Society of Antiquaries of Scotland

Darkness Visible

The Sculptor's Cave, Covesea, from the Bronze Age to the Picts

Ian Armit and Lindsey Büster

ISBN: 978-1-908332-17-2 (hardback) • 978-1-908332-23-3 (PDF)

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Darkness Visible

This volume is dedicated to the original excavators of the Sculptor's Cave
(left to right: Alexandra 'Lekky' Shepherd, Sylvia Benton and Ian Shepherd)

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The Sculptor's Cave, Covesea, from the Bronze Age to the Picts

IAN ARMIT and LINDSEY BÜSTER

Based on excavations by Ian and Alexandra Shepherd, and Sylvia Benton

With contributions by
Torben Bjarke Ballin, Katharina Becker, Julie Boreham, Alan Braby, Trevor Cowie, Gemma Cruickshanks, Mary Davis, Adrian Evans, Mark Hall, Derek Hamilton, Nick Holmes, Fraser Hunter, Dominic Ingemark, Rachael Kershaw, Christopher Knüsel, Jo McKenzie, Sam Moorhead, Clare Rainsford, Daniel Sahlén, Rick Schulting, Daniel Shaw, Alison Sheridan, Tom Sparrow, Michael Stratigos, John Summers, Jim Tate, Lore Troalen, Colin Wallace and Andrew S Wilson

SOCIETY OF ANTIQUARIES OF SCOTLAND

Edinburgh 2020

Published in 2020 in Great Britain by the Society of Antiquaries of Scotland

Society of Antiquaries of Scotland
National Museums Scotland
Chambers Street
Edinburgh EH1 1JF
Tel: 0131 247 4115
Fax: 0131 247 4163
Email: editor@socantscot.org
Website: www.socantscot.org

The Society of Antiquaries of Scotland is a Registered Scottish Charity No. SC010440.

ISBN 978 1 90833 217 2

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

Jacket images: (front) a cervical vertebra from the Sculptor's Cave, with cut marks indicative of decapitation (photograph: Rick Schulting); (reverse) the interior of the Sculptor's Cave, looking out through the twin entrance passages (photograph: Ian Armit)

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

The authors and the Society of Antiquaries of Scotland gratefully acknowledge funding towards the publication of this volume from Historic Environment Scotland.

Design and production by Lawrie Law and Alison Rae
Typesetting by Biblichor Ltd, Edinburgh
Printed in Croatia by Fine Tone, by arrangement with Associated Agencies Ltd, Oxford

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SUMMARY

The Sculptor's Cave, on the south coast of the Moray Firth, some 64km east of Inverness in north-east Scotland, takes its name from a series of Pictish symbols which adorns its distinctive twin entrance passages. Excavations by Sylvia Benton in 1928–30 and by Ian and Alexandra Shepherd in 1979 produced a large assemblage of metalwork and other artefacts from the Late Bronze Age and Roman Iron Age, including several gold-covered hair rings and one of the largest Roman Iron Age coin hoards known from the north of Britain. They also recovered more than 1600 disarticulated human bones including several cervical vertebrae displaying cut marks consistent with decapitation.

While Sylvia Benton's work was published fairly promptly (Benton 1931), the more detailed stratigraphic excavations carried out by the Shepherds have remained unpublished until now. This publication is the result of renewed work on the Sculptor's Cave archive between 2014 and 2018, comprising a full analysis of the Shepherds' excavations and their integration with Benton's earlier findings. A key element for reanalysis of the site was the creation of a comprehensive chronological framework, through Bayesian modelling of 51 AMS dates obtained during the post-excavation programme. This has confirmed that the Sculptor's Cave saw a long history of use and veneration, particularly from the Late Bronze Age to the Late Roman Iron Age.

While the specific nature of activity within the cave varied significantly over more than a millennium of use, it appears consistently to have focused on ritualised practices associated with treatment of the dead and with votive deposition. The site's enduring status as a special place within the local landscape may have derived from its liminal position between the above-ground world of the living and the below-ground world of spirits and ancestors. This liminality is also reflected in the cave's location: cut off by high tide and separated from the land by steep sea cliffs. The lengths that individuals went to in order to access the site suggests that the cave was specially sought out for particular kinds of activity. It was certainly never used for long-term habitation and it is unlikely to have been visited in the course of daily activities.

During the Late Bronze Age (Phase 1: beginning around *1050–975 cal BC*), the cave was a focus for mortuary practices involving principally (though not exclusively) the bodies of young children. At this time the cave seems not to have been a place of primary disposal of the dead, but rather a place where bodies were brought after a period of curation elsewhere. These bodies, adorned with valuable items of personal ornament such as copper alloy bracelets and gold-covered hair rings, appear to have been deposited essentially as mummy bundles. This activity was associated with a sequence of stake-built structures situated at the inner part of the West Passage. These structures, possibly representing timber screens or racks, would have served to control access to the interior of the cave, which appears to have contained a pool of stagnant water at this time. Spreads of pottery, animal bones and plant remains suggest that the preparation and consumption of food took place alongside funerary activity, perhaps as an intrinsic part of the mortuary rites conducted in the cave.

Although there is no evidence for the deposition of human remains in the Pre-Roman Iron Age (Phase 2: between around the ninth century BC and the first century AD), large spreads of pottery and the continued accumulation of anthropogenic deposits attest to the continued use of the cave. Given the location, it is probable that this activity was, as before, non-domestic in character. Structures appear to have existed at this time under the entrance canopy and features within both entrance passages suggest that access to the cave was controlled. After the destruction of some of these structures by fire, during the middle centuries of the first millennium BC, the character of the deposits within the entrance passages changed, with less evidence for trampling and compaction and a marked reduction in the density of artefactual, faunal and botanical material. Throughout this period, the interior would have remained wet and probably still contained a pool of standing water. This apparently low-level activity included a dog burial in the West Passage dated to 400–200 cal BC.

During the Roman Iron Age (Phase 3: spanning the late first to fourth centuries AD), the dried-out interior of the cave became the focus of activity, including the presence of hearths (as reported by Benton). It was during this period that the cave once again assumed a more obvious mortuary character. Indeed, the majority of the human remains from the cave (representing a minimum of 33 individuals, but probably many more) seem to belong to this period. In contrast to the Late Bronze Age activity, the individuals represented were predominantly adults and the specific composition of the bone assemblage indicates that bodies entered the cave intact (although certain body parts appear subsequently to have been removed). Numerous small, personal items, such as ring-headed pins, toilet instruments and necklaces, may have adorned the bodies, or were perhaps deposited as votives. A deposit of fourth-century coins, comprising a small number of official Roman issues and many more indigenous copies, represents an exceptional find in this region, far north of the Roman province.

The most dramatic episode within the cave's history occurred at some point between *cal AD 240–325*, when at least six individuals (four adults and two adolescents) were decapitated. The scale of

this event, and its context in a period of social upheaval following the withdrawal of Roman influence in the region, suggests that it may have been politically motivated; perhaps the removal of an elite group by their competitors. Whatever the specific motivation for the killings, the use of such an inaccessible place, long associated with votive and funerary activity, suggests a strong ritualised dimension.

The enigmatic Pictish symbols around the cave's twin entrance passages appear to mark the end of the main period of the site's use. Although traditionally dated rather later, it is possible that these symbols were carved as early as the late fourth century, and may have served to memorialise the dead within the cave, or perhaps represent the symbolic closure of a spiritually dangerous pagan place.

RÉSUMÉ

La *Sculptor's Cave* (Grotte du Sculpteur), sur la côte sud du Moray Firth (64km à l'est d'Inverness), dans le nord-est de l'Écosse, tire son nom d'une série de symboles pictes qui ornent ses deux entrée. Les fouilles effectuées par Sylvia Benton entre 1928 et 1930, ainsi que par Ian et Alexandra Shepherd en 1979, ont fourni un important ensemble d'objets en métal ou autres de la période de l'âge du Bronze Final et de l'âge du Fer romain (*Roman Iron Age*, qui désigne les phases les plus récentes de l'âge du Fer contemporaines de l'occupation romaine de la Bretagne). Cet ensemble comprend plusieurs 'anneaux à cheveux' (*hair rings*) en or, ainsi que l'un des plus grands trésors de pièces de monnaie de l'âge du Fer connus au nord de la Grande-Bretagne. Ces fouilleurs ont également récupéré plus de 1600 os humains désarticulés, ainsi que plusieurs vertèbres cervicales présentant des marques de découpe compatibles avec la pratique de la décapitation.

