

# **A late Mesolithic lithic scatter from Corralanna, Co. Westmeath**

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## **Abstract**

This report discusses a surface collection of late Mesolithic date from Corralanna, Co. Westmeath. The site, which was discovered after peat extraction in 1999, is characterised by a lithic assemblage comprised almost exclusively of chert, two axes, some coarse stone tools and a small range of organic finds including uncarbonised hazelnut shells. This discussion reviews the material from Corralanna, with an especial emphasis on the character of the chipped stone assemblage, placing the site in its appropriate landscape and archaeological contexts. Three radiocarbon dates from hazelnut shells were obtained. These are not demonstrably associated with the lithics, but the dates are in keeping with late Mesolithic stone tool technology. Although the assemblage is derived from a surface collection, and suffers from some of the problems associated with this, the site at Corralanna offers a significant contribution to our understanding of Mesolithic settlement in the midlands, an area rich in Mesolithic archaeology, but one that has been somewhat neglected until recently. The creation of this report was facilitated by a Heritage Council Unpublished Excavations Grant.

## **Introduction**

This paper discusses a late Mesolithic stone tool assemblage and radiocarbon dates from Corralanna, Co. Westmeath (Figure 1). The discovery and initial investigation of the Corralanna lithic scatter has been summarised previously (Stanley 2000a; Moore *et al.* 2003), an expanded account is presented below. A background to the Mesolithic archaeology of the region is presented as an introduction, before site discovery and archaeological interventions are characterised. Reviews of the site location, the stone tool assemblage, organic tools, and three radiocarbon dates associated with the collection follow. These allow for a concluding discussion assessing the place of the Corralanna site within its appropriate archaeological landscape.

In the late 1960s, a drainage scheme lowered the water level of the River Inny and adjacent lakes of the Irish midlands, exposing late Mesolithic artefacts and possible wood and stone structures in counties Cavan, Longford and Westmeath. Lithic scatters, stone axes and other stray finds have been identified on the banks of

the River Inny, especially where it enters Loughs Kinale, Derravaragh and Iron (Mitchell 1970; O'Sullivan 1998, 48–52), while undisturbed deposits were excavated at Lough Derravaragh (Mitchell 1972). However, until recently these areas have seen little detailed research; and the extant records of these early discoveries are difficult to integrate into wider narratives.

This is frustrating because the Mesolithic of the midlands has always had the potential to significantly contribute to understandings of the hunter-gatherer settlement in Ireland. Notwithstanding the presence of enigmatic 'platforms' at so many of the midland sites (Fredengren 2002; Little 2005; O'Sullivan 1998), these sites can contribute to very long-standing debates. For example, most models of Mesolithic settlement had assumed that marine resources were vital to hunter-gatherer settlement in an island with an impoverished terrestrial ecology (e.g. Woodman 1978); where the midland sites should be linked to the coast in regular patterns of movement. In contrast, isotopic work on late Mesolithic human bone in Ireland (Woodman *et al.* 1999; Woodman 2004a) suggests that some populations did not use marine resources. We might therefore either expect inland sites to be completely separated from coastal communities, or, more likely linked to the coast through social networks. Detailed analyses of the Mesolithic sites of the midlands, and especially their stone tool assemblages, could shed light on these questions; as well as key concerns with site function and the connections between places.

The Mesolithic of the midlands is also of considerable importance because, in contrast to the flint that has dominated the study of the Mesolithic in Ireland, it is characterised by the predominant use of a high-quality chert. Despite the significant contribution of the Ferriter's Cove excavations (Woodman *et al.* 1999) in highlighting the diversity of raw material use in the Mesolithic, and by extension the Stone Ages more generally, the absence of research and publication on non-flint sites in Ireland is very problematic. Chert, for example, is used widely in Ireland throughout prehistory, but despite some exceptions, such as Neolithic assemblages in North Mayo and Sligo (for example, Bengtsson & Bergh 1984; Ó Nualláin 1998), few detailed analyses of chert industries exist in the published literature, especially analyses focusing on the structuring of technology (for an important exception, see Driscoll 2006). In particular, the Mesolithic of the midlands is closely associated with the exploitation of chert, abundant in this region of Carboniferous limestone (see, for example, Mitchell 1970; 1972; Woodman 1978). However, in a region characterised by such abundance, even our definitions of chert and understandings of its variability require development. The Corralanna assemblage is based on a distinctive 'festooned chert' (see below for discussion) which is also present in smaller quantities on

other sites in the region and beyond; suggesting a material of some importance to understanding Mesolithic settlement in the region. Despite this, to our knowledge the discussion in this paper is the first detailed publication of a midlands Mesolithic chert assemblage since Mitchell, excepting Woodman's 1978 synthesis.

Mesolithic research in the midlands is booming at present. Christina Fredengren's excavations at Derragh, Lough Kinale, Co. Longford, have uncovered a remarkable, complex, lake-edge platform, with a substantial lithic assemblage, again dominated by chert (Fredengren 2004; 2006). Aimée Little has been undertaking Doctoral research at the UCD School of Archaeology (Little in prep.), examining the landscape context of Mesolithic finds in the region, with an especial emphasis on Lough Derravaragh. In this active research context the surface collection from Corralanna has much to contribute.

### **Background to Discovery**

In early April 2000, *Dúchas* The Heritage Service received a report from Mr Michael Rainsford of Street, Co. Westmeath, who had identified two stone axes and a number of lithics from a bog in Corralanna townland during the summer of 1999. Mr Rainsford was referred to the Irish Archaeological Wetland Unit (IAWU), formerly based in the Department of Archaeology, University College Dublin, who conducted a non-invasive investigation of the site on the 20th April 2000. The purpose of the IAWU inspection was to secure the artefacts, identify any further material, assess the archaeological potential of the site and report their findings. On inspection, the artefacts proved to be a diagnostic late Mesolithic assemblage (Stanley 2000b).

A further visit was conducted by Archaeological Development Services Ltd (ADS Ltd), consultants to the landowner Bord na Móna (BnM) (O'Carroll 2000) and Michael Stanley has collected material from Corralanna on informal visits between 2003 and 2007. The site is now listed in the Sites and Monuments Record as WM002-035. The present paper analyses the material collected from Corralanna between 1999 and 2006 by all the parties outlined above, in addition to reporting on recent radiocarbon dating results.

### ***Context of find***

The find spot of the Corralanna lithic scatter is located between Lough Kinale and Lough Derravaragh in an area of predominantly industrial peatland north of the Coole–Lismacaffry road and west of the River Inny (NGR E238300 N273334; Figure 2). The site lies 1km to the west of the River Inny, approximately 5km north of

Lough Derravaragh and 8km south of Lough Kinale. The bog is one of a number of BnM-owned bogs in the area but the relevant portion, adjacent to an extensive area subject to industrial-scale milled peat extraction, was leased to a private operator who harvested and sold the peat as domestic fuel. The harvesting method entailed the excavation of peat from a face-bank using a mechanical excavator, this was then loaded into a tractor-drawn machine that macerated and extruded the peat as continuous strings of sods on to a spreading area. These were then turned, footed and removed for use once sufficiently dry. Archaeological material was strewn over the spreading surface and compacted into sods as a result of these extraction operations. The material is thought to have originated from below the waterline of a drain separating the face-bank from the spreading surface. As a result, the context from which it was disturbed was not readily visible.

### ***IAWU site investigation***

Investigations began by inspecting the material initially recovered by Mr Rainsford; this comprised one stone adze/axe, 82 pieces of struck chert, fragments of charred pinewood, and four sods with chert and hazelnut shells compressed within them. The second of the reported axes could not be examined during the visit. It is currently in the possession of Mr Rainsford's brother, who resides in Wales, and was not available for analysis in the present study.

The find spot was subsequently examined to identify *in situ* archaeological material and quantify the extent of the disturbance (Plate 1). Numerous pieces of chert, hammerstones, miscellaneous stones (some burnt), charred wood and hazelnut shells were immediately observed exposed on the field surface. Sodds stacked along the southern edge of the field were found to contain similar material (Plate 2). A non-invasive visual examination was conducted along the length of the peat face from which the material was thought to have originated and was extended to encompass the peat faces of the adjacent fields. There were no discernible features in any of the section faces. The area around the drain was unsafe, precluding a more detailed investigation but probing established that mineral soil was *c.* 1.5m below the field surface. Small lumps of up-cast shell marl were noted on the field surface suggesting the former presence of open water in the area. The surfaces of the adjacent fields to the north and south were also examined but no archaeological material was identified. It would appear that the source of the material could, with some certainty, be provenanced to the peat face immediately east of the field on which the material was strewn. The deposition of this material was a direct result of the extraction procedures and its distribution closely followed the areas used by the machinery.

