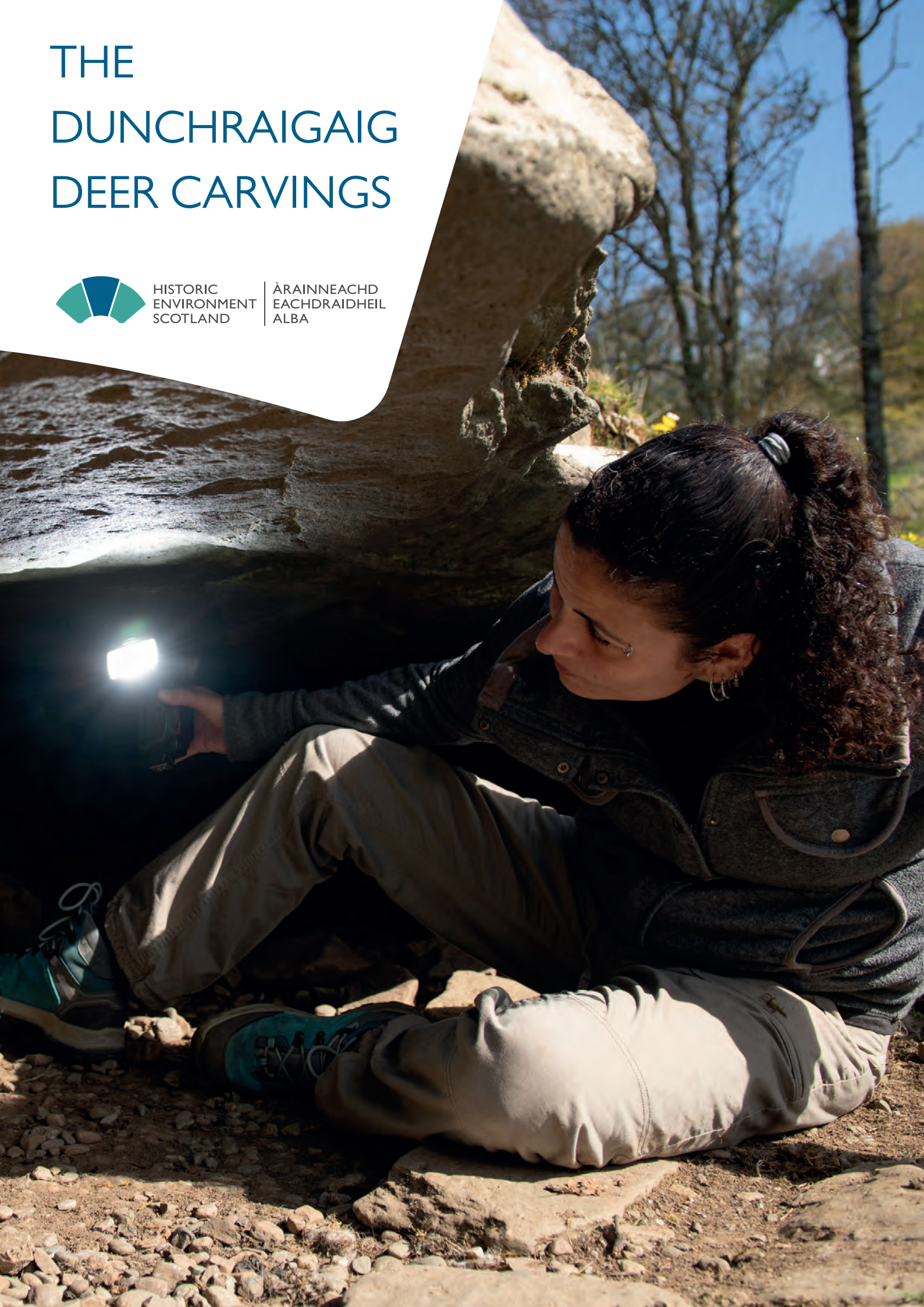


# THE DUNCHRAIGAIG DEER CARVINGS



HISTORIC  
ENVIRONMENT  
SCOTLAND

ÀRAINNEACHD  
EACHDRAIDHEIL  
ALBA



# THE DUNCHRAIGAIG DEER

## The discovery of Scotland's earliest animal carvings

Animal carvings dating back 4000-5000 years have been discovered within Dunchraigaig Cairn, a prehistoric burial monument in Kilmartin Glen, western Scotland. These are Scotland's earliest known depictions of animals.

