6
Level 2 Surveys

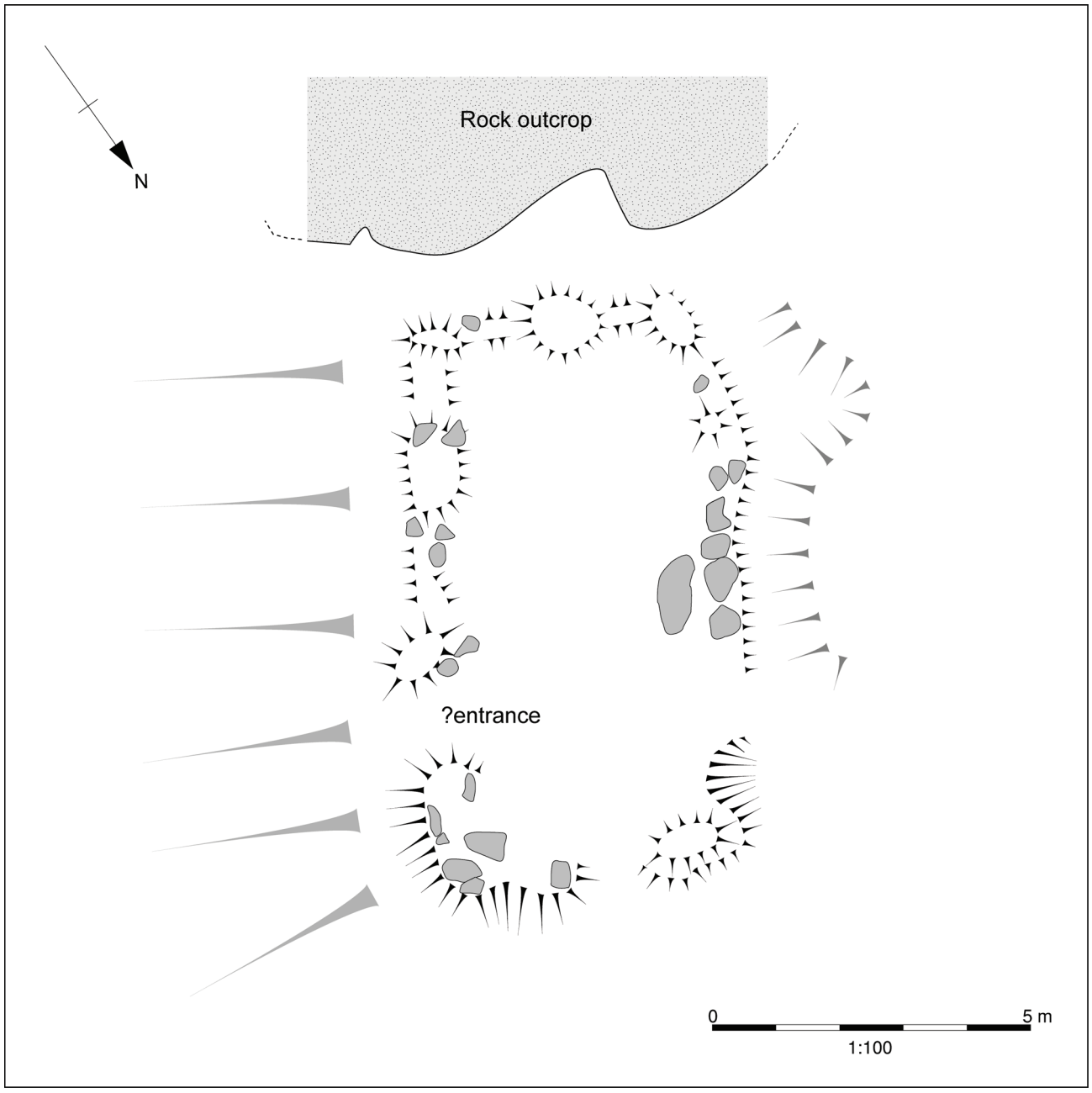
The majority of the time devoted to the R2R project was taken up by the Level 1 foot surveys which systematically recorded and photographed the location and appearance of interesting sites. Another large amount of effort went into excavating the two ring cairns at Lead Pike. However, due to limitations in resources, we knew that further excavations of other sites found by the foot surveys would not be possible in the short term. This would have been very frustrating had we not embarked on a series of so-called Level 2 surveys of specific sites of interest in addition to those of the excavated cairns.

Put simply, a Level 2 survey involves the accurate measurement of the surface features of a site, in order to produce a clear two dimensional scale-drawing that can be compared with other similar sites. The beauty of the survey method we chose, Tape-and-Offset Survey, is that it requires very simple tools and can be carried out by anyone after brief training (see Chapter 8.4b). It nevertheless gives rise to line drawings of good precision and clarity.

In essence, the method involves inserting a survey peg into the ground at each end of the site and stretching a tape measure between the two. The precise position of the pegs is measured using a very

Photo 77 A Level 2 survey in progress at the longhouse site at Lad How

Figure 5 (*Right*) Foundations of long house or shieling at Lad How. A possible entrance can be seen on the north east side



accurate GPS system, so the exact locations of each surveyed object will be known. The coordinates of each item at the site are then identified by measuring the item's distance at right angles from the appropriate position on the tape, and those coordinates are then transferred as a pencil mark to special tracing paper overlaid on graph paper. The marks are then joined up, symbols are added to indicate the topography and the direction of magnetic north, and the whole drawing is later tidied up using special software.

Using this technique, we surveyed about twenty sites, some of which were visited several times to complete the survey. Bad weather sometimes curtailed these efforts, but on at least one occasion, the heroic scribe was seen to struggle on in the cold, brushing snowflakes off the precious drawing.

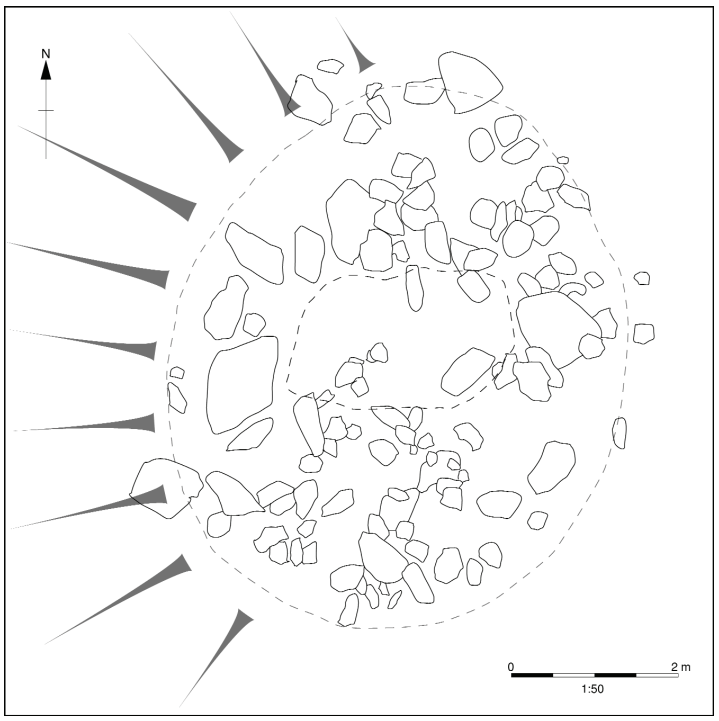


Figure 6 Bronze Age ring cairn at Lead Pike (south), Seathwaite Tarn

In one case, when we were in possession of a good quality aerial photograph of a particular site (the Pikeside Farm longhouses) we also tried another technique which involved rectifying the oblique digital photo to represent the site as it would look when viewed vertically downwards, and then tracing round the structures visible in the image (see Fig. 2 in Chapter 4.2 which describes research on Pikeside). However, although avoiding the need for fieldwork, this method was certainly not as accurate as the hands-on tape offset surveys. The Level 2 survey of the Lad How longhouse (Fig. 5) shows the degree of detail which can be achieved by the latter technique.