The field surface was thoroughly examined by walking its entire length at *c.* 10m intervals, identifying two main zones of *ex situ* material. The first zone was *c.* 7m south-west of the peat face and consisted of occasional chert flakes and three discrete deposits of material (chert, hazelnut shells, burnt stone, charred wood and a possible hammerstone). These deposits were 0.1–3m from the drain edge and are likely to have fallen from the excavator bucket upon extraction. It can be assumed that the material in these deposits was closely associated prior to extraction. The second zone was *c.* 85m south-west of the peat face and *c.* 80m from the first zone. This zone coincided with the area over which the extracted peat was initially spread to begin drying thus the largest concentration of *ex situ* material was recorded here. This zone was *c.* 45m long and lines of stacked sods flanked its southern extent. In tandem with this examination a random selection of hazelnut shells, struck chert, hammerstones and miscellaneous stones were collected from the spreading surface and adjacent to the drain.

On being informed of the discovery BnM arranged for the management of the site to preclude damage to the remaining material and any undisturbed deposits. Cessation of peat extraction along the pertinent peat face was arranged and access to the spreading field was blocked. Additional non-intrusive work was undertaken by ADS Ltd in September 2000, entailing the systematic collection of the remaining exposed chert. The nature of any further work at the site has yet to be formulated.

### **Site Location**

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The site of Corralanna is today located in bog, and field observations by the IAWU identified mineral soil *c.* 1.5m beneath the present cut-away surface and the former presence of open water was evidenced by up-cast shell marl. Looking more closely at the landscape suggests that the site may have been strategically located in the Mesolithic. No detailed palaeographic or palaeoenvironmental work has taken place as part of the current project, but analysis of cartographic data suggests some possibilities. On Figures 2 and 3 dryland, as observed by the Geological Survey of Ireland (GSI) in the nineteenth century, is indicated in a dark grey shade and areas prone to seasonal flooding by light grey.

Even in the mid-nineteenth century, Corralanna was some 700m from dryland to the north-west, but this is likely to have been very different in the late Mesolithic. Topographically it seems likely that the spur of land to

the north-west may project to the south-east, as partially indicated by land divisions (Figures 2 and 3). This ridge, which is likely to be discontinuous, may in fact run as far as the Inny and beyond; as at the river it coincides with a notable pinching of the channel, a bridge and a ford. This feature of the river is likely to have been an important landmark at the time.

To the north of Corralanna is an extensive area of bog, and the GSI recorded at least two tributaries here, one substantial and featuring lakes: this area was assumedly much wetter in antiquity, and may have featured extensive open water. This may imply that Corralanna was located just off of a dryland ridge, in bog, to the south of an extensive area of wetlands. From the site, a substantial tributary immediately connected people to the Inny river system. An eel weir a little to the north on the Inny was recorded by the Ordnance Survey in the nineteenth century, indicating that the river was a suitable eel habitat in the recent past and hinting at the potential riverine resources that may have been available during the late Mesolithic.

## **Stone Tools**

This report describes the 282 stone artefacts recovered from Corralanna by the IAWU and ADS, with especial emphasis on the chipped stone technology<sup>1</sup>. It is important to note at this stage that the Corralanna assemblage is a surface collection, and is therefore likely biased in characteristic ways. The very limited quantity of small debris (with only 12 pieces being less than 20mm) on a site clearly characterised by the working of stone is symptomatic of this. Further likely consequences of collection bias include an overemphasis on regular artefacts, e.g. blades and flakes.

There is no means of associating the artefacts with any archaeological stratigraphy and therefore no way of knowing whether they relate to one or multiple phases of activity. This is a particular problem given the complex history of reoccupation of later Mesolithic midlands sites (see below); on an *a priori* basis it seems likely that the Corralanna assemblage is a conflation of different occupation phases. Nevertheless, the assemblage is broadly homogenous in character, and is dominated by characteristically ‘later Mesolithic’ elements—there is little strong evidence of any Neolithic component. Neolithic activity in the region is limited, especially in terms of the use of festooned chert (Little in prep.).

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<sup>1</sup> A further two artefacts collected from the surface recently are not included in these discussions, but are part of the archive deposited with the National Museum of Ireland.

### ***Raw materials***

A total of 282 pieces of stone were collected from Corralanna (Table 1). Of that total 270 (95.7%) were of festooned chert. Other materials were present in very small amounts, and only flint formed any part of the chipped stone assemblage. The others were an anvil, hammerstones, or possible hammerstones. The quartzites, quartz, shale and dolerite are all either available locally in the parent geology, or likely to be transported by glacial action. The flint is a medial blade fragment of good quality material, which is 42mm in surviving length, suggesting a comparatively large original blank. Material of this size and quality is very unlikely to have been available through glacially-derived sources. A beach pebble source on the east or northeast coast, or possibly a primary source in the northeast, is likely, and this piece seems to have been imported.

The assemblage is dominated by chert, and in particular by a distinctive form of chert informally known as ‘festoon chert’ or ‘festooned chert’. Originally recorded by Nevill (1958) as the ‘Festoon cherts of Lough Derravaragh’ these deposits, which are also known as the ‘Derravaragh cherts’, are ‘unfossiliferous dark grey thinly-bedded calcisiltites and wackestones with thin shales’ (Morris *et al.* 2003, 64), with chert occurring in ‘irregular layers’ and ‘great ovoid cake-like or helmet-shaped nodular masses’ which may be up to 5ft (c. 1.5m) in size (Neville 1958, 296–7). Festooned chert is visually distinctive: technically it is a partially silicified limestone with thin films of pure chert present, vividly described as resembling ‘a pile of soap suds’ (*ibid.* 297). As testament to its high visibility and prominence within the landscape, the presence of this particular band of festooned chert has been previously documented within discussions of the local quaternary of the Westmeath lake district (Drew 1997).

Festooned or Derravaragh chert *sensu stricto* is geographically highly restricted in its primary geological contexts, with the unit occurring in the Lough Owel Syncline, running from near Mullingar northeastwards to Castlepollard (Morris *et al.* 2003, 64) and forming a distinctive topographical feature including rocky precipiced sharp hills (Neville 1958). Chert, as noted above, is extensive in the Carboniferous midlands of Ireland, with geological sources frequently discussing ‘cherty limestones’ of varied character. It is difficult to assess if chert of festooned character appears more widely in primary geological deposits in the region—such appearances are certainly not recorded in the geological literature, but because of the variable character of chert in the region, and the comparative lack of interest in this material, it is impossible to exclude the possibility of smaller

deposits elsewhere. Certainly, the movement of blocks of chert and/or chert bearing limestone in glacial deposits is possible, but given the nature of the material it is difficult to envisage large sources being available in such secondary deposits. In the context of Corralanna, however, which is located so close to Lough Derravaragh, it is not necessary to seek more distant sources for the festooned chert, and a reliance on the Derravaragh cherts *sensu stricto* is assumed in this paper. In this context it is very important to note that not all prehistoric chert assemblages, either Mesolithic or from other periods, in this region rely so extensively on festooned chert, and our understandings of chert variability and sources of chert in the region as a whole are rather limited.

Recent fieldwork (O'Sullivan *et al.* 2007) has identified a possible quarry for festooned chert on the summit of Knockeyon, Lough Derravaragh. This site, located on top of a dominant hill, is important as, although chert is geologically abundant in the midlands, geological exposures in the region are rare (Nevill 1958, 287), which may have provided limited opportunities for prehistoric stone workers to gather large, high-quality cherts. Detailed fieldwork is required to assess the full range of exposures of the Derravaragh cherts, to differentiate between material from the outcrops and screes beneath them, and to consider the possible evidence for their prehistoric exploitation, but the identification of evidence of exploitation of exposures on Knockeyon provides one likely source for the festooned chert at Corralanna. Certainly, the size and quality of the chert visible at Knockeyon is in keeping with the later Mesolithic industries from Corralanna and other sites in the region.