Les travaux de Sylvia Benton ont été publiés assez rapidement (Benton 1931), mais les fouilles stratigraphiques plus détaillées réalisées par les Shepherd n'avaient pas encore été publiées à ce jour. Cette publication est le résultat d'une reprise du travail sur les archives de *Sculptor's Cave* entre 2014 et 2018. Ellei comprend une analyse complète des fouilles des Shepherd et intègre leurs résultats aux découvertes antérieures de Benton. Un élément clé de cette nouvelle analyse du site a été la création d'un cadre chronologique complet, grâce à la modélisation Bayésienne de 51 dates AMS obtenues pendant la phase post-fouille. Cela a confirmé que la *Sculptor's Cave* avait connu une longue histoire de fréquentations, souvent à vocation rituelle, en particulier de l'âge du Bronze à la fin de l'âge du Fer romain.

Bien que la nature spécifique de l'activité dans la grotte ait considérablement varié au cours de plus d'un millénaire, elle semble en effet s'être toujours concentrée sur les pratiques ritualisées associées au traitement des morts et à la déposition votive. Le statut du site en tant qu'emplacement particulier dans le paysage a peut-être découlé de sa position liminale, à l'interface entre le monde terrestre des vivants et le monde souterrain des esprits et des ancêtres. Cette liminalité se reflète également dans l'emplacement de la grotte: isolée par la marée haute et séparée de la terre par des falaises abruptes. Les efforts déployés pour accéder au site suggèrent que la grotte a été spécifiquement recherchée pour des activités particulières. Il n'a certainement jamais été utilisée comme habitat durable et il est peu probable qu'elle ait servi de cadre aux activités du quotidien.

Au cours de l'âge du Bronze Final (Phase 1: à partir de 1050–975 cal av. J.-C.), la grotte était un espace réservé aux pratiques mortuaires impliquant principalement (mais pas exclusivement) les corps de jeunes enfants. A cette époque, la grotte ne semble pas avoir été un espace de disposition primaire des morts, mais plutôt un endroit où les corps étaient amenés après avoir été conservés un certain temps ailleurs. Ces corps, parés d'objets de valeur, tels que des bracelets en alliage cuivreux et des anneaux recouverts d'or pour les cheveux, semblent avoir été déposés essentiellement sous forme de 'mummy bundles'. Cette activité était associée à une série de structures en bois situées dans la partie interne du passage ouest. Ces structures, pouvant représenter des écrans ou des étagères, auraient permis de contrôler l'accès à l'intérieur de la grotte qui semble contenir une mare d'eau stagnante à cette époque. Les épandages de poterie, d'ossements d'animaux et de restes de plantes suggèrent que la préparation et la consommation de nourriture avaient lieu parallèlement à l'activité funéraire, peut-être en tant que partie intégrante des rites mortuaires pratiqués dans la grotte.

Bien qu'il n'existe aucune preuve de dépôt de restes humains au cours de l'âge du Fer pré-romain (Phase 2: entre le IXe siècle avant notre ère et le premier siècle de notre ère), les épandages de poteries et l'accumulation continue de dépôts anthropiques témoignent de la persistante utilisation de la grotte. Compte tenu de son emplacement, il est probable que cette activité avait, comme auparavant, un caractère non domestique. Des structures semblent avoir existé à ce moment-là dans la partie de la grotte donnant sur l'extérieur; les caractéristiques des deux entrées suggèrent par ailleurs que l'accès à la grotte était contrôlé. Après la destruction de certaines de ces structures par le feu, au milieu du premier millénaire avant notre ère, les niveaux qui se sont déposés dans les passages des entrées ont changé de nature, et présentent moins de traces de piétinement et de compactage ainsi qu' une réduction sensible de la densité des artefacts et des écofacts. Pendant toute cette période, l'intérieur serait resté humide et contiendrait probablement encore une mare d'eau stagnante. Cette activité, apparemment de faible intensité, comprend l'enterrement d'un chien dans le *West Passage* (Passage Ouest), entre 400 et 200 ans avant notre ère.

Au cours de l'âge du Fer romain (Phase 3: du premier au quatrième siècle de notre ère), l'intérieur de la grotte, alors asséché, devint le centre de toutes les activités, caractérisées notamment par la présence de foyers (comme le rapportait Benton). C'est durant cette période que la grotte a retrouvé un caractère mortuaire plus évident. En effet, la majorité des restes humains (représentant un minimum de 33 individus, mais probablement beaucoup plus) semble appartenir à cette période. Contrairement à ce qu'on observait pour l'âge du Bronze Final, les individus représentés étaient principalement des adultes. L'étude des restes humains suggère que les corps ont fait l'objet de

dépôts primaires, avant le possible prélèvement de certaines parties anatomiques. De nombreux petits objets personnels, tels que des épingles, des instruments de toilette et des colliers, peuvent avoir orné les corps ou ont peut-être été déposés en tant qu'offrandes. Un dépôt de pièces du quatrième siècle, composé d'un petit nombre de monnaies romaines et de nombreuses copies indigènes, représente une découverte exceptionnelle dans cette région, très au nord de la province romaine.

L'épisode le plus dramatique de l'histoire de la grotte s'est produit entre 240 et 325 ap. J.-C., quand au moins six personnes (quatre adultes et deux adolescents) ont été décapitées. L'ampleur de cet événement, son contexte marqué par la période de bouleversement social qui a suivi le retrait de l'influence romaine dans la région, suggèrent qu'il pourrait avoir été motivé par des considérations politiques. Il résulte peut-être de l'élimination d'un groupe lignager élitaire de la main de leurs concurrents. Quelle que soit la motivation spécifique des massacres, l'utilisation d'un lieu aussi inaccessible, longtemps associé à une activité votive et funéraire, suggère une forte dimension ritualisée.

Les énigmatiques symboles pictes gravés autour des deux entrées de la grotte semblent marquer la fin de la période principale d'utilisation du site. Bien que traditionnellement datés plus tardivement, il est possible que ces symboles aient été sculptés dès la fin du IVe siècle et aient pu servir à commémorer les morts déposés dans la grotte ou peut-être marquer la fermeture symbolique d'un lieu païen, spirituellement dangereux.

ZUSAMMENFASSUNG

Sculptor's Cave, die 'Höhle des Bildhauers', liegt an der südlichen Küste des Moray Firth, etwa 64km östlich von Inverness im Nordosten Schottlands. Sie ist nach den piktischen Symbolen benannt, mit denen ihr charakteristischer Doppeleingang verziert ist. Die Ausgrabungen, die 1928–30 von Sylvia Benton und 1979 von Ian und Alexandra Shepherd durchgeführt wurden brachten eine grosse Menge von metallenen und anderen Objekten der späten Bronzezeit und der Römischen Eisenzeit zutage, unter anderem mehrere mit Goldfolie verkleidete 'Haarringe' und einen der grössten bisher aus dem nördlichen Britannien bekannten Münzhorte der Römischen Eisenzeit. Ausserdem wurden mehr als 1600 menschliche Knochen gefunden, unter diesen mehre Halswirbel mit Schneidspuren, die auf Enthauptungen hinweisen.

Während Bentons Ausgrabung bald publiziert wurde (Benton 1931), blieb die Arbeit der Shepherds bis jetzt unveröffentlicht. Die Archive und Ergebnisse dieser Grabungen wurden fuer den hier vorgelegten Band zwischen 2014 und 2018 aufgearbeitet und integriert. Eine zentrale Rolle hatte dabei die Konstruktion einer Chronologie mithilfe bayesianischer Modelle der 51 AMS Datierungen inne. So wurde die lange Dauer der Nutzung und die kultischen Bedeutung der Höhle von der Spätbronzezeit bis in die Römische Eisenzeit belegt.

