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Abstract:

We describe a tanged point and a blade technology from Rubha Port an t-Seilich, Isle of Islay, Scotland that provides further support to a Late Pleistocene or Early Holocene presence in Scotland prior to the establishment of the narrow blade Mesolithic industry. The existing evidence for a Late Pleistocene or early Holocene presence comes from isolated finds of tanged points (Tiree, Shieldig, Brodgar), undated assemblages from disturbed contexts that are most likely Late Pleistocene in date (Howburn, Kilmefort Cave), and undated assemblages containing broad blade microliths (*e.g.*, Glenbatrick, Morton). This article provides a summary of recent excavations and the stratigraphy at Rubha Port an t-Seilich, and a detailed analysis the lithic blade blank production at the site, which is, we believe, the first application of a chaîne opératoire based approach to a Scottish assemblage. The study includes comparisons with contemporary assemblages from north-western Europe. The significance of the Rubha Port an t-Seilich finds is threefold: (1) the relative large size of the assemblage that allows a technological analysis; (2) the finds partially derive from a stratified context below a narrow blade assemblage, associated with radiocarbon dates 9301-7750 cal. BP; and (3) further excavation can increase the sample size and potentially expose an in situ Late Pleistocene or early Holocene cultural horizon.

Keywords: Mesolithic; Ahrensburgian; lithic technology; *chaîne opératoire*; blade production; western Scotland

1. Introduction

Rubha Port an t-Seilich (henceforth RPAS) is located on the east coast of the Isle of Islay, western Scotland (NR 43035 67449; 55°49′53.92″N, 006°06′18.30″W) (Figure 1). As reported in Mithen *et al*. (2015) this is a rare instance of a stratified Mesolithic site with faunal preservation. A trial trench in 2013 recovered two chipped stone technologies. That coming from the upper most horizon, principally Contexts 101 and 110 on Figure 2, had attributes consistent with the Scottish Mesolithic, referred to as the narrow blade industry and equivalent to the later Mesolithic in England (Saville 2004). This was associated with radiocarbon dates between 9310-7750 cal. BP (Mithen *et al.* 2015) (Table 1), although a

 DOI: https://doi.org/10.2218/jls.2892

Published by the School of History, Classics and Archaeology, University of Edinburgh
ISSN: 2055-0472. URL: http://journals.ed.ac.uk/lithicstudies/

comprehensive dating of the upper horizon has yet to be completed. The earliest known date for the narrow blade industry in Britain is from Cramond, eastern Scotland at c. 10,300 cal. BP (Ashmore 2004; Waddington 2015). Conneller *et al*'s (2016) claim that this is a broad blade Mesolithic site, as found during the earlier Mesolithic in England, having been refuted by Waddington *et al.* 2017. The appearance of narrow blades industry is interpreted by Waddington (2015) as a secondary colonisation of Britain following the inundation of Doggerland. The narrow blade assemblage from Rubha Port an t-Seilich was notable for a high frequency of microliths as compared to those from contemporaneous sites within the region.

The technology coming from a lower horizon, Context 111, lacked such Mesolithic attributes. There was only a small exposure of this context within the trench, providing an assemblage of 65 artefacts. While these had attributes more frequently associated with Lateglacial technology, culturally diagnostic artefacts were lacking and the assemblage was too small to draw definitive conclusions on a typological basis. Tephra from immediately below Context 111 has geochemical characteristics compatible with a Katla-type tephra, with the possibility of it being either the AF555 tephra (11.58-11.34K BP), Vedde Ash (12.24-12.00K BP) or the Dimna Ash (15.6-15.1K BP). We favour the Vedde Ash because of its presence elsewhere in Scotland, placing the artefacts from Context 111 immediately after the Younger Dryas - but this attribution also remains provisional (Mithen *et al*. 2015). The potential discovery of activity at RPAS prior to the establishment of the narrow blade industry of the Scottish Mesolithic is of considerable significance. Current evidence for such activity within Scotland is persuasive but limited in value because of the absence of absolute dating and contextual information: the assemblage from Howburn, South Lanarkshire, is attributed to the Hamburgian c. 14,500 BP (Ballin *et al*. 2010), but coming from within plough soil it lacks absolute dating and associated material. An assemblage from Kilmefort Cave, Argyll, has also been attributed to the Upper Palaeolithic (Saville & Ballin 2009), but this also lacks any contextual and dating information, as is the case for several artefacts from Nethermills, Aberdeenshire, that exhibit attributes of the Late Upper Palaeolithic (Ballin & Wickham-Jones 2017). The proposed Ahrensburgian points from Tiree and Shieldig (Ballin & Saville 2003) are un-provenanced finds. Ballin *et al.* (2018: 109-110) list further sporadic finds and undated assemblages that might be Late Pleistocene in date on the basis of their technological characteristics. With regard to the Early Holocene, assemblages with broad blade microliths (isoscoles triangles, obliquely blunted points) similar to those found in the English Early Mesolithic, such as at Star Carr, have been recovered from Morton, Glenbatrick and An Corran (Coles 1971; Mercer 1974; Saville *et al.* 2012). These also remain undated and highly scarce in comparison to the abundance of narrow blade assemblages with small, geometric microliths. In contrast to these important but rather frustrating discoveries, RPAS provides the opportunity for recovering an assemblage of pre- narrow blade artefacts from a stratified context, and hence with the possibility for absolute dating and the recovery of associated materials.