Pride of place among the Level 2 surveys is probably taken by the ring cairns, all of which are of structures likely to date from the Bronze Age. The surveys of the two excavated ring cairns at Lead Pike are presented in Figure 3, but five other sites in the Seathwaite Tarn area were also surveyed in detail (Figs 6–10). These surveys show that ring cairns vary considerably in size and definition. One is located just uphill from the excavated cairns (Fig. 6), and the survey shows that this cairn is less clearly defined than the others, and indeed might be missed entirely by the casual eye.

On the other hand, nobody could possibly miss the two magnificent ring cairns at Brock How which stand in a prominent and atmospheric position overlooking the upper end of Seathwaite Tarn at an altitude of 420 metres (Figs 7–8). The smaller of the two, Brock How 1, is only about 5 metres in outer diameter, but is well banked up, and several of

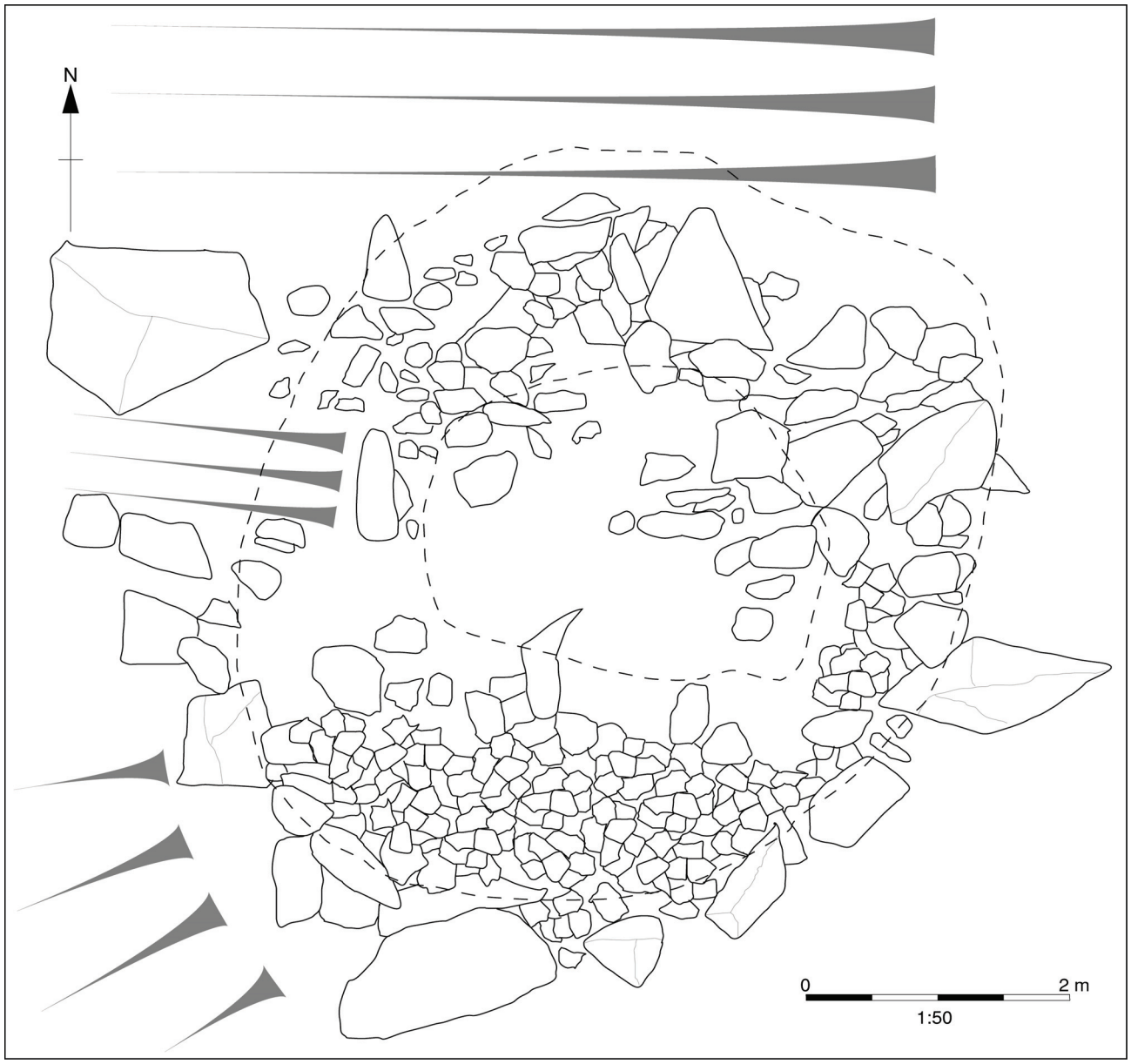


Figure 7 Bronze Age ring cairn at Brock How (1)