Über mehr als tausend Jahre hinweg scheint die Höhle als liminaler Ort zwischen der Welt der Lebenden und der Toten fuer die Deponierung von Körpern und Objekten genutzt worden zu sein. Der Eindruck der Liminaliät der Höhle wird durch ihre Lage – durch steile Klippen vom Land getrennt und während der Flut auch von der Seeseite her abgeschnitten ist – unterstrichen. Diese Abgeschiedenheit macht es wahrscheinlich, dass sie nur für besondere Anlässe aufgesucht wurde und es wurde auch keine Indizen für die Nutzung der Höhle als Siedlungsort gefunden.

In der Spätbronzezeit (Beginn von Phase 1: 1050–975 cal BC), wurde die Höhle vor allem für die Bestattung von Kindern genutzt. Es scheint jedoch, dass die Körper erst hierher gebracht wurden nachdem sie zuvor an einem anderen Ort präpariert worden waren. Die Körper, dekoriert mit wertvollem Bronzearmringen und goldenen 'Haarringen', scheinen als Mumienbündel in der Höhle deponiert worden zu sein. Diese Niederlegungen fanden in der Nähe einer Gruppe von Pfosten im hinteren Teil der westlichen Passage statt und mögen diese vom Inneren der Höhle, in welchem Wasser stand, separiert haben. Keramikscherben, Tierknochen und Pflanzenreste zeigen die Zubereitung und den Verzehr von Nahrungsmitteln an, der vielleicht Bestandteil der Bestattungsrituale war.

In der Vorrömischen Eisenzeit (Phase 2 begann zwischen dem 9. Jh v. Christus und dem 1. Jahrhundert n. Christus), bezeugen zwar Keramikscherben und die Akkumulation von Material anthropogenen Ursprungs die Weiternutzung der Höhle. Es wurden jedoch keine menschlichen Überreste gefunden und angesichts der abgelegenen Lage der Höhle ist es wahrscheinlich dass sie auch in dieser Phase nicht für Siedlungsaktivitäten genutzt wurde. Einbauten, vielleicht in Form von Gestellen oder Trennwänden scheinen zu dieser Zeit unter dem Vordach der Höhle existiert und Einbauten in beiden Passagen den Zugang zur Höhle beschränkt zu haben. In der Mitte des ersten Jahrhunderts vor Christus wurden einiger diese Einbauten durch Brand zerstört und die nachfolgenden Schichten in den Eingangspassagen zeigen eine veränderte Zusammensetzung mit weniger Verdichtung und deutlich weniger Artefakten, Tier und Pflanzenresten. Im hinteren Teil der Höhle stand weiterhin Wasser. Eine Hundebestatttung in der westlichen Passage wurde auf 400–200 cal BC datiert.

Während der Römischen Eisenzeit (Phase 3: von dem späten ersten bis zum späten vierten Jahrhundert n. Christus), wurde das nun trockene Innere der Höhle intensiver genutzt, unter anderem, wie von Benton bemerkt, in Form von Herdstellen. Während dieser Phase fanden hier auch wieder Bestattungen statt. Tatsächlich wurden die meisten menschlichen Überreste – von mindestens 33, aber wahrscheinlich mehr Individuen – zu dieser Zeit niedergelegt. Im Gegensatz zur Spätbronzezeit waren dies meist die Bestattungen von Erwachsenen und es scheint dass die Körper intakt in die Höhle eingebracht und bestimmte Körperteile später entfernt wurden. Zahllose kleine persönliche Gegenstände, wie Ringkopfnadeln, kosmetische Instrumente und Halsringe waren mit den Körpern als Grabbeigaben oder Votive niedergelegt. Ein in das 4. Jahrhundert datierter Münzhort, bestehend aus einer kleinen Anzahl offizieller römischer Prägungen und zahlreicher lokaler Kopien stellt so weit nördlich der Römischen Provinzen einen aussergewöhnlichen Fund dar.

Zwischen *cal AD 240–325* spielten sich in der Höhle dramatische Ereignisse ab als mindestens sechs Individuen (vier Erwachsene und zwei Jugendliche) enthauptet wurden. Die hohe Anzahl mag andeuten dass die Toten in einer Phase sozialer Unruhe nach dem Ende römischen Einflusses in der Region Opfer eines politisch motivierten Ereignisses wurden; vielleicht handelte es sich um die Beseitigung einer Elitegruppe durch Konkurrenten. Was auch immer der genaue Grund für die Hinrichtungen gewesen sein mag, die Wahl eines so schwer zugängigen Ortes mit einer langen Votiv- und Bestattungstradition betont den stark ritualisierten Charakter der Ereignisse.

Die geheimnisvollen piktischen Symbole im Bereich des Doppeleinganges signalisieren das Ende der Nutzung der Höhle. Obwohl diese Zeichen üblicherweise später datiert werden, ist es möglich, dass sie schon im späten vierten Jahrhundert geschaffen wurden um der Toten in der Höhle zu gedenken oder einen heidnischen Ort voller spiritueller Gefahren symbolisch zu verschliessen.

NOTE ON THE TEXT

1. Unless otherwise stated, radiocarbon dates (including combined dates) are quoted throughout the volume at 95% confidence. The exceptions are modelled dates, where the 68% confidence range is quoted. Modelled date ranges are in italics throughout.

2. Our title, taken from a description of hell in John Milton's *Paradise Lost*, refers to the hidden nature of the mortuary practices that took place in the dark recesses of the Sculptor's Cave (now hopefully illuminated . . .).

LIST OF CONTRIBUTORS

PROFESSOR IAN ARMIT
Department of Archaeology, University of York, King's Manor, Exhibition Square, York YO1 7EP

DR TORBEN BJARKE BALLIN
Lithic Research, Banknock Cottage, Denny, Stirlingshire FK6 5NA

DR KATHARINA BECKER
Department of Archaeology, University College Cork, Cork T12 YN60

JULIE BOREHAM
Prospect House, 38 Great Lane, Reach, Cambridgeshire CB25 0JF

ALAN BRABY
5 New Street, Cockenzie, Prestonpans, East Lothian EH32 0HN

DR LINDSEY BÜSTER
Department of Archaeology, University of York, King's Manor, Exhibition Square, York YO1 7EP

TREVOR COWIE
Research Associate, Scottish History and Archaeology, National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

DR GEMMA CRUICKSHANKS
Scottish History and Archaeology, National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

DR MARY DAVIS
Collection Services, National Museums Scotland, 242 West Granton Road, Edinburgh EH5 1JA

DR ADRIAN EVANS
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

DR MARK HALL
Perth Museum and Art Gallery, Perth PH1 5LB

DR DEREK HAMILTON
SUERC, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride G75 0QF

NICK HOLMES
Research Associate, Scottish History and Archaeology, National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

DR FRASER HUNTER
Scottish History and Archaeology, National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

DR DOMINIC INGEMARK
Department of Archaeology and Ancient History, Uppsala University, Engelska Parken,
Thunbergsvägen 3H, Uppsala, Sweden

RACHAEL KERSHAW
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

PROFESSOR CHRISTOPHER KNÜSEL
UMR 5199, PACEA, Université de Bordeaux, Bordeaux, France

DR JO MCKENZIE
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

DR SAM MOORHEAD
Portable Antiquities and Treasure Department, British Museum, London WC1B 3DG

DR CLARE RAINSFORD
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

DR DANIEL SAHLÉN
Stockholms Läns Museum, Box 4151, 141 04, Huddinge, Sweden

PROFESSOR RICK SCHULTING
Institute of Archaeology, University of Oxford, Oxford OX1 2PG

DANIEL SHAW
Department of Archaeology, University of York, King's Manor, Exhibition Square, York YO1 7EP

DR ALISON SHERIDAN
Research Associate, Scottish History and Archaeology, National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

TOM SPARROW
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

DR MICHAEL STRATIGOS
SUERC, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride G75 0QF

DR JOHN SUMMERS
Archaeological Solutions, Bury St Edmunds IP32 7AJ

DR JIM TATE
Research Associate, Collections Services, National Museums Scotland,
242 West Granton Road, Edinburgh EH5 1JA

DR LORE TROALEN
Collections Services, National Museums Scotland, 242 West Granton Road,
Edinburgh EH5 1JA

COLIN WALLACE
1 Warriston Terrace, Edinburgh, EH3 5LZ

PROFESSOR ANDREW S WILSON
School of Archaeological and Forensic Sciences, University of Bradford, Bradford BD7 1DP

LIST OF ILLUSTRATIONS

Note on the illustrations: all photographs and drawings are by the Sculptor's Cave Project, unless otherwise credited.

