



IDENTIFYING AND RECORDING SCOTLAND'S PREHISTORIC ROCK ART

A SHORT GUIDE

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1. INTRODUCTION

Prehistoric rock art is one of the most fascinating and intriguing aspects of Scotland's historic environment. It represents a unique form of archaeological evidence that provides an insight into how people made sense of the world 6,000–4,000 years ago. Over 3,000 examples of rock art are currently known in Scotland, making it one of the country's most common prehistoric monument types. Despite this, there is still a great deal of research and work to be done to allow us to better understand and care for rock art.

This document describes the techniques for documenting rock art, and advises on an approach for use by individuals, community groups, academics, students and heritage practitioners. It also provides a general background on what rock art is, and the nature and significance of rock art in Scotland. Finally, it provides information on the issues and challenges surrounding Scotland's rock art, and how these can best be addressed through detailed recording.

Relevant resources, including suggested reading and websites, are listed at the end of this guide. Further information about the recording methods set out in this guide can be found on the [Scotland's Rock Art Project website](#), while the [Rock Art Pilot Project Report](#) (2000) provides in-depth discussion on approaches to rock art management, conservation, protection and presentation.



Image © ScRAP

Figure 1 Complex series of conjoined cup and ring motifs on a panel at Cairnbaan, Kilmartin, Argyll.

2. SCOTLAND'S ROCK ART

2.1 WHAT IS ROCK ART?

Rock art is a global phenomenon, created by people across the world over the past 75,000 years and still made in some places today. Carving or painting on to rocks occurs across many time periods and takes many forms, like grave markers, graffiti, or even mile-markers. Some industrial activity, such as the quarrying of querns or millstones, can create visually striking carving but was purely functional. This is a guide to a practice known as 'Rock Art'. It can be defined as marks deliberately painted or engraved on natural rock surfaces that capture unique information about the beliefs and values of the people who made them.

For many people, the term 'rock art' conjures images of cave *paintings*, such as the magnificent Upper Palaeolithic images of Lascaux in France and Altamira in Spain.

However, rock art is frequently carved and can be found in shallow rock shelters or on boulders and outcrops in the open air. Carved or painted rocks and stones are generally called **panels**. Rock art is either **figurative**, representing things such as animals, people and objects (boats and weapons are common themes), or **abstract**. Abstract rock art comprises **motifs** (symbols) that do not resemble anything we recognise today but meant something to the people that made them. These range from simple shapes, like lines or circles, to elaborate and complex forms.

2.2 WHAT IS SCOTLAND'S ROCK ART?

Scotland's rock art is almost entirely abstract, characterised by **cup and ring marks** carved into the rock. Cup marks are small circular depressions, sometimes occurring in great numbers and often



Image © ScRAP

Figure 2 Horned spiral motif on rock art panel at Achnabreck, Kilmartin, Argyll.

surrounded by one or more concentric rings, and linear grooves. However, cup marks can also be found on their own on a rock surface, and a single cup mark is quite common. Although simple, these motifs have numerous subtle variations, and are often assembled into elaborate arrangements. The shape, texture and natural features of the rock surface are also frequently incorporated into the design, suggesting that the rock itself was considered significant. Certain rocks may have been selected for carving because of their particular visual or material attributes.

Rock art was created in Scotland during the Neolithic and Early Bronze Age (c.4000–2000 BC), although it may have continued to be important in later periods, perhaps with different meanings. It forms part of a wider European prehistoric carving tradition, referred to as **Atlantic Rock Art**, occurring in parts of Britain and Atlantic Europe such as Ireland, Portugal and north-west Spain. Atlantic Rock Art is typically carved on natural rock surfaces

in the open air, but can be associated with prehistoric monuments, or re-used in more recent structures such as field walls.

A related form of Late Neolithic carving called **Passage Tomb Art** is known in parts of Britain, Ireland and Western Europe. Passage Tomb Art has a similar distribution to Atlantic Rock Art, but probably served a different purpose. It is almost exclusively associated with Neolithic Passage Tombs and was created for use in these monuments. The carvings comprise motifs rarely found in other rock art, such as spirals, lozenges, and chevrons, often arranged into intricate designs. In Scotland, Passage Tomb Art is restricted mainly to burial monuments in Orkney, but in rare cases the motifs occur in the landscape, such as at Achnabreck in Kilmartin. Interestingly, many motifs carved on slabs recovered during excavation of Neolithic buildings at Ness of Brodgar and Skara Brae in Orkney also resemble Passage Tomb carvings.

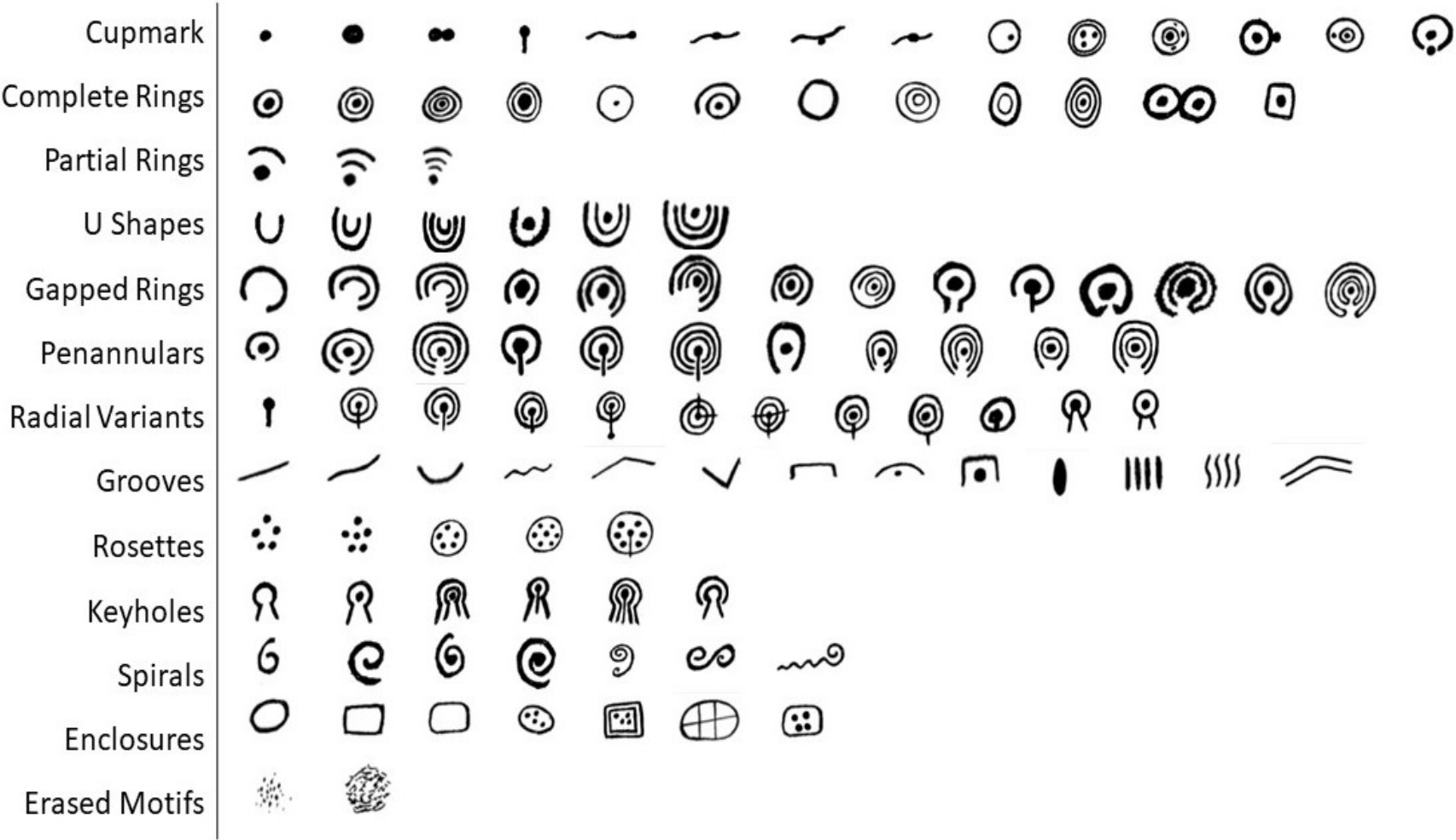


Figure 3 Examples of subtle variations in rock art motifs.

2.3 HOW WAS IT MADE?

The motifs were created by repeatedly striking – known as **pecking** – the rock surface with a hard implement. Individual peck marks from the tool's impact are sometimes preserved in the motifs. Although the wearing and weathering over centuries makes these peck marks hard to spot, they can help separate human-made markings from those made by natural processes. Excavations at rock art sites in Scotland have recovered large quantities of quartz and quartzite pebbles that were probably used to make the carvings. Experimental archaeology using similar tools shows that it takes 30–90 minutes to produce a cup and ring motif on soft rocks like schist and sandstone, while carving harder rocks takes much longer. Elaborately carved rocks would have required significant time and effort, although the design may have been developed over an extended period. There is occasional evidence of modification and even removal of motifs, showing that some carved rocks were repeatedly re-worked. It is unclear whether the carvings were made by one person, or several people working together or separately. The identity and social role of the rock 'artists' is unclear although experimental carving shows that anyone can create similar motifs, regardless of age, gender or, in most cases, physical ability.