### ***Condition***

Overall the assemblage is in fresh condition, although characteristic patterns of damage caused by machinery (see below) are very important. Seventeen burnt stone finds are present, and suggest there may have been a hearth in the vicinity. In total thirteen burnt pieces of chert and four non-chert burnt finds were recorded. It is interesting to note that of the burnt material, ten pieces were what could be considered manufacturing 'waste' (e.g. fragments and chunks) or broken (e.g. distal, proximal or medial parts of blades or flakes). It is possible that shattering and fragmentation occurred due to the deliberate deposition of refuse into hearths, which is not uncommon on Irish Mesolithic sites (e.g. Ryan 1980; Woodman *et al.* 1999).

One of the most unusual characteristics of the Corralanna assemblage is the nature of damage many of the artefacts have suffered. Nearly half (43.6%) of the 282 pieces recovered have evidence of scarring, flaking and



crushing. Some, at least, of this damage is clearly attributable to the objects being forced against a metal surface—most likely during the macerating and extruding process. A degree of size sorting of undamaged and damaged artefacts results from this: damaged chert artefacts (n=120) average  $56.4 \pm 25.9$ mm (length) x  $36.2 \pm 18.5$ mm (breadth) in maximum dimensions compared to  $38.9 \pm 17.2$  x  $26.3 \pm 12.3$ mm for undamaged (n=148). Undamaged artefacts are in exceptionally good condition. Interestingly there is a distinction between the artefacts collected by IAWU and ADS in terms of the presence of machine damage present (Table 2), with the IAWU artefacts much less frequently damaged. One possible explanation for this is that, as discussed above, the IAWU collection included the area where material had fallen from the bucket of the excavator, prior to extrusion. The ADS collection, in contrast, may have focused more on the spread of material associated with extrusion and maceration.

The form of damage associated with extrusion is very unusual, and if found in isolation there is a considerable danger that the damage might not be recognised. Larger objects can appear to have been retouched into very unusual forms (C00.3:009 on Figure 4); and can create artefacts that superficially appear to be scrapers (C00.3:025 on Figure 4). Given that the Irish later Mesolithic, especially in chert regions, has a tendency to produce unusual, large ‘core tools’ (Woodman 2005) there is some worth in outlining the character of this damage. On some pieces this takes the form of repeated, curving flake removals, up to 20mm in length, and, superficially, very similar to pressure-flaked retouch. This ‘retouch’ is associated with unusually low platform angles—often at greater than 90 degrees. Alongside flake removals grinding and abrasion are also common, and abrasion of the ‘platform’ edge of the flake removals is notable. The only way of understanding the formation of these flake removals is through pressure and rotation. Removals are present on multiple lateral edges of a small number of artefacts and the positioning of the damage can be explained by rotation of the artefact against a hard surface. This rotating damage can appear to be very similar to triple arête retouch. In some instances the presence of metal traces is very clearly visible. In almost all cases machine damage is easily distinguishable from other forms of edge damage, especially possible damage associated with use.

### ***Primary technology***

The assemblage at Corralanna clearly derives from an industry aiming at the production of large blades and flakes using direct hard-hammer percussion. From a technological perspective, therefore, it is broadly in keeping with what is known about Irish late Mesolithic stone-working traditions on different materials elsewhere (Andersen and Johnson 1993; Costa *et al.* 2005; Woodman 1978; Woodman and Anderson 1990). As noted

above, the assemblage contains a relatively small proportion of chunks and smaller chips, assumedly due to well-recognised biases associated with surface collections. The presence of twenty cores, a possible rejuvenation piece, as well as two hammerstones (quartz and sandstone) and two hammerstone fragments (quartz and quartzite) provide strong support for on-site reduction and working of material at Corralanna. A large sub-oval quartzite with pitting on both flat surfaces was also recovered; it is possible that this may have acted as an anvil during the course of various activities, but the absence of any evidence of bipolar techniques in the assemblage suggests that this pitting results from activities unrelated to stone-working tasks.

The assemblage from Corralanna contains a minimal number of primary pieces from the initial stages of the reduction of chert. Chert differs from flint in that there is no true 'cortical' surface but an exterior surface (exposed/weathered surface) is clearly visible (see e.g. C00.3:226, 270). It is therefore not possible to directly compare chert and flint in terms of reduction sequences, as the morphology of the parent material varies. Out of the 256 chert pieces that have reduction sequences recorded (excluding those <20mm, or obscured by burning) only 1.1% (n=3) were identified as primary, 39.5% (n=101) as secondary and 59.4% (n=152) as tertiary. Proportions of exterior surfaces clearly vary on different artefacts. Of eleven intact cores all have some exterior surface present whereas only 40% of complete blades (n=40) and 38.2% of complete flakes (n=68) do. This distinction is partially explained by core technology—whereby blocks of chert appear to have been worked towards an exterior surface: implying, assuming that these exterior surfaces are at the top and bottom of a seam of chert, that working is along the band, rather than across it. The distinction between flake/blade removals and cores in terms of exterior surfaces is important here, and must be considered in making comparisons between assemblages in the region.

The presence of 20 chert cores and core fragments allows detailed comment on core technologies. Cores carry evidence of both flake and blade production, with cores displaying blade (30%, n=6), flake (25%, n=5), and both flake and blade (20%, n=4) removals. A further five cores had indeterminate negative scars. This pattern, with a slight dominance of blade cores, contrasts a little with an overall dominance of flakes in the assemblage (111 flakes, 89 blades). At Corralanna there is a broad spectrum of core types, with uni-platform cores most common, and platforms predominantly simple flake surfaces. These cores are often characterised by flat reduction surfaces rather than any attempt to develop a conical or cylindrical core form. As noted above, some examples of these cores are exceptionally planar, with exterior surfaces clearly visible to the back of the core (C00.3:226, 228; Figure 5). Here it appears that large blocks of chert with exterior surface present are being reduced across a broad working face characterised by few removals: structurally, there are therefore similarities

between these cores and classic 'Larnian' examples developed on flint pebbles (e.g. Woodman and Johnson 1996). One example C00.3:003 (Figure 5) has the working edge across its narrow face. These cores reveal the difficulties of formal comparisons of dynamic artefacts such as cores: the final form may bear some similarities to Larnian cores, and like them are characterised by few larger removals, but the processes of working are different.

Other cores continue the theme of few removals, and if exterior surfaces are present they are at the back of the core, but these cores are less planar (e.g. C00.3:007 and 008; Figure 6). Two cores (C00.3:088, 145; Figure 7) are more complex, with subsidiary platforms present. On C00.3:088 there is a smaller platform at the distal of the main working face, with both sets of removals terminating in the same place: this may be a way of controlling removals on this very large core. On C00.3:145 there are clear removals on a second phase of working across the back of the initial face, perpendicular to the original direction of removals. In a third phase of working removals have then been initiated from this surface, removing the lateral margins of the initial face. This core, with its complex and unusual approaches to stone working, may indicate the presence of unskilled stone workers, as may an episode where a sequence of smaller flakes remove the formal platform of C00.3:228.

In general cores are frequently slightly larger, and notably wider, than the majority of removals on-site (Figure 8). This is testimony to the structures of chert working in this industry, where most removals are narrower and shorter than the core face, with few removals removing the tip of the core; a structure broadly paralleled with classic Larnian cores at Bay Farm (Anderson and Johnson 1993; Woodman and Johnson 1996). In this context the presence of a single plunging flake is notable.

Flat uni-plane cores are commonly described as a wasteful by-product of the late Mesolithic technologies, whereby the aim was to produce large flakes and blades: they are most frequently associated with large sources of pebble flint. The presence of such cores in other materials, including chert and quartz is increasingly recognised, and appears to be associated with the exploitation of lithic raw materials of substantial size. In this respect, the large outcrop of festooned chert at Lough Derravaragh may be significant.

As noted above, the Corralanna assemblage focused on the production of blades and flakes and a slight dominance of blade cores is present. The lamellar character of the assemblage is notable. Whilst flakes are numerically dominant many of these are small, irregular flakes, most likely production debris of some kind. Some discussions have suggested a change over time in the character of later Mesolithic assemblages, with a decreasing lamellar character over time; with the large, 'leaf-shaped' flake, so often seen as the archetypal later

Mesolithic tool, actually restricted to the very latest parts of the Mesolithic (Woodman *et al.* 2006). Such models are primarily derived from the only extensive chronological sequence of the Irish later Mesolithic, that of Newferry (Woodman 1977), and are based on flint. However, if we choose to extend the model to Corralanna and accepting the problems noted above with possible conflation, the blade-like character of the Corralanna assemblage may suggest an earlier date within the later Mesolithic sequence. This is, broadly, congruent with the radiocarbon dates (below).