LIST OF TABLES

ACKNOWLEDGEMENTS

Many individuals and institutions have helped in various ways with the analysis and publication of the Sculptor's Cave excavations. Our greatest debt is to the excavators: initially, Sylvia Benton, and then Ian and Alexandra Shepherd, whose records form the basis for the analysis presented here. The Shepherds' excavations were funded by the Ancient Monuments Division of the Scottish Development Department and Grampian Regional Council. The post-excavation and publication programme at the University of Bradford was funded by Historic Environment Scotland and managed for them by Rod McCullagh and Dr Lisa Brown.

Bradford Visualisation and the Fragmented Heritage Project at the University of Bradford provided equipment and expertise for the laser scanning of the cave and the structured light scanning of its carvings. Fieldwork at the cave in 2014 owed much to the help of Bruce Mann and Claire Herbert (Aberdeenshire Council), and Dr Allan Rutherford (Historic Environment Scotland) provided assistance with Scheduled Monument Consent. Permission to excavate was granted by the landowner, Gordonstoun School, and we would particularly like to thank Hugh Brown and John Buchanan for their help. We would also like to thank the intrepid individuals who braved the Lummie in 2014 to conduct fieldwork at the cave: Dave Anderson; Victoria Anderton-Johnson; Leanne Demay; Rebecca Hirst; John Kemp; Dr Rachael Reader; Graham Robertson; and last, but not least, Kevin Rutherford (Ecosse Mountains) who provided safety cover for the project. Dr Mhairi Maxwell (Victoria and Albert Museum, Dundee) and Clara Molina Sánchez (Glasgow School of Art) provided RTI of the carvings. Professor Rupert Till and Dr Kristina Wolfe (University of Huddersfield) provided insights into the acoustic qualities of the cave. Professor Tim Champion (University of Southampton) provided archive material on Sylvia Benton, and Dr Zoe Outram (Historic England) provided advice on the processing of environmental samples.

We would also like to thank colleagues at the University of Bradford who helped in various ways at different stages of the project: Dr Jo Buckberry; Dr Laura Castells Navarro; Stuart Fox; Dr Andrew Holland; Rob Janaway; the late John McIlwaine; the late Sue Thornton; and placement students Matthew Burns, Emily Claridge, Alistair MacIntyre, Daniel Shaw, and Frankie Wildmun. Iain Greig and John Crae of the Grampian Caves Association pointed us helpfully in the direction of relevant literature.

Jim Wilson (National Museums Scotland) provided invaluable assistance in accessing the archive. Daniel Sahlén would like to thank Suzie Stevenson (National Museums Scotland) for the preparation of thin section slides for petrographic analysis. Sam Moorhead would like to thank Dr Fraser Hunter and Nick Holmes for assistance with the compilation of the Roman coin report; Dr Eleanor Ghey for helping extract data from the new hoards database that will soon be live on the PAS Database; Dr Adrian Chadwick for his advice about coins in cave contexts; and Dr Eleanor Ghey and Dr Richard Abdy for their comments on this paper. Lore Troalen and Jim Tate would like to thank Dr Gemma Cruickshanks for some of the XRF analysis of the copper alloy and Dr Christophe Moulhérat at the Musée du Quai Branly in Paris for help in the identification of fibres. Rick Schulting would like to thank Paul Moore of the Department of Agriculture and Rural Development Northern Ireland for his comments on the fly pupae. Fraser Hunter would like to thank Dr Andrew Ross (Curator of Palaeobiology at NMS) for advice on the fossil plant stem.

Dr Alexis Gorgues (Université Bordeaux Montaigne) helped with translation of the French abstract and Dr Katharina Becker (University College Cork) translated the German abstract.

The authors would like to thank Dr Janet Trythall, Andrew Dunwell and our anonymous peer reviewers for their comments on the complete manuscript. Finally, thanks to Dr Janet Trythall for her help at all stages of the project, from our first visit to the cave to the final publication.

Chapter 1

THE SCULPTOR'S CAVE: A PLACE APART

1.1 Cannibals, demons and monsters

Sometime in the sixteenth or seventeenth century, a native of East Lothian called Sawney Bean moved westwards with his wife to the Ayrshire coast. Setting up home in a deep, remote sea cave, cut off at high tide, the pair spawned and raised an incestuous clan of around fifty children and grandchildren. For the next 20 years or so, they lived by robbing and killing unwary coastal travellers and eating their flesh. The corpses of their unlucky victims were taken back to the cave to be eaten, with some body parts being preserved for later consumption. Eventually, the cannibal clan were discovered, captured and taken to Edinburgh for execution.

There is of course no independent historical evidence to corroborate the existence of Sawney Bean. Indeed, it seems that his story was first formalised in the early eighteenth century, when it appears in various popular publications (Hobbs and Cornwell 1997). Nonetheless, it is likely that this early modern myth originated in folk tradition at a rather earlier date.

The Sawney Bean tale is resonant with themes of liminality: the 'in-between' state that separates one world from the next. In the story, the cave-dwelling cannibals occupy a conceptual space somewhere between the domestic and wild worlds. Consuming human flesh renders Bean's clan bestial and less than fully human. This is especially true for the anonymous hordes of children and grandchildren: unnamed, savage and animalistic. Uncertainties over the veracity of the story only add to the uneasy status of the cannibals. Neither domestic nor wild, human nor animal, real nor imaginary, they remain elusive. It is probably no coincidence that 'Sawney' is an old Scots name for the Devil (Hobbs 2011: 201).

As a sea cave, Sawney Bean's lair is the perfect backdrop for the tale. Situated between the above-ground realm of the living and the underworld of the dead, it also lies on the very edge of the inhabited world, between land and sea. Cut off by each rising tide, the cave seems to oscillate between worlds.

Sawney Bean's story is by no means an isolated one. From the earliest times, caves have exerted a special hold on the human imagination. As liminal places between the above-ground world of daily experience and the underworld realm of gods, spirits and ancestors, they have formed a persistent focus for human engagement with the supernatural. The sensory deprivation that comes from immersion in the darkness, stillness and silence of caves creates a powerful, numinous arena for ritual performance. It is little surprise then that caves the world over have been repeatedly visited for the performance of rites associated with religion, magic, divination and death.

The earliest surviving human art, dating to the Upper Palaeolithic, is found deep underground; caves are home to dangerous supernatural beings in Greek myth, like the nymph Calypso and the Cyclops Polyphemus in Homer's *Odyssey*; and caves are the lairs of monsters and demons in north European folklore. As late as the twelfth century AD, Norse adventurers such as Rognvald Kali Kolsson, Earl of Orkney, believed that certain caves housed spirits or goblins, writing 'Here have I built in darksome cave of Doll a beacon high to goblin grim of sternest mood' (Vigfússen 1887: 100). Among numerous myths based around caves, many Mesoamerican peoples believed that their ancestors and their gods had first emerged from a seven-chambered cave at a mythical location known as Chicomoztoc (eg Boone 2000: 54, 249). In all these cases, caves are places of darkness and uncertainty, where the world of everyday experience blurs into the underworld of gods, demons and spirits.

1.2 The Sculptor's Cave, Covesea

This volume concerns the Sculptor's Cave, a secluded and inaccessible sea cave lying at the foot of high sandstone cliffs on the south coast of the Moray Firth in north-east Scotland (illus 1.1, 1.2; Canmore ID 16278). Although there is nothing to suggest that this cave was a cannibal den, it nonetheless shares many features with Sawney Bean's mythical adopted home. Both are sea caves, hard to reach and remote from the mundane world of day-to-day life. Both are cut off at each high tide. And both are places of the dead.

The Sculptor's Cave takes its name from a series of enigmatic Pictish symbols carved around its distinctive twin entrance passages. Two programmes of excavation, however, in the 1920s and 1970s, have shown that human activity began much earlier. During the Late Bronze Age, from around 1100 BC, the cave was a mortuary site, where the dead were laid out with personal objects, including ornaments of bronze and gold. People continued to visit the cave throughout the Iron Age, though the nature of activity is more elusive. In the early centuries AD, however, rich artefactual material suggests a renewed intensity of ritual activity. Most remarkable of all, human remains from the Roman Iron Age attest to the execution by decapitation of at least six people inside the cave; an extraordinary event whose impact was surely magnified by the deep spiritual associations of the site.