Following the 2013 discovery, a search was made through the artefacts collected from the initial test-pitting at RPAS in 2010 that had not been formally catalogued. This identified a point coming from the base of a test-pit immediately adjacent to the 2013 trial trench that has the attributes of a small tanged point of Ahrensburgian type (Figure 1) (Rust 1943; Taute 1968).

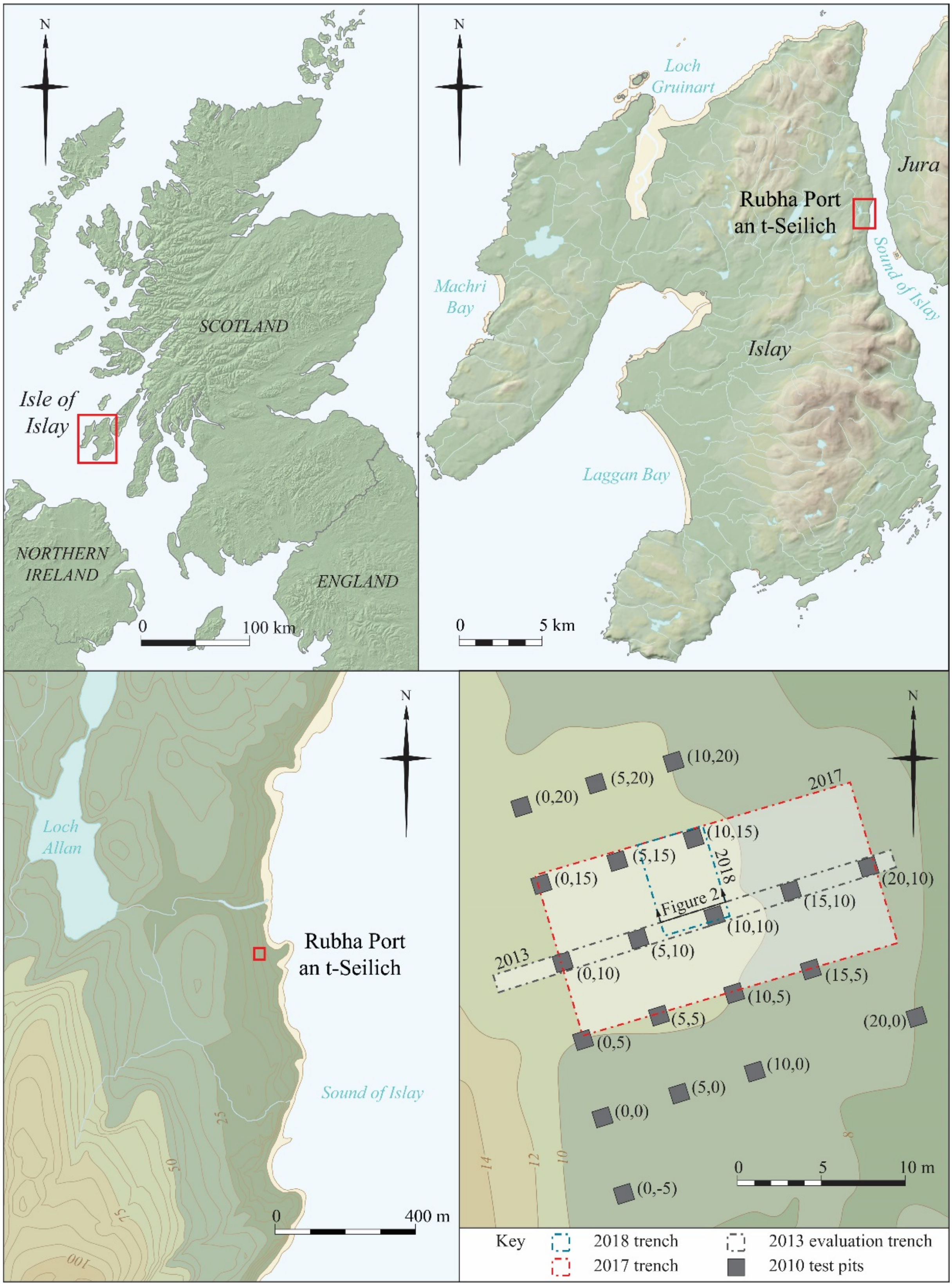

Figure 1. Location map of RPAS, showing the trial trench excavation of 2013, and location of 2010 test-pits, 2013 and 2017 trenches. Contains Ordnance Survey data and database rights 2019 Ordnance Survey (100025252). (Jamieson 2019).

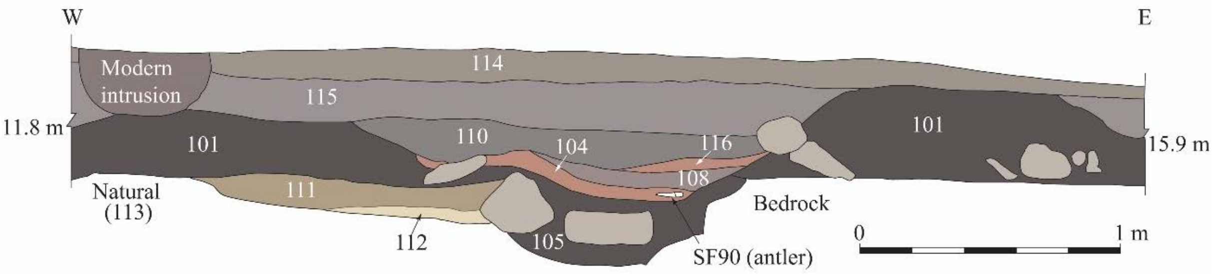

Figure 2. Stratigraphy of RPAS, showing a Mesolithic fireplace constructed between outcrops of bedrock. Content 114 is the topsoil below surface vegetation, which continues into Context 115 that contains disturbed Mesolithic artefacts or narrow blade tradition that we assign to technology Concept 2. Contexts 101 is an *in situ* Mesolithic occupation horizon that contains dense quantities of chipped stone artefacts of narrow blade affinity, that we designate as Concept 2, coarse stone tools, charred hazelnut shell, charcoal and fragmented bone. Contexts 110, 104, 116, 108 and 105 are horizons within a Mesolithic fireplace Context 111 contained a chipped stone assemblage with we designate as Concept 1 and attribute to the Ahensburgian. Context 112 is the sterile horizon, a glacial till.