2.4 WHERE IS ROCK ART FOUND IN SCOTLAND?

Distribution

Over 3,000 prehistoric carved rocks (**panels**) are currently known in Scotland, with more discovered every year. There are large concentrations in parts of Argyll, Perthshire and Inverness-shire, and around the coast of Dumfries and Galloway, with smaller clusters in Angus, Aberdeenshire, and Bute, whereas the north-west Highlands and Scottish Borders have only

a handful of examples. Today's rock art maps are, however, biased by patterns of survival and discovery, so are unlikely to reflect the full extent or distribution of rock art in prehistory. Quarrying, agriculture, and urban construction have destroyed countless panels while others remain concealed by peat, turf, and woodland. Gaps in the distribution may also reflect areas where there have been fewer efforts to find and record rock art.

The types of motifs, their arrangements, and their relationship to the natural rock surface vary across the country. Simpler motifs such as cupmarks and **dumbbells** (two cupmarks linked by a short groove) tend to dominate in northern Scotland, while complex and unusual variants are more common in the south, with a transition zone in Perthshire around Loch Tay. Various rock types have been carved, ranging from soft, fined-grained sandstones to hard, coarse-grained Lewisian gneiss and granites. Harder rocks tend to have simpler motifs, whereas softer rocks like sandstone are often more elaborately carved, but this is not a definitive rule.

Contexts

Rock art panels are generally located on hillsides, open moorland and around the edges of fertile river valleys and arable land. Like many other prehistoric monuments, they are carefully sited considering things like the local topography, and how they were intended to be used. There can be regional variations in these patterns. They are often found in places favourable for prehistoric settlement, farming and herding, rather than remote mountain regions. Carvers typically favoured surfaces with a low profile, rather than prominent upright boulders, and the carved panels are usually flat or gently sloping. However, outliers also exist such as carvings on vertical rock surfaces, such as at Ballochmyle in Ayrshire.



Image © ScRAP

Figure 4 Rock art panel at Balmacnaughton on slopes above Loch Tay, Perthshire.



Image © ScRAP

Figure 5 Fragment of rock art panel reused within modern field wall, Glasvaar, Kilmartin, Mid Argyll.

A small proportion of Scotland's rock art (about 7%) is associated with Neolithic and Early Bronze Age burial cairns, stone circles, and standing stones. Carvings in Early Bronze Age burial cairns tend to be eroded or damaged, suggesting they were quarried from carved outcrops in the landscape for re-use in the monument, although some appear quite 'fresh' as if made specifically to be placed within the tomb.

Rock art is also incorporated into later prehistoric structures, such as hillforts, brochs, and souterrains. It is often deliberately positioned in entrances and other important parts of these structures, suggesting that the communities who built them still considered rock art important. Some recent evidence may also show re-use of rock art panels as late as the early medieval period, but more functional re-use of carved boulders and rock fragments in more recent constructions like field walls and gateposts is probably accidental rather than deliberate.

2.5 WHAT WAS ITS PURPOSE?

The abstract nature of Scotland's rock art makes it hard to understand its purpose and meaning. Nevertheless, over a hundred theories have been proposed, ranging from charts of astronomical events, conceptual maps and territorial markers, to games, receptacles for liquid and moulds for casting metal objects. In recent decades, research has moved away from studying the motifs in isolation to focus instead on their contexts, and the experiences surrounding rock art production and use. These approaches, supported by digital technology and archaeological excavation, have been more revealing.

Landscape Approaches

Landscape studies, frequently combined with **Geographical Information Systems** (GIS – a computational system that creates, manages, analyses, and maps all types of data), have provided new insights into the spatial patterning of rock art, building on the notion that carvings were not randomly located but

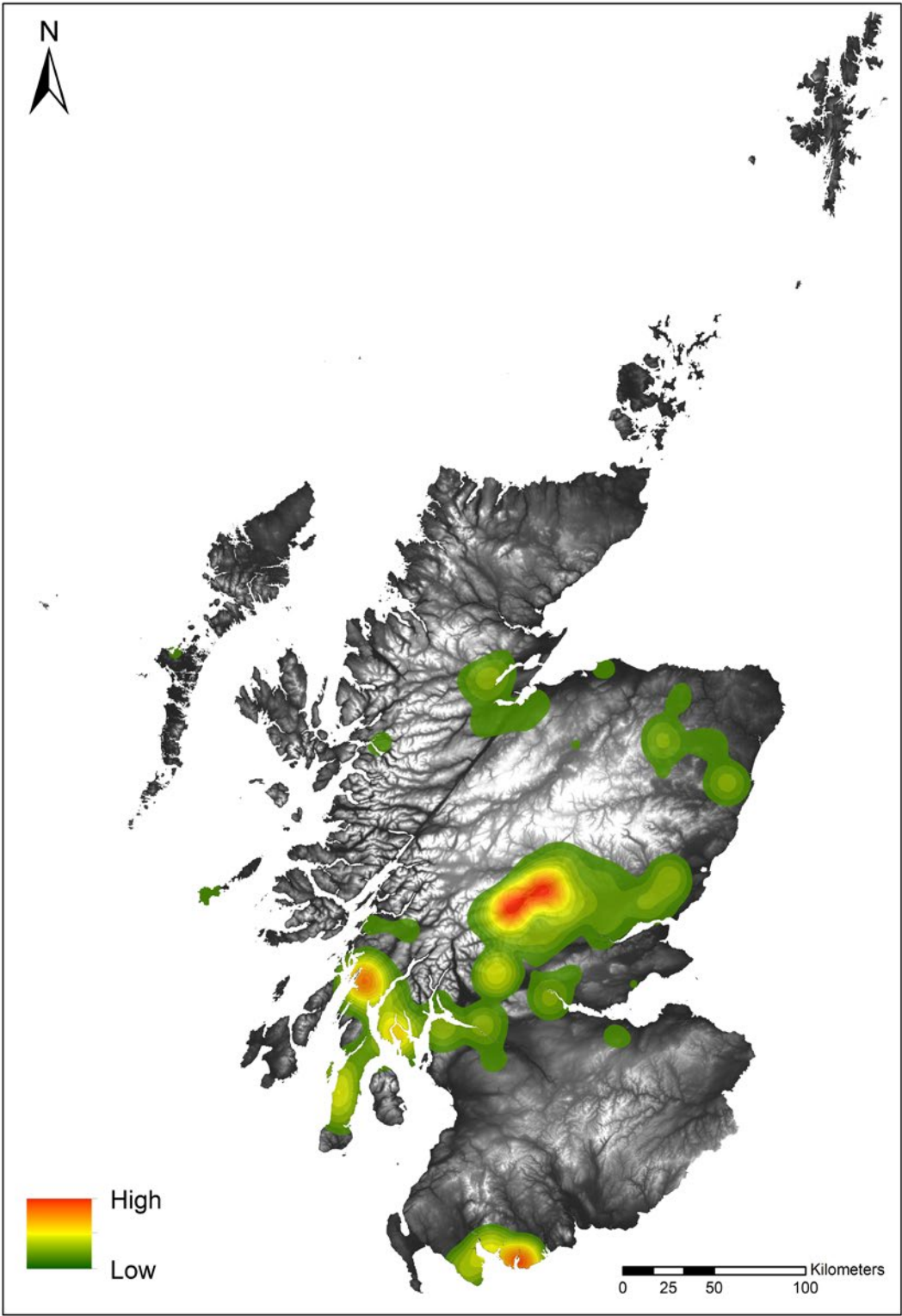


Image © ScRAP

Figure 6 Map showing density of known rock art panels in Scotland.



Image courtesy of Forestry and Land Scotland © Alan Braby

Figure 7 Artist's impression of the process of creating rock art, from *A Song in Stone*, a learning resource by Forestry and Land Scotland exploring Scotland's prehistoric rock art.

carefully structured within the landscape. Panels appear to overlook and define fertile areas, natural routeways, and other significant features or locations. They lie on the thresholds between contrasting landscapes, with more complex carvings clustered at major entrance and exit points. In these contexts, the carvings are viewed as a mechanism for controlling movement, communicating information, and altering the perceptions and experiences of people moving through the terrain.

Experiencing Rock Art

Research and excavations in recent years have explored the experiences of creating rock art, and their effect on people. Many cultures today believe certain rocks, or rocks in certain places, are living things

with supernatural powers. Such rocks are treated with respect and are often a focus for ritual. Rock art production in Scotland may have been considered as a way of tapping into the power of 'living rocks' to harness it for healing, fertility, or protection against evil forces, and might have been performed as part of a ceremony that brought the community together. The experience of carving these rocks, together with the sound of pecking and other activities like feasting, dancing and storytelling, could have forged potent memories that connected people to the landscape and each other, and was possibly as important as the motifs themselves.

ENHANCING UNDERSTANDING THROUGH ROCK ART EXCAVATION



Image © Aaron Watson

Figure 8 Rock art panel under excavation at Cloanlawers, Ben Lawers, Perthshire.