The chapters that follow present a comprehensive report on the Sculptor's Cave excavations, drawing on the work of the 1970s site directors, Ian and Alexandra (Lekky) Shepherd, and their team of excavators and post-excavation researchers.

Illustration 1.1
Location map

Illustration 1.2
The Sculptor's Cave

Following a wholesale programme of post-excavation analysis at the University of Bradford from 2014–18 under the aegis of the Sculptor's Cave Project, it integrates the Shepherds' findings with those of the earlier excavations by Sylvia Benton.

1.3 Location, topography and geology

The Sculptor's Cave lies between the villages of Covesea and Hopeman on the south shore of the Moray Firth, 64km east of Inverness (NGR NJ 1750 7072). It is one of a series of sea caves along a 10km stretch of coastline between Burghead and Lossiemouth (Clemmensen 1987). Set around 6m above the high-tide mark, the cave occupies the south-west corner of a small bay, below cliffs which rise to almost 30m (illus 1.3). These belong to the Hopeman Sandstone Formation, which is thought to have formed through aeolian action in the Permian or Early Triassic periods, although there remains some debate about its precise geological origins (Maithel et al 2015).

The cave itself is a large and imposing space, some 20m deep by around 13.5m wide, with a roof rising to 5.5m high (illus 1.4). The entrance is extremely distinctive, being formed by two parallel passages some 11m long by 2–3m wide separated by a solid spine of rock (illus 1.5). Although remarkably regular in form, the entrance passages appear to be entirely natural. The passages are both sufficiently tall and wide that it is nowadays possible to walk unimpeded into the cave. This striking entrance marks the cave out from the many others along this stretch of coast.

There is no easy direct access to the bay from the landward side. Today, the quickest way to reach the cave is to climb down an artificially enhanced vertical channel (the 'lummie') cut into the cliffs of the next bay to the east; the lummie formerly had steps cut into the rock (Allen and Anderson 1903: 130), but these were mostly blasted away after the 1920s excavations. Similarly, there are footholds cut into the cliff face leading to Covesea Cave 1 in the next bay to the west (illus 1.1, 1.3), though these are highly precarious. Otherwise, access from the land involves a lengthy walk along a beach covered, in many places, by dense concentrations of large, angular, slippery boulders. Whatever the approach, the bay is inaccessible for prolonged periods either side of high tide; an obstacle to access that would have been significantly more marked during the first millennia BC/AD, when relative sea levels in this area were perhaps around 1.5–2m higher than they are now (Smith et al 2012). The cave is not, therefore, an easy place to approach by land. Similarly, it does not present straightforward access by sea, since the bay is fringed by dense, sharp, angular rocks that would present a serious danger to vessels of any draft (illus 1.6): it would, however, probably be possible (though not advisable!), in calm conditions at high tide, to pull up a small canoe or coracle, by disembarking beyond the rocks and manually hauling the boat ashore.

The inaccessibility of the cave would have been exacerbated in prehistory by the environmental conditions of the hinterland. The area behind the coastal strip was dominated until the Middle Ages by a large sea loch known as Loch Spynie. Although surviving only as a relatively small body of open water today, this loch originally occupied a substantial area between Burghead and Lossiemouth (illus 1.7, 1.8; see section 7.2). Together with the

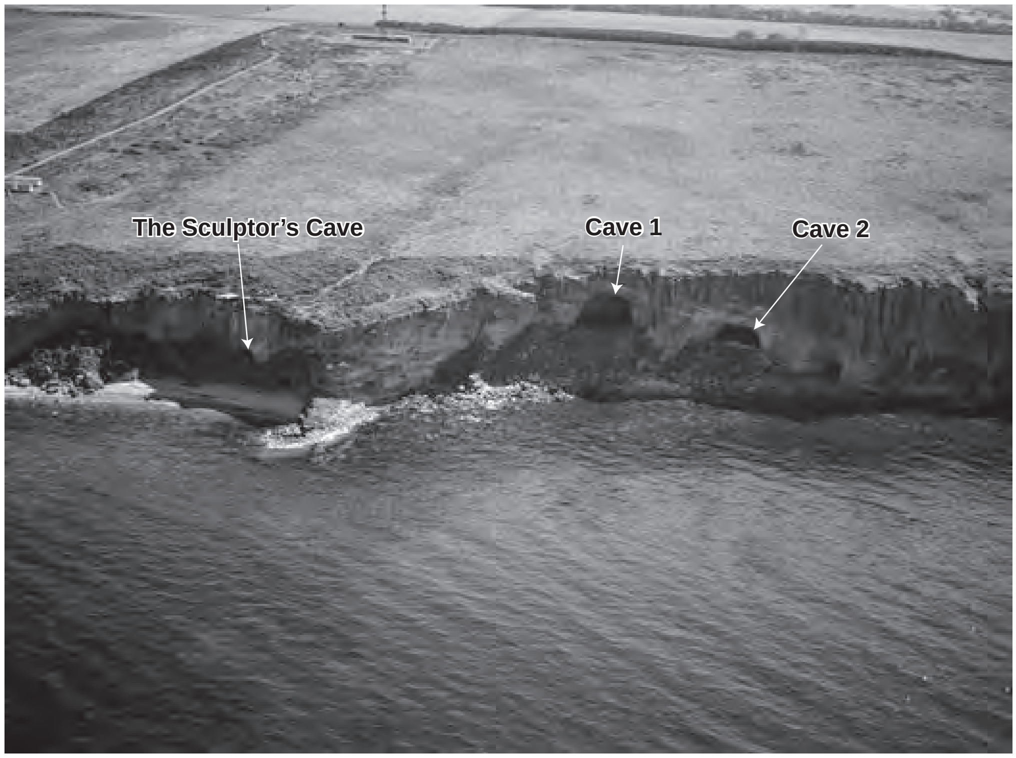

Illustration 1.3
The Sculptor's Cave from the air at high tide. Covesea Caves 1 and 2 are indicated to the west (© Aberdeen Archaeological Surveys / Ian Ralston, reprinted by permission of Historic Environment Scotland, SC 1012386)

marshy wetlands that surrounded it, the loch would have formed a significant barrier to movement on foot, creating effectively an island of the narrow coastal strip where the Covesea Caves are sited.

This complex environmental history may be reflected in the name Covesea itself (pronounced 'Cow-sea'), which is first attested, as 'Coiſſey', in a charter dated 1561 (Innes 1837: 404, no. 369). Similar forms appear on a succession of later documents, including 'Coyſie' on Pont's map (*c* 1583–96), 'Coiſie' on Blaeu's Atlas (1654), and 'Causie' on Ainslie's chart of 1785 (illus 1.7). The slightly different, perhaps anglicized, form 'Cave-Sea' first appears in the *History of the Province of Moray* (Shaw 1775), while both forms, 'Causea or Cave-sea', are recorded in the entry for the parish of Drainie in the Statistical Account (Gordon 1799: 85). One reading of these variants might be that the name means something approximating to 'Cave Island', but another possibility is that it derives from 'causeway'. Either suggests a perception of marginality.

1.4 The recent history of the Covesea Caves

The Covesea Caves have been well known local landmarks since at least the late eighteenth century. The Reverend Lachlan Shaw (1775: 163), for example, notes in his *History of the Province of Moray*, that 'in the Parishes of Kinnedar and Duffus, there are ſeveral Caves; some are ten or twelve feet high, and it is uncertain how far they extend; they open to the sea, in a Hill of Free Stone, and were probably formed by the impetuous waves, washing away the Sand and Gravel between the Strata of stone'.

Perhaps the earliest recorded human use of the caves is described by the Reverends John Grant and William Leslie (1798: 122), who note that one 'was occupied as a stable to conceal the horses of the family of Gordonstown (sic) from the rebels, in the year 1745, and has the entrance built up into a neat door'. The same story is reflected a century later by James Brown (1873: 326–7) who says of 'the Laird's Stable' that it 'was a hermit's cell, and that Sir Robert Gordon of Gordonstown (sic) degraded it into a stable in 1745, to conceal his horses, as people say, from the rebels, or from the royalists, or from both'. The 'Laird's Stable' (named 'Sir Robert's Stables' on the First Edition 6" OS map; illus 1.7D) is still accessible today, in a bay to the east of the Sculptor's Cave (illus 1.9).