This information sheet has been produced by the Scotland's Rock Art Project at Historic Environment Scotland.

## ABOUT THE CARVINGS

### What do the carvings look like?

Images of deer were carved into rock in western Scotland over 4000 years ago, during the Neolithic or Early Bronze Age. They show at least five animals, including two stags with large, branching antlers, and two young males. This exciting discovery completely changes our understanding of prehistoric rock art in Scotland.

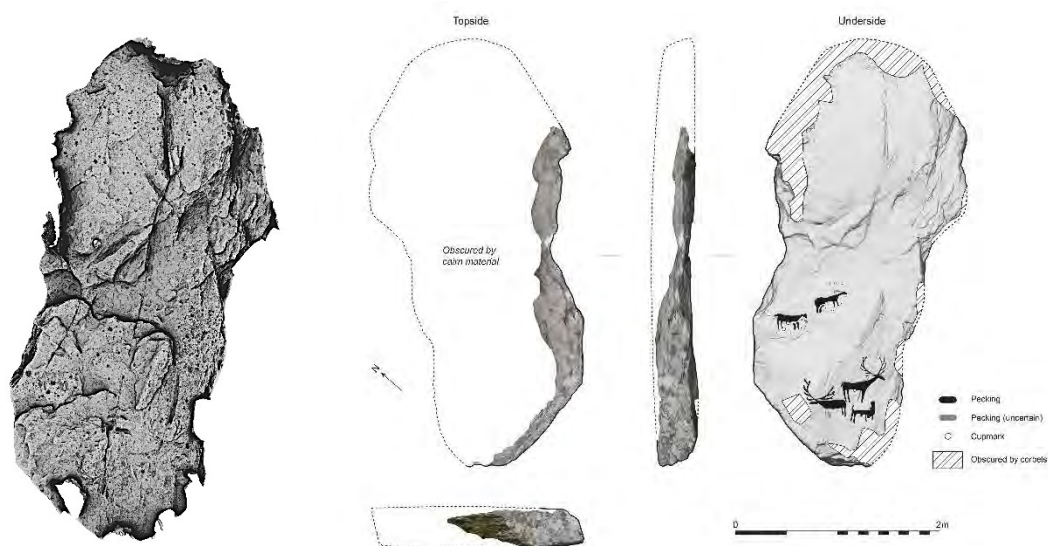
The animals measure between 15-45cm long and 12-20cm high. The two larger animals are naturalistic representations of male red deer (*Cervus elaphus*) with well-defined antlers. One has clear anatomical details including a long neck, pronounced rump, and short tail. The antlers are shown as if viewed head-on, whereas the heads and bodies are depicted in profile. This stylistic technique, known as twisted perspective, is common in prehistoric rock art elsewhere in Europe.



Photograph of the largest stag taken with oblique lighting. The animal is facing right, and the large antlers, head, body and legs can be seen clearly.

There are two more animals carved in a different, less naturalistic style with little anatomical detail. They can be identified as males by small cupmarks marking their sex. One has a possible short antler, suggesting they are juvenile deer.

The fifth animal is very eroded and possibly damaged. Only its legs and part of its body can be distinguished. This makes identification problematic, but it may depict a deer to fit with the theme of the other carvings.



Left: 3D model of the carvings with surface rendering (HES Digital Documentation and Innovation Team)

Right: Drawing of the carvings based on the 3D model. © Dr Guillaume Robin, Edinburgh University.

## How were they made?

A hard implement, probably a stone tool, was used to strike the rock surface repeatedly, creating multiple small depressions ('peck marks'). The bodies, heads and antlers of the animals have all been formed from peck marks. These marks are still visible in the two stags but not in the smaller animals, which are more weathered.

## Where are the carvings?

The images are carved on the underside of a massive schist slab forming the roof of a stone-built chamber (cist) within a large, complex, circular Early Bronze Age burial monument, Dunchraigaig cairn, in Kilmartin Glen. Kilmartin Glen is renowned as the most important prehistoric landscape in Scotland. It contains hundreds of prehistoric monuments, including other unique rock carvings and a linear cemetery of Early Bronze Age cairns.