In recent years, archaeological excavations around carved rocks, such as those at Torbhlaren in Argyll and Cloanlawers in Perthshire, have transformed our understanding of rock art. At Torbhlaren, traces of a wooden structure and cobbled platform, together with vast quantities of quartz pebbles and fragments, provide evidence for complex ritual activities associated with the carved outcrops.

Experimental archaeology has demonstrated that some quartz pebbles were probably used for making rock art, while others were deliberately smashed. Quartz fragments and hammerstones wedged into natural fissures in the outcrops at Torbhlaren may indicate a belief that the rock was a living entity, animated by supernatural forces. Radiocarbon dates from sealed fissures containing quartz hammerstones suggest that the rock art was created during the Late Neolithic and continued to be significant for hundreds of years into the Late Bronze Age.

This research shifts our focus away from the visual appearance of the motifs by emphasising the attention to natural features and materials in prehistory, and the powerful experiences associated with creating rock art. Quartz emits a strange glow when struck, and these special qualities, together with the percussive noise of carving rock art, may have been part of communal performances involving sound, light and movement. In some areas of Europe, the creation of rock art may have taken place within large complexes of monuments, suggesting it was just one part of a range of different ritual activities at important places and times of year.

3. WHY RECORD SCOTLAND'S ROCK ART?

Rock art can tell us about prehistoric beliefs, values and practices. It offers a unique perspective on the past that complements data from other forms of archaeological evidence. Although frequently studied in isolation, it is best investigated as part of the wider landscape. Recording rock art in the landscape can be a rewarding exercise, taking you to new and interesting places and giving you a chance to engage with an intriguing part of our past. In gathering and sharing data on rock art panels, we can contribute to our understanding of these monuments as well as helping to manage and protect them.

The more accurate and detailed the information the better – for example, incorrect information on the location of a rock art panel could lead to its accidental damage or destruction.

There are four key aims for rock art recording:

- Gather data to enhance our knowledge of rock art and make that data accessible for education and public awareness.
- Help us to understand the significance of rock art in the past and its value to us today
- Gather data to inform how we manage and look after rock art.
- Create a permanent record of archaeological monuments which are eroding and may be at risk of damage or destruction.

3.1 HOW ARE THE ROCK ART RECORDS USED?

Rock art records are used in many ways, from research and heritage management to public enjoyment and tourism. They have also been developed into educational resources, and have inspired creative

interpretations in different media, including ceramics, soap, textiles, jewellery and tattoos.

Ideally, recorded information should aim to satisfy as many of these varied uses as possible, and even anticipate future demands and research questions. Heritage managers need a precise, detailed and measurable record of the content, condition and location of the rock art. Researchers require consistent and wide-ranging information on the nature of the carvings and their contexts, while interested members of the public want clear and accurate information about where to find the rock art and what it looks like. Other audiences, including artists, teachers, and young learners, prefer a visually engaging record that sparks their imagination, and inspires learning and creative practice.

As values change and public access to digital information and technology develops, there is a growing demand for detailed online records. In recent years, heritage organisations have worked closely with community groups to record rock art using methods like 3D modelling. Many more people are now able to engage with and enjoy rock art.

3.2 WHAT ARE THE RISKS TO ROCK ART AND HOW IS IT PROTECTED?

Scotland's rock art is vulnerable. Many motifs are so weathered that they are only visible in certain lighting conditions or high-resolution 3D models. Some have been damaged or destroyed, either deliberately or through lack of awareness, or completely lost to erosion. There are various ways in which rock can be conserved and best cared for. This will vary depending on a rock art panel's circumstances, so careful and informed



Image © ScRAP

Figure 9 Example of rock art recorded in the wrong location, causing it to be damaged during forestry operations, Tom nan Clach, Argyll.

advice from specialists is often needed. However, there are actions that relate to all panels – recording condition and potential threats is necessary for ongoing monitoring and management, which can provide crucial benchmark data for assessing change and deterioration.

Rock art panels are often under threat both from natural processes, chiefly weather erosion and damage by vegetation, and risks posed by how we use the land. For example, trampling by livestock and people can damage motifs, and quarrying, forestry, and agriculture all pose significant threats. Some of these risks are increasing due to [climate change](#). Even well-meaning efforts to expose rock art can lead to erosion.

Some rock art panels in Scotland (about 5% of the total) are protected by law through designation as Scheduled Monuments, making it a criminal offence to damage or interfere with them. Panels that are not designated may be at greater risk, particularly if their records contain minimal or inaccurate information, such as details of their location. Any panels which are currently unknown or not yet recorded have no protection at all and may be at greatest risk. Consistent records can inform decisions about the relative importance of panels and the appropriate level of protection required, as well as ensuring that sites can be properly considered when development occurs.

Carved rocks are therefore fragile monuments and care must be taken when recording them to ensure they are not damaged. The best way to do so is to follow the **Rock Art Code** (see page 23).

[Canmore website](#), which allows users to browse and download information and images for all known rock art in the country. In 2021, the HES archive was updated with thousands of digital images and details for over 1,000 panels recorded by Scotland's Rock Art Project (ScRAP). The [ScRAP website](#) also provides extensive information about Scotland's rock art, with map- and text-based search functions linked to the ScRAP database.

Regional rock art archives are curated by Local Authority Historic Environment Records (HERs), and sometimes the information on these may be different from that found on Canmore. The full complement of regional and national data can be viewed on [PastMap](#). In addition, there are several independent online resources for accessing and contributing rock art data, listed at the end of this publication. These contain valuable information and images sometimes absent from official archives and are worth consulting.

The records for Scotland's rock art have been compiled over two centuries by many different people using a diversity of techniques that have developed organically over time, as has our understanding of rock art. As a result, existing information is sometimes inconsistent or inaccurate. Grid references, particularly for older records, are often imprecise, sometimes by more than 300m. Identifying what is rock art and what are natural features can be tricky, so it is not uncommon for natural or later human-made features to be documented as cupmarks.

3.3 ROCK ART RECORDS

The central archive of Scotland's rock art is managed by Historic Environment Scotland (HES) and is accessible via the

4. RECORDING SCOTLAND'S ROCK ART

The previous sections have outlined key points about Scotland's rock art and stressed the importance of a reliable and accurate record for understanding, protecting, managing and celebrating this unique resource. This section sets out the methods and best practice for rock art recording. It offers guidance on what to record, how to locate and identify rock art, and how to capture detailed information at different scales.

4.1 GENERAL PRINCIPLES AND WHAT TO RECORD

There is no single technique for recording rock art. A wide range of methods have been applied over time by different individuals and organisations. In recent years, community projects in England and Scotland have developed a standardised approach which has been used to document over 3,000 rock art panels. This approach is recommended for all future recording.

Before going into detail, it is important to note three essential principles that all rock art recording should adopt:

1. Any intervention should be kept to an absolute minimum and should be entirely non-destructive. See the Rock Art Code in Section 3.
2. The same recording methods should be used for every panel, regardless of the scale and complexity of the carvings. This allows analysis to be carried out across all panels.
3. Recording should be objective and repeatable; anyone should be able to achieve the same results regardless of experience or capacity.

Adhering to these principles will help generate a comprehensive and consistent record with long-term value, while preserving rock art for the future.

Recording methods have evolved over the years in line with changing technology and attitudes. Traditionally, documentation focused on the motifs and their arrangements on the rock surface. It is now recognised that recording should also include the rock itself, the condition of the rock surface and the carvings, and the wider physical and cultural contexts. We can broadly categorise the three scales of recording as:

- Large scale: the landscape and cultural contexts
- Medium scale: the panel and rock surface
- Small scale: the motifs and their arrangement on the rock surface.

These three categories are discussed in more detail in Section 4.3. Recording different scales of information generates a powerful database with wide-ranging applications for research, management and public appreciation.

4.2 LOCATING AND IDENTIFYING ROCK ART

Rock art recording can either enhance existing information or create new records for undocumented panels. Looking for rock art in the field can be challenging as existing grid references and descriptions may not be accurate, the panels may be hidden by vegetation, and the carvings are often difficult to see. Initial research and an understanding of where and when to look for rock art can increase the likelihood of locating known carvings and discovering new ones.

Rock art rarely occurs in isolation, and surveying for 'new' panels often focuses on areas where it is already known. Information on known rock art can be accessed on Canmore, the local Historic

Environment Record, PastMap and ScRAP websites, while historical documents, such as the First Edition Ordnance Survey maps, help build a picture of landscape changes that may have affected rock art survival. There are also regional and topic-specific online resources which can be useful. Some helpful resources are given at the end of this document.

Good light is one of the best tools for locating rock art. Clear winter days are ideal, when the vegetation is less dense and the angle of the sun is low. The visibility of carvings is also enhanced by slanting morning and evening light, especially when the rock surface is wet. In summer months, bracken and other seasonal vegetation can obscure carved rocks and impede survey, so recording can be less effective at this time of year.

