where a similar technology was in use, a problem even for the interpretation of nearby excavated assemblages (Harding 2000, 34). Our examples may be just casual losses, but they are nonetheless evidence that this area was indeed exploited at this time and that more substantial and better preserved 'sites' may well survive in the wider locality.

Coming forward in time, and in keeping with expectations for this Wealden substrate,

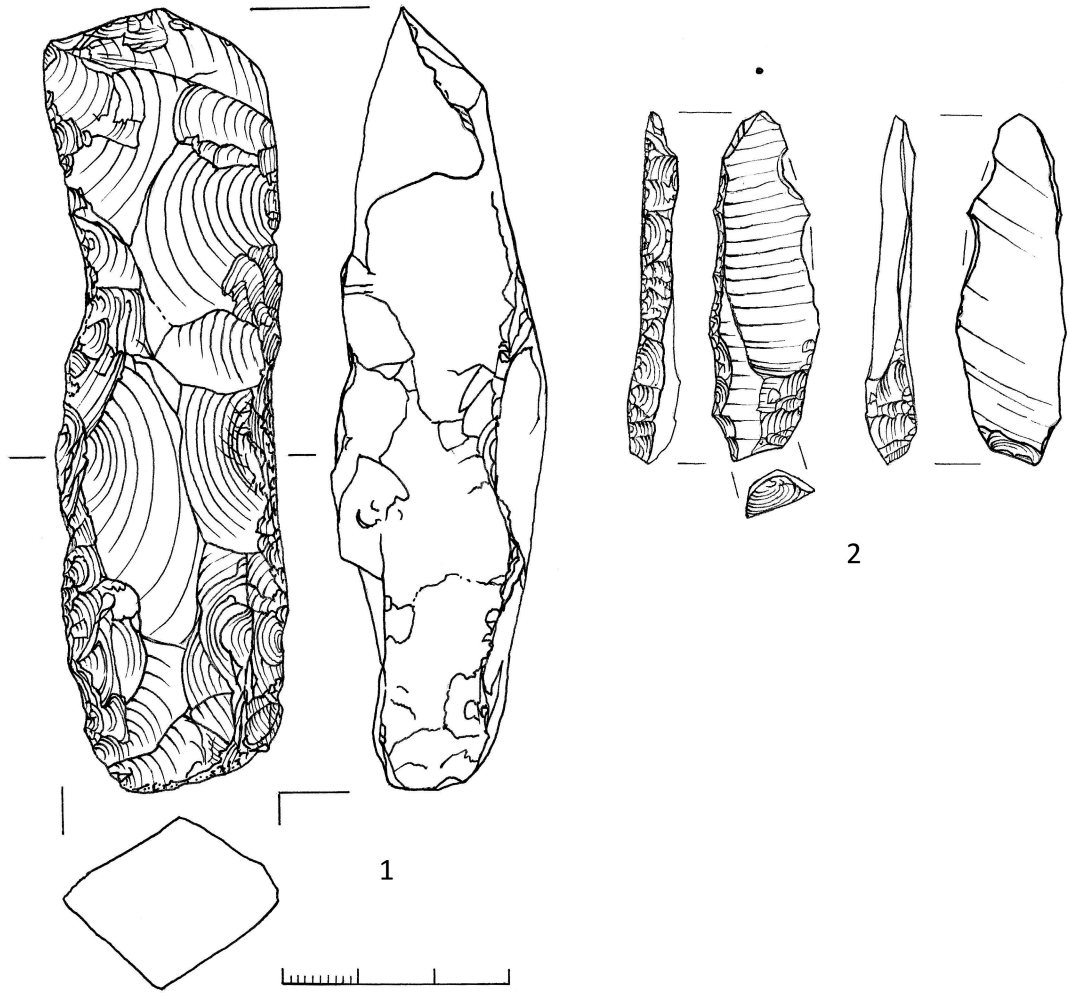

Fig. 13. Finds from Haines. 1: core axe/adze; 2: ?federmesser (scale in cm and mm).

the evidence for sustained activity is altogether more apparent in the mesolithic, although its timing and duration cannot be specified in any detail. Although certainly present at locations such as Iping Common, the evidence for an earlier mesolithic typical of Deepcar or Star Carr phases is equivocal at our sites, since many of the tool types in these are not easily distinguishable from those that occur later on (Reynier 2005).

Among those microliths that may be typo-chronologically sensitive, the dominance of smaller obliquely-backed points is suggestive, as is the absence of larger scalene triangles. Our contention, therefore, based on the data from Hesworth, is that the typological evidence falls most neatly within the rather later Horsham phase where such obliquely-backed microliths and isosceles triangle dominate, together with its signature hollow-based points.