In terms of size it is commonly supposed that later Mesolithic assemblages, and especially chert ones, will be characterised by large pieces. However the average size of débitage in the Corralanna assemblage is fairly small; this is especially striking as the assemblage is a surface collection, which one might suspect to be predisposed to larger objects. Some large pieces do exist, the interquartile range for blades is 46.5–78.8mm, but the average size for even intact flakes is comfortably below 50mm. Average sizes are a problematic basis for comparisons as, even assuming complete standardisation in how measurements are recorded, they are heavily influenced by the proportion of small débitage in an assemblage. Woodman *et al.* (1999) cites figures for Bay Farm with a 30mm cut-off to control for débitage, and this calculation is replicated here (Table 3). These figures give an overall average length for all flakes and blades of 56.6mm, somewhat smaller than the Bay Farm figures, which ranged, in different areas, from 59–69mm (*ibid.*). Differences in raw material, site function and analysis are all likely significant here, but the key point is that, even in a surface collection, the Mesolithic assemblage from Corralanna is smaller than some stereotypes might suggest.

### ***Secondary technology***

A total of 25 pieces within the chipped stone assemblage have definitely been retouched (Table 4). Of the 25, 24 are chert and one is flint: a medial fragment of an edge retouched blade; the fact that the only flint artefact in the assemblage is retouched may be significant. The retouched pieces are dominated by miscellaneous edge retouched blades and flakes, with classically diagnostic forms limited to seven butt-trimmed blades or flakes and a single butt- and distally-trimmed piece. A further 18 objects have indeterminate scarring which may be retouch or may simply represent damage through use or other post-depositional processes: nearly half of these indeterminate pieces show severe machine damage and all, bar one, have lateral damage characteristic of use.

Of the eight butt-trimmed pieces only three were complete (Figure 9), with the remainder represented by proximal fragments. Of these eight butt-trimmed objects, two are formal Bann Flakes (following Woodman *et al.* 2006, 121). C.003:085 is the finest of the butt-trimmed forms, and a classic Bann Flake, with confident

blunting retouch on the proximal left, and possible retouch, in an area of damage, on the proximal right. The second Bann Flake (C00.3:081) is technically a butt- and distally-trimmed piece; it is heavily damaged, with retouch truncated by this damage visible on the right hand proximal lateral and left hand distal.

Miscellaneous retouched pieces, including edge retouched, denticulates and crude scrapers are a common occurrence on later Mesolithic sites (Woodman *et al.* 1999, 77), and the range of edge retouched pieces from Corralanna certainly fits in this pattern (Figure 10). The presence of two highly irregular convex end of flake/blade 'scrapers' may also fit in this broader category (defined as 'crude' scrapers by Woodman *et al.* 1999). C00.3:075 is a splayed flake with an inversely retouched converse retouched edge using a hinge fracture: it is best understood as an expedient tool. C00.3:083 combines a variety of attributes, with very clear butt trimming on the right hand side (visible on the profile of Figure 10) and an irregular slightly concave working edge truncating the flake. There is damage in this area, but not sufficient to explain all of the truncation, and an irregular tool is the preferred interpretation. Neither piece is a classic scraper form, even accepting the difficulties with typologies here (Woodman *et al.* 2006).

### ***Adze/Axe***

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C.00.3:103 is an adze/axe of shale (163 x 80 x 27mm; 483g; Figure 11). The adze/axe was manufactured on an utilised cobble that has been flaked, pecked, ground and polished, including episodes of reworking and resharpening (see below). The shale bedding planes are very clear on both faces, and are oriented on the main axis of the artefact. An overview of the artefact is presented here, full technical detail is available as part of the Irish Stone Axe Project (ISAP: 20785). For the following descriptions Face 1 is on the right of Figure 11.

In plan the adze/axe is of typical axe form, owing to the plunging curved right hand side and general asymmetrical shape (see below). In profile, however, it is very obviously an adze-form. The regrinding on Face 1, is not matched on Face 2, and represents a deliberate attempt to limit the asymmetric profile of the object. The asymmetric, adze-like character may be a product of the use of a cobble source, and it is important to note that thin adze forms of this kind can function very effectively as axes.

The artefact is asymmetrical in profile with the edge notably closer to Face 1. The cross section is plano-convex at the edge, with Face 1 being planar, trending to narrow oval across the rest of the artefact with the left hand side being slightly pointed. Both sides are partially remaining with flake scars initiated from them leading onto both faces, and scars showing later evidence of grinding/polishing. Both sides are polished. The left hand side is straight, and the right hand side is straight in upper portion, curved in lower. The right hand side plunges lower than the left. Edge is extensively damaged mainly to the left of Face 1, with smaller area centre right and minor damage only on Face 2. The edge is gently curved and asymmetrical in plan, and sinuous in profile. Evidence of resharpening through grinding is present along the whole of the original edge on Face 1. Where the original edge remains, it has been slightly blunted, probably through use. The morphology of the butt is difficult to assess because of regrinding after damage. Butt form at present is sloping, but this is not original. Face 1 was originally all over polished, and most of this remains, except for an area of deep scarring in the centre of the face indicating pecking and regrinding of this already polished surface. Face 2 is also all over polished with small areas of later regrinding and the centre having been pecked and reground in a similar, if less extensive, manner to Face 1.

### **Organic Finds**

A small number of organic items were recovered as part of the Corralanna assemblage. These include 39.1g of uncarbonised hazelnut shells (C00.3:110)<sup>2</sup>. Also included among the material recovered by Mr Rainsford was a length of pinewood (*c.* 15 cm long), which was charred at both ends and a smaller example, more extensively charred (Plate 3). In the context of a surface collection these objects were not retained for analysis but have since been recognised as possible charred pine tapers. Such objects are thought to have functioned as light sources fuelled by pine resin and have been recovered from late Mesolithic sites at Derragh, Lough Kinale (Fredengren 2006), and Moynagh Lough, Co. Meath (Bradley 2001).

### **Radiocarbon Dates**

A total of three radiocarbon dates from uncarbonised hazelnut shell have been obtained from Corralanna. The shells appear to have been humanly fragmented in antiquity, and do not appear to correspond to the rafting of “Preserved, uncarbonised, whole hazelnuts” described by McComb (1999, 10). The shells derive from two of

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<sup>2</sup> Weight excludes the three shells destroyed as part of the radiocarbon dating process.

the discrete deposits from the first zone noted above and the three sods presented to the IAWU by Mr Rainsford; field observations would imply that they are well associated, and this is upheld by the consistency of the dates themselves, which all lie *c.* 5500–5200 cal. BC (Table 5; Bronk Ramsey 2005). Combining the three estimates provides a date of 5470–5400 cal. BC (19.7%) or 5390–5300 cal. BC (75.7%)<sup>3</sup>. This unfortunately corresponds to a small plateau in the calibration curve (Figure 12), but strongly suggests that the age of the hazelnut shells lies in the 54<sup>th</sup> or 55<sup>th</sup> century BC.

This very tight date is not demonstrably associated with the stone tool assemblage. Both sets of materials were recovered *ex situ* (Plate 4), and no intact stratigraphy has been examined. Other sites in the region provide complex, long-term sequences of activity. One example of this is at Clonava, Co. Westmeath (Little in prep). Here Mitchell (1972) excavated through three archaeological layers, separated by fen-peat, and thus, assumedly, indicating activity over the long term. Recent Royal Irish Academy (RIA) supported re-dating of carbonised hazelnut shells from the lowest level of the site has returned two dates that are distinct at two sigma: 4313–4045 cal. BC (5327±37 bp, UBA-8105) and 4680–4458 cal. BC (5706±37 bp, UBA-8106). A longer sequence extending into the Neolithic is apparent at Derragh, Lough Kinale (Christina Fredengren, pers. comm.).

Given such potential problems it is not possible to associate the date with the lithics at Corralanna. Assuming that the hazelnut shells are imports to the site, and not merely a natural deposit, the date simply indicates that human activity took place in the 55<sup>th</sup> or 54<sup>th</sup> century BC. Until recently few other sites in Ireland were known to be contemporary, with Woodman (2004b) noting that this period is poor in terms of dating. It is interesting that recent sites, often characterised by high-quality organic preservation, are beginning to infill this gap: for example Clowanstown, Co. Meath (Matt Mossop, pers. comm.; FitzGerald 2007), and North Wall Quay, Dublin (McQuade and O'Donnell 2007). As noted above, the blade-like character of the Corralanna lithic assemblage may be suggestive of a date earlier within the later Mesolithic sequences, assuming of course, that such models are appropriate in chert. This may be in keeping with the radiocarbon dates, but given the problems outlined above, no direct link is possible.