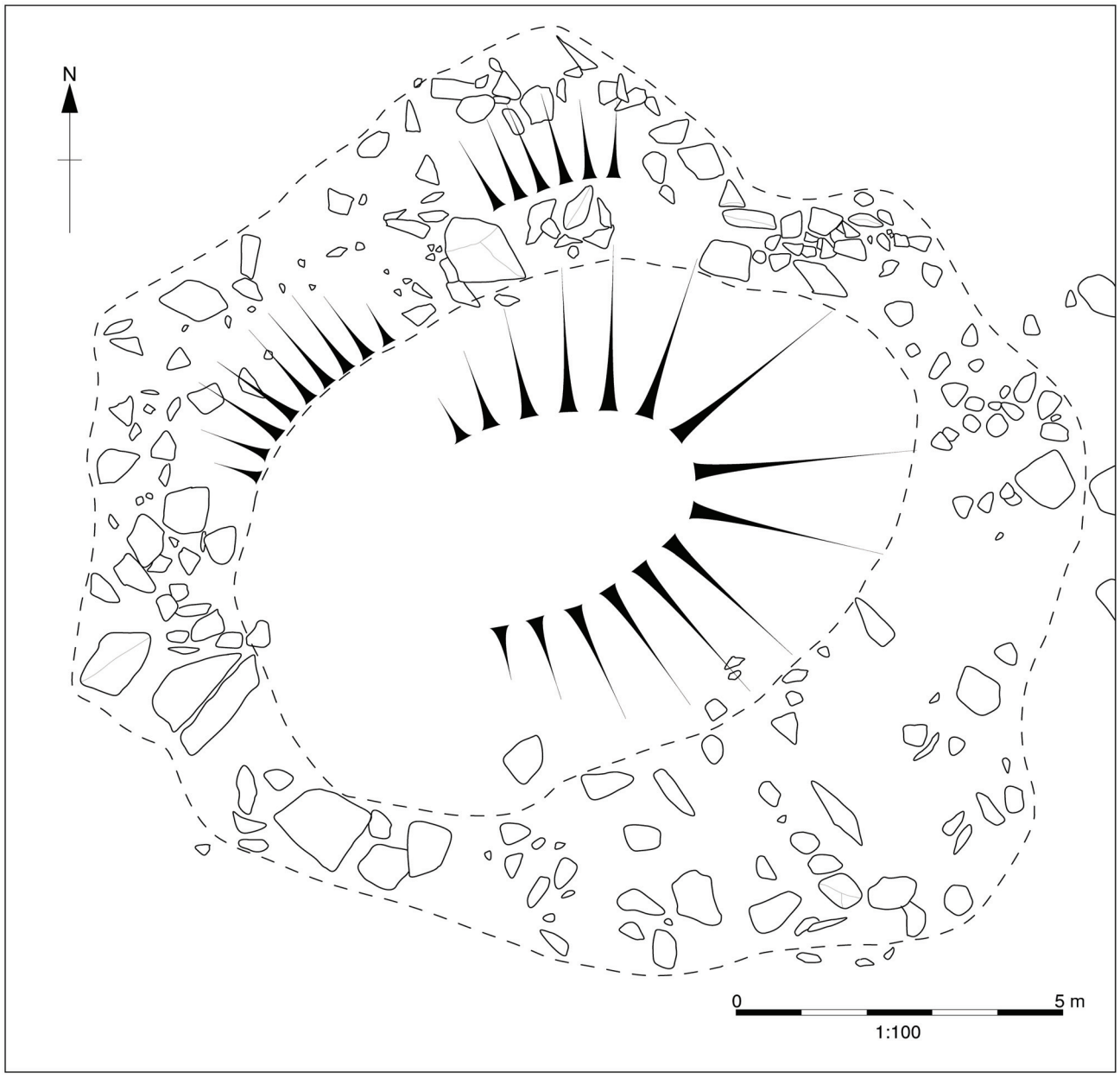


Figure 8 Bronze Age ring cairn at Brock How (2)

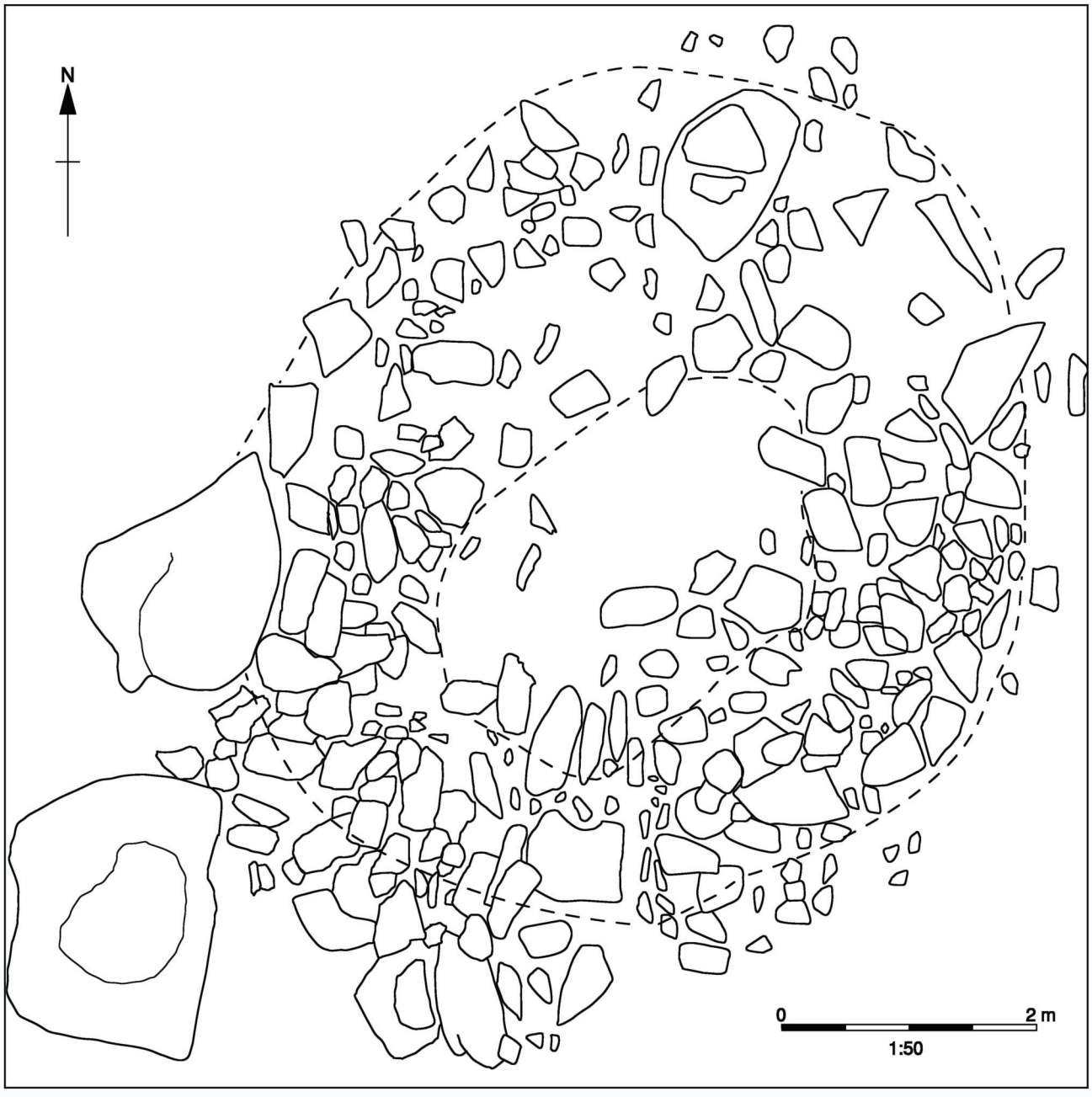
the outer stones appear to have been placed deliberately on end. Brock How 2, on the other hand, is about 15 metres in diameter, although its full extent only became apparent after an extensive stand of bog rush had been painstakingly trimmed back.

Perhaps the most perfectly circular ring cairn was one of those found at the top of Woody Crag at an elevation of just over 500 metres again with a magnificent view over the tarn and surrounding fells (Fig. 9). This clearly shows that the cairn's builders were not averse to incorporating large natural boulders which were apparently left *in situ* while the smaller stones were placed around them. Something similar seems to have occurred during the construction of the ring cairn at Bleaberry Gill (Fig. 10), a site at an altitude of 400 metres which was discovered by accident by a team member who had gone off for a quiet pee, hence its unofficial name of Wendy's Place.

Figure 9 Bronze Age ring cairn at Woody Crag, Seathwaite Tarn.

The main message from these surveys is that there is no standard pattern for ring cairns in the Seathwaite Tarn area, with considerable variations in size, shape, stone content and altitude. The common factor is a lack of discernible entranceways, and a generally flat, stone-free area in the centre. Without further excavations, we cannot be confident that the dating and unknown ritual function ascribed to the two excavated cairns at Lead Pike are also applicable to the others, although this seems likely.

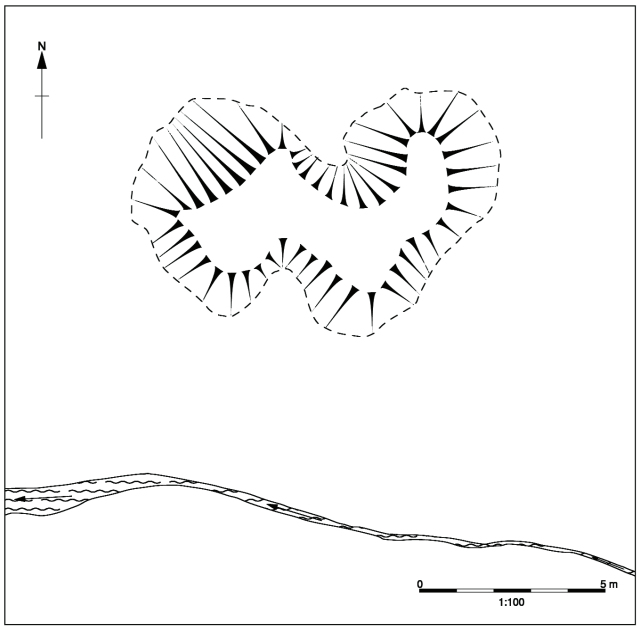
One of the remaining Level 2 surveys is of an interesting burnt mound at Brown Rigg on Birker Fell (Fig. 11). This lies close to the burnt mound at Winds Gate described in Chapter 3 (Fig. 12), and at a similar altitude (just under 250 metres). However, the principal difference is that the Brown Rigg mound is doubled up, with space for two cooking fires, one to the north and one to the south. This arrangement is rather unusual, but the overall size of the monument is similar to that at Winds Gate, with a small stream running close by. Neither of these mounds has yet been dated, but there is no doubt that prehistoric people lived on Birker Fell, a location which is now



a rather bleak and completely uninhabited peat bog.