Additionally at Hesworth there are two points with inverse basal retouch, characteristic of microlith inventories from the English Midlands and tentatively also placed as intermediate between the earlier and later mesolithic (the Honey Hill type, Saville 1981a,b; Conneller, Bayliss *et al.* 2016; Cooper and Jarvis 2017). Such points have also been recorded from the 'Horsham' sites at Halt, Old Beeding Wood and Colgate in Sussex (Clark 1933, 75; Jacobi 1978, 20; Reynier 2005, 27–9) and at

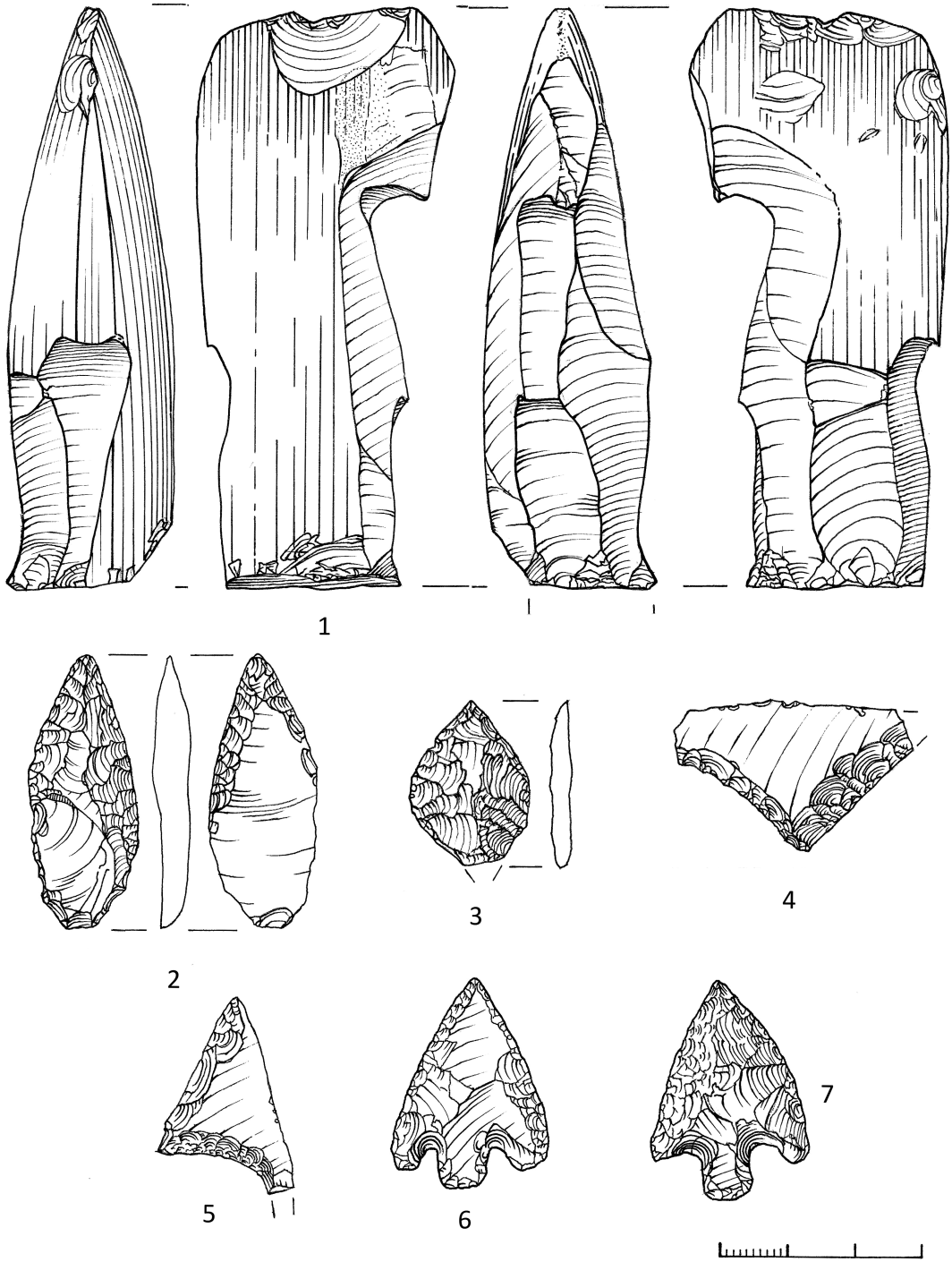

Fig. 14. 1. Polished flint axehead reused as core (SU 98158 19345); 2, 3: leaf-shaped arrowheads (SU 98143 19345; SU 980 200); 4: chisel arrowhead (SU 98309 19499); 5: oblique arrowhead (SU 98173 19942); 6,7: barbed and tanged arrowheads (SU 984 200; SU 98197 19379) (scale in cm and mm).

Bletchingley in Surrey (Jones 2013) and so introduce the possibility, flimsy though this must remain for the moment, of some sort of contemporaneous link with the present-day Midlands.

Contrarily, it can be noted that hollow-based Horsham points do not occur much beyond a heartland firmly focused in the south-east, although extending as far as Wiltshire (Bishop 2014, 17) with outliers as far off as Dorset (Reynier 2005, 92) and perhaps Lincolnshire (Butler 2005, 98).