## Discussion

The surface collection from Corralanna, although small, and affected by many problems, nevertheless makes a valuable contribution to understanding the early prehistoric settlement of the midlands of Ireland. As argued

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<sup>3</sup> OxCal3.10; X2 test: DF=2, T=2.3 (5%=6)

above, our understanding of the site is limited—notably our chronological modelling is very weak. At present the radiocarbon dates cannot be associated with the lithics, and we cannot be certain whether the lithics represent one phase of activity or the conflation of many different episodes. It may be important that the radiocarbon-dated hazelnut shells, which are in effect a random sample of datable material from the site, all date very closely. This suggests that the activity involving the deposition of hazelnut shells was reasonably short lived but this cannot provide a proxy for the lithics.

Corralanna certainly provides further evidence of the extensive use of the waterways of the northern midlands in the Mesolithic. Many finds have been recovered from the shores of lakes, with a concentration near the entry and exit points of the River Inny but some, such as Clonkeen and Kilgolagh (Little 2005; Little in prep.), from the banks of the Inny itself. In a number of instances, focal points of Mesolithic activity appear to have been located immediately off of dryland areas: with the construction and occupation of brushwood, marl or stone platforms. Corralanna very much fits within these themes; with a broad reconstruction of the environment suggesting that the site lay in peat near a dryland ridge, possibly immediately to the south of a wet, boggy area. Corralanna was likely connected to the Inny through a network of waterways and it may be important that the site was located in an area where a ridge of drier land was dissected by the Inny itself.

In previous years archaeologists interpreted Mesolithic site location in very functional terms: thus an emphasis has been placed on possible resources in these wetlands. For food one would discuss water fowl, fish and plant resources such as water lily; for stone tools, the abundance of chert (examples, amongst many, include: McCartan 2000 & O’Sullivan 1998). In this vein, one could model Corralanna as a site located for economic activity: located near a river providing food resources, above productive wetlands, and in a region rich in chert. Whilst aspects of these accounts may be significant, it is important to note that little strong evidence underpins these models. Evidence for fishing, for example, is elusive (Little forthcoming) and, as noted above, models of regional chert abundance may have mistaken limestone and chert (Little in prep.); sources of high-quality chert possibly being more restricted. Taphonomy plays its part in the gaps in our evidence, but it is important to note that these functional narratives reduce Mesolithic activity to a very limited range of tasks.

More recently, there has been a stress on mobility in our understandings of the midlands—with the waterways seen as a communication network and the possibility of sites being located to control movement and access to



materials being raised (Fredengren 2002). Views from and to sites have been discussed, and the importance of memory and temporality in structuring Mesolithic activity in these wetlands have been drawn into focus (Little 2005). Such discussions consider both the possibilities of mobility between the inlands and the coast (see below), but also the routine nature of daily movements in and around the waterways of the midlands. Of course, given the nature of the 'site' at Corralanna, it is harder to be specific in considering its place in a fluid Mesolithic world. The location of the site off of the main water system, but possibly at a strategic node between lakes may have been significant.

Such discussions provide a broad context into which a site like Corralanna might fit, but it is important that the details of the site itself, accepting the problems with the collection, determine our narratives. Here we are primarily reliant on the stone assemblage and, of course, it is difficult to be certain whether we are dealing with primary or secondary contexts: whether our scatter has been disturbed directly from living floors, or from a midden. In either case we can begin by thinking of some of the tasks evidenced by the material, for minimally, the assemblage tells of time spent working stone—of manufacturing stone tools from a distinctive festooned chert. Some evidence suggests that much of this material may have been quarried from Knockeyon. Details of the structure of exploitation of chert are embryonic, and it is not possible to discuss direct or indirect procurement at this stage. Broad distinctions between the types of chert and the proportions of exterior surfaces on sites in the region exist, but at this stage it is not clear if these are chronological, functional, or technical in origin.

Manufacture focused on blades and larger flakes, and the characteristic approaches to their production—the use of large, primarily single platform cores—maintained links with other Mesolithic communities throughout the island. Interestingly two cores from Corralanna are suggestive of either unskilled knappers, or people deliberately trying to do things differently. A small number of hinged or plunging flakes may indicate similar processes. This may imply a diverse social group being present. At the least, cores were worked at Corralanna, and some of the flakes and blades from these episodes of working may have been used on site. Others were presumably carried away from the site to be used elsewhere: some scatters in the region, such as Clonkeen, are dominated by blades and flakes, and contain no production evidence (Little in prep.). Some of the flakes and blades at Corralanna were most likely produced elsewhere: and this is most closely demonstrated by the fragmentary flint blade from the site. Likely to have originated in the flint rich north-east or the eastern beaches

of Ireland, this object was undoubtedly an import to the area. In comparison with other areas, such as Lough Kinale, the proportion of non-chert materials in the assemblages from Derravaragh is very low.

As noted above, some previous discussions have suggested that the Mesolithic occupation of the midlands was tied into seasonal patterns of mobility stretching from the coast into the centre of the island. Such models of mobility, although very familiar in archaeology, are rather problematic both theoretically and empirically. In an Irish context, a stress on the impoverished character of terrestrial resources, coupled with seasonal models, has encouraged an understanding of settlement as very transient—and the supposed lure of the coasts for prehistoric settlement has been very strong. Models of coastal and inland mobility have been so prevalent in Mesolithic archaeology that Woodman *et al.* (1999, 142) worry about the status of this ‘self evident truth’. In fact, bone chemistry has suggested that for some Mesolithic communities the coast did not provide any significant dietary role (Woodman *et al.* 1999; Woodman 2004a) and a need for seasonal mobility stretching from the inlands to the shores on dietary grounds must be dismissed; in any case, as others have observed, the early Holocene wetlands of the midlands may have been a very rich environment (McCartan 2000; O’Sullivan 1998). The flint from Corralanna, and the higher frequencies of this material from other sites, suggests that contacts between the midlands and the coast did exist, and that these varied at sub-regional, and possibly local levels. We cannot, at this stage, discuss direct movements or otherwise, the variation in materials suggests that the networks linking different people and places were components of very varied social geographies (see also Kador 2007). Variations in the kinds of chert present on different sites may imply other scales of identification and association within the region.

Some objects are demonstrably curated—in particular the shale adze/axe, which has a complex history of use, working, and reworking. In part this may simply reflect the investment of time a ground stone object represents, but much recent evidence implies that axes, as well as being common on many later Mesolithic sites in Ireland (for example Newferry, or Ferriter’s Cove; Woodman 1977; Woodman *et al.* 1999), had especial meanings for Mesolithic communities. The presence of large numbers of axes from Lough Kinale (O’Sullivan 1998) is a notable feature of the midland’s archaeological record (for wider discussion, see Chatterton 2006).

The evidence does not allow us to discuss tasks at any level of detail. Limited use wear on other later Mesolithic lithic assemblages (e.g. Anderson and Johnson 1993) suggests a role in woodworking for some, at least, of the

flakes and blades produced, and the increasingly rich organic assemblages recovered from contemporary or near contemporary sites (e.g. McQuade and O'Donnell 2007) demonstrates the range of objects that may have been produced. The limited organic component from Corralanna most likely reflects the conditions of site discovery, as preservation conditions for organics on the site proper must be good. An anvil may have had a variety of functions, including the processing of hazelnuts, but does not appear to have been used for stone working. The hazelnuts indicate time spent gathering material in the early autumn, but this cannot be used as an indicator of the seasonality of occupation on this site because of the possibility of storage. The charred pine taper(s) is paralleled at other Mesolithic sites such as nearby Derragh, where varied possible functions have been proposed—a source of light, heat, or fire starters seeming the most likely.

Further work at Corralanna clearly has potential to greatly enrich such narratives. Minimally, a site with a rich lithic assemblage and associated organic preservation is indicated. In this regard, it is unfortunately impossible to estimate how much unrecorded archaeological material has been removed from Corralanna and unwittingly destroyed, or how much may remain *in situ*. It is instructive, if somewhat depressing, to note that Mr Rainsford commented that horizons of burnt wood and hazelnut shells were observed in the area for years and that sods harvested from here were often difficult to burn owing to the quantity of stone compacted within them.