Dunchraigaig cairn showing the cist containing the carvings and remains of the cairn structure made of stone cobbles. The cairn is a Scheduled Monument and is cared for by Historic Environment Scotland.

## How old are they?

There are currently no techniques to date the carvings accurately. We can establish a rough date from their archaeological context. Excavations of Dunchraigaig cairn in the 1860s revealed three stone burial cists, all containing burnt and unburnt human remains. No organic material has survived to enable precise scientific dating but the cairn's structure and artefacts recovered during the excavations are typical of the Early Bronze Age. The artefacts include a type of decorated pottery known as Food Vessels that were in use in Scotland around 2200-1800 BC (4200-3800

years ago). The two Bipartite Bowl Food Vessels from Dunchraigaig cairn date more specifically to 2160-2080 BC (4160-4080 years ago). It is very likely that the cairn was built around this time.

The animal carvings are located within the largest cist on the south-western side of the cairn. No artefacts were found in this cist, but it contained an unusually high number of human remains from 8 to 10 individuals. A whetstone, a greenstone axe and a flint knife were all recovered from the cairn material near this cist - unfortunately these are now lost.

It would have been extremely difficult to peck the animal images from inside the cist. They were almost certainly created before the tomb was constructed, although it is uncertain how much earlier. Weathering of some of the animals suggests they were exposed for a while before the slab was built into the cairn. It is possible that they were originally carved on an earlier monument in this location or on a nearby rock outcrop.



The prehistoric stone cist (burial chamber) in Dunchraigaig cairn where the carvings are located.

## What were the carvings for?

Deer feature in myth and legend, and are sacred to many cultures around the world. They are a common theme in European prehistoric rock art from the Upper Palaeolithic (around 40,000 years ago) onwards, and interpretations of what they represent include hunting magic, fertility, seasonal regeneration, totemism, shamanic practices, elite status, and clan identity.

The Dunchraigaig carvings may have had different meanings depending on the context in which they were created and their subsequent re-use in the burial cairn. While we do not know exactly what the images meant to people 4000-5000 years ago, the act of placing the carvings within a funerary monument facing towards the burials is significant. This could suggest an association with death, the afterlife, and the social identity of the deceased. The different stages of maturity and seasonal development represented by the stags and juvenile male deer may embody beliefs or values linked to the annual cycle of nature and the landscape.

## ABOUT THE DISCOVERY AND RESEARCH

### How were they discovered?

Hamish Fenton, who has a background in archaeology, first spotted the carvings using a torch, then created a digital 3D model to see them more clearly. His discovery is published in *Discovery and Excavation in Scotland 2021*. Hamish contacted the Scotland's Rock Art Project (ScRAP) Team at Historic Environment Scotland (HES) in November 2020. In December, the HES Digital Documentation and Innovation Team created a high-resolution 3D model of the carvings and underside of the capstone.

Over the following six months, experts from the ScRAP Team, Digital Documentation and Innovation Team, and Curatorial Research Centre scrutinized the 3D model using a range of digital enhancement and visualisation techniques. Due to lockdown restrictions, the ScRAP Team were not able to visit and verify the carvings until late April 2021.



Digital recording of Dunchraigaig cairn by the HES Digital Documentation and Innovation Team.

### What digital techniques were used to record the carvings?

For the high-resolution data capture of the carvings and underside of the capstone, the HES Digital Documentation and Innovation Team used a process called structured light scanning, which records surface geometry through measuring distortion of a projected light pattern from a projected source. Photographic texture is also captured. For this project they used an Artec Leo scanner. It is a highly portable and non-contact process which allows complex surfaces to be captured quickly with millimetre accuracy, so was ideally suited for these carvings.