The absolute dating of such intermediate typologies is extremely sketchy. A recent reassessment, based on Bayesian analysis of 13 determinations from just four sites, has been used to suggest that such assemblages lasted from 9280–8305 cal BC until 7030–5845 cal BC (95% probability: Conneller, Bayliss *et al.* 2016). However, almost half the dates used for this calculation, and those which determine the earliest appearance of the phase, are from Cramond in Scotland and have to be dismissed as they relate to an assemblage heavily dominated by numerous narrow-blade microliths, with only one (or perhaps two) basally-retouched points (Saville 2008; Waddington *et al.* 2017). Furthermore, the inclusion of a date from Westhampnett (OxA-4170: 8880 ±100 BP) in the recent analysis (Conneller, Bayliss *et al.* 2016) is also questionable, as the published account makes no reference to either Horsham or inversely retouched points (Fitzpatrick *et al.* 2008). This leaves only the dates from Kettlebury 103 (Surrey) and Longmoor 1 (Hants) where an association with only Horsham Points is reliable (Reynier 2002, 2005), providing an unhelpfully broad span (between 10040–7740 cal BC and 7020–4970 cal BC at 95% probability, A Bayliss pers. comm.).

The only robust dating for an assemblage of Honey Hill type is *c.* 8000 cal BC at the excavated site at Asfordby (Bayliss *et al.* 2017, 50–56). Closer to hand, the difficulty of dating specifically 'Horsham' sites in their heartland, let alone elsewhere, is illustrated by equivocal results from the mesolithic 'persistent place' at Bletchingley, Surrey (Jones 2013). Here, charcoal from a possible hearth (161, Area 6) that *may* be associated with three Horsham Points and two inverse, basally-retouched points from nearby provided two radiocarbon determinations which both calibrate to 7480–7170 cal BC (Marshall *et al.* 2013 100, 102); however, the association here between samples and lithics is unclear.

At other excavated sites the problem is no less acute: no material suitable for dating was found at either Rock Common (Harding 2000) or from within the pit containing distinctive Horsham material excavated at Saltwood, Kent (Devaney 2009; Allen *et al.* 2009). Confirmation of a date at *c.* 7000–7690 cal BC for the small amount of distinctively Horsham-type material from the recent work at Bexhill, East Sussex, is awaited with interest (analysis is well advanced on the very large lithic assemblages recovered during excavations here by Oxford Archaeology and should result in a much more refined definition and chronology for the mesolithic of the south-east of England than is currently available: M. Donnelly, pers. comm.).

Back in the western Rother valley, the Horsham character of the Hesworth assemblage can also be firmly traced at both the Haines and Haslingbourne sites, although the picture there is more blurred, both by the addition of small, geometric forms of microlith at Haines and by a palimpsest of neolithic and later Bronze Age material over both sites.

The Hesworth assemblage stands apart in that it apparently does not include evidence for the smaller elongate scalene triangles and other narrow-blade forms of the later mesolithic (Jacobi 1978). The recent reconsideration of the available radiocarbon dates places the first appearance of these latter types at 8315–7765 cal BC (95% probability: Conneller, Bayliss *et al.* 2016).

LOCAL COMPARISON: HESWORTH AND ROCK COMMON

If a tighter chronology for Horsham sites is for the moment elusive, we are nonetheless fortunate to be able to call upon the results of excavation at Rock Common (1995–97: Harding 2000), only 14km to the south-east of Hesworth, to allow at least some tentative comparisons between their respective lithic signatures (and leaving aside the less formal and potentially more diverse surface collections from Haines and Haslingbourne).

With over 52,000 pieces, mostly from the total excavation of an area of just 121 square metres (within Area A), the assemblage from Rock Common is the most comprehensive of any that is currently available for viable comparison. There are of course obvious caveats in trying to align the results of surface collection with those of a fully-excavated and sieved assemblage but, such cautions accepted and in the absence of much

other corroborative data, we feel such comparison is worthwhile, at least at a generalized level.

At this level therefore, comparison of raw material and debitage between Hesworth and Rock Common indicates a broad similarity, focusing on single- and double-platform core preparation with associated flake, blade and bladelet production. Most of the flint may have come from the South Downs, and knapping involved hard and soft hammers, although the evidence for soft-hammer blade and bladelet removal is more pronounced at Rock Common (where technological analysis and commentary by Phil Harding has been more thorough); both sites produced few hard hammers.

The tool inventories at both sites also have much in common, notably a predominance of microliths and their by-products, and convex-ended scrapers. Other shared tool types include occasional core axe/adzes (and axe-sharpening flakes), as well as piercers and truncations; each site also has a single 'fabricator' and microdenticulate, although the chronological ranges of these extend beyond the mesolithic period.

A striking difference between the inventories, however, is the apparent absence of burins at Hesworth, whereas at Rock Common, with 30 examples, they constitute the third most frequent tool type. A few possible burin spalls at Hesworth hint that the type may not be entirely absent, but the contrast with Rock Common remains stark and is not easily explained away by differing fieldwork strategies.

As burins are usually linked to the working of bone and antler, it may therefore be possible that this processing activity was relatively unimportant at Hesworth. There are hints of other differences too, with notched pieces and denticulate scrapers distinctively present at one (Hesworth: 15 and 9 examples respectively) but entirely absent from the other. Perhaps not so much should be read into this, as both tool types are of uncertain function and can also occur outside specifically mesolithic contexts but, nevertheless, it strengthens the likelihood that differing craft activities took place at these sites.