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Figure Number	Caption
1	Location of Corralanna, Co. Westmeath and key places discussed in text. Satellite image courtesy of NASA; see <a href="http://visibleearth.nasa.gov">http://visibleearth.nasa.gov</a>
2	Extract from Co. Westmeath S.M.R. Sheet 2 with location of Corralanna findspot. Map produced by Conor McDermott.
3	Key environmental features of the Corralanna landscape. Map produced by Conor McDermott.
4	Chert artefacts from Corralanna, Co. Westmeath with machine damage associated with peat extraction. Illustration by Simon Dick.
5	Chert cores from Corralanna, Co. Westmeath. Illustration by Simon Dick.
6	Chert cores from Corralanna, Co. Westmeath. Illustration by Simon Dick.
7	Chert cores from Corralanna, Co. Westmeath. Illustration by Simon Dick.
8	Length/width plots of complete flakes, blades and cores from Corralanna, Co. Westmeath. Artefacts <20mm in maximum size excluded.
9	Butt-trimmed forms from Corralanna, Co. Westmeath. Illustration by Simon Dick.
10	Miscellaneous retouched forms from Corralanna, Co. Westmeath. Illustration by Simon Dick.
11	Adze/Axe of Shale, from Corralanna, Co. Westmeath. Illustration by Simon Dick.
12	Combined radiocarbon estimate from Corralanna, Co. Westmeath. Note calibration curve plateau
Plate Number	Caption
1	Overview of site find spot showing (left to right) Michael Rainsford, Conor McDermott, Michael Stanley and Michael O'Neill on-site. © Aidan O'Sullivan
2	Sod containing artefacts. © Aidan O'Sullivan
3	Artefacts as recovered from Corralanna by Michael Rainsford, including two possible charred pine tapers: larger taper visible to right of adze/axe, smaller to right of larger. © Aidan O'Sullivan
4	Chert artefacts and hazelnuts on the surface, Corralanna. © Aidan O'Sullivan
Table Number	Caption
1	Composition of the lithic assemblage, primary technology
2	Proportions of machine damage on different collections
3	Average size of all complete, unretouched blades and flakes >30mm in length
4	Composition of retouched assemblage.
5	Radiocarbon dates, all dates from uncarbonised hazelnut shell.