Identifying prehistoric carvings correctly can be difficult, even for experienced fieldworkers, and there are many examples of natural features mistakenly recorded as rock art. Complex motifs, such as cups with multiple concentric rings, are more obviously human-made, but the majority of Scotland's rock art comprises simple cupmarks. These are often weathered to shallow depressions that can be hard to distinguish from natural features on the rock surface. Circular hollows are also formed by a variety of human and animal actions, so need to be examined carefully. In addition, geological processes can produce a whole array of anomalies that look deceptively like rock art. Where it is not possible to make a firm decision about whether a feature has natural or human origins, repeated visits in different weather and lighting conditions can be helpful.

Table 1 (page 21) summarises the main causes of features resembling rock art.

It is unlikely that there was a strict division between natural and human-made elements in prehistory, however. The rock

surface and natural features may have been considered significant and have often been incorporated into the design or copied by the motifs. In some cases, natural features have been enhanced. For example, fissures may have been widened or elongated by pecking, and rings may have been created around natural depressions. Although hard to identify, these subtleties provide an insight into how people perceived their world in the past and so should be recorded.

When searching for and recording rock art it is important to remember to be careful not to expose them by removing turf, moss and lichens, as this can damage the stone surface and the carvings.

Tips for identifying Rock Art

The more of the following that can be discerned, the greater the probability that the feature is a cupmark, bearing in mind that rock art does not always display all these characteristics:

- Regular, circular shape when viewed from above
- Fairly regular size of 2–5cms diameter, although occasionally larger or smaller
- Hemispherical or conical sides, typically 0.5–2cm deep (no vertical sides or flat bases)
- Outer edges that are smoothed rather than sharp or overhanging
- Traces of peck marks (small depressions made by the impact of a tool) inside the motif, rather than smooth and even surfaces inside
- Arranged in rows, arcs or other distinct patterns not formed by natural processes or geological anomalies in the rock
- Surrounded by one or more concentric rings, or associated with definite rock art motifs
- Situated on rocks not geologically prone to differential weathering or natural depressions



Images © ScRAP and T Barnett

Figure 10 A range of features that could be mistaken for rock art. From top left: bait holes, used for grinding shellfish for bait; hollows caused by piddocks (marine creatures); erosion of natural concretions; evidence of medieval or later quern quarrying.

Cause	Effect
Natural and geological	
Differential erosion of concretions or other nodules formed within sedimentary rocks such as sandstone	Circular/ sub-circular depressions
Release of pebbles embedded in conglomerate rocks	Circular/ sub-circular depressions
Small 'potholes' created by the grinding action of a stone or coarse sediment in ancient river or stream beds, or indeed in glaciers	Circular/ sub-circular depressions
Weathering of vesicles (solidified air bubbles) in some volcanic rocks	Circular/ sub-circular depressions, occasionally with an outer 'ring'
Differential water erosion of the natural rock surface curvature, fissures and depressions	Circular/ sub-circular depressions Grooves
Differential erosion along bedding planes	Sub-circular depressions Grooves
Glacial striations	Grooves
Folding of metamorphic rocks	Multiple parallel grooves, sometimes forming rings
Weathering by tree roots, caused by differential wearing from humic acid produced by the roots as they break down	Branching linear depressions
Animal	
Hollows created by piddocks (<i>Pholadidae</i>) – clam-like marine molluscs that burrow into soft rocks such as sandstone	Circular/ sub-circular depressions
Scratches made by animal hoofs or antlers scraping on horizontal rock surfaces	Grooves
Human	
Quarrying marks for inserting wedges to pry open rocks, or drilled holes intended for explosives	Circular/ sub-circular depressions
Sockets to hold gate or fence posts	Circular/ sub-circular depressions, occasionally re-using cupmarks
Bullet strike marks, most common in military training areas and grouse moors	Circular depressions
Plough marks, often found on boulders close to the ground or on edges of arable fields	Grooves
Flail marks, in areas where bracken or heather has been managed	Grooves
Marks made by polishing or sharpening stone and metal objects	Sub-circular or oval depressions Grooves
Bait holes for grinding shellfish to use as fishing bait	Circular depressions
Quern-stone and mill-stone extraction sites	Circular/ sub-circular depressions with an outer 'ring' (in situ quern roughouts) Circular depressions (extracted querns)
Ordnance Survey benchmarks	Carved pattern in in a distinctive triangle shape

Table 1 Natural, animal and human causes of rock-art like features.

- Located in the vicinity of other rocks or natural outcrops with clearly identifiable rock art
- Located on rock surfaces that are flat or gently sloping rather than vertical or steeply sloping
- Located in accessible places with evidence of past or present human activity, especially Neolithic or Early Bronze Age monuments, but rarely on sea and loch shores, steep hillsides, and mountain tops, or in caves and narrow gorges.

4.3 RECORDING ROCK ART

There are various methods for recording rock art – from simple note-taking to detailed 3D modelling using expensive high-tech equipment. Any accurate information is useful, but the quality and usefulness of the data is increased by greater amounts of detail and variety of recording methods. Each method records different information and, used together, they can capture breadth and depth of detail for the carvings, the rock surface and the wider landscape – see Table 2 (page 25). When recording, remember to always follow the Rock Art Code shown on page 23.

What you will need for recording rock art in the field

Locating and preparing rock art for recording

- Ordnance survey map and/ or mobile phone
- Grid references and descriptions of known rock art
- Hand-held GPS device or mobile phone with GPS app
- Spare batteries for GPS/ mobile phone
- Rubber gloves
- LED torch (and spare batteries) to help view the carvings

- Bamboo canes or similar to mark the location of panels
- Kit bag

Field recording

- Recording forms and clip board, or digital equivalent
- Sharp pencils, eraser and sharpener
- 5m tape measure
- Compass or compass app on mobile phone
- Inclinator or inclinometer app on mobile phone to measure panel slope
- Geology card for measuring grain size

Photography and photogrammetry

- Camera (a DSLR is preferable for 3D modelling, rather than a mobile phone camera)
- Spare SD cards for camera (minimum of 4GB, especially if capturing images for 3D models)
- Spare camera batteries
- 0.5m scale bar (preferably wood or heavy material)
- 10cm scale bar for detailed photographs
- North arrow (preferably wood or heavy material)
- Tripod for overcast conditions or night photography

Field Survey

A walk-over survey of the area around the panel(s) prior to recording is important for locating the rock art, identifying archaeological and modern features in the vicinity, and developing an understanding of the geology and landscape setting. It is best to use a **GPS** (Global Positioning System) device or mobile phone to navigate to known rock art panels, bearing in mind that the grid reference may not be precise or accurate and you may need to search the surrounding area to find the panel(s). It is also worth looking carefully

ROCK ART CODE

ALWAYS:

- ✓ Leave the carved rocks and other archaeological features as you find them.
- ✓ Keep your impact on the rock surface to an absolute minimum.
- ✓ Seek permission from the relevant owner or manager to visit sites, and obtain any legal authorisation, such as Scheduled Monument Consent.
- ✓ Respect the environment and follow the [Scottish Outdoor Access Code](#).

NEVER:

- ✗ Remove turf from buried rock art panels. A freshly exposed rock surface is very vulnerable to erosion.
- ✗ Remove lichen, mosses and other growths from rock art panels. This can seriously damage the carvings and weaken the rock surface.
- ✗ Attempt to remove graffiti, chalk, or anything else on the rock.
- ✗ Use any substances (including water, even if from natural sources) to 'clean' rock surfaces.
- ✗ Use brushes with stiff bristles (plastic or wire) to clean the rock.
- ✗ Use any metal tool (eg a trowel or knife) to 'clean' the carvings.
- ✗ Add chalk or enhance the carvings using any other substance (this may interfere with accurate dating of the surface).
- ✗ Use any recording technique that involves direct and/ or repeated contact with the surface (eg wax rubbing) scratch or chalk your name or messages on or close to the carved panels.
- ✗ Walk or drive over carved panels.
- ✗ Light fires or candles on or close to rock carvings.

at every rock outcrop and stone in the vicinity for unknown rock art. There is no set rule about the distance between panels, but they tend to be in relatively easily accessible places and are often close to natural route-ways through the landscape. If the land has been used for agriculture recently or in the past, carved stones and fragments of carved rocks may have been moved to the field edges when the land was cleared, and these are good places to investigate. Stone walls and piles of stones from field clearance also sometimes contain rock art and are worth looking at. Over time, rock art surveyors can occasionally develop a 'feel' for where best to find panels. If the panel(s) cannot be located, it may be worthwhile returning to the area when the light conditions and vegetation are different.

Preparing the Panel Survey

Preparing the rock art panel in advance can help to identify features and make any later recording more effective. Loose vegetation and detritus can be removed from the panel surface using soft brushes, or wooden implements such as spatulas and lolly sticks. Removing moss, lichens, turf and vegetation to reveal the carvings should be resisted, as it can place rock art at risk. Soils and other deposits growing in cracks and fissures could contain archaeological and/ or paleoenvironmental deposits, so these should also be left alone. Be aware that if the panel is a Scheduled Monument, even minor cleaning could constitute a criminal offense. Advice and consent must be sought from Historic Environment Scotland prior to recording.

Text-based Recording

The key categories of information to record for each panel are described below. It is helpful to use a standardised recording form to note consistent detail for each panel. The [recording form](#) developed by Scotland's Rock Art Project (ScRAP) is available for download on the ScRAP

website together with [comprehensive guidance notes](#), and it is advisable to consult this information before recording.