Furthermore, and despite a shared prominence of microliths and microlith manufacture at both sites, there are significant differences in this definitive tool category as well. Obliquely-backed points are important in both, as are larger triangular forms and the distinctive presence of a small number of basally-retouched points. At Rock Common, however, and in near complete contrast to Hesworth, the microlith inventory is dominated by crescents and lozenges (Clark's D2 and D3 types respectively, Clark 1933) and also small scalene triangles (Harding 2000, table 2, fig. 9).

This disparity may, to some extent, be a consequence of a bias between excavation versus surface collection, as smaller geometric types may be missed by the latter; however, given the detailed and repetitive collecting methodology adopted at Hesworth, the contrast seems genuine. What this difference, and other lesser differences amongst the microlith assemblages, may signify is very unclear. Some sort of functional variation may be responsible, in which the two sites engaged in different hunting strategies or processing activities, as proposed above in respect of variations in the presence and abundance of burins, notches and denticulates.

However, variation in microlith composition and shape may also reflect chronological or behavioural factors, the disentangling of which is beyond the current resolution of the record. That said, the suggestion that variations in microlith shape might reflect differing social territories or tribal affiliations is a factor which could have a bearing here, perhaps at a very local level.

At a more regional level it has been proposed that there may be some territorial significance to the variation, noted above, between points with inverse basal retouch (predominant in the Midlands) and Horsham Points (predominant in the south-east). Both these distributions also seem to extend south of the English Channel, where attention has been drawn to parallels within potentially contemporary assemblages in France, Germany and the Low Countries (Jacobi 1976; Reynier 2005, 111–116). The Horsham Culture was indeed originally identified as Tardenoisian by Grahame Clark (1933) and nowadays the links, with northern France at least are no less explicit, even if terminology and associations have now moved on. Indeed, with recent publications of comparable French material, any discussion of English Horsham-type material must now also look across the Channel, as we attempt to do briefly below.

A FRENCH CONNECTION?

The exact nature and timing of links with the near-continent are still hazy, as neither side of the English Channel is well served, either by

radiocarbon-dated assemblages or by the mutually exacting comparative analysis of their respective lithic components, in both of which there is much variation, further complicated by differing traditions of study and nomenclature.

While certain elements of assemblages can be precisely paralleled across the Channel, it is rarely the case that entire assemblages convincingly match up in every part, and any chronological synchronisation is approximate at best. A current assessment of the evidence, for the most part dependent on the larger and more recently excavated material from the French side, and still extremely tentative (Ghesquière, 2011, 2017), points to shared influences in two phases with coalescing geographies: a possibly earlier zone to either side of the eastern English Channel (between the Nord-Cotentin peninsula and the southern North Sea) dominated mostly by Horsham-type assemblages, *c.* 8500–7800 cal BC, followed by and/or overlapping with a later and more westerly zone (from the Nord-Cotentin towards Brittany) with Honey Hill type assemblages *c.* 7500– 6500 cal BC (Ghesquière 2017, figs 327, 331).

Taking the Horsham-type first, there are several northern French sites where the eponymous points have been identified, among which perhaps the most important are the series at Saleux, in the Somme valley, where several scatters have been investigated (Fagnart *et al*. 2008). The excavators suggest that these scatters, occurring at the end of the Preboreal and into the Boreal, share a commonality with others (of the Ourlaine Group) found from Belgium to the Loire, including southern England.

Other sites of this type (see Fig. 15) in the Somme catchment include Hangest-sur-Somme (gravière II Nord), Amiens-Étouvie (*ibid.*, 116) and Warluis I and IIc (Ducrocq *et al.* 2008). In the Seine catchment there are assemblages with basally-retouched points close to the Horsham variety at St-Wandrill-Rançon, Acquigny, Chéronvilliers (Souffi, 2008) and, perhaps, Fécamp on the Haute-Normandie coast (Ghesquière 2011).

Further west in northern France, the more frequently encountered type is the inversely retouched point for which parallels have been observed amongst English Honey Hill assemblages (Ghesquière and Marchand 2010; Ghesquière 2011, 2017; Cooper and Jarvis 2017, 84–5). Such points are a feature of large samples of excavated lithic material from the northern coasts of the Nord-Cotentin peninsula, notably at Flamanville Central EDF and at Auderville, Roc de Gîte.

Both of these assemblages also include obliquely-backed points and many narrow-backed bladelets (including scalene forms), but few or no isosceles triangles or convex-backed pieces; the inventories of other tool types include truncations, scrapers, burins and retouched flakes, any of which would not be out of place in English Honey Hill assemblages. Flamanville EDF does not have tranchet core tools, but a few of these are present at Auderville.

Prominent at at the latter site, but notably absent from Honey Hill assemblages, is an abundance of pebble tools, many of which are close analogues to the 'bevelled pebbles' associated mostly with western Atlantic coasts in the later mesolithic (Jacobi 1980; Pailler and Dupont 2007; Waddington 2007). Their presence at Auderville must therefore throw doubt on any proposed cultural affiliation with the English Midlands during the middle mesolithic.