The final surveys illustrated in this chapter are of two burial cairns found within 100 metres of each other, just to the south of Stickle Pike at an altitude of 270–300 metres (Fig. 13). To the casual eye, these mounds of stones might appear rather like clearance cairns, but in both cases their centres have been dug out at some point in the past, either by grave robbers or more likely by eighteenth or nineteenth century antiquarians, who would almost certainly have been intent on recovering 'treasure' rather than doing a careful excavation job. The cairn numbered LWSP 19 (the upper one in the illustration) still contains the remains of a stone cist within which an inhumation or cremation would have been placed. Similar disturbed burial cairns are widely distributed in the Duddon Valley and elsewhere, so there is now little opportunity to conduct worthwhile excavations to modern standards.

This brief description of our Level 2 surveys in the Duddon Valley illustrates the variety of ancient sites we have found there, and shows the valuable and detailed information that can be gathered by well-trained volunteers using extremely simple equipment and abundant patience.



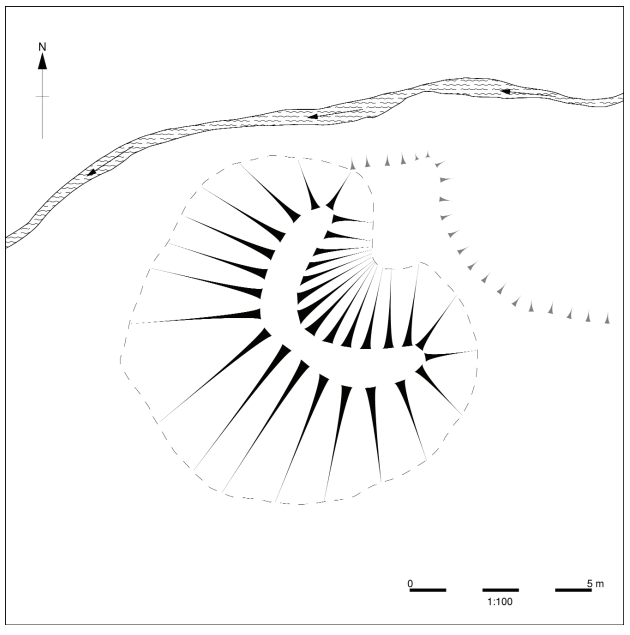
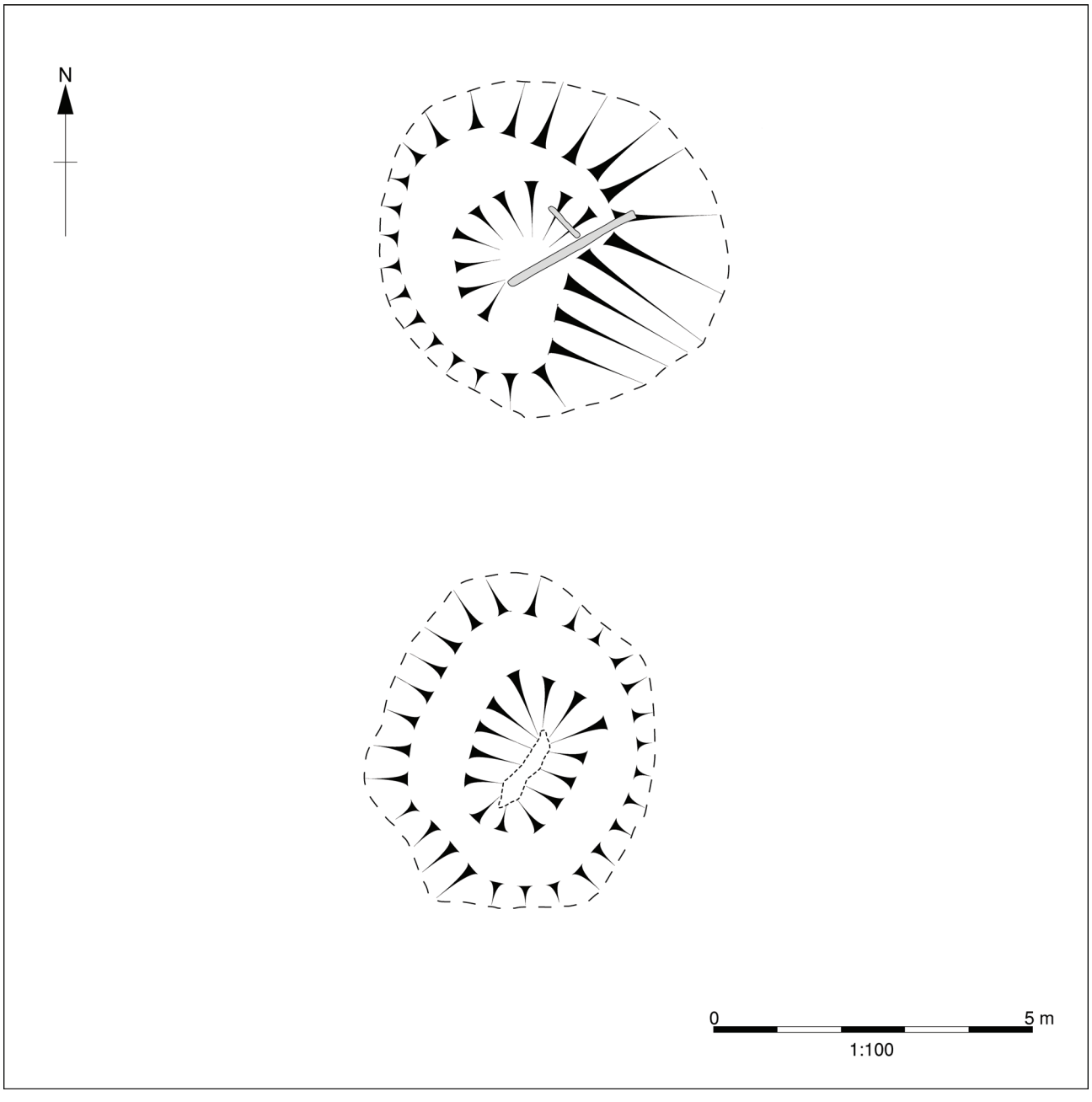


Figure 10 (*left*) Bronze Age ring cairn at Bleaberry Gill, Seathwaite Tarn
Figure 11 (*top*) Prehistoric burnt mound at Brown Rigg, Birker Fell
Figure 12 (*bottom*) Burnt Mound at Winds Gate, Birker Fell
Figure 13 (*overleaf*) Prehistoric burial cairns near Stickle Pike. LWSP 19 (upper) LWSP 11 (lower). The remains of a stone cist survive in the centre of LWSP 19. Both cairns have been disturbed, probably by antiquarians.



7

Major Achievements and Remaining Questions

7.1 What Have We Learned About the Duddon Valley's History?

Before the R2R project began, almost everyone associated with it would have claimed to know the Duddon Valley rather well, because we had all lived in its vicinity for years and walked its upland and lowland paths for recreational purposes, or, as LDNPA volunteers, on various tasks such as rights of way surveys. Some of us would even have prided ourselves on knowing something about its archaeology, particularly those people (such as farmers and rangers) whose jobs take them onto the fells on a daily basis.