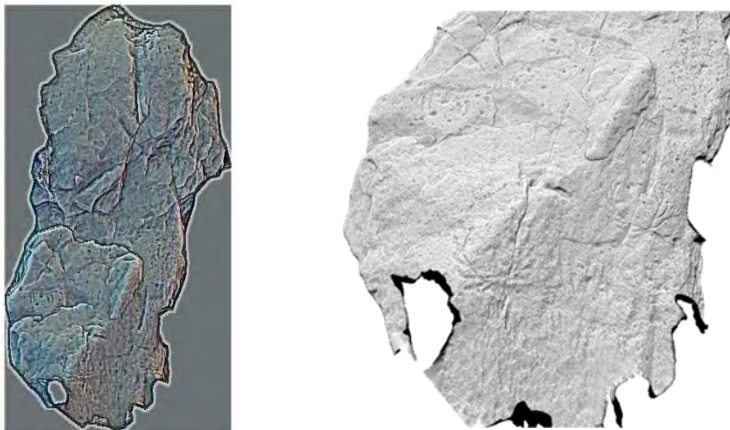
The raw 3D data were processed in Artec Studio 13 software. First, individual scans were aligned, then aligned scans were processed to a triangulated mesh model with a final triangle edge length resolution of 0.5mm. Two 16K texture maps were generated from the images captured

by the Artec Leo during the scanning process, and automatically applied to the 3D model to add RGB colour. The 3D model was then exported to .obj format and textures exported to .png format to allow for visualisation and analysis in a range of 3D software packages.

## What digital techniques were used to investigate the carvings?

The 3D model was investigated with different filters and renderings to highlight details of the carvings that would be otherwise difficult to distinguish. Initially, the model was examined in Meshlab using filters such as Radiance Scaling. Then it was investigated with multiple shading LiDAR tools, treating it as if it was a landscape. Finally, our colleagues at the Curatorial Research Centre analysed the model with a range of techniques including variations in Depth Colouring, Surface Distance Imaging, PCV analysis, Alternative ambient occlusion images, Surface deviation, Hill shading, as well as producing a Virtual RTI (Reflectance Transformation Imaging, a 2.5D digital recording technique), to be inspected with RTI Viewer.

## Digital enhancement of the carvings by HES, Scotland's Rock Art Project and Curatorial Research Services



Left: Rendering of the 3D model with LiDAR tools.

Right: Enhancement of the carved area of the slab using a Radiance Scaling filter in Meshlab.



Left and middle: Filtering with localised light source and depth colouring (grey scale) of the larger stags (left), and the two smaller animals (right). Peck marks are visible in the stags (by Curatorial Research Centre for ScRAP).

Right: Distance mapping in grey showing the two smaller animals (by Curatorial Research Centre for ScRAP).

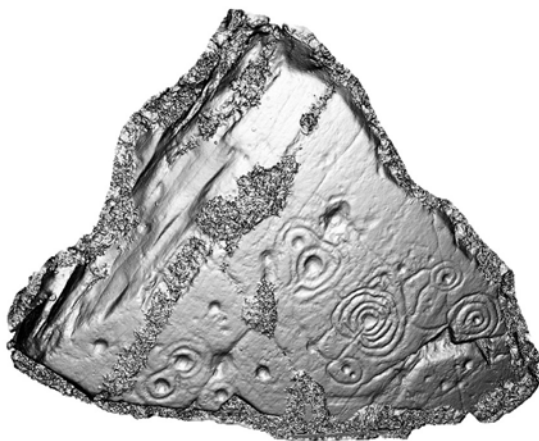


## ABOUT PREHISTORIC ROCK ART IN SCOTLAND, BRITAIN AND EUROPE

### Are there other prehistoric rock carvings in Scotland?

Scotland has a rich tradition of prehistoric rock carving, which it shares with Britain, Ireland and other parts of Atlantic Europe. This is often called 'Atlantic Rock Art' and takes the form of 'abstract' motifs based on cups (small circular depressions) and concentric rings. These images are thought to have been created at least 4000-5000 years ago during the Neolithic and Early Bronze Age. Over 3000 examples of Atlantic Rock Art are known in Scotland, with a further 4000 in Britain and Ireland. Most are found on boulders and natural rock outcrops in the open landscape. A few are included in Late Neolithic and Bronze Age burials, and other monuments such as standing stones.