By the end of the eighteenth century, certain of the caves were frequented by workmen engaged in the extensive quarrying operations that were carried out along this coast. Grant and Leslie (1798: 122) record, for example, that 'some of the lightest are used as shelters by the stone-cutters, both from the heat and rain, and are in part filled by the chips and fragments'. Their description is borne out by modern inspection, for example, of one large cave adjacent to Covesea Quarry (Canmore ID 318072; illus 1.10). Other caves described by Grant and Leslie are harder to pinpoint, including 'another behind the village of Lossiemouth [which] had, in ancient times, been formed into a small hermitage, not exceeding 12 feet square: it was completed by a handsome Gothic door and window, and commanded a long but solitary view along the eastern shore. These artificial decorations were torn down about 30 years ago, by a rude shipmaster; and in the course of working the quarries the whole cave has been destroyed' (1798: 130). Brown (1873: 290)

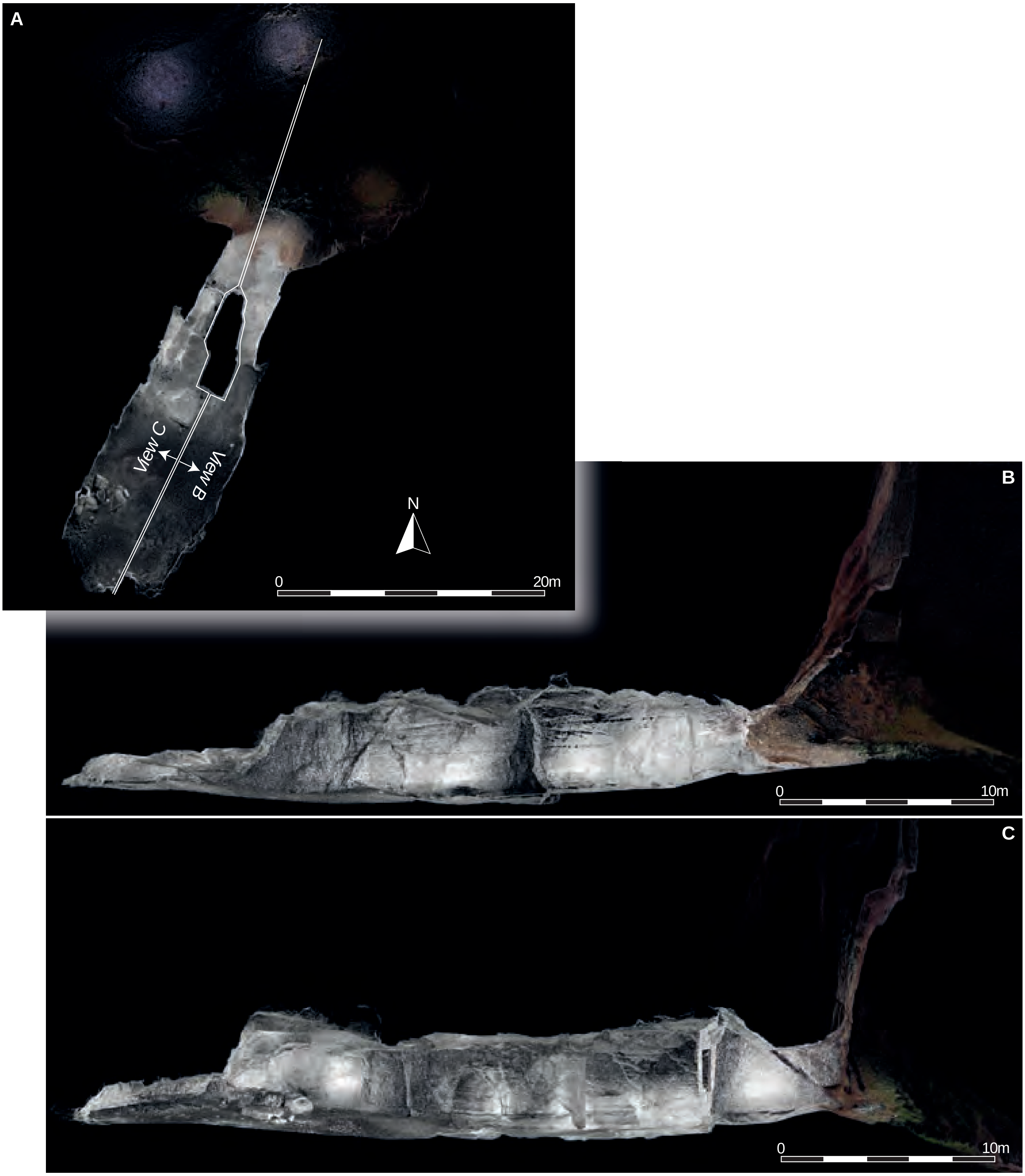

Illustration 1.4
Digital scans showing (A) a plan view of the Sculptor's Cave, (B) a section through the East Passage to the rear of the cave and (C) a section through the West Passage to the rear of the cave. The scans give some sense of the ease of access into the cave as it is now and as it would have been prior to the beginnings of human activity (courtesy Visualising Heritage, University of Bradford)

Illustration 1.5
The Sculptor's Cave (A) from the outside showing the distinctive twin entrance passages and (B) from the inside indicating the scale of the interior space

mentions human activity in other caves which are also now difficult to identify, including 'another cave, near Hopeman [where] have been found a flint arrow-head, bones of the beaver and the crane, and other traces of prehistoric occupancy'. Brown also mentions the Sculptor's Cave itself (though not by name), reporting that 'the roof . . . is sculptured with figures of the half-moon, sceptre, fish and suchlike symbols of ancient Celtic art' (ibid).

By the mid-nineteenth century, the spectacular coastal geology of the Moray Firth was a magnet for tourists, attracted by its 'caves, fissures, arches, stacks, and fantastic forms of rock, various and romantic as the ruins of a vast city' (Groome 1884: 290). As the Reverend Dr Rose describes in the New Statistical Account, 'to visit these [caves], gentlemen and ladies, pleased with the scenery, and more pleased with each other, scramble hand in hand over slippery rocks, and rounded boulders, at the risk of

Illustration 1.6
View from the entrance to the Sculptor's Cave

professes no knowledge of them, confirming that they had not yet been drawn to the attention of local antiquarians.

The first known attempt to record the carvings, seemingly prompted by this exchange, was conducted in 1866 by Lady Sophia Dunbar, a noted watercolourist with antiquarian interests, and resident at nearby Duffus. In a letter to Simpson, she recounts that 'I was lately so fortunate as to discover some small remains of ancient sculptures in a cave at Covesea which I was pleased to hear from Mr [John] Stuart had interested you. I have no doubt their antiquity is authentic altho' the sculptures are trifling in themselves' (Dunbar 1866). Dunbar's sketches convinced John Stuart to send Aberdeen-based artist Andrew Gibb 'to make the necessary drawings' for inclusion in the second edition of his *Sculptured Stones of Scotland*, published the following year (1867).

The first known excavations came just a few years later, when an article in the *Elgin Courant*, dated 25th September 1868, states that 'deep excavations were made in the cave by some scientific gentlemen of the neighbourhood, and one, we believe from Edinburgh' (Anon 1868a: 5). The same article goes on to report the finding of a 'human lower jaw-bone and part of a human skull' among the debris of occupation (ibid). Although these 'gentlemen' are anonymous, Lady Dunbar seems once again to have been closely involved, since it was she who, later that year, donated 'bones, etc' which had been 'found in excavating debris on the floor of the 'Sculptured Cave' at Covesea' to Elgin Museum (Anon 1868b). These accession records also represent the first occasion on which the cave was identified by name. Several decades later, describing the carvings in their magisterial *Early Christian Monuments of Scotland*, Allen and Anderson note that the floor of cave was covered by a coarse gravel 'which appeared to have been disturbed by explorers' (1903: 130). Whether this referred to the still-visible traces of the 1868 excavations, or later unrecorded antiquarian interventions, is uncertain.

breaking their necks and limbs' (1845: 150). Evidence of these Victorian visits is plentiful at the Sculptor's Cave, where numerous visitors carved their names into the walls, both alongside the Pictish carvings at the entrance, and extending into the interior; a phenomenon which has continued into more recent times (illus 1.11). The caves were also used as expedient shelters by the homeless and itinerant ('bands of wandering gypsies'; Stuart 1867: xciv) during the nineteenth century, as had probably been the case in earlier centuries. Nowadays the caves are more rarely visited, although the careful placement of bones, feathers and other found objects on a large boulder towards the rear of the Sculptor's Cave suggests that it continues to exert some residual spiritual pull (illus 1.12).