- Canmore Number (except for 'new' panels) – known as 'NUMLINK'.
- Historic Environment Record Number (this can be easily obtained via PastMap).
- Classification (eg cup marked stone; cup and ring marked rock). Definitions of the specific terms are available on the [Canmore Thesaurus](#).
- Current location/ provenance (eg at original location, re-used in a structure, re-located, in a museum, lost or destroyed, or not located), and any biographical information about the panel, such as where it was moved from and when.
- Weather conditions during recording, which may affect the consistency of the data.
- **Large scale:** detailed description of the location, noting the terrain, current land-use and vegetation, views, distance and direction to other rock art panels, and to any archaeological, historical and modern features visible from or within about 200m.
- **Medium scale:** detailed description of the panel, noting its shape, dimensions, slope and orientation of the carved surface(s), rock type, grain size, texture, anomalies such as nodules or colour bands, size and position of natural features such as fissures, hollows, bedding planes, or pitting, and the condition of the panel.
- **Small scale:** detailed description of the carved motifs, noting the type, frequency and relative position of motifs on the rock surface and to each other, obvious patterns or arrangements such as arcs or alignments, relationship to rock surface features, presence of tool marks, the condition of the carvings and any

Scale of recording	Method					
	GPS	Text-based	Drawing	Photography	3D Modelling	RTI
Large Scale (Context)	✓	✓	✓	✓		
Medium Scale (Panel)	✓	✓	✓	✓	✓	
Small Scale (Motifs)		✓	✓	✓	✓	✓
Condition		✓		✓	✓	

Table 2 Recording methods recommended to capture different scales of detail.

potential threats or risks. Also note whether you consider the features to be definitely, probably or possibly rock art.

Spatial Recording

It is essential to note the location as accurately as possible using a GPS device or mobile phone held over the centre of the panel to generate a 12-figure grid reference. A hand-held GPS device, such as the Garmin e-trex, is lightweight and can store multiple grid references. Mobile phones can often be as accurate as GPS devices for taking grid references and various free GPS apps are available, including [View Ranger](#). Both GPS devices and mobile phones are more accurate than Ordnance Survey (OS) maps, and should be used wherever possible. Google Earth or [Canmore Aerial photographs](#) can be used to identify larger rocks, and both should provide better grid references than the OS map. Further information about taking grid references can be found in the [ScRAP recording guidance notes](#).

Field Sketches

Making sketch plans (with added measurements where appropriate) of the location of each panel, and of the panel itself, including details of the motifs and rock surface features, encourage close scrutiny of the carvings and rock surface features, and complement the photographic records. Sketches should include a scale, position of North, panel name, Canmore Number and date of recording. It is helpful to always use standardised drawing conventions such as [those developed for ScRAP](#).

Photography

Good photographs are vital for documenting rock art and its surroundings, as well as helping others identify the carvings. It is good practice to take the same series of photographs for each panel, regardless of its size and complexity, and to always include a scale bar and North arrow in each shot (on the ground in front of the panel rather than on the carved surface). Notes should be kept of what each photograph is capturing, especially if more than one panel is being recorded, as

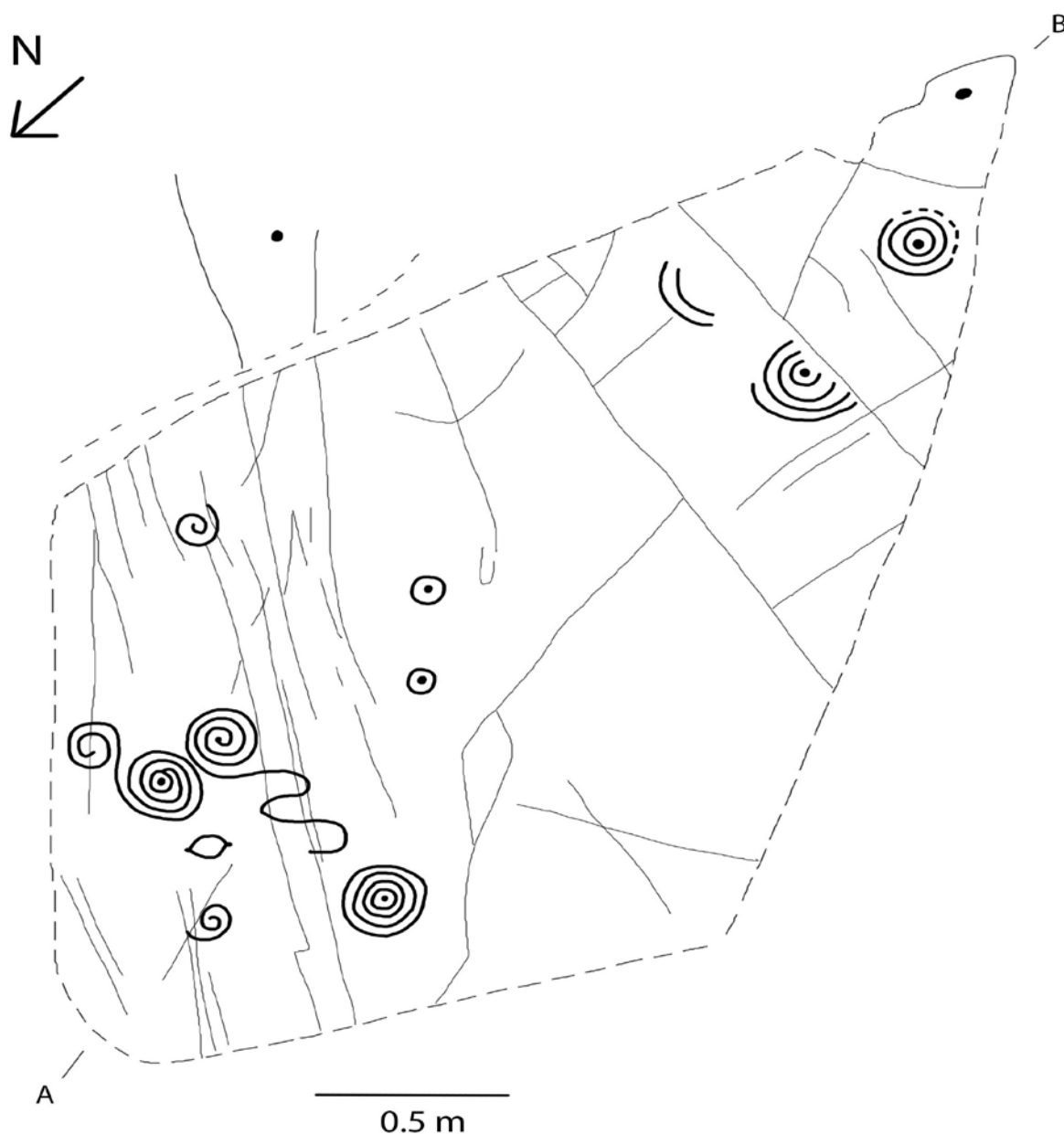


Image © ScRAP

Figure 11 Sketch of rock art panel at Blairbui, Dumfries and Galloway.

it is easy to lose track. Photographs should be taken on a high or medium setting (between 4MB and 10MB) using a good quality digital camera such as a DSLR, although many mobile phone cameras are perfectly adequate. The following photographs are recommended:

Large scale (Context): The panel in its wider setting, ideally including shots from each cardinal point (N, S, E, W) looking

towards the carved rock. Panorama photographs of the panel in context can also be useful, and many digital cameras and mobile phones have an automated panorama feature, but there are also numerous free options, such as [PanoramaStudio](#) and [PhotoStitcher](#).

Medium scale (Panel): Closer shots that capture the size and shape of the panel, the nature and condition of the

EXAMPLE OF A DESCRIPTION FOR LAGGAN HILL 1, HIGHLAND

Site Name: Laggan Hill 1 Canmore ID: 285787 NGR: NH 99860 25856

Classification: Cup Marked Stone (Neolithic) – (Bronze Age)

Date Fieldwork Started: 02/04/2019 Compiled by: NOSAS

The panel is located on a gentle S facing slope with extensive views over Strath Spey towards Aviemore and the Cairngorms, in rough pasture about 200m due W of the small Laggan Burn and 10m to the E of a large rock outcrop. The panel forms part of a small cluster of carved rocks, and more dispersed carved stones, comprising Laggan Hill 2 (Canmore ID 12376; approximately 2m to the NW) and Laggan Hill 4 (Canmore ID 12377; approximately 8m to the SSE). It lies about 180m to the N of a Bronze Age burial cairn, 8.5m diameter (Canmore ID 8972), and about 35m to the S of two smaller cairns (Canmore ID 7826 and 9832), each with a diameter of 3m. A rough trackway lies 200m to the SE of the panel, running in a NE-SW direction. Locally, this is thought to date back to at least the 17th century.