Table 1. Steps in the chaîne opératoire represented in RPAS Context 111, excavated 2013, and Contexts 115 and 114 from the 2017 excavation. Method based on Eriksen (2000), Schild (1980), and Sørensen (2006b; 2013).

Step	Part of production process	Artefact category present	Context 111 (2013)	Context 115 (2017)	Context 114 (2017)	Total assemblage
1	Primary core preparation	Large cortex flakes	X	X	X	X
		Prepared and discarded fragments and blocks	-	-	X	X
		Prepared, unexploited cores (pre-forms)	-	X	X	X
2	Secondary core preparation	Diverse cortex flakes	X	X	X	X
		Core preparation waste	X	X	X	X
		Trimming flakes	-	X	X	X
3a	Primary core exploitation	Crested blades with cortex	-	X	X	X
		Blades with cortex	X	X	X	X
3b	Secondary core exploitation	Exploited or exhausted blade cores	X	X	X	X
		Core fragments	-	X	X	X
		Platform flakes and tablets	-	X	X	X
		Crested blades without cortex	-	X	X	X
		Blades without cortex and with less than 50 % dorsal traces of core preparation	X	X	X	X
4	Tools and tool production waste	Curated tools	X	X	X	X
		Microburins	-	X	X	X
		Burin spalls	-	-	-	-
-	Non-diagnostic waste	Undetermined flakes and fragments	X	X	X	X
		Small preparation flakes	X	X	X	X