0 5 10 Kilometers

Lough  
Kinale



Derragh

Corralanna ★

Clonava ★

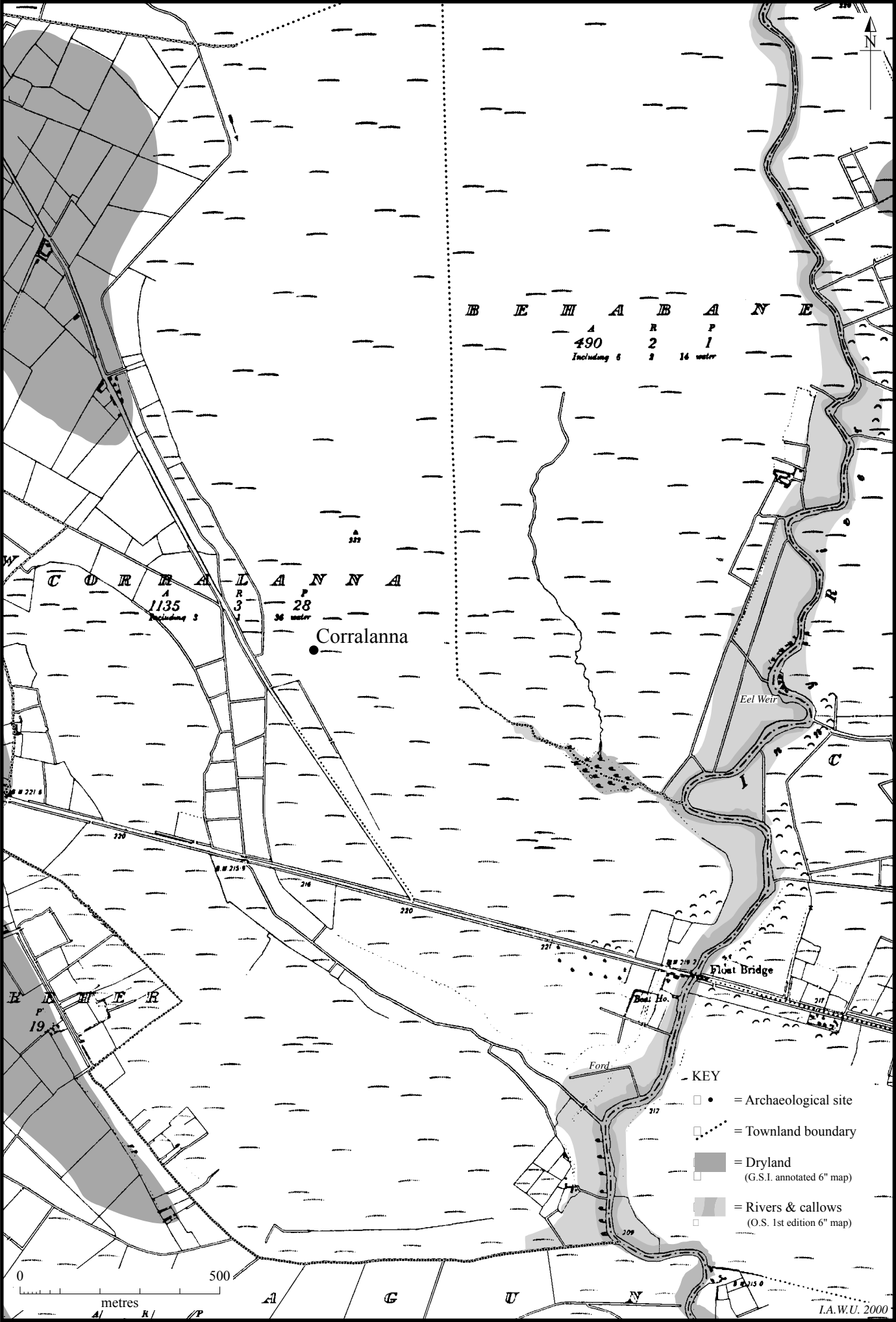


Lough  
Derravaragh



Knockeyon





BEHABANNE  
A 490  
Including 6 R 2 P 1  
3 14 water

CORRALANNA  
A 1135  
Including 3 R 3 P 28  
36 water

Corralanna

Eel Weir

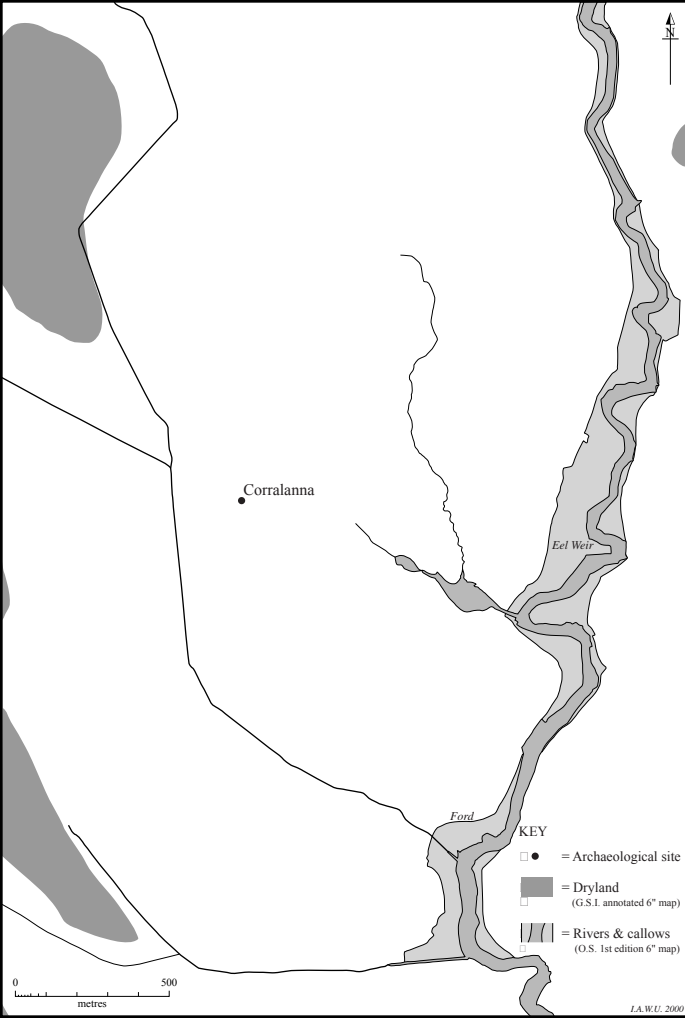
Float Bridge

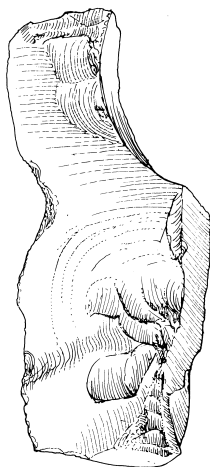
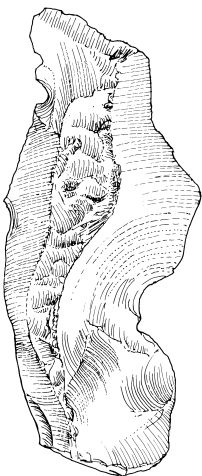
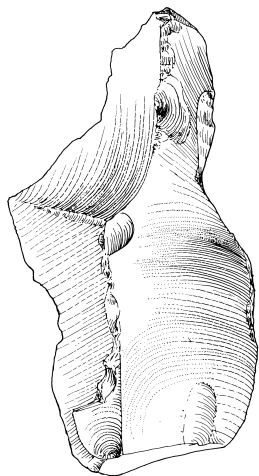
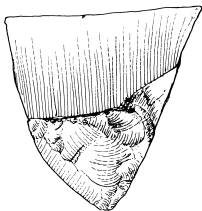
Ford

KEY

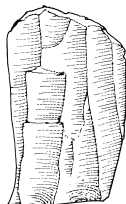
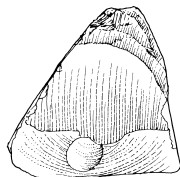
- • = Archaeological site
- ..... = Townland boundary
- = Dryland (G.S.I. annotated 6" map)
- = Rivers & callows (O.S. 1st edition 6" map)

0 500 metres

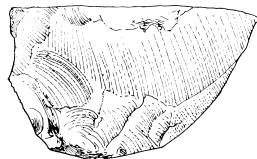




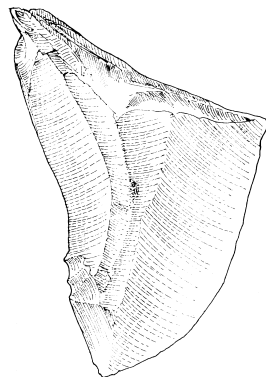
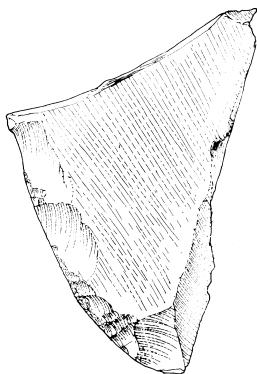
C00.3:009



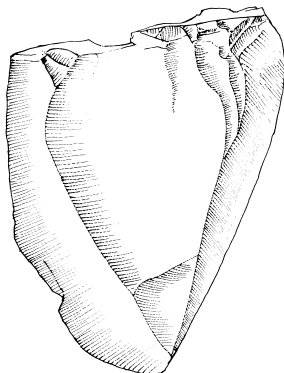
C00.3:025



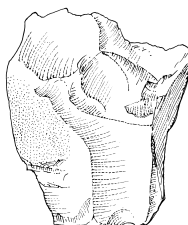
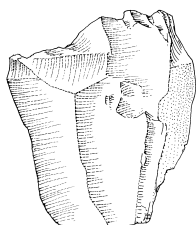
C00.3:003



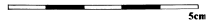
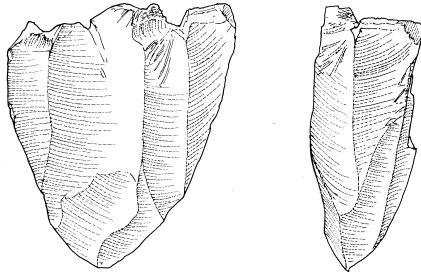
C00.3:226



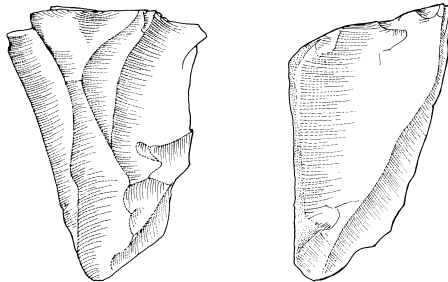
C00.3:228

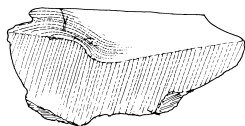


C00.3:007

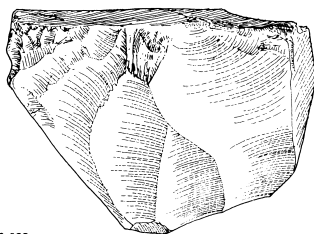
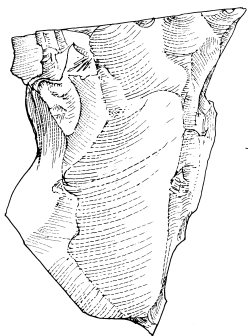


C00.3:008

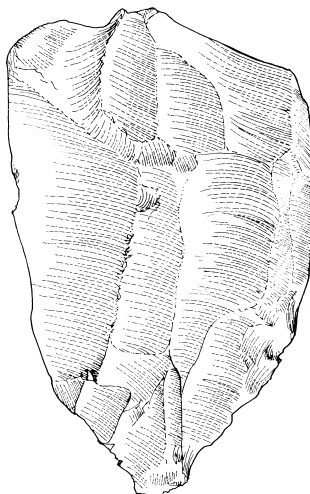
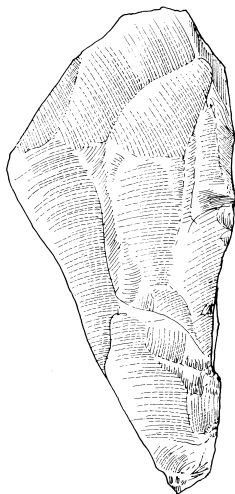