Indeed, with relatively few comparators for Honey-Hill-type assemblages elsewhere in northern France, we share with Conneller, Bates *et al.* (2016, 67) the need for some caution in suggesting contact between France and England at this time, at least until further evidence becomes available. With only limited and overlapping dating so far, it can only remain a working hypothesis that such sites are later than those with Horsham Points, although this is also implied by association with bevelled pebbles.

At the beginning of our potential Horsham period, when hollow-based points were in use on both sides of the channel, from *c.* 8000 cal BC, there was already more than 100km of open sea due south of the sites in West Sussex (Sturt *et al.* 2013, figs 4, 6; Fig. 15). However, further to the east there seems to have been a chain of islands between the mouth of the River Somme and the Kentish South Foreland which might have provided a possible, if very treacherous, route across the widening strait; otherwise, terrestrial contact was only still achievable much further to the north-east, across a diminishing Doggerland.

Certainly by the end of the period (i.e. at about 7000 cal BC) Britain was fully insular and any contact would have necessitated taking to the water. That this may have inhibited trans-Channel contact is suggested by the very marked divergence of lithic armature types to either side of

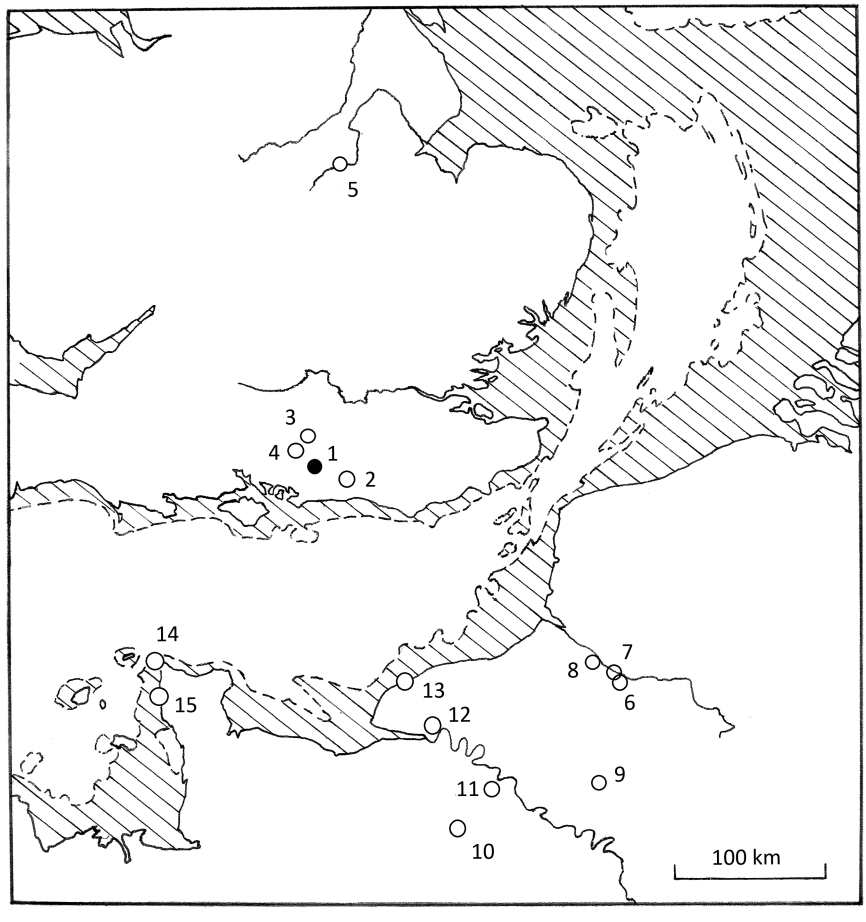

Fig. 15. Location of sites: 1. Hesworth; 2. Rock Common; 3. Kettlebury 103; 4. Longmoor 1; 5. Asfordby; 6. Saleux; 7. Hangest-sur-Somme; 8. Amiens-Étouvie; 9. Warluis; 10. Chéronvilliers; 11. Acquigny; 12. St-Wandrill-Rançon; 13. Fécamp; 14. Auderville, Roc de Gîte; 15. Flamanville, Central EDF. The approximate extent of potential dry land at c. 9.5 cal BP is indicated (after Sturt *et al.*, 2013, fig 6).

the Channel after the middle mesolithic. However, it is doubtful that the open water itself accounts for this, and perhaps socio-economic factors related to population pressures in a shrinking terrestrial world also played a role, although the opposite effect, the creation of a diaspora and the exploitation of newly productive environments might be anticipated instead (Conneller, Bates *et al.* 2016).

A hint of this, and a clear signal that voyaging was well within the abilities of at least late mesolithic people, is evidenced by unexpected finds of distinctive trapeziform microliths at Old Quay on the Scilly Isles, indicative of contact between this extremity and an area north of the Somme, a distance in excess of 500km (Anderson-Whymark *et al.* 2015, Garrow and Sturt 2017).