In 2017, we opened a 10 m by 15 m trench at RPAS (Figures 1 and 3). During that season of excavation, we were able to remove Contexts 114 and 115 from the southwestern and central parts of the trench exposing the stratigraphy illustrated in Figure 2 as defined during the 2013 evaluation: Context 114 is the topsoil immediately below surface vegetation and Context 115 the underlying sub-soil. This contains Mesolithic artefacts but these are likely to have been disturbed and redistributed. Context 115 is above undisturbed Mesolithic deposits (Contexts 101, 110). In the north-eastern part of the trench, however, the stratigraphy had largely been lost by erosion and re-deposition, suggesting the assemblage from this area is derived from the complete sequence of cultural deposits at RPAS as identified in 2013, combing artefacts from Context 111 with those from 101,110, 115 and 114.

Figure 3. 2017 excavation at RPAS

The 2017 excavation recovered an assemblage of 3767 chipped stone artefacts of flint. A small worked-quartz assemblage was also present, that will be the subject of a future report. Here, we provide an analysis of the chipped flint assemblage, comparing it with that recovered from Context 111 in 2013.

2. The small tanged point

A small tanged point was identified when re-inspecting the artefacts recovered from test-pits excavated at RPAS in 2010 (Figure 4). This came from the basal deposits in test-pit (10, 10, Figure 1), between 0.50 and 0.75 m below the surface. This test-pit was located immediately adjacent to the 2013 test-trench (Figure 1). We now believe this test-pit has penetrated deposits equivalent to, or potentially a continuation of, Context 111.

The tanged point is made from a straight irregular blade, and has concave abrupt direct retouch on each side of the base forming a shouldered tang. The tip is placed in the distal blade end with an oblique, slightly concave, retouch on one lateral side. No trace of microburin technique is visible. The surface of the point has been modified, perhaps by leaching from prolonged contact with seawater or by some other means of patinaton. It is also abraded, possibly from being water-rolled. The unretouched edge displays some edge-damage, which we interpret as coming from post-depositional movement.

Figure 4. The small tanged point from 2010 test-pit (10,10) at RPAS. Largest dimensions are length: 31.9 mm, width: 14.5 mm, thickness: 3.7 mm, weight: 1.2g, noting that these are of an abraded artefact (scale bar: cm and mm)

The point fits well within the Ahrensburgian tanged point type as described by Taute (1968) as well as numerous later authors. This projectile type characterises Younger Dryas assemblages from Northwest Europe (Ahrensburg group), as well as being frequently present in many Preboreal assemblages from West-Sweden and Norway (Early Mesolithic). The occurrence in the lower layer at the RPAS site points toward an affinity with either the Ahrensburg group or the Scandinavian Early Mesolithic.

3. Technological analysis

Working within a technological approach based on the *chaîne opératoire* concept as a methodological basis, we apply a *dynamic-technological classification* and reading of the complete assemblage, combined with a detailed attribute analysis of a sample of 1929 flint artefacts (Berg-Hansen 2017; 2018; Damlien 2015; Eriksen 2000; Inizan *et al*. 1999; Schild 1980; Sørensen 2006a; 2006b; 2013). This allows a description of the concepts, methods and techniques for production of tool blanks and tools, along with raw-material procurement strategies, enabling a comparison with results from similar studies of North European assemblages, which has been notably lacking in Scottish Mesolithic studies.

A complete *chaîne opératoire* comprising core preparation, production and use of blades and tools was evident from each of the three Contexts: 111, 114 and 115. Each contained waste from the primary and secondary preparation of cores, blades and flakes from all stages of production, and a variety of curated tools, many with macroscopic traces of use (Table 1).

3.1 Raw materials

Small rounded or irregular (<10 cm largest dimension) nodules of high-quality flint had been the principal raw material, probably of local origin coming from the west coast of Islay where they are primarily located in beach deposits today (Marshall 2000a; 2000b). Such sources are c. 30 km from RPAS, and may explain the evident exhaustive and non-wasteful exploitation of the flint raw materials, with heavily reduced cores. Context 111 has relatively large artefacts that exhibit a relatively low frequency of cortex, suggesting that larger nodules of flint had been utilised. There is no evidence for the testing of flint nodules or import of finished tools, although the import of pre-prepared cores in Context 111 is possible.