This is a small, roughly rectangular schist slab, measuring approximately 2.0 x 2.5m with its long axis orientated SE. The panel is low-lying, rising to a maximum of 0.5m above the present ground surface but now largely hidden by bracken. Its smooth, flat surface slopes gently to the S, with two natural channels running N-S across the surface. A possible groove runs parallel to these natural channels but is heavily eroded and may be natural. There are 2 cups each with a single ring and 1 larger cupmark, all located on the NW corner of the panel. A possible groove connects the larger cup with one of the cup and ring motifs. Peck marks are visible in the larger cup, but all other motifs are heavily eroded. Turf cover over the lower part of the rock may be obscuring further carvings.

rock surface, and the motifs, making sure that the panel 'fills the frame' of the photograph. Ideally, there should be at least one photograph taken perpendicular to the carved surface, in addition to several shots of the panel from different directions.

Small scale (Motifs): Close-up shots of unusual motifs, natural features and/ or the relationship between them, as well as details of any damage to the panel or the motifs, such as graffiti, burning, or flaking of the rock.

Rock art is not easy to photograph well, especially when very eroded, so care needs to be taken to ensure the motifs are visible. Lighting has a dramatic effect on the visibility of the carvings, and natural light and weather conditions should be harnessed whenever possible. Suggestions for how to do this are given below.

TIPS FOR ROCK ART PHOTOGRAPHY

Things to Consider:

- Make the most of lighting conditions and weather effects. Rock art is best photographed in low morning or evening sunlight, or in the winter. Low sunshine following a rain shower is perfect. Find the best angle for the shot and, if conditions are changeable, wait for the sun to come out.
- Place the photographic scale horizontally on the ground in front of the panel, face-on to the direction of your shot, and the N arrow where it is easily visible. The scale and N arrow should not obscure any carvings or rock surface features.
- Dappled sunlight reduces the visibility of the motifs. If working in woodland, wait for cloud cover, or artificially shade the rock surface to achieve a consistent light across the rock surface.

- Reflective materials, such as a silver space blanket or a mirror, can be used to increase the light on the carvings. Alternatively, a powerful torch, LED light or flashlight can provide artificial oblique lighting in dull conditions.
- Photographing rock art at night is very effective, using artificial slanting lighting and a long exposure time with a camera mounted on a tripod.

Things to Avoid:

- Remove all bags, people, and equipment from the shots.
- Avoid getting feet, arms, hands or your own shadow in the photograph.
- Check what is beyond the panel and move position slightly if necessary to avoid background clutter.
- Avoid using an automatic flash. Use a tripod and self-timer in poor light.

Digital Modelling

In recent decades, digital technology has revolutionised how we record and understand archaeological sites and objects. Digital recording, processing and visualisation techniques have become increasingly user-friendly over the years, and many are well-suited for community co-production initiatives, such as Scotland's Rock Art Project. Mechanisms for sharing digital models are freely and widely available, so everyone with access to a computer can view 3D imagery.

These techniques are particularly valuable for recording rock art as they have no impact on the rock surface, and capture a precise, 3D replica of the carvings and the topography, texture and natural features of the rock. They reveal faint details and subtleties in the motifs that are not visible with the naked eye and, because they are measurable, provide bench-mark data for conservation monitoring and investigation, such as calculating the rate of deterioration over time.

Which technique to use depends on the resources, scale, and aims of each recording project. The main attributes of each method are described below and summarised in **Table 3** (page 32).

Laser and Structured Light Scanning

3D laser scanners and structured light scanners work in broadly similar ways, by projecting a laser beam or a structured light pattern across the surface of an object and capturing the reflected light with one or two cameras. This information is then used to create a high-resolution 3D model comprised of thousands of points (a 'point cloud') with sub-millimetre accuracy (up to 0.005mm).

The techniques can be used to model objects of different scales, from large buildings to small artefacts, with devices ranging from hand-held scanners to large, heavy pieces of equipment. These approaches generate massive data files, so digital archiving and dissemination need to be taken into consideration. As they require specialist equipment and training, their use is generally restricted to heritage organisations, who use them for documenting nationally important or high-interest sites.

Image-based 3D Modelling

Image-based photogrammetric modelling is an excellent method for recording rock art and is used increasingly for this purpose. It is user-friendly, highly portable and does not require expensive specialist equipment, so is ideal for large-scale projects and community engagement initiatives. Sub-millimetre detail is possible, but the technique is generally used to create models with 1–5mm accuracy, depending on the size and number of images captured in the field.

3D modelling based on matching stereo-pairs of photographs has been replaced in recent years by Structure from Motion



Image © ScRAP



Image © England's Rock Art

Figures 12 and 13 Examples of poor images. Upper: Image taken in dull light, where panel appears flat and carvings cannot be clearly seen, with clutter in background. Lower: Distracting shadow of photographer, scale bars hard to read.



Image © Historic Environment Scotland



Image © ScRAP

Figures 14 and 15 Examples of good images. Upper: Slanting light highlighting carvings. Lower: Wet stone and sunlight highlighting carvings.



Image © ScRAP

Figure 16 Snapshot of enhanced 3D model, Cairnbaan 4, Kilmartin, Argyll. For comparison, a photograph appears as Figure 1 (page 5).

(SfM) photogrammetry which captures multiple, overlapping photographs of an object from different angles as the photographer moves around it. The photographs are processed using dedicated software which recognises and matches common points in each image, then puts them together to form a 3D model. Agisoft Metashape is widely used for processing 3D models, although you will need to buy a licence for it. Various open-source, free alternatives are available, such as VisualSfM or Regard 3D.

Reflectance Transformation Imaging (RTI)

RTI is an image-based technique used to create digital models with a moveable light source. For rock art, it reveals very fine details, such as shallow carvings, tool marks, and fine incisions. RTI involves

taking a sequence of photographs from a fixed point while shining a bright light, eg a flashgun, from different positions towards a particular motif or small area of the carved surface. A shiny sphere, such as a black billiard ball, placed on the rock surface reflects the light, providing information about the angle from which each photograph is taken. The model is created by stitching the photographs together in a dedicated free software application (RTI Builder) which identifies the direction of the light sources and creates controlled lighting conditions. The model can be viewed using another software application (RTI Viewer), in which lighting conditions can be manipulated allowing the user to explore the model.

Recording Technique	Does not require specialist training and equipment	Sub-millimetre accuracy	Easily portable over large distances and rough terrain	Open-source processing software currently available	Large scale object recording	Small scale object recording	Suitable for communities, students and young learners	Suitable for rock art recording
Laser scanning	✗	✓	✗	✗	✓	✓	✗	✓
Light structured scanning	✗	✓	✗	✗	✓	✓	✗	✓
Image-based modelling (SfM)	✓	✓	✓	✓	✓	✓	✓	✓
RTI	✗	✗	✗	✓	✗	✓	✗	✓

Table 3: Attributes of different techniques for rock art recording.

The technique is cost-effective and relatively user-friendly, but more time-consuming and less portable than SfM. Its main drawback is the very small area captured in the model. Although perfect for detailed recording of a particular motif or remnants of tool marks, RTI is not viable for documenting a whole panel.

The digital landscape is constantly evolving, and visualisation tools are being refined and developed all the time. Growing public access to these tools is enabling and empowering more people to explore the historic environment and record rock art and other archaeological features.

Enhancement and Visualisation Tools

There are numerous tools available for visualising and enhancing digital models. These enable the user to manipulate the light, colour, depth and texture of the rock surface in order to reveal very faint details, allowing closer scrutiny and analysis.

Some, such as Meshlab and Blender, are user-friendly and widely applied by professionals and members of the public for viewing and interrogating 3D models of rock art. Others, including multiple surface shading or rendering functions in LiDAR, Python and CloudCompare, tend to have a more restricted use for specific analyses of rock art.