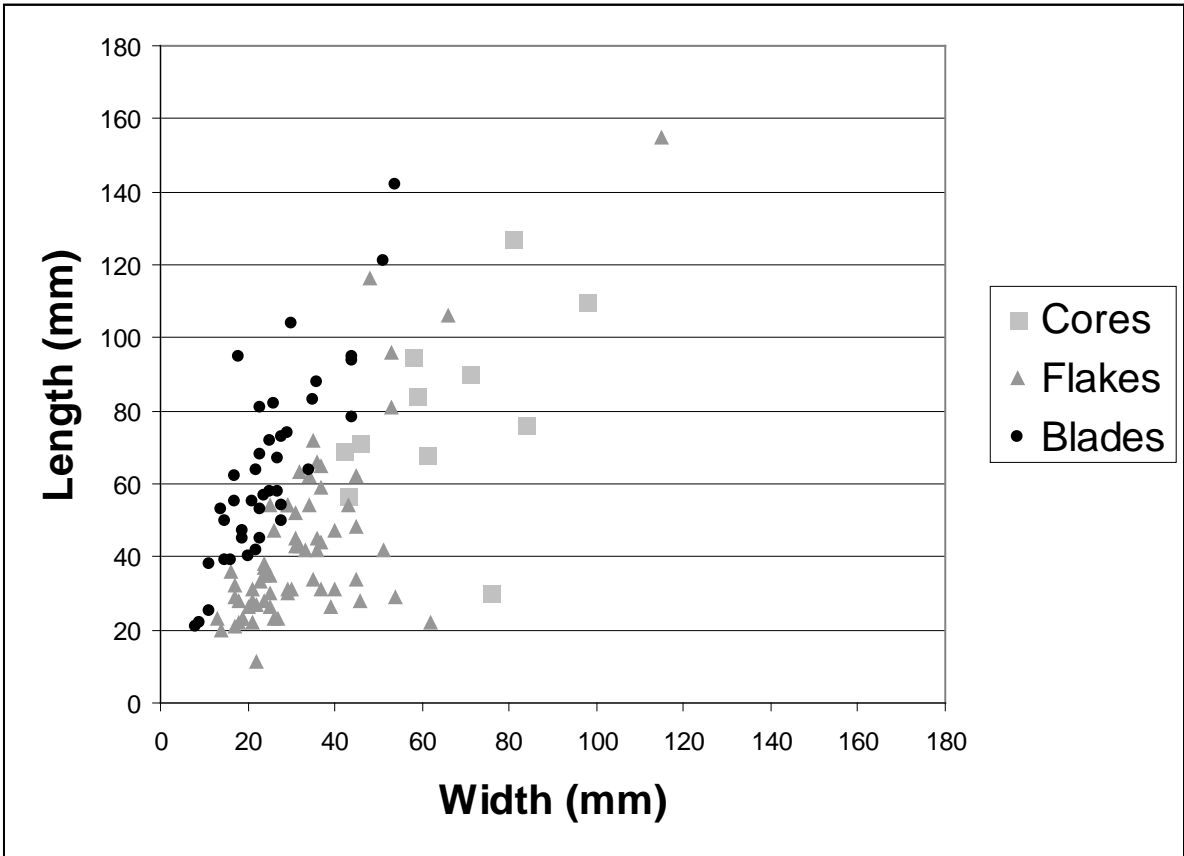


C00.3:145

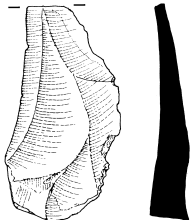


C00.3:088

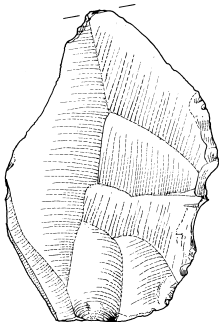




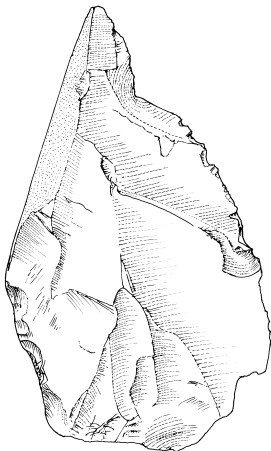




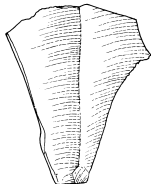
● C00.3:222



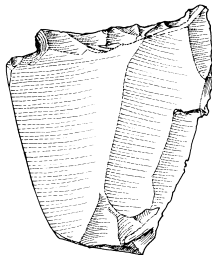
● C00.3:081



● C00.3:085



C00.3:075



C00.3:083



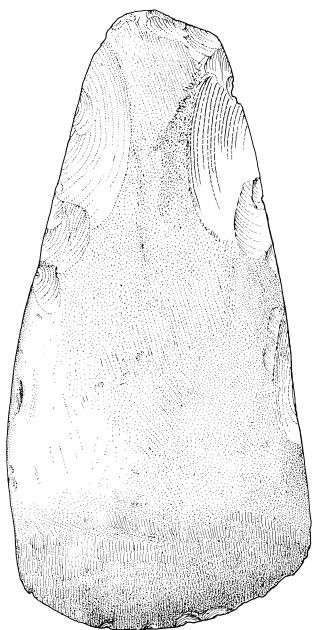
5cm



C00.3:015



C00.3:264

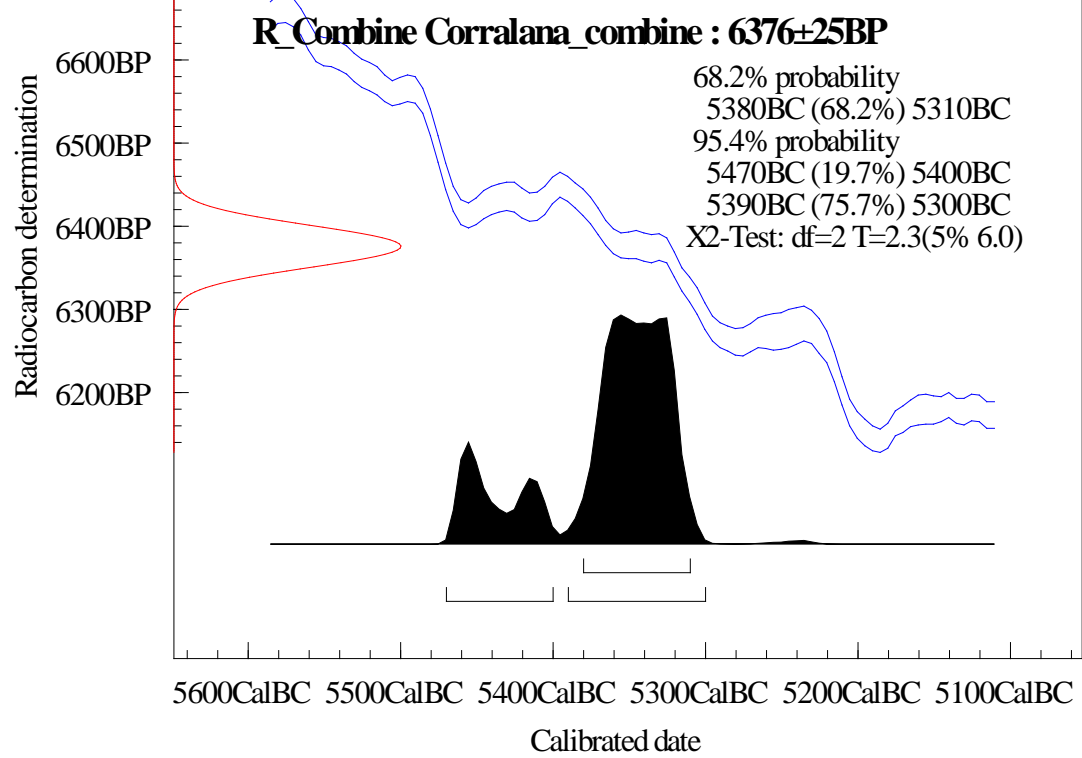


C00.3:103



5cm

Atmospheric data from Reimer et al (2004); OxCal v3.10 Bronk Ramsey (2005); cub r:5 sd:12 prob us[chron]













	Chert	Dolerite	Flint	indet	Quartz	Quartzite	Shale	Sandstone	Sandstone/Dolerite	
Adze/axe	0	0	0	0	0	0	1	0	0	1
Blade	89	0	1	0	0	0	0	0	0	90
Chunk	30	0	0	0	0	1	0	1	0	32
Core	20	0	0	0	0	0	0	0	0	20
Flake	111	1	0	0	0	1	0	0	0	113
Fragment	4	0	0	0	0	0	0	0	0	4
Indeterminate	3	0	0	0	0	0	0	0	0	3
pieces <20mm	12	0	0	0	0	0	0	0	0	12
Spall	0	0	0	0	1	0	0	0	0	1
Cobble/Hammerstone	1	1	0	1	0	2	0	0	1	6
Total material	270	2	1	1	1	4	1	1	1	282
Material as % of assemblage	95.7%	0.7%	0.4%	0.4%	0.4%	1.4%	0.4%	0.4%	0.4%	

<b>Machine Damage</b>	<b>IAWU</b>		<b>ADS</b>		<b>Total</b>	
<b>Yes</b>	63	33.0%	60	65.9%	123	43.6%
<b>No</b>	128	67.0%	30	33.0%	158	56.0%
<b>Indeterminate</b>			1	1.1%	1	0.4%
	191		91		282	

<b>Sub-Blank</b>	<b>Avg L</b>	<b>StDev L</b>	<b>Avg W</b>	<b>StDev W</b>	<b>N</b>
<b>Blades</b>	68.3	26.0	26.7	12.0	25
<b>Flake - irreg</b>	45.6	19.5	33.3	9.6	19
<b>Flake - reg</b>	50.8	17.3	33.4	9.0	14

	Chert	Flint
Butt & distally-trimmed flake (‘Bann Flake’)	1	
Butt-trimmed blade/flake (inc. one ‘Bann Flake’)	7	
Edge-retouched blade/flake	13	1
Irregular scraper?	2	
Indet.	1	
Total	24	1

<b>Code</b>	<b>Material</b>	<b>Date</b>	<b>Error</b>	<b>D13</b>	<b>Range (95.4%)</b>
UB-6349	Corylus	6418	44	-28.7	5480–5320 cal. BC
UBA-8109	Corylus	6319	49	-35.6	5466–5211 cal. BC
UBA-8110	Corylus	6378	39	-31.1	5470–5303 cal. BC