This possibility notwithstanding, the majority of current evidence indicates that continental connections declined, or at least became less apparent, following the physical isolation of Britain at a time when suites of 'narrow blade' microliths come to predominate there, among which it has been argued that variations might even reflect the further development of more confined territorial and social affiliations (Jacobi 1979; Jacobi and Tebbutt 1981). Such microliths, though quite abundant elsewhere in south-east England (Conneller and Pope forthcoming 2019) are sparsely

present in the Petworth assemblages currently under discussion, only reaching significant representation at Haines (Table 4).

As the proportion of non-microlithic tools and debitage that may also belong to this period of activity cannot be reliably determined, it would be unwise to read much significance into this apparent lack of activity at this time, save to note a similar absence at Rock Common; perhaps there were then factors at play at these sites that were outside the circumstances that favoured them as 'persistent places' at other times?

CONCLUSIONS

The lithic assemblages discussed above provide another illustration of the richness and chronological depth of prehistoric activity on the Lower Greensand of south-eastern England, but from an area of this formation which has previously seen little fieldwork or collecting activity. As with most surface collections, however, one is faced with the problem of a mixed accumulation of material of widely differing ages from which only very general conclusions can be drawn.

While other prehistoric periods are certainly represented, our view is that a substantial proportion of each of the three main flint scatters derives from activity of the Horsham phase of the mesolithic, intermediate between early and late, and perhaps dating somewhere between 8000 and 7000 cal BC.

The presence of microliths and microburins at each site, together with blade and bladelet cores, is good evidence for the manufacture of hunting weaponry, while various other tool types, notably scrapers, are indicative of other activities also probably taking place. The sites are located on rising ground above the flood plain of the western Rother and are next to tributaries or springs, all factors attractive for hunting stopovers, as well as for more prolonged camping where maintenance, craft and other 'domestic' activities could have taken place.

The Rock Common area is likewise well-served by springs (Harding 2000, 43) and the many contemporary sites around Horsham itself are also located near water sources (Butler 2008, 17). The scatters are extensive, suggesting either repetitive visiting and/or more prolonged stays, although clues on seasonality, duration and economy are entirely lacking.

Certain contrasts in the representation of some tool types (such as burins) between sites might reflect differences in the craft activities taking place, and contrasts in the type (or perhaps style?) of projectile points, for example between Rock Common and Hesworth, might have social rather than just practical connotations.

Exploitation of the South Downs is suggested by some of the better flint raw material, although inferior local material was also used; a lack of more exotic cherts limits the evidence for the wider movements that presumably took place. That the sites do belong within a larger cultural association or 'province' is confirmed by the presence of those distinctive basally-modified microliths, including Horsham Points, which align them with many others in the Weald as well as elsewhere in the south-east of England, in the Midlands and probably in northern France.

Such generalized speculation will remain just that until sites that have not been damaged and dispersed by cultivation can be located, excavated and analysed in the detail required for the provision of the essential chronological and palaeoecological frameworks into which newly described cultural schema can be fitted. Such schema will need to include detailed consideration of apparent links with sites in northern France.

In the meantime, the identification and characterisation of surface scatters such as those reported here helps to fill out the distributional picture and focus the search for those sites with stratification and preserved organic remains. That such sites might survive mostly in valley floor locations, such as the western Rother, presents a challenge for future methods of prospecting and investigation, as well as necessitating a readiness to take full advantage of opportunities offered by future land development.

Acknowledgements

Lord Egremont, the landowner, and Brian and Lee Dallyn, of Strood Farm, are warmly thanked for their permissions. Paul Linford kindly provided the location and distribution figures, and Alex Bayliss is thanked for a reanalysis of the radiocarbon dates from Kettlebury and Longmoor. Mike Donnelly is thanked for discussion and sight of finds from the Bexhill excavations. Nicolas Naudinot, Emmanuel Ghesquière and Tim Painter kindly provided generous assistance with publications, and Caroline Wells was good enough to read and comment helpfully on the draft. The artefact drawings are by Andrew David.

Authors: Marmanet, 133 Salthill Road, Fishbourne, West Sussex PO10 3PZ andrew.david1@hotmail.co.uk

REFERENCES

Aldiss, D. T. 2002. *Geology of the Chichester and Bognor district. Sheet Explanation of the British Geological Survey 1:50 000 Series Sheet 317 and Sheet 332 (England and Wales*).

Allen, M., Beavan Athfield, N., Diack, M., Riddler, I. and **Trevarthen, M.** 2009. The radiocarbon dates from Saltwood Tunnel, Kent, in S. Foreman, *Channel Tunnel Rail Link Section 1*. York: Archaeology Data Service, https://doi.org/10.5284/1000230.

Anderson-Whymark, H., Garrow, D. and **Sturt, F.** 2015. Microliths and maritime mobility: A continental European-style Late Mesolithic flint assemblage from the Isles of Scilly, *Antiquity* **89**, 954–971.

Barber, L. and **Bennell, M.** 2002. Excavations at Redhill, in D. Rudling (ed.), *Downland Settlement and Land-use: The Archaeology of the Brighton By-Pass*, 91–106. London: Archetype Publications.