ANALYSING THE DUNCHRAIGAIG DEER USING 3D MODEL ENHANCEMENT TOOLS

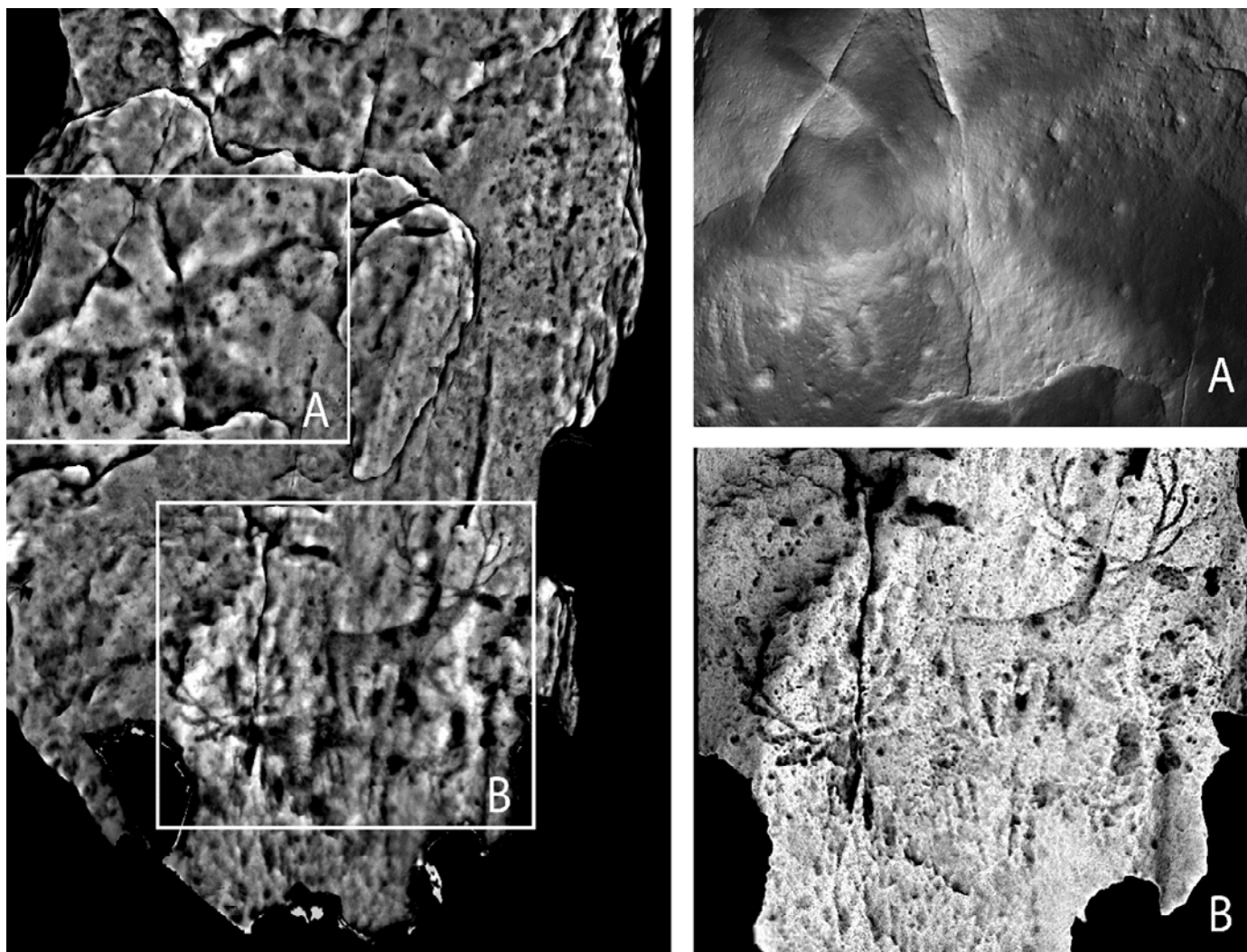


Figure 17 Trend surface distance mapping highlighting both groups of animal carvings. Detail A. Juvenile deer with localised light source and grey-scale depth-mapping. Detail B. Greyscale PCV image of the stags © Historic Environment Scotland. Image enhancement by Tom Goskar.

Visual enhancement techniques play an important role in rock art studies by enabling us to identify subtle features of the motifs and their relationship to the rock surface that can be invisible to the naked eye. These techniques have been crucial for analysing one of the most important prehistoric finds in Scotland in recent years. The sensational discovery of animal carvings within an Early Bronze Age burial at Dunchraigaig Cairn in Kilmartin, Argyll, prompted an in-depth study of the motifs to establish their character and authenticity.

A high-resolution 3D model of the carved rock surface, created by Historic Environment Scotland's Digital Documentation and Innovation Team, was scrutinised using a range of digital enhancement tools to alter its surface texture, colour, lighting, and depth. This process revealed details of five creatures, including two red deer stags sporting impressive antlers, along with two probable juvenile male deer, and confirmed these to be the earliest known animal carvings in Scotland.

5. ARCHIVING, SHARING AND CELEBRATING ROCK ART

Data Archiving and Sharing

It is important to consider how the rock art data from recording and processing are managed. Recording, especially 3D documentation, can generate large volumes of data and digital image files. These may require considerable digital storage capacity and will need to be strictly managed using an appropriate digital filing system and naming/numbering conventions before archiving.

There are some crucial rules governing ownership and reproduction of digital images, 3D models, and images derived from 3D models. As the author of a digital image or 3D model, you retain the intellectual property (IP) rights and copyright in your material. How you share your 3D material commercially or non-commercially may be restricted by the licence terms and conditions of the specific processing software you used to create the model, so read these carefully. Make sure that you have the appropriate permissions and copyrights before publishing any images virtually or in hard copy, and be aware that some archives, online platforms and websites may ask you to give up the copyright or IP rights in the digital material you upload.

It is vital that rock art records are properly archived and curated in the long-term, and made freely accessible to everyone, whether for general interest, research or management. There are several routes available to professionals, communities, and members of the public for archiving and sharing rock art information:

- Depositing data and digital images for 'new' or existing rock art records in **Historic Environment Scotland's (HES) Digital Archive**. This route ensures preservation and public access in perpetuity via the Canmore website. If you would like to deposit

your digital files with HES, please contact the HES Digital Archives team on digital.archives@hes.scot in the first instance. All digital material must be accompanied by a **Digital Depositor's Form** which can be found on the depositor's information page on Canmore: <https://canmore.org.uk/content/depositors-information>, and you may need to assign the copyright in your digital material to HES.

- You should also share information with your local Historic Environment Record. These are run by the relevant local authority (contacts for these can be found here – <http://smrforum-scotland.org.uk/her-contacts/>). Local authorities are responsible for protecting and managing undesignated monuments (which make up around 95% of the known historic environment), and so it is crucial to ensure they have access to up-to-date data.
- Contributing information and images to existing Canmore records via **MyCanmore**. These will be publicly accessible, but the images are not currently ingested into the HES digital archive for long-term curation and you retain the copyright in these. To add data, you first need to [register for an account with MyCanmore](#), then use the search tools to locate the site record to which you would like to contribute, and follow the instructions at the bottom of the record page.
- Reporting new rock art discoveries to **Discovery and Excavation in Scotland (DES)**, run by Archaeology Scotland in collaboration with HES. These records are published in the DES Journal and added to Canmore annually, although images are not currently ingested into the HES digital archive. The easiest way to report a new discovery is to [register for an account with DES](#), then complete the online 'Create Report' section.

- Sharing 3D models and associated information via online platforms such as Sketchfab. Opening a free Sketchfab account allows you to publish or download low-resolution models, while high-resolution models can be uploaded through a paid account. Sketchfab and similar resources allow users to interact with and manipulate 3D models, although there is no way of knowing how long these platforms and the information they contain may last.

Celebrating Rock Art

A crucial part of rock art recording and research is sharing and celebrating your findings as widely as possible. There is a huge community of interest in Scotland's rock art, both here and abroad, and there are endless opportunities for reaching out to people globally through websites, social media channels and traditional media. Webinars run by Scotland's Rock Art Project in 2021 attracted audiences of thousands, from Europe and America to Asia, Africa and Australia (<https://www.rockart.scot/events/scrap-webinars/>), while posts on the ScRAP Facebook page were regularly viewed by tens of thousands of people across the world.

Closer to home, there are considerable benefits to community participation. Many local interest groups and societies across Scotland are keen to learn more about the rock art in their area, and their members are often a rich source of relevant local information. Encouraging individuals and communities to share their own experiences and findings, and facilitating opportunities for this, such as conferences, workshops and informal events, can be incredibly rewarding for everyone involved, and important for enhancing awareness and social value. Actively involving the local community in your work can bring even greater benefits and will leave a powerful legacy by embedding new skills,

capacity and insights. Rock art panels can also play a role in enriching communities today, creating social value and even generating public benefit.

In cases where the carvings are at extreme risk from natural, animal, or human agents, or where there is a desire to significantly enhance access and visibility, specialist advice should be sought in order to clarify the implications of any works and ensure they informed by an understanding of the rock art and its needs. Potential sources of funding for any specialist work could also be explored. Often a range of permissions will also be required, such as from a landowner or to ensure any nature conservation interests are recognised. Historic Environment Scotland's Planning, Consents and Advice Service can help provide initial advice, along with the relevant local authority archaeological service.

ENGAGING WITH AND CELEBRATING ROCK ART

Rock art has huge potential for inspiring creativity, fuelling imagination, and helping engage people in archaeology and the landscape. Learning about rock art from an early age helps to raise awareness and encourage care of the carvings. Motifs have been carved in soap, chalked in playgrounds, woven into comic book stories, and animated in videos through dynamic education projects led by organisations such as the University of Glasgow, Archaeology Scotland, Forestry and Land Scotland, and Kilmartin Museum.

Involving an entire community in activities and events relating to rock art can also be highly beneficial to everyone involved. Glasgow University's FaifleyRocks! project is a superb example of how effective rock art can be in building new connections, interests and skills within the community, while

enriching people's knowledge and appreciation of their local area. Scotland's rock art is an amazing and irreplaceable fragment of our past that belongs to all of us today.

Creative initiatives and community engagement projects in recent years have brought rock art into the present in new and exciting ways, and there is still much more we can do to better understand, care for, and celebrate these unique carvings.



Figure 18 (upper) Neolithic 'artists' Pix and Derm help to create a human connection with the past in Forestry and Land Scotland's excellent learning resource, *A Song in Stone*. Image © Alex Leonard.

Figure 19 (lower) Active engagement with rock art near Faifley has involved people of all ages from the local community. Image © Kenny Brophy.