1.5 Discovery and excavation

There seems to have been no antiquarian recognition of the Sculptor's Cave prior to the mid-nineteenth century. It is not mentioned, for example, in the Old or New Statistical Accounts (Gordon 1799; Rose 1845), despite detailed descriptions of the general coastal landscape around Covesea that includes references to other caves in the vicinity. The first written record of the carvings at the Sculptor's Cave appears to be contained in a letter written by Sir James Young Simpson (1865), the distinguished physician and antiquarian, who was then studying the Pictish symbols at the Wemyss Caves in Fife. Simpson's letter, to the Reverend Dr George Gordon of Birnie, an amateur geologist, antiquarian and founder of Elgin Museum, had been prompted by information received from the factor of a local estate, suggesting that there was at least some local knowledge of the Sculptor's Cave carvings by this time. Gordon's reply (1865), however,

The turning point in the history of research on the Sculptor's Cave came in 1928, when Sylvia Benton, at that time a student of classical archaeology at the British School at Athens, visited the cave (Trythall 2012). Although the purpose of her visit was to examine the Pictish carvings, Benton reports that 'my companion, Miss Mollie Hair, called my attention to the fact that the floor was strewn with human bones' (1931: 177). Trial trenching later the same year confirmed the presence of rich archaeological deposits and further excavations in the summers of 1929 and 1930 were supported by the local landowners, the Gordon Cumming family, who supplied a team of four workmen to assist with the project. Over the course of the project, almost all of the anthropogenic deposits were removed from the cave interior, though Benton left strips of in situ material along each of the two entrance passages as a resource for future excavators (illus 1.13). Benton's work revealed

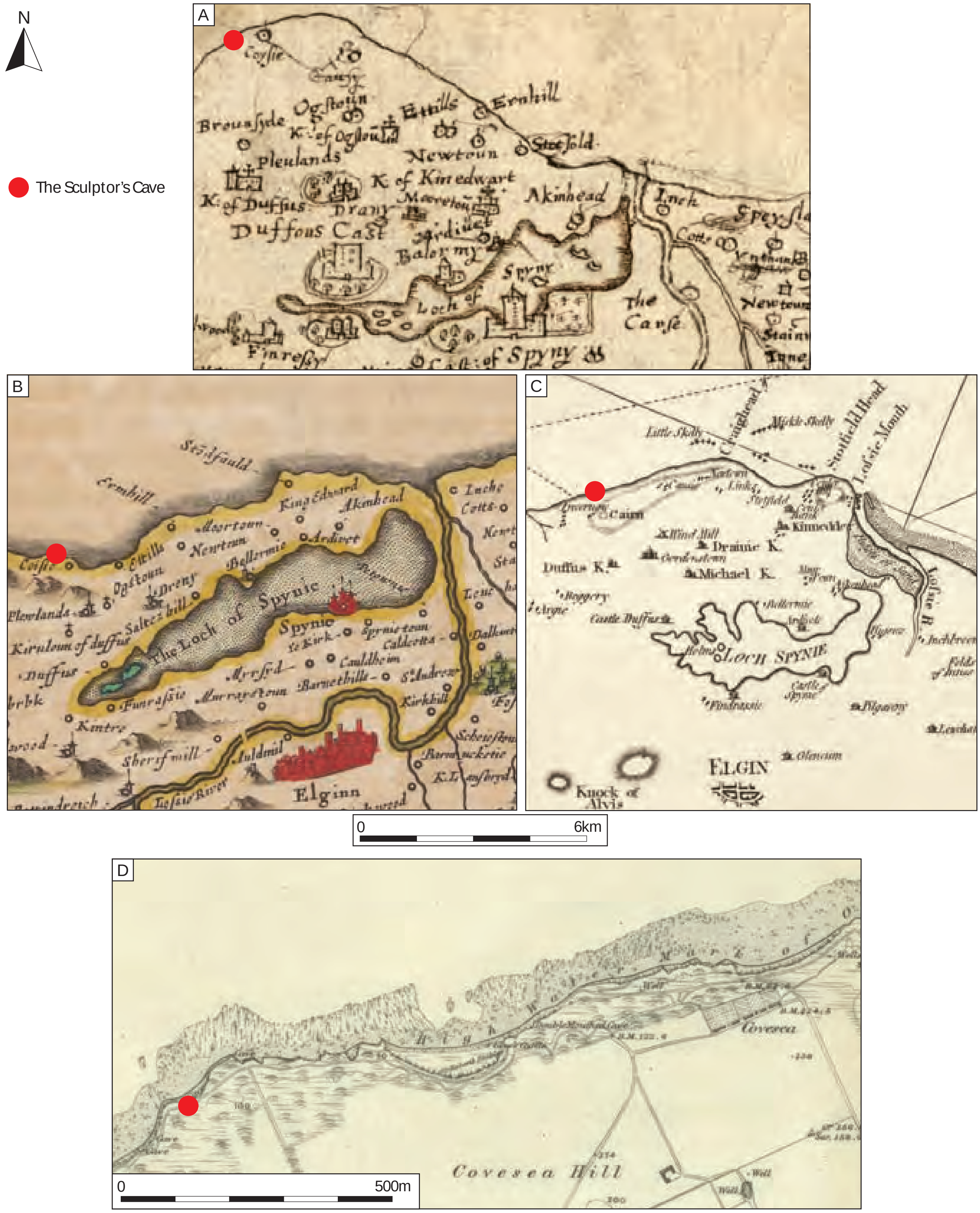

Illustration 1.7
(A) Pont's map of Elgin and north-east Moray (*c* 1583–96), (B) Blaeu's Atlas of Scotland (1654), (C) Ainslie's chart of part of the north of Scotland, from Banff to Duncansby Head (1785), (D) the First Edition 6" Ordnance Survey (1843–82) (maps reproduced with the permission oional Library of Scotland)