Barton, R. N. E, Berridge, P. J., Walker, M. J. C. and **Bevins, R. E.** 1995. Persistent places in the Mesolithic landscape: an example from the Black Mountain uplands of South Wales, *Proceedings of the Prehistoric Society* **61**, 81–116.

Bayliss, A., Jarvis, W., Bronk Ramsey, C., Gook, G. and **Cooper, L. P.** 2017. Radiocarbon dating and chronological modelling, in L. P. Cooper and W. Jarvis, Making and Breaking Microliths: A Middle Mesolithic Site at Asfordby, Leicestershire, *Proceedings of the Prehistoric Society* **83**, 50–56.

Bishop, B. 2014. Assessment of the lithic material, in D. Jacques and T. Phillips, Mesolithic settlement near Stonehenge: excavations at Blick Mead, Vespasian's Camp, Amesbury, *Wiltshire* Archaeology and Natural History Magazine **107**, 15–17.

British Geological Survey (BGS) 2017. Geology of Britain Viewer, http://mapapps.bgs.ac.uk/geologyofbritain/home.html (accessed 2/8/17).

Butler, C. 2001. A Mesolithic and later prehistoric flintworking site at East and West Hills, Pyecombe, West Sussex, *Sussex Archaeological Collections* (hereafter *SAC*) **139**, 7–25.

— —2005. *Prehistoric Flintwork*. Stroud: Tempus Publishing.

— —2008. A collection of Mesolithic flintwork from the Horsham area, *SAC* **146**, 7–18.

Clark, J. G. D. 1932. *The Mesolithic Age in Britain*. Cambridge: Cambridge University Press.

— —1933. The classification of a microlithic culture: the Tardenoisian of Horsham, *Archaeological Journal* **90(1)**, 52–77.

Conneller, C. and **Pope M.** forthcoming 2019. The Upper Palaeolithic and Mesolithic Periods, in M. J. Allen and D. Rudling (eds), *Archaeology and Land-use of South-East England to 1066*. Oxford: Oxbow Books.

Conneller, C., Bates M., Bates, R., Schadla-Hall T., Blinkhorn, E., Cole, J., Pope, M., Scott, B. and **Underhill**, **D.** 2016. Rethinking human responses to sea-level rise: the Mesolithic occupation of the Channel Islands, *Proceedings of the Prehistoric Society* **82**, 27–71.

Conneller, C., Bayliss, A., Milner, N. and **Taylor, B.** 2016. The Resettlement of the British Landscape: Towards a chronology of Early Mesolithic lithic assemblage types, Internet Archaeology **42**, http://dx.doi.org/10.11141/ia.42.12

Cooper, L. P. and **Jarvis, W.** 2017. Making and Breaking Microliths: A Middle Mesolithic site at Asfordby, Leicestershire, *Proceedings of the Prehistoric Society* **83**, 43–96.

David, A. 2007. *Palaeolithic and Mesolithic Settlement of Wales, with special reference to Dyfed*, British Archaeological Reports (Brit. Ser.) **448**. Oxford: Archaeopress.

Devaney, R. 2009. The worked flint from Saltwood Tunnel, Saltwood, Kent, in S. Foreman, *Channel Tunnel Rail Link Section 1*. York: Archaeology Data Service https://doi.org/10.5284/1000230

Ducrocq, T. 2001. *Le Mésolithique du bassin de la Somme. Insertion dans un cadre morpho-stratigraphique, environnemental et chronoculturel*. CERP, Universités des Sciences et Technologies de Lille.

Ducrocq, T., Bridault, A. and **Coutard, S.** 2008**.** **'**Le gisement mésolithique de Warluis (Oise): approche préliminaire', in J-P. Fagnart, A. Thevenin, T. Ducrocq, B. Souffi, and P. Coudret (eds), Le début du Mésolithique en Europe du Nord-Ouest*, Société Préhistoriques Française Mémoire* **XLV**, 85–106.

Fagnart, J-P., Souffi, B. and **Coudret, P.** 2008. 'Les occupations mésolithiques du gisement de Saleux (Somme)', in J-P. Fagnart, A. Thevenin, T. Ducrocq, B. Souffi, and P. Coudret (eds), Le début du Mésolithique en Europe du Nord-Ouest*, Société Préhistoriques Française Mémoire* **XLV,** 107–152.

Farewell, T. S., Truckell, I. G., Keay, C. A. and **Hallett, S. H.** 2011. *Use and applications of the Soilscapes datasets*. Cranfield University, http://www.landis.org.uk/downloads/downloads/Soilscapes_Brochure.pdf (accessed 2/8/17).

Fitzpatrick, A.P., Powell, A.B. and **Allen, M. J.** 2008. Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, Vol 1: Late Upper Palaeolithic–Anglo-Saxon, *Wessex Archaeology Report* **21**. Salisbury: Wessex Archaeology.

Garland, N and **Anderson-Whymark, H.** 2016. Mesolithic and late neolithic/Bronze Age activity on the site of the American Express Community Stadium, Falmer, East Sussex, *SAC* **154**, 1–44.

Garrow, D. and **Sturt, F.** 2017. *Neolithic Stepping Stones: Excavation and survey within the western seaways of Britain, 2008–2014*). Oxford: Oxbow Books.