The single most profound outcome of the project is that we now know how ignorant we really were. Not only have we all gained some knowledge of archaeological thinking and techniques, but we have discovered an astonishing array of previously unrecorded historical remains. It would be fair to say that we all now regard the Duddon, and all the other valleys in the Lake District, in a completely new light, and find it impossible to walk the fells without looking for, and seeing, previously unremarked evidence of human activity.

The Duddon Valley is rather small (about 70 square kilometres), including just two parishes, and is criss-crossed by a network of footpaths that give good access to many areas, which makes it all the more unexpected for the R2R project to have discovered considerably more than 3,000 mainly stone or earth constructions which were not previously in the archaeological record. We presume this is partly because people tend to remain on footpaths and roads, rather than going 'off piste' like our survey teams, but the sheer number and density of historical traces is still remarkable. We are obviously seeing the accretion of remains from 4,000 to 6,000 years of human occupation, but the contrast with the current very low population density is nevertheless very apparent. Certainly by the time of the industrial revolution, if not before, the valley was clearly much more heavily populated than today (there were just 288 residents recorded in the 2001 census, or about 4 people per square kilometre). It has been heavily modified by people over several millennia, and stunningly exemplifies the term 'cultural landscape'.

The fact of larger populations in the past is evidenced by the huge diversity of activities whose traces we have discovered. Essentially the only economic activities today are related to sheep rearing, timber growing and tourism, but the picture in former times was very different. In the past, farmers were also involved in growing crops such as barley and flax, and rearing a wider range of livestock

(including cattle). Others were employed in a plethora of industrial activities, including coppicing, charcoal manufacture, bobbin making, potash production, wool processing, flax processing, metal mining and smelting, slate quarrying, and peat cutting. These activities were obviously made possible by the environment and geology of the area, but their intense distribution was largely unsuspected. It is clear that the valley was a hive of activity during much of the previous two millennia, although it has not yet been possible to make human population estimates, particularly for the period before the Romans invaded Britain.

We have come to realise that all this activity was not occurring in isolation. The agricultural and industrial output of the valley must increasingly have been traded for goods originating elsewhere in the Lake District, and even further afield. Even before the Romans arrived, there were probably quite good communications with the outside world, perhaps mainly by sea. Furthermore, the complex network of old packhorse tracks and drove roads, as well as peat, quarry and mine tracks, is evidence for intensive transport of goods both within and without the valley. The Duddon Valley thus once contributed substantially to the wider economy of Cumbria, in marked contrast to the present.

One very striking finding has been the association of many medieval and pre-medieval features at altitudes where land is currently unused except for sheep-grazing. It is clear that cattle-rearing and crop-growing once took place, not just on the valley floor, but in a band round the sides of the valley up to heights of 1,000–2,000 feet (300–600 metres). The same applies to many features which were probably associated with ritual activities. We are confident of this because the modern ploughing which has destroyed archaeological features in parts of the country where arable agriculture is now important has not happened to such a great extent on the floor of the Duddon. The lack of modern agricultural and other activities on the valley slopes is not surprising given that peat bogs have become much more extensive compared with 3,000 years ago, as a result of climatic changes. However, before that time, it is clear that the lower fells were a more congenial place to live than today, while the valley floor was probably covered in impenetrable boggy thickets.

Despite all the evidence of utilitarian enterprise in the past, some of our most interesting, and mystifying, discoveries are essentially unconnected with economic activity. In particular, there are high densities of stone cairns in certain places (for example, at Stephenson Ground and around Seathwaite Tarn) which are not the prosaic result of post-Ice Age land clearance. Some of these are probably or certainly burial cairns, but others such as the many ring cairns do not seem to be associated with burials. This is certainly the case for the two Bronze Age ring cairns which we excavated at Lead Pike. Furthermore, the lack of evidence for human occupation or stock-holding within these cairns has led to the tentative conclusion (in the absence of hard facts) that they had some ritual purpose. Even though it is unlikely that all the ring cairns were in simultaneous use, their large numbers still require explanation. This also applies to rather similar ring cairns found in other parts of the Lake District (for example, around Stickle Tarn in Great Langdale).

What the putative rituals might have been is simply speculation at present, and we are unlikely ever to know exactly what occurred at these locations. For example, it is possible that the ring cairns fulfilled some commemorative or religious function that may have been related to those presumed to have taken place at the larger circles of standing stones found outside the valley (at Swinside, for example). It is also possible that some of the ring cairns, which are often

situated at sites with extensive sight lines to the horizon, may have been associated with the observation of astronomical events used for identifying important dates in the calendar. Such theories will all need to be rigorously tested through further research, but one thing is clear; our Duddon Valley ancestors several millennia ago undoubtedly had concerns and interests which went beyond the utilitarian ones of housing, clothing and food.

Some of our 'findings' are in fact puzzling absences. For example, although we have found a few individual dwelling sites, such as the medieval longhouses at Pikeside Farm and Stephenson Ground, there do not seem to be enough remains of ancient dwellings to explain the presence of a population big enough to sustain the many activities which clearly went on in the medieval and earlier periods. Some dwellings may well have been temporary ones used during the summer when stock was moved up to higher pastures (transhumance), others were probably situated on the sites of post-medieval farmhouses that are still occupied, and yet others may have been buried by peat growth, but we were certainly expecting to find more house remains, and have not (yet) found any evidence of ancient settlements such as at Barnscar in Eskdale.

Another rather surprising gap is the lack of evidence for Roman activity, apart from the short stretch of previously-recorded Roman road in Wrynose Bottom, between Hardknott Castle and Ambleside. It seems unlikely that the Romans did not use the Duddon Valley as a source of supplies, or even as a route from Hardknott to the Duddon Estuary, but there is no hard evidence for this at present. However, some of the many well-built tracks may have a Roman origin which will require excavation to uncover.

Yet another puzzle concerns the range of small stone structures whose function is unclear, even though it was probably utilitarian. Many were probably associated with some aspect of stock rearing that has now been forgotten, but further research will be required to provide convincing explanations.

Like all worthwhile research, the R2R project has thrown up more questions than it answered. The overwhelming majority of newly-discovered features have not yet been surveyed or investigated in detail, so there is much more work to be done. Plans are currently being developed to address the knowledge gaps, including some of the following:

- What was the function of ring cairns and many small stone structures?
- How many people lived in the valley at various periods?
- Did some of the medieval and pre-medieval populations live in settlements rather than isolated dwellings, and if so where?
- Were the Romans ever active in the valley?
- What structures have been buried by the peat?
- What are the construction dates of many stone structures?
- Can any astronomical alignments be rigorously verified?
- How can we use modern archaeological methods to further investigate sites in the Duddon Valley?

The precise nature of future archaeological studies in the Duddon Valley remains to be worked out in detail, but it is hoped that we can benefit from experience with techniques and interpretation employed by archaeological surveys in other parts of Cumbria and further afield. We also expect that our extensive database will be used as a starting point for a range of academic research projects. Our findings to date are therefore just the beginning.

7.2 What Have We Learned About Using Volunteers in Archaeological Surveys?

Listed below are some of the main things we have learned about using volunteers to conduct an initial archaeological survey of an upland area; it has proven to be an extremely effective use of resources which has generated much unique and valuable data. This has been of benefit to the volunteers, who have gained immensely in skills and experience for use in future projects, and also to the professional archaeologists who have been handed a rich database of discoveries which can form the basis of future research.