4. Two concepts for blade production

Two distinct concepts for blade production have been identified, these designated as RPAS Concept 1 and RPAS Concept 2, as illustrated in Figure 5 (cores) and Figure 6 (blades). The technological analysis distinguished standardised production of blades from platform cores, while failing to identify systematic flake production, including no evidence for bipolar percussion on anvil as often found in the Scottish Mesolithic (Mithen 2000).

4.1. RPAS Concept 1

Concept 1 is represented by artefacts coming from Context 111 and Context 114 in the eastern part 2017 trench, where a mixing of contexts is evident. The one core coming from Context 111 and 14 cores from Context 114 exhibit one-sided exploitation of the flint nodules with one or two opposed platforms (Figure 5). The cores are elongate, mainly exploiting the longest profiles of the natural volumes with narrow and curved core faces that facilitate the production of relatively long and narrow blades; 73 % of the cores display a narrow core face in the last stage of production. Facial scaring on cores with two opposed platforms indicate successive production from one platform at a time. Platforms are mainly smooth (53%) indicating platform rejuvenation by platform tablets, however a significant portion (33%) show platform preparation by the removal of large flakes. In addition, one core shows some faceting of the platform surface at the edge towards the core face. The core platform edges were prepared by trimming (20%), abrasion (c. 53%), or in combination (20%). Four cores have a triangular cross-section and a vertical ridged back, of which a couple show cresting. The analysis demonstrates that the cores were prepared to maintain their general shape and architecture throughout the production.

The analysis of technological attributes from the 21 blades (9 complete and 12 fragments) from Context 111 show that they can be characterised as irregular, of medium length and width, relatively thin, straight or with an even longitudinal curvature, not twisted, and c. 33% pointed and 40% straight termination (Figure 6, Tables 2 and 3). The blades have a sharp interior angle (<90 degrees) which combined with the overall irregular shape, demonstrates blade production by direct percussion technique. Further, the blades display a relatively high degree of ventral fissures and detached bulbs (both 33%), missing lips (50%) and no missing bulb. Although this is a small sample of blades, this evidence suggests the use of medium hard hammer (soft stone) or soft organic hammer percussion technique (Damlien 2015; Inizan *et al.* 1999; Madsen 1992; Pelegrin 2000; Sørensen 2013).

Figure 5. Concept 1 and Concept 2 cores from RPAS (scale bar: cm and mm).

Figure 6. Concept 1 and Concept 2 blades from RPAS (scale bar: cm and mm).

Table 2. Descriptive statistics of essential blade attributes from RPAS Context (111) and Contexts (115) and (114) from 2017 excavation. The sample comprises complete blades and blade fragments (n=587).

Blade attributes	Context 111 (2013)		Context 115 (2017)		Context 114 (2017)		Total	
Interior platform angle	**Angle**	**n = 6**	**Angle**	**n = 165**	**Angle**	**n = 143**	**Angle**	
Mean degrees	83.7		81.7		79.7		80.8	
Median degrees	85.0		84.0		80.0		81.0	
Bulb morphology (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
No	0	0	15	7	6	3	21	5
Yes	13	100	181	85	148	83	342	84
Double	0	0	18	8	24	13	42	10
Lip formation (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
No	5	50	59	30	67	42	131	36
Yes	5	50	135	70	94	58	234	64
Conus formation (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
None	4	33	90	40	69	39	163	39
Ring crack on butt	0	0	1	0,4	0	0	1	0
Ventral proximal fissures	4	33	96	43	64	36	164	40
Detached bulb	4	33	38	17	44	25	86	21
Butt morphology (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Large	0	0	29	14	22	13	51	13
Thin oval	4	33	39	18	47	27	90	23
Small and thick	0	0	31	14	11	6	42	11
Small	7	58	78	36	79	45	164	41
Punctiform	0	0	20	9	2	1	22	6
Broken	1	8	17	8	13	7	31	8
Butt preparation (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Smooth	6	75	151	84	142	90	299	86
Two facets	1	13	9	5	3	2	13	4
Multi-facetted	0	0	3	2	0	0	3	1
Concave	0	0	0	0	0	0	0	0
Cortex	0	0	1	1	0	0	1	0,3
Broken	1	13	15	8	13	8	29	8
Edge faceting	0	0	1	1	0	0	1	0,3
Blade preparation (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Cortex	0	0	6	3	1	1	7	2
Unprepared	0	0	10	5	4	2	14	3
Trimming	0	0	49	22	23	13	72	18
Trimming and abrasion	4	36	50	23	58	33	112	27
Abrasion	6	55	73	33	59	33	138	34
Isolated butt by abrasion	1	9	33	15	33	19	67	16
Regularity (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Irregular	19	90	200	68	179	80	398	74
Regular	2	10	79	27	39	15	120	22
Very regular	0	0	15	5	6	3	21	4
Curvature (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Straight	13	68	158	63	128	61	299	63
Distal	1	5	25	10	34	16	60	13
Even	4	21	59	24	42	20	105	22
Proximal	1	5	7	3	5	2	13	3
Twisting (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
No	15	83	199	79	157	77	371	78
Yes	3	17	54	21	48	23	105	22