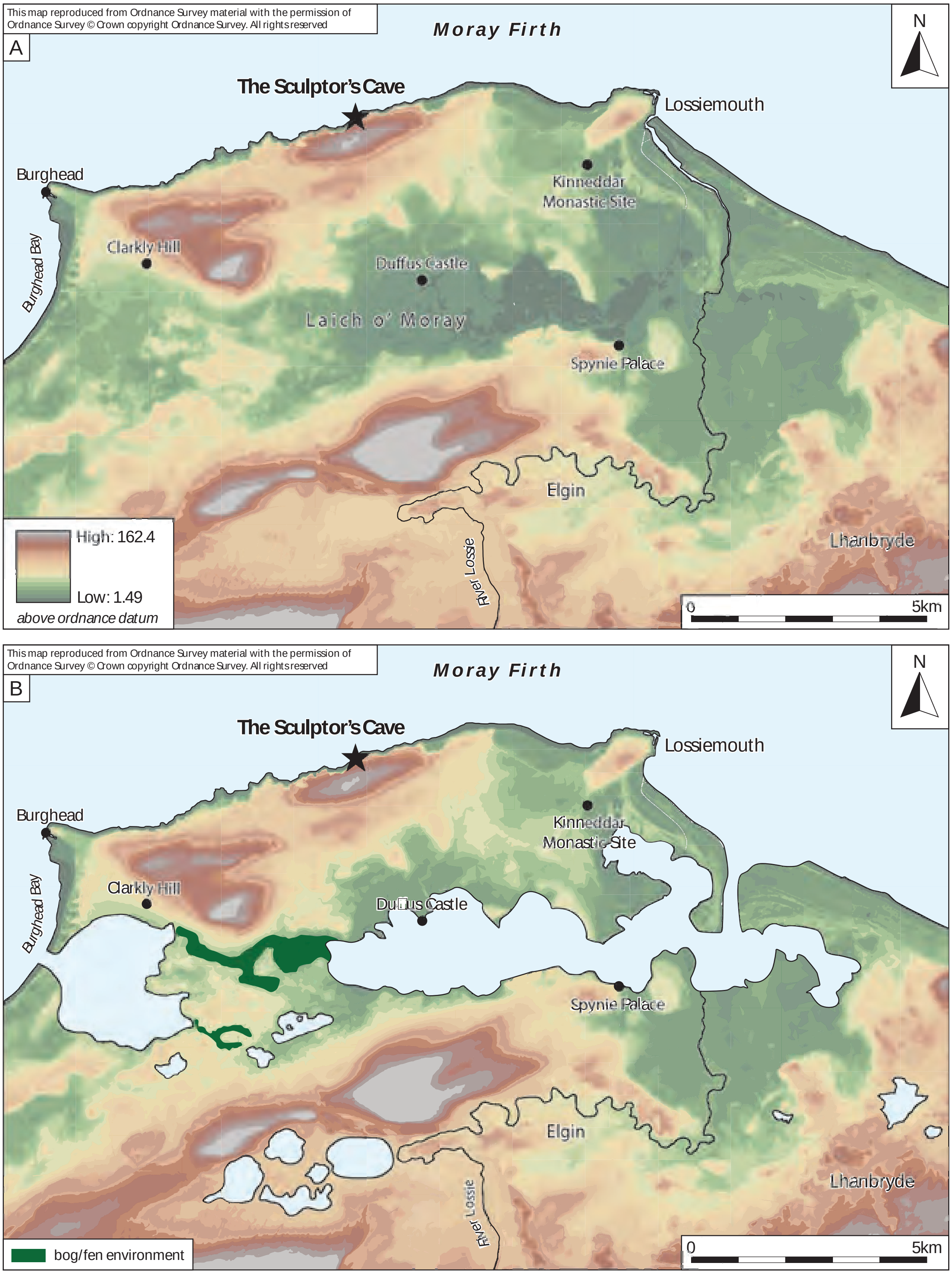

Illustration 1.8
The landscape context of the Sculptor's Cave: (A) as it appears today, (B) as it might have been during later prehistory (data courtesy Michael Stratigos; for full details on the landscape reconstruction see section 7.2)

Illustration 1.9
The 'Laird's Stable', popularly supposed to have been used as stables during the 1745 Rising and perhaps, prior to this, the home of a hermit

Illustration 1.10
Cave adjacent to Covesea Quarry, used by quarrymen during the eighteenth and nineteenth centuries

large quantities of artefactual material, including an unusually high-quality assemblage of metalwork from the Late Bronze Age and an array of personal ornaments and coins dating to the Roman Iron Age. Of even greater significance perhaps was a remarkable assemblage of disarticulated human remains, although virtually all of these were discarded during or after the excavations (see box sections 2 and 4).

Although Sylvia Benton went on to work extensively in the Greek Islands, including leading fieldwork on caves in Ithaca (Benton 1939), the Sculptor's Cave was her first real experience of excavation. Despite the problems she encountered in this hugely difficult working environment (see chapter 2) and in the face of scepticism from the Scottish archaeological establishment, the work was well-conducted for its time and resulted in remarkably prompt publication (Benton 1931). The latter seems to have owed much to V Gordon Childe, Abercromby Professor at the University of Edinburgh, who engineered an invitation for Sylvia Benton to lecture to the Society of Antiquaries of Scotland and to publish the site in their journal (Ralston 2009: 66). Though, typically for the period, much of her interpretation concerned questions of typology and cultural history (including the supposed arrival of cultural influences from Switzerland), Benton's work established the Sculptor's Cave as a mortuary site with clear episodes of votive deposition in the Late Bronze Age and Roman Iron Age. Inevitably, the utility of Benton's report is limited by the relatively crude recovery techniques available at the time, an issue exacerbated by the difficult conditions associated with working in the cave. Stratigraphic information was thus rather rudimentary.

Following Benton's work, the site remained prominent in Scottish archaeological literature. Childe, for example, discussed the pottery from the cave in the context of the 'Late Bronze Age Invasion' of Britain (1935: 172), while Piggott cited the cave in his discussion of Late Urnfield migrations from the Rhine or the Low Countries (1962: 116–17). Interestingly, Piggott seems to have regarded the Late Bronze Age activity within the Sculptor's Cave as representing settlement, wondering if his 'would-be settlers [had] become fugitives', 'obliged to lurk in caves' (ibid: 117). Most notably perhaps, the Sculptor's Cave became the type-site for Coles' 'Covesea Phase' of the Scottish Late Bronze Age (Coles 1960), which broadly equated to the Dowris Phase in Ireland and the Ewart Park Phase in England.

Despite the recognition of its importance, however, the cave itself remained remote and vulnerable to unauthorised disturbance. Following repeated episodes of illicit digging, a renewed programme of excavation was initiated in 1979 to remove the surviving archaeological deposits that Benton had intentionally left in the two entrance passages (illus 1.14). The work was led by Ian and Alexandra Shepherd and funded by the Ancient Monuments Branch of the Scottish Development Department (now Historic Environment Scotland) and the former Grampian Regional Council. Following the excavations, the cave was scheduled on 24th October 1979, primarily to protect the Pictish carvings, since all anthropogenic deposits within the cave and its entrance passages were thought to have been removed.

Due to pressure from various work commitments, the 1979 excavations remained unpublished, although some preliminary post-excavation analysis was completed in the early 1980s and several interim statements were published (Shepherd 1983; 1993; 1995; 2007; Shepherd and Shepherd 1979; 1980). Following a lengthy hiatus, renewed post-excavation work, including the first radiocarbon dating programme for the site, began in 2006/7 as part of a reanalysis of the human remains led by Ian Armit and Rick Schulting, in collaboration with Ian Shepherd and Chris Knüsel (Armit et al 2011). Following Ian Shepherd's untimely death in 2009, however, work on the archive ceased once again.

1.6 Excavating the archives

In 2013, following discussions between Historic Environment Scotland, Alexandra Shepherd and the University of Bradford, a new programme of work was initiated with the aim of achieving full publication and archiving of the Sculptor's Cave excavations. The Sculptor's Cave Project was directed by Ian Armit and managed by Lindsey Büster. Its aims were essentially to design and

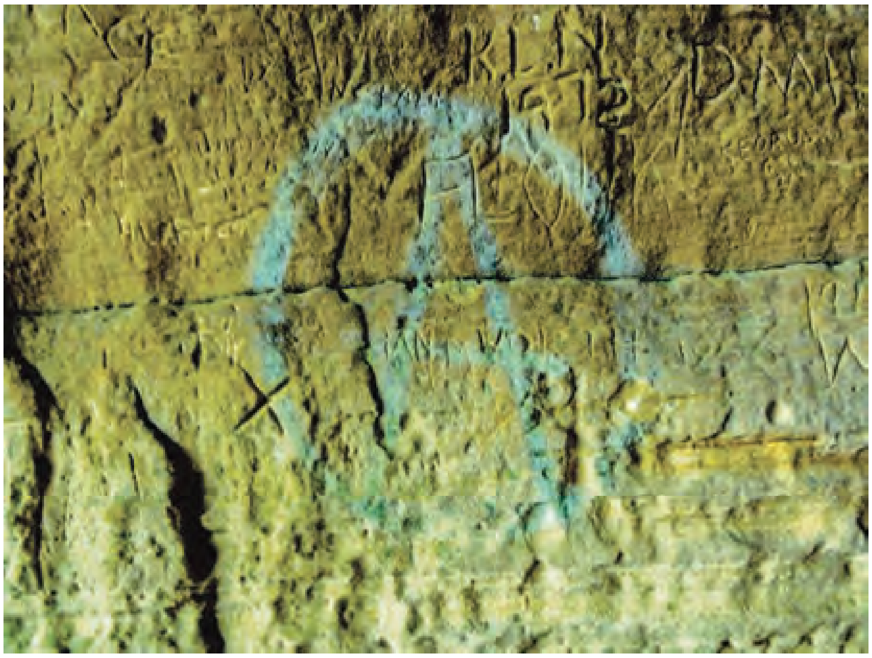

Illustration 1.11
Modern graffiti inside the Sculptor's Cave