- The partnership between the professionals and the volunteers is crucial for success; it has to be worked on and should not be taken for granted.
- There may be much more to the project than you envisage at the start.
- Clear project boundaries should be set and not deviated from unnecessarily.
- Clear objectives should be set and shared with all.
- Clear lines of responsibility and good communication are essential.
- The capability required for success should be clearly defined.
- Sound organisational structures hold things together.
- Selecting the right people to lead teams makes a difference.
- Effective training is essential.
- Standard protocols enable training and consistency across teams.
- Give people capability, ownership and responsibility once training is complete.
- At the instigation of each new step things will take longer than you plan for but it is worth spending time getting it right.
- From time to time professional input is required to audit process.
- A mix of backgrounds and skills are great enablers.
- In a team environment the learning continues through discussion.
- The common approach can be reinforced by bringing people from the different teams together on a regular basis to share their experiences and learn from each other.
- Volunteers are self-motivated and committed.
- People are capable and generally exceed expectations.
- Constraints on professional resources and time for interpretation can be an issue.

Photo 78 A few members of the R2R team relaxing outside the Manor Arms in Broughton-in-Furness

- Quote from Brian Cole in the Manor Arms, after a wet survey team stumbled in for a pint: 'Ah, I see the alcohologists are here.'
- Quote from Ian Boyle, on encountering yet another bield: 'It looks like Bob the Bielder's been at it again.'
- Quote from Alan Westall, when considering the interpretation of most new finds: 'With great respect, Mervyn, I would disagree with your assessment.'
- Another quote from Ian Boyle: 'What is the collective name for a group of archaeologists? – An argument.'
- Comment made while clearing peat from the stones of the ring cairn excavation, during one of the wettest Julys on record: 'This is like shovelling brown porridge.'

7.3 Data Available for Future Study and Plans for the Future

In late July 2009 a group of twenty history group members (predominantly project participants) assembled for a post project 'wash-up and review' workshop; the objectives for the afternoon were to review achievements, identify potential improvements and agree future direction.

As with any project of this size and duration there were a number of things identified that could have been done better but what was achieved against our set objectives and the things that went well far outweighed the not so good.

In the final session a number of potential future scenarios were examined. Those attracting the most and almost equal amount of interest are listed below:

- Work with the LDNP and landowners on clearing, consolidating and maintaining special sites.
- Choose a larger number of sites for further examination and progress a series of specific exploratory and research objectives that would start to characterise sites or areas.
- Choose a small number of special sites of interest for further examination and develop long-term plans for research and understanding.
- Carry out Level 2 Surveys of the mysterious or enigmatic sites.

It was agreed that using the professional 'standard' the next project would be designed for one or more of these options and that activity would be organised to progress the others; with over 3,000 sites and features recorded, there is plenty to go on.

It was also recognised that there was still a fair degree of learning that could be gained from inter team pollination and organised trips to well understood sites outside the Duddon.

7.4 Conclusions

Before the start of this project we carried out a survey amongst our members and 22 said they might participate in some way; in total we have had more than 60 volunteers take part with over 20 keen to take things further.

We now know a great deal about our study area, we have a core of people who are well trained and with the motivation to learn more and add to our understanding of the Duddon Valley's history in a structured and enjoyable way; we plan to go beyond R2R with our next project.

8

Appendices

8.1 Project Deliverables

Major objectives

- A significant increase in knowledge and understanding of the historic environment in the Duddon Valley for a wide audience
- To stimulate active participation in research and interpretation of the historic environment
- To provide educational benefits and use of the historic environment resource produced through the project
- To encourage effective management of the historic environment
- To provide a firm basis for local participation and ownership of the historic environment

Project deliverables

- Complete Level 1 archaeological survey of 75 per cent of the Duddon Valley study area
- Complete 20 metrical surveys at Level 2 of selected archaeological sites in the Duddon Valley survey area
- Complete excavation of the Bronze Age ring cairns at Seathwaite Tarn together with a palaeoenvironmental investigation
- Completion of all identified project outputs
- The development of local knowledge and skills in archaeological fieldwork that will form the basis of further projects by the DVLHG
- For all involved to learn and have fun

Project outputs – benefits

- Day conferences and training
- Annual Archaeological Conference participation
- Exhibitions
- Events for schools and young people
- Excavation open days
- Guided walks leaflets
- Informative book
- Academic publication
- Newsletter and web-based information
- Enhanced Lake District Historic Environmental Record (HER)

8.2 Project Statistics

Approximately 84 sq. kms of the Duddon and Lickle Valleys were surveyed and a total of 1,416 survey sheets were filled in recording over 3,000 features, sites or monuments.

Activity	People Days Contributed			
	Year 1	Year 2	Year 3	Totals
Planning and Organisation	155	60	23	238
Training	141	42	18	201
Archaeological Survey	378	572	263	1213
Data Input		32	25	57
Archaeological Excavation		268		268
Level 2 Survey			84	84
Exhibitions & Talks	10	55	26	91
Book & Walks Compilation			102	102
Feedback & Cross Team Communication		29	54	83
Totals	684	1058	585	2337

8.3 Glossary of Terms

Adit	An almost horizontal passage leading from a hillside into a mine or quarry for access, ventilation or drainage
Alluvium	Fine silt deposited by rivers
AMS	Accelerator Mass Spectrometry
Bank barn	A type of Lake District barn in which the fodder for livestock is transferred to and stored in an upper storey via an embankment (usually the adjacent hillside). The livestock lives on the ground floor and is then easily fed from above.
Barkpeeler's hut	Small stone huts in woodland used as temporary accommodation by oak bark peelers and their families. The bark was used in the tanning of leather.
Baulk	A slab of undisturbed ground in an excavation
Bee bole	An alcove in a stone wall used to house a straw bee skep
Bield	A small drystone shelter or fold for livestock, usually consisting of a low semi-circular wall
Blast furnace	An iron-smelting furnace in which ore and fuel (originally charcoal in the Lake District) were fed in at the top and air forced in at the bottom. This achieved higher temperatures than traditional bloomeries and resulted in molten pig iron which was run off at the bottom.
Bloomery	An early charcoal-fired furnace for smelting iron ore. The bloom was a mixture of iron and slag and was further refined by smithing.
Bobbin mill	A mill in which billets of wood were turned into the bobbins used to hold yarn in the spinning and weaving mills.
Bothy	A simple shelter, sometimes known as a howff, often built by enclosing the space under a large natural boulder using drystone walling. These were used by shepherds and other agricultural workers.
Bronze Age	The period of prehistory from *c.* 2500 – *c.* 600 BC. During this period metal was used for the first time – first copper and then bronze (an alloy of copper and tin).
Burial cairn	Burial cairns were stone mounds built over graves, some including a cist or cists (stone 'boxes' to house an inhumation).
Burnt mound	A usually kidney-shaped mound situated next to a water source, consisting of the piled up remains of fires which were probably used for cooking. It is thought that stones were heated up in the fire and then placed in a wood-lined tank filled with water in order to cook food. The resulting shattered stones and charcoal were thrown up onto the growing mound around the tank, naturally falling into a characteristic kidney-shape. Burnt mounds in Britain have been dated to periods ranging from the Neolithic to the medieval period.
Cairn	A pile of stones sometimes built as a monument or landmark (*see also* Clearance cairn and Burial cairn)
Cairn field	An area characterised by the presence of numbers of cairns, usually clearance cairns.
cal BC, cal AD	These refer to radiocarbon dates that have been calibrated using tree ring data.
Carding mill	A mill in which wool was combed to align the fibres before they could be spun into yarn.