6. CONCLUSION

We know far more about Scotland's rock art today than ever before, but many questions remain. There is a need for extensive survey and comprehensive recording to generate a consistent, detailed database that can underpin academic and conservation research, inform heritage management practices, and enhance our understanding of the social value of rock art today. Rock art faces very real threats from environmental factors, including climate change. Records can help monitor change and put in place adequate conservation measures, and archives must be up-to-date and accurate to help inform what action to take. Making rock art records publicly accessible is also an important responsibility of any recording programme. Social media, the internet, and digital technology provide dynamic opportunities for sharing data freely, facilitating community engagement, and inspiring people of all ages in new and creative ways.

Scotland's rock art is a remarkable and irreplaceable fragment of our past. Detailed, accurate recording using a standardised methodology, and appropriate data archiving are essential for ensuring that our prehistoric carvings can be better understood, cared for, valued, and celebrated by all of us now and in the future.

7. ONLINE RESOURCES

Below you can find useful webpages providing contact details for relevant organisations, archival resources, and useful software.

Archives and Mapping

Canmore: <https://canmore.org.uk>

National Map Library of Scotland: <https://maps.nls.uk/>

PastMap: <https://pastmap.org.uk/>

Frameworks and Advice

Future Thinking on Carved Stones in Scotland: <https://scarf.scot/thematic/future-thinking-on-carved-stones-in-scotland-2/>

Scottish Archaeological Research Framework (ScARF): <https://www.scottishheritagehub.com/>

Scottish Outdoor Access Code: <https://www.outdooraccess-scotland.scot/>

General Information on Rock Art in the UK

British Rock Collection: <https://ukra.jalbum.net/brac/>

England's Rock Art database: https://archaeologydataservice.ac.uk/archives/view/era_eh_2009/

Megalithic Portal: <https://megalithic.co.uk>

Modern Antiquarian: <https://themodernantiquarian.com>

Northern Antiquarian: <https://megalithix.wordpress.com>

Rock Art Pilot Project Main Report (2000): https://eprints.bournemouth.ac.uk/9602/1/Rock_Art.pdf

Scotland's Rock Art Project: <https://www.rockart.scot/>

Processing, Enhancing and Sharing Digital Images

Agisoft Metashape (paid software with free demo version): <https://www.agisoft.com/>

Blender (free software): <https://www.blender.org/>

Meshlab (free software): <https://www.meshlab.net/>

Reflectance Transformation Imaging (RTI) Builder and Viewer (free software): https://culturalheritageimaging.org/What_We_Offer/Downloads/

Sketchfab: <https://sketchfab.com/>

Useful Organisations

Archaeology Scotland: <https://www.archaeologyscotland.org.uk/>

Discovery and Excavation in Scotland (DES): <https://des.rcahms.gov.uk>

Historic Environment Scotland: <https://www.historicenvironment.scot/>

Local Authority Archaeologists: <https://www.algao.org.uk/>

National Committee on Carved Stones in Scotland (NCCSS): <http://www.carvedstones.scot/>

Scotland's Archaeology Strategy: <https://archaeologystrategy.scot/>

8. FURTHER READING

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9. CHECKLIST FOR FIELD RECORDING

- ✓ Do a risk assessment before starting fieldwork.
- ✓ Obtain necessary permissions.
- ✓ Date your notebook and/ or recording form, note weather conditions.
- ✓ Record the name and number the panel. If a new panel, name after nearest named feature on the Ordnance Survey 1:25,000 map.
- ✓ Record the grid reference.
- ✓ Brush any debris off the panel surface, cut back overhanging branches and trim grasses.
- ✓ Record details of the location and panel, as detailed in Section 10.
- ✓ Take photographs and photogrammetry images, note image numbers.
- ✓ Double check you have all the information and photos you need before leaving.
- ✓ Leave the site as you found it and close all field gates when leaving.
- ✓ Write up your location and panel notes as soon as you can, while they are fresh in your mind. If necessary, save them as a Word document for uploading to Canmore/ DES later.
- ✓ Download and sort your photos. Re-name if needed.
- ✓ Process your 3D models. File images and models appropriately.
- ✓ Upload your 3D models to an online platform, such as Sketchfab.
- ✓ Upload your records and images to Canmore or DES.

10. GUIDANCE FOR SITE DESCRIPTION

Recording the Location

1. Survey area of approximately 200 by 200m around the panel.
2. Draw your location plan to scale, if possible, even if approximate. Show panel(s) position(s) with a circled X. If more than one panel within the surveyed areas, make one good plan to cover all the panels in the area and name and number them on your plan. Show the important permanent landscape features on your plan and annotate freely. Show N, add scale and date.
3. Write or bullet point location description, including information about the physical setting, and archaeological and modern features as below:

Location Description

Aim for a clear, succinct description of the panel's location. Start with the physical setting, then describe the archaeology. Please use N, S, E, W and m or cm rather than metre or centimetre etc. for consistency in Canmore.

Physical Setting:

- **The nature of the terrain around the panel** eg flat, sloping, undulating.
- **Is the panel on the top, bottom or side of a hill.**
- **The aspect/ orientation of the ground on which the panel is located** eg 'The panel is situated on the S facing slope of a hill.'
- **Current land use and vegetation** eg moorland, improved pasture, bog/ marsh, rough grazing, arable, wood/ forest, urban/ garden, military, routeway, conservation area, other (specify other).
- **If in wood/ forest**, is it eg ploughed, mounded, new plantation, mature or recently felled.

- **Views or outlook** eg 'There are extensive views S over Strath Spey towards the Cairngorms.'
- **Proximity to other features including water sources, roads, gates, fences, or rights of way, with names where known or noted on the OS map** eg 'The panel lies about 500m due W of the small Laggan Burn.'
- **Other features that may help locate the site again** eg 'The panel is 10m E of a large 3m high domed rock outcrop.'

Archaeological Context:

- **History of the panel** eg where it was moved from, where to, and how it was moved.
- **Direction and distance to other rock art panels** with their Canmore IDs where possible.
- **Archaeological sites/ features within about 200m of the panel or visible from the panel, and relevant details of these** eg burial mound/ cairn, standing stone, stone circle, burnt mound, field system, settlement, dun, hillfort, hut circle, enclosure, clearance cairn, other (specify other). Include relevant Canmore IDs for these sites in your notes if possible.
- **Approximate distance and direction to specific archaeological features** eg 'The panel lies about 120m SW of Glenvoidean chambered cairn'
- **Any other relevant information** about the archaeology and/ or how to access the panel.

Recording the Panel

1. Take measurements of panel.
2. Record the angle of slope and the aspect of the carved surface(s).
3. Draw the carved surface(s), and whole panel if practical, to scale. Label drawing with N, panel name, scale and date. Draw the longest profile to scale.

4. Write or bullet point panel notes, including information about the shape, size, height and geology of the rock/stone, the orientation, slope and surface features, and the motifs as below:

Panel Description

As with the location description, aim for a clear, succinct description of the panel, the carved surface(s), and the motifs, including the following where possible:

Panel:

- **Location in the landscape** eg boulder/slab, outcrop, cliff/ shelter, other (specify other).
- **If in a structure** eg burial monument, standing stone/ stone circle, other (specify other).
- **If in a museum**, state which museum and the collection/ accession number if known.
- **Approximate size and shape.**
- **Dimensions** (length, width, maximum and minimum height) and/ or visibility above surrounding vegetation.
- **Slope and aspect of the carved surface(s).**
- **Panel geology (rock type)** eg 'This is a roughly circular area of schist bedrock measuring 2.5 x 1.8m, flush with the ground, and sloping gently (about 5 degrees) to the S.'
- **Compactness, grain size and visible character of the rock** eg hardness, grain size (fine, medium, coarse, very coarse), any mineral inclusions (such as quartz nodules or seams), or striking features like colour banding, glittery surface.
- **Rock surface features** eg rough, smooth, pitted, cracks/ fissures, bedding planes, weathering channels, natural hollows.

Motifs:

- **Number and type of motifs visible, and their relative position on the rock surface.** Avoid using subjective terms like 'large'; use 'larger' or 'deeper' when a motif is noticeably different from the other motifs on that rock surface.
- **Any obvious patterns or arrangements suggested by the carvings.**
- **Presence of visible tool marks and/ or random pecking.**
- **Is the rock art possible, probable or definite.**
- **Other comments or observations** eg on condition of the carvings and/ or the rock surface; if you removed turf and vegetation; specific threats to the panel (water, vegetation, animal, human); if the panel is at serious risk of being damaged or destroyed.

Photography

- Move rucksacks, gear and people out of the photo area,
- Dry motifs if necessary. Shade rock surface if dappled light.
- Check camera settings (medium to high quality photos).
- Take photos of the panel in its setting from N, S, E, and W, including N arrow and scale bar, keeping your shadow and feet out of the shots.
- Take one or two photos perpendicular to the carved surface(s) with N arrow and scales in place.
- Take best possible panel photo (filling the frame) and context photo in good light conditions.
- Take series of overlapping photos for photogrammetry.

Note: A completed example of a site description can be found on page 27.



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Front cover image:

Example of prehistoric cup and ring marks,
Ardifuir, Kilmartin, Mid Argyll.

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