Ghesquière, E. 2011. 'Les rapports entre les deux rives de la manche au Mésolithique Moyen (8000 – 6500 av J.-C.)', in Les Anglais en Normandie*, Congrès des Sociétés Historiques et Archéologiques de Normandie* **16**, 37–45. Bayeux : Fédération des Sociétés Historiques et Archéologiques de Normandie.

— —2017. *Le mésolithique de Basse-Normandie*. Presses Universitaires de Rennes.

Ghesquière, E. and **Marchand, G**. 2010. *Le Mésolithique en France, Archéologie des derniers chasseurs-cueilleurs*. Paris: La Découverte.

Harding, P. 2000. A Mesolithic site at Rock Common, West Sussex, *SAC* **138**, 29–48.

Holgate, R. 2003. Late glacial and post-glacial hunter-gatherers in Sussex, in D. Rudling (ed.) *The Archaeology of Sussex to AD 2000*, 29–38. Brighton: University of Sussex.

Jacobi, R. M. 1976. Britain inside and outside Mesolithic Europe, *Proceedings of the Prehistoric Society* **42**, 67–84.

— —1978. The Mesolithic in Sussex, in P. Drewett (ed.), *Archaeology in Sussex to AD 1500*, Council for British Archaeology Research Report **29**, 15–22.
— —1979. Early Flandrian hunters in the south-west, *Proceedings of the Devon Archaeological Society* **37**, 48–93.
— —1980. The Early Holocene settlement of Wales, in J. A. Taylor (ed.), *Culture and Environment in Prehistoric Wales*, British Archaeological Reports (Brit. Ser.) **76**, 131–206.
Jacobi, R. M. and **Tebbutt, C. F.** 1981. A late Mesolithic rock-shelter at High Hurstwood, Sussex, *SAC* **119**, 1–36.
Jacobi, R. M. and **Higham, T.** 2011. The Later Upper Palaeolithic Recolonisation of Britain: New Results from AMS Radiocarbon Dating, in N. Ashton, S. Lewis and C. Stringer (eds), *The Ancient Human Occupation of Britain*, Developments in Quaternary Science **14,** 223–247. Amsterdam: Elsevier.
Jones, P. A. 2013. A *Mesolithic 'Persistent Place' at North Park Farm, Bletchingley, Surrey*. Monograph **8**, SpoilHeap Publications.
Marshall, P., Bayliss, A., Bronk Ramsey, C., Gook, G., Toms, P, and **Bailey, R.** 2013. *Scientific Dating*, in P. A. Jones 2013, 100–105.
Pailler, Y. and **Dupont, C.,** with **Leroy, A. and Sparfel, Y.** 2007. Functional analysis of the bevelled pebbles of the Mesolithic at the end of the Neolithic in the West of France, Great Britain and Ireland, *Bulletin de la Société Préhistorique Française* **104.1**, 31–54.
Pettitt, P and **White, M.** 2012. *The British Palaeolithic: human societies at the edge of the Pleistocene world*. Routledge: London and New York.
Reynier, M. 2002. Kettlebury 103: a Mesolithic 'Horsham' type stone assemblage from Hankley Common, Elstead, *Surrey Archaeological Collections* **89**, 211–231.
— —2005. *Early Mesolithic Britain: origins, development and directions*, British Archaeological Reports (Brit. Ser.) **393**. Oxford: Archaeopress.
Saville A. 1981a. Honey Hill, Elkington: a Northamptonshire Mesolithic site, *Northamptonshire Archaeology* **16**, 1–13.
— —1981b. Mesolithic industries in central England: an exploratory investigation using microlith typology, *Archaeological Journal* **138**, 49–71.
— —2008. The beginning of the later Mesolithic in Scotland, in Z. Sulgostowska, and A. J. Tomaszewski (eds), *Man-Millennia-Environment. Studies in Honour of Romuald Schild*, 207–213. Warsaw: Institute of Archaeology and Ethnology, Polish Academy of Sciences.
Souffi, B. 2008. 'Le Mésolithique de Haute-Normandie: taphonomie et interprétation chronoculturelle', in J-P. Fagnart, A. Thevenin, T. Ducrocq, B. Souffi, and P. Coudret (eds), Le début du Mésolithique en Europe du Nord-Ouest*, Société Préhistoriques Française Mémoire **XLV**,* 135–151.
Sturt, **F., Garrow, D.,** and **Bradley, S.** 2013. New models of north-west European Holocene palaeogeography and inundation, *Journal of Archaeological Science* **40**, 3963-3976.
Waddington, C. 2007. *Mesolithic Settlement in the North Sea Basin: a case study from Howick, north-east England*. Oxford: Oxbow Books.
Waddington, C., Ballin, T. and **Engl, R.** 2017. Missing the point: a response to Conneller et al. (2016) and the mis-characterisation of narrow blade technology in Britain, *Mesolithic Miscellany* **25.1**, 26–32.
Woodcock, A. G. 1973. The Nature of the Horsham Industry and its Place within the British Mesolithic, *Chichester Museum Occasional Papers* **1.**