Charcoal burner's hut	A small temporary hut in woodland used by charcoal burners and their families. The production of charcoal was vital for use in smelting iron ore before coke became the dominant fuel in the Lake District in the early twentieth century.
Charcoal pitstead	A horizontal platform constructed by charcoal burners for reducing wood to charcoal. Lengths of coppice wood were stacked in a conical mound around a central stake, covered with turf and soil and burnt over a couple of days.
Cist (pronounced 'kist')	A prehistoric grave comprising a 'box' contructed using slabs of stone, built to contain an inhumation.
Clearance or consumption cairn	A cairn built as a disposal site for stone cleared from the land to improve it for grazing or arable agriculture.
Consumption wall	An extremely thick stone wall which had the same function as a clearance cairn.
Coppiced woodland	A system of sustainably managed woodland in which broadleaved trees such as hazel and ash are regularly cut to near ground level to provide wood poles for various purposes.
Cortex	The usually white outer layer of a flint
Cruck barn	A barn in which the roof is supported by pairs of naturally curved timbers (or crucks), independently of the walls. Each pair of timbers was usually cut from a single piece of wood, with one of the pair reversed to match the opposite one.
Deer park or forest	An area set aside by the aristocracy in medieval times for hunting. The terms 'park' and 'forest' do not imply that the area necessarily looked like parkland or was forested.
Dendrochronological research	The use of tree ring patterns to date pieces of wood
Dressing	Term used to describe the shaping of quarried stone.
Drystone walls	Stone walls built without any cement or mortar. Many of these date back to the eighteenth century or earlier, and some were erected following the General Enclosure Acts of 1836 and 1840 that allowed landowners to enclose areas of fell which had previously been used by subsistence farmers for grazing small numbers of livestock.
DVLHG	Duddon Valley Local History Group
Fox trap	A dry-stone structure with a single entrance at the top, sometimes in a corbelled roof. Foxes were attracted by bait in the trap and were unable to escape once inside.
Fulling mill	A mill in which newly woven wool cloth is washed in thick soapy water and milled (pounded) to mesh the fibres together and produce the desired texture and feel ('handle').
Gate stoop	Stone gate support, often with a series of holes originally used to locate horizontal wooden bars in place of a gate
Glacial drift	Eroded rock and soil deposited by glaciers
GPS	Global Positioning System – a satellite-based system for accurately fixing one's position on a map
HER	Historic Environment Record – a database of archaeological sites. See the following web-address for the Lake District HER: http://www.heritagegateway.org.uk/Gateway/CHR/Lake+District+HER.htm
Herdwick	A type of hardy mountain sheep unique to the Lake District possibly introduced by the Norse in early medieval times.
HLF	Heritage Lottery Fund
Hogg hole	A hole through a stone wall at ground level to allow the passage of young sheep (hoggs), but usually too small to admit adult sheep. The hole is usually closed off with a stone slab when necessary
Howff	See Bothy
Ice Age	The last Ice Age (known as the Devensian) buried the Lake District under an ice sheet from about 30,000 to 13,500 years ago. This was followed by a brief warming period (the Windermere Interstadial) and a short recurrence of the ice for up to 1000 years (the Loch Lomond Re-advance), so the Lake District has been clear of permanent ice for about 10,000 years.
Inhumation	The burial of a body (as opposed to a cremation etc.)
Intake wall	The wall separating the open fell from land lower down which has been enclosed or 'intaken'.
Iron Age	The Iron Age is the period of prehistory from c. 600 BC until the time of the Roman conquest (early 2nd century AD in the Lake District). The smelting of iron was introduced during this period. Some Iron Age settlements continued to be occupied throughout the Roman period and these are often described as 'Romano British'.

Lazy bed	see Rig and Furrow
LDNP	Lake District National Park
LDNPA	Lake District National Park Authority
Leat	An artificial water channel, often used to take water from a stream to a mill or other industrial building.
Level 1 survey	An archaeological survey to produce a basic record of the location, character and condition of archaeological features.
Level 2 survey	An archaeological survey to produce a more detailed record of an archaeological site, including an accurate pictorial representation of the visible features.
Long house	An oblong, generally rectangular medieval farmhouse with stone footings which may have been built up with turf and then topped off with a wooden roof thatched with bracken, reeds or turf. There was sometimes an outer wall, with turf between the walls for insulation. Longhouses often consisted of two ground floor rooms, one for people and one for their livestock. There was no chimney, and smoke from the central hearth exited from a simple hole in the roof or filtered through the thatch.
Malthouse	A building in which soaked barley was allowed to germinate before being dried and used as malt in brewing.
Medieval period	In Britain, this roughly covers the period from the Norman Conquest (1193 in Cumbria) to the mid-sixteenth century.
Megalithic flanked access	An entrance flanked by large stones
Mesolithic	*see* Stone Age
Microlith	A small stone blade used to make composite cutting tools during the Mesolithic Age
Neolithic	*see* Stone Age
OAN	Oxford Archaeology North
Orthostat	A large upright stone
Palaeolithic	*see* Stone Age
Peat	Partly decomposed vegetable matter, laid down in waterlogged bogs, which can be dried out and burned as fuel.
Peat hut	A stone hut used for storing peat. Partially dried peat was usually fed in to an upper floor through a high entrance (reached by an embanked track), allowed to dry fully, and then removed via a lower doorway. Also known as peat scales.
Peat scale	*see* Peat hut
Peat track	A cart or sled track linking the peat diggings on the fell with peat storage huts in the valley
Pele tower	Simple fortified square towers built in the medieval period to protect the inhabitants of a farm or settlement from marauding raiders. They could withstand a short siege and were generally 3 storeys high. In the Lake District, the raiders generally came from the Scottish borders, and were called reivers.
Pinnel hole	A roadside gravel pit.
Potash kiln	A pit used for burning wood or bracken to make potash alkali required in the production of soap for cleaning wool
R2R	The Ring Cairns to Reservoirs Project which surveyed the Duddon Valley and produced this book.
Rabbit smoot	A small hole at the base of a wall to permit passage of rabbits and hares. These were often associated with a stone-lined pit with a counter-weighted trapdoor used for catching the animals for food.
Raddle shelf	A small recess in a wall, used by shepherds to store raddle or sheep dye. Otherwise known as a smitt shelf.
Radiocarbon dating	Estimating the age of organic material by measuring the proportion of the carbon isotope ^{14}C in comparison with normal carbon (^{12}C). Organisms absorb a small but constant proportion of ^{14}C during life which radioactively decays very slowly at a known rate, thus permitting an estimate of the age of their remains.
Retting pond	An artificial pond used for rotting down plant fibres such as flax, hemp or jute in preparation for the manufacture of fabric.
Revetment	Drystone walling built up to support the edge of a track or other structure on steep ground.
Ridge and furrow	*see* Rig and Furrow
Rig and furrow	Low parallel ridges in grassland caused by ploughing or digging land. Most examples in the Lake District are post-medieval. Some ridges are a by-product of ploughing with oxen or horses in a clockwise spiral, starting in the middle of the open medieval field strips, with the soil being displaced to the right and gradually building up into ridges. This cultivation technique was intended to produce a well-drained seedbed, with the furrow acting as a shallow drainage ditch. In lowland areas of