Blade attributes	Context 111 (2013)		Context 115 (2017)		Context 114 (2017)		Total	
Termination (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Pointed	5	33	45	27	51	35	101	31
Straight	6	40	70	42	55	37	131	40
Hinged	3	20	33	20	28	19	64	20
Feathered	0	0	1	1	0	0	1	0,3
Plunged	1	7	15	9	13	9	29	9
Broken	0	0	2	1	0	0	2	1
Fragmentation (%)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Complete	9	43	113	35	107	43	229	39
Short distal fragment	1	5	23	7	13	5	37	6
Long proximal fragment	2	10	48	15	38	15	88	15
Short proximal fragment	1	5	62	19	37	15	100	17
Long distal fragment	4	19	32	11	29	12	65	11
Medial	4	19	35	11	23	9	62	11
Languette break (prox.)	0	0	6	2	0	0	6	1

Table 3. Size distribution of blades. All measurements are maximum size. Numbers are blade sizes in millimetres.

	Context 111 (2013)	Layer 115 (2017)	Context 114 (2017)	Sum all
Length complete blades	(n=9)	(n=113)	(n=107)	(n=228)
Mean	41.0	27.0	28.6	28.3
Median	45.2	26.4	26.8	26.8
Max	66.9	47.0	68.9	68.9
Min	16.0	8.3	14.2	8.3
Width complete blades	(n=9)	(n=113)	(n=107)	(n=229)
Mean	17.2	12.4	13.4	13.1
Median	17.3	12.4	13.1	12.8
Max	24.9	25.9	28.2	28.2
Min	8.6	5.0	6.4	5.0
Thickness complete blades	(n=9)	(n=113)	(n=107)	(n=229)
Mean	4.6	4.7	4.6	4.6
Median	4.5	4.1	4.5	4.4
Max	8.1	13.1	14.2	14.2
Min	2.0	1.2	1.9	1.2
Length blade fragments	(n=12)	(n=205)	(n=140)	(n=357)
Mean	27.2	18.1	22.9	20.3
Median	20.0	17.4	21.3	18.8
Max	64.5	45.4	56.7	64.5
Min	11.8	1.8	4.6	1.8
Width blade fragments	(n=12)	(n=204)	(n=140)	(n=356)
Mean	14.9	12.1	13.7	12.8
Median	12.8	12.0	13.5	12.5
Max	35.7	26.0	26.9	35.7
Min	7.5	4.0	5.2	4.0
Thickness blade fragments	(n=12)	(n=205)	(n=140)	(n=357)
Mean	3.3	3.9	4.4	4.1
Median	2.5	3.7	4.1	3.8
Max	8.1	15.1	10.8	15.1
Min	1.7	0.8	1.3	0.8

4.2. RPAS Concept 2

Concept 2 is represented by artefacts from Contexts 115 and 114. The 70 cores representing a systematic blade production from these contexts exhibit one-sided exploitation mainly from single platforms. In contrast to Concept 1, the majority of cores show short broad volumes and wide core faces (67 %) with the knapping direction across the longitudinal direction of the core, exploiting the broad profiles of the natural volumes. The cores mostly have short, and somewhat curved or relatively flat faces, although narrow curved faces also are present (Figure 5). Several pre-cores and prepared nodules are present. These confirm the choice of volumes and the placing of the face of the core on the broad side of the raw material. Core platforms are smooth (70%) or prepared by large or medium sized thin flakes covering parts of the platform surface (28%). On several small cores, there is no evidence of platform rejuvenation during production. In such cases, a single blow removed one end of the nodule, with the negative flake scar providing the platform. The thick platform flake and tablets were themselves sometimes used as a core, as found in other Mesolithic assemblages from western Scotland (Finlay *et al.* 2000: 556). The core platform edges were generally prepared by abrasion (c. 60%), often in combination with trimming (c. 22%). Core faces generally show hinges and breaks, possibly caused by their relative flatness, being the probable reason for rejection.