The Scotland's Rock Art Project has worked with local communities to record and create 3D models for over 1500 examples of Atlantic Rock Art in Scotland. These can all be viewed on the Scotland's Rock Art Project website: [www.rockart.scot](http://www.rockart.scot)



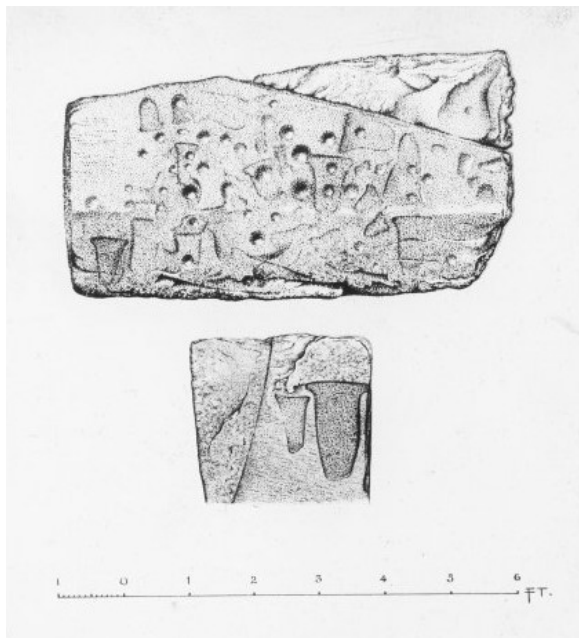
Above: Cup and ring markings typical of Atlantic Rock Art in Scotland. Similar motifs are found in other parts of the UK, Ireland, north western Iberia, and Scandinavia.

## Does Scotland's rock art show any other recognisable things?

Depictions of physical objects are extremely rare in the Neolithic and Early Bronze Age rock art of Scotland, and there are no known rock carvings of animals or people. The few recorded examples of representational rock art are found almost exclusively in Kilmartin Glen. Pecked images of Early Bronze Age axe heads and a type of weapon known as a halberd adorn the capstone and side slabs of cists within at least three other Early Bronze Age burial cairns in Kilmartin. Similarities between the technique, date and context of these images and the Dunchraigaig deer suggest they are connected through a shared tradition and knowledge.

A handful of representational rock carvings are documented from Early Bronze Age contexts elsewhere in the UK, including images of weapons at Stonehenge, and possible schematic animal images associated with burials in the Isle of Man and Northumberland.

The discovery of a 4500 year old human figure incised on a pebble from the Links of Notland in Orkney (nicknamed the Orkney Venus, or more familiarly the 'Westray Wifey'), and two further human figurines from the same site, shows that figurative imagery was not unknown in Neolithic Scotland. Although there are no unambiguous depictions of animals, humans and other objects on pottery or in rock art, people may have been creating images on organic materials such as wood and leather that have not survived.



Carvings of Early Bronze Age axe heads on cist slabs in Nether Largie North burial cairn, Kilmartin. The top image shows that the axe heads are superimposed over earlier cupmarks.

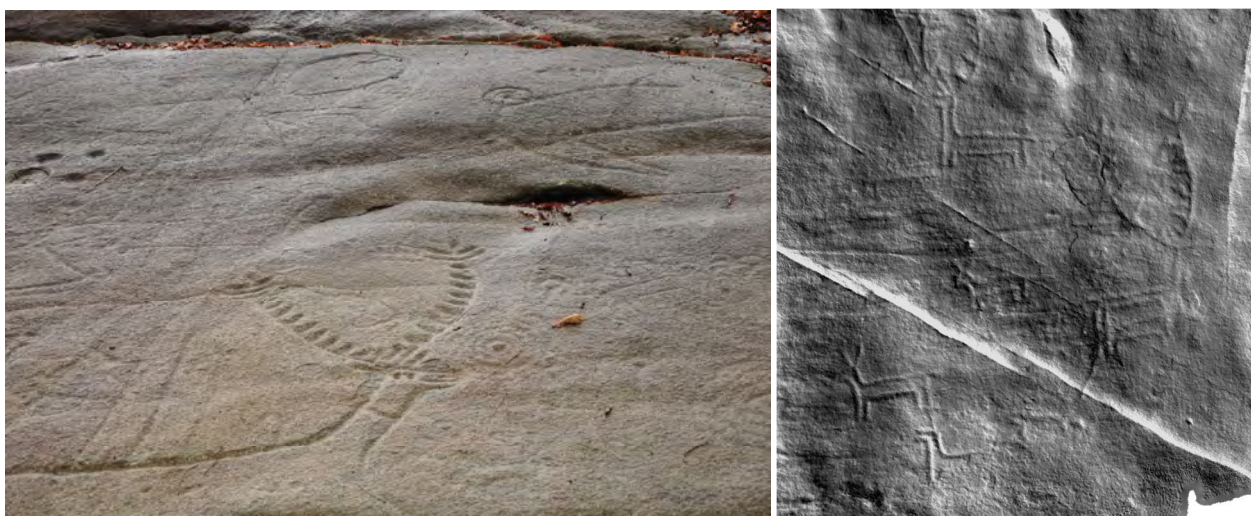
## Is rock art found in other prehistoric burials in Scotland?