	England, the phenomenon is generally known as ridge and furrow. It is also similar to the features known as lazy beds, although these were generally dug by hand and tended to be wider than most types of rig and furrow.
Ring cairn	A circular ring of stones without an entrance. The inner and outer faces may be kerbed. Ring cairns generally date to the Bronze Age and may contain burials and other evidence of ritual activity. In some cases their function is less obvious.
Ring garth	A medieval wall which separated the tilled land on the valley floor from the grazing land on the fellsides.
Riving	Term used to describe the splitting of slate into thin sheets.
Round house	A circular prehistoric or Romano-British farmhouse. Earlier examples were of wooden construction with thatched roofs and wattle and daub walls. In later periods a stone footing for the outer wall was constructed. Smoke from the central hearth exited via a simple hole in the roof, or filtered through the thatch.
Sheep dub	*see* Sheepwash
Sheepfold	Drystone walled enclosure used for temporarily holding stock.
Sheepwash (sheep dub)	A stone walled enclosure built next to a natural or dammed pool (or 'dub') in a beck. Sheep were held in the enclosure and then individually washed in the dub to clean the wool and remove parasites.
Sherd	A piece of pottery
Shieling	A temporary settlement used by shepherds and herders who took their animals into the fells for grazing in the summer months (see Transhumance)
Slate quarries and mines	Slate was quarried in the Duddon Valley for roofing material. The remains of many early, small casual quarries can be seen. Larger industrial quarries started up in the eighteenth century and production reached a peak in the nineteenth century.
Smitt shelf	see Raddle Shelf
Sondage	A small test excavation
Stone Age	The Stone Age is divided into three successive stages: the Palaeolithic (Old Stone Age – *c.* 500,000 to *c.* 8,000 BC), Mesolithic (Middle Stone Age – *c.* 8,000 BC – *c.* 4,000 BC) and the Neolithic (New Stone Age – *c.* 4,000– *c.* 2,500 BC). The earliest known occupation in Cumbria dates to the end of the Palaeolithic, *c.* 12,000 BC. Subsistence was based on hunting and gathering, which continued into the Mesolithic. Mesolithic settlement concentrated on the coast and in the uplands. Domesticated plants and animals were imported into Britain in the Neolithic, and although wild food remained important into the Bronze Age, subsistence was based in part on farming. Our earliest visible monuments – the large stone circles of Cumbria – were constructed during the Neolithic.
Stone slab bridge	Horizontal stone slabs laid across a stream, often made of slate.
Transhumance	A type of stock rearing in which the animals were driven to high pastures in the summer, and the herdsman and his family moved with them and lived in a shieling.
Tuff	Fine grained rock formed from compressed volcanic ash. Some tuff can be flaked like flint to produce sharp edged stone axes.
Turbary	The right to cut peat.
Turnpike road	A road on which tolls were levied by the landowner.
Water yeat	Stone or wooden bars in a wall gap designed to allow a stream to pass through while preventing the movement of stock.
Wattle and daub	A construction technique in which walls made of woven wood strips (wattles) attached to the wooden house frame were then plastered with a sticky mixture of straw and dung or mud (daub).

8.4a Processes: Level 1 Survey Protocol

- Decide on what approximate area you are going to survey; look for natural visible features that will act as boundaries and can easily be distinguished i.e. becks, paths, cut off between steeply sloping ground and flatter areas etc.
- Arrange people approximately 10 metres from boundary, spaced 20 metres apart; on cluttered or difficult ground reduce spacing and keep the team in close contact while progressing through the survey area. Move steadily and concentrate on your area of survey; individuals should scan the 10 metres either side of them.
- The person on the furthest extremity should be the GPS reader for the day and should start by taking a GPS reading of their position and placing a marker flag at the start point; after each sweep they should mark and record the new start.
- In areas where there are collections of stones or significant promontories, stop and take an overall view and ask the question, 'is this natural or has man altered it or added to it over time'?
- When someone finds what they believe is worth discussion they should contact the nearest people and call the group in for assessment
- When a site or feature is located then it should be recorded; a sequential number is allocated; a photo should be taken of the sheet number and then the site, the GPS reading entered on the record sheet along with a description, dimensions and the condition of the site and the surroundings.

Equipment required

30 metre tape, two half metre ranging poles, digital camera, weather-proof writing equipment and marker flags

8.4b Processes: Level 2 Survey Protocol

Tape-and-offset survey

Equipment required:
Drawing Board (covered with graph paper and Permatrace)
Pencils (H or harder)
Rubber
Scale Ruler
Compass
30 metre and/or 50 metre tapes (at least two)
5 metre hand tape
8 clothes pegs
Ring-headed survey pins (at least 4)
Red plastic pegs
Ranging rods

Tape-and-Offset Survey can be used to create accurate, scaled plans of both small features such as burnt mounds and larger features such as medieval settlements.

This method of survey involves establishing a baseline through, or parallel to the features that you want to map, and measuring the distance of the features from this known line.

To create a baseline, stretch a measuring tape taut along the ground and hold it in place with survey arrows and clothes pegs. The length of the baseline is determined by the size of the area you want to survey. Once set up on the ground, plot your baseline on your drawing board.

Accurate National Grid References (NGRs) should be recorded for the two points at each end of the baseline using a differential GPS. The NGRs should be recorded on the drawing board. If differential GPS is not available on the day then red plastic pegs should be left on the ground marking the two ends of the baseline so that they can be recorded later.

To record points of interest, measure along the baseline tape then take a measurement at right angles from the tape to the point you wish to record. Plot these measurements on to your drawing board (using the underlying graph paper to measure the correct scale). The scale that you choose will be appropriate for the size and nature of the site that you are recording. Scales of 1: 50 (1cm = 0.5m) or 1:100 (1cm = 1m) are appropriate for most features.

Further details of this survey method will be provided in the field.

Checklist of information to include with survey drawing:
Name of site (from Level 1 survey record sheet)
R2R survey number (from Level 1 survey record sheet)
Lake District HER number or National Trust HER number if these exist
Scale of drawing (eg. 1:100)
Date of Survey
Names of surveyors
North arrow (use compass for accuracy)
NGRs for each end of the baseline (to be added later if differential GPS is not available)

8.5 The Lake District Historical Environment Record (LDHER)

The Lake District Historic Environment Record (LD HER) is a computer database and map based system of all the known historical and archaeological sites, buildings, landscapes and find spots in the area. We currently hold c. 14,000 records for the Lake District. Well known sites such as Castlerigg Stone Circle, Ravenglass Roman Fort and Shap Abbey are included, but also cairns, charcoal burning platforms, ruined farmhouses and other less well known monuments are recorded. Sites range from the prehistoric period (from 12,000 BC) up to the modern day and many industrial and World War Two monuments are incorporated into the system.

Each record contains information, where available, on the location of the site, the type of site, its age, whether it is protected, a description, how it survives, its condition, any known sources and whether any archaeological intervention e.g. excavation or survey, has taken place. This information is supported by a wide range of material including aerial and ground photographs, antiquarian accounts, published and un-published material, journals, books, archaeological reports, old maps and information on legally protected sites (scheduled monuments and listed buildings). The LD HER is a great starting point on any research into the historic environment.

The LD HER initially developed as a tool in the planning and development control process and originally formed part of the Cumbria County Council Sites and Monuments Record. Used to enable archaeologists and planners to respond appropriately to development proposals, it has grown and developed and is now used for a variety of other purposes. Importantly it is used as a research tool, providing information to members of the public, archaeologists, consultants and academics and contributes to learning and education, through providing educational resources and presenting historic environment information to the public.

The LD HER is continually being updated and enhanced with new information from members of the public, excavation and survey work and documentary research. Projects such as Ring Cairns to Reservoirs provide huge amounts of data which will be used in the future to advise on planning issues, land-use change proposals and input into schemes such as environmental stewardship. The information that the LD HER contains is continually being used to inform the management and conservation of the historic environment.

The Historic Environment Record can be accessed by appointment at the offices of the Lake District National Park Authority at Murley Moss, Kendal. However, the database element can be searched on the internet at http://ads.ahds.ac.uk/ and www.heritagegateway.org.uk

If you believe you have a new site to verify or record or would like further information, please don't hesitate to contact the Archaeologists at the Lake District National Park on 01539 749555 or archaeology@lake-district.gov.uk