The primary preparation of the cores within Concept 2 consists of removing the platform flake or tablet, followed by the removal of one or two parallel (cortical) flakes to prepare the core face by creating a ridge for the initial blade. Pre-cores as well as numerous elongated cortex flakes in the assemblage confirm this simple method of primary preparation. This preparation strategy is probably a response to the exploitation of raw materials of small size and rounded shapes. Secondary preparation and rejuvenation of cores was often undertaken by removing large, broad flakes that detached the complete or parts of the core face, and sometimes carried out by detaching crested blades.

The blade concept evident in the Contexts 115 and 114 assemblages is characterized by short, relatively thick and irregular blades, not twisted, mainly straight although 10% and16% show distal curvature, and with a 27% and 35% pointed and 42% and 37% straight termination respectively (Tables 2 and 3). Compared to the blades from Context 111, those from Contexts 115 and 114 are shorter, narrower and relatively thicker, while other attributes are similar. The technological attributes from the 566 blades (220 complete and 346 fragments) from these contexts exhibit sharp interior angles (<90 degrees) and mainly irregular shapes, signifying the use of a direct percussion technique. Further, these blades suggest the use of medium hard (soft stone) hammers: a high frequency of missing lip (30-42%), and presence of ventral fissures (36-43%) as well as detached bulb (17-25%), and low frequencies of regular blades (15-27%) and missing bulb (3-7%) (Damlien 2015).

5. Comparisons

The RPAS Concept 1 technology from Context 111 and Context 114 has similarities with the methods for blade production in the Final Palaeolithic (Ahrensburgian) and the Early Mesolithic in Northwest Europe (Berg-Hansen 2017; 2018; 2019; Perdaen *et al*. 2008; Sørensen 2006b; 2008). This suggests a technological affinity with this area, which is supported by the presence of a small tanged point although we have yet to demonstrate stratigraphic continuity between the basal deposits in Test pit (10,10) and Context 111. While the main blade production concept is common to the Final Palaeolithic and Early Mesolithic, a chronological differentiation in the core preparation strategies used between these periods has been identified (Berg-Hansen 2017; 2018). Unfortunately, the small number of cores attributed to RPAS Concept 1 and the limited evidence about their preparation, has prevented making this distinction for the RPAS assemblage, but the possibility exists following further excavation to increase the sample size. Further, the assemblage seems to show some similarities with the Star Carr assemblage as described by Conneller *et al.* (2018; see also Pitts & Jacobi 1979; Reyner 2005; Saville 2004).

The blade production in RPAS Concept 2 technology differs in its basic strategies from those of RPAS Concept 1, as well as those used within the Final Palaeolithic and Early Mesolithic of northwest Europe, and the Middle and Late Mesolithic of northwest continental Europe (Berg-Hansen 2017; 2018; Damlien 2016; Damlien *et al.* 2018; David & Sørensen 2016; Sørensen 2006b; Sørensen *et al.* 2013). However, the technology of RPAS Concept 2 is consistent with the narrow blade industry from Scottish and the English Late Mesolithic (Conneller *et al.* 2016; Mithen 2000; Mithen *et al.* 2015).

6. Conclusions

By drawing on the 2017 excavated material, we were able to supplement the 65 artefacts recovered from Context 111 in 2013 with further artefacts from the 2017 excavation that exhibit the same technology and which we believe derive from the same context. We designate this technology as RPAS Concept 1, finding significant similarities to that from the Final Palaeolithic and Early Mesolithic from Northwest Europe. It has no known existing parallel in western Scotland. The designation of the context (111) assemblage to the Final Palaeolithic or Early Mesolithic is supported by the recovery of a complete tanged point with close affinities to those attributed to the Ahrensburgian group and the Early Mesolithic of Sweden and Norway. This came from the base of a test-pit that we now believe is stratigraphically consistent with Context 111, which will be tested by future excavation. In light of these results and discovery, further excavation at RPAS is warranted to realise the opportunity of recovering further material and potentially an *in situ* horizon of pre-Scottish narrow blade Mesolithic activity.

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