Although most of the prehistoric rock art in Scotland is in the open landscape, the tradition of including rock art in prehistoric burials dates back hundreds of years before the Dunchraigaig cairn was built. Abstract carvings were incorporated into some Late Neolithic burial monuments in Scotland, Britain and Atlantic Europe at least 5000 years ago. This practice became more widespread in Scotland in the Early Bronze Age, around 4200-3800 years ago. It is during this period that different forms of abstract carvings, including rare figurative images, were deposited in some burial monuments. The axe-head carvings in the Kilmartin cairns are a good example of this, and the Dunchraigaig deer fit well within this context of changing traditions.

## Are there similar prehistoric deer carvings elsewhere in Europe?

Animal carvings are a feature of Atlantic Rock Art in parts of northern and western Europe. Images of stags found alongside cup and ring motifs in Iberia are similar in date and technique to the Dunchraigaig deer but different in style. There are also thousands of figurative images, including stags, in the slightly later Bronze Age rock art of Scandinavian countries. In fact the absence of animal carvings in Britain has long been a mystery. But no longer!

In Iberia there are a few examples of figurative carvings in burial monuments, such as the Neolithic burial chambers of Antelas (Viseu), which includes human-like images, and Orca dos Juncais (Viseu), both over 5000 years old and radiocarbon dated to the 4<sup>th</sup> millennium BC. Orca dos Juncais is particularly relevant as it features naturalistic paintings of deer involved in a hunting scene on the inner surfaces of its slabs.



Left: Deer carving with cup and ring motifs at Campo Lameiro (Galicia, Spain). © Dr Joana Valdez-Tullett

Right: Detail of deer carvings from a 3D model of Gurita 1 (Barbanza Peninsula, Galicia, Spain). © Dr Joana Valdez-Tullett

## Could there be other animal carvings in Scotland?

This discovery at Dunchraigaig raises the strong possibility that there are other figurative carvings of animals or humans in Scotland still waiting to be discovered. Digital 3D modelling and enhancement techniques increase our chances of finding such images, which may be very difficult to see under normal conditions. They are most likely to be better preserved in prehistoric burials, but could potentially be found on other Late Neolithic and Bronze Age monuments such as standing stones and stone circles, or even in the open landscape.

## Why is this discovery important?

This discovery is unique as there are currently no animal carvings of this date known anywhere else in Scotland, and very few representative images. It also demonstrates the strong connections between Scotland and Europe 4000-5000 years ago that potentially reached as far as Iberia. Kilmartin may have been an important node in a dynamic international network through which knowledge and ideas flowed along with material goods and people. It indicates that established traditions in Scotland changed significantly in the late 3rd millennium BC. The images are not simply depictions of stags, but may denote a fundamental shift in social values and beliefs at this time.

## What will happen to the carvings now?

HES are conducting further scientific analysis at the site and developing a strategy for the long-term protection and preservation of these unique carvings.

The Scotland's Rock Art Project Team at HES are continuing their research on the carvings and this work will be published in a high-profile academic journal in the coming months.

The 3D model of the carvings created by the HES Digital Documentation and Innovation Team can be viewed on Sketchfab here:

<https://sketchfab.com/3d-models/dunchraigaig-cairn-kilmartin-glen-42a503ea24ca4047a406c84a45894b2e>

<https://sketchfab.com/3d-models/dunchraigaig-cairn-detail-unt textured-view-4a275e4335fb43a68a0449724b61334e>

<https://sketchfab.com/3d-models/dunchraigaig-cairn-detail-coloured-view-ec4d8d05b1ba478cabacd0e1f03c292b>

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**SCOTLAND'S  
ROCK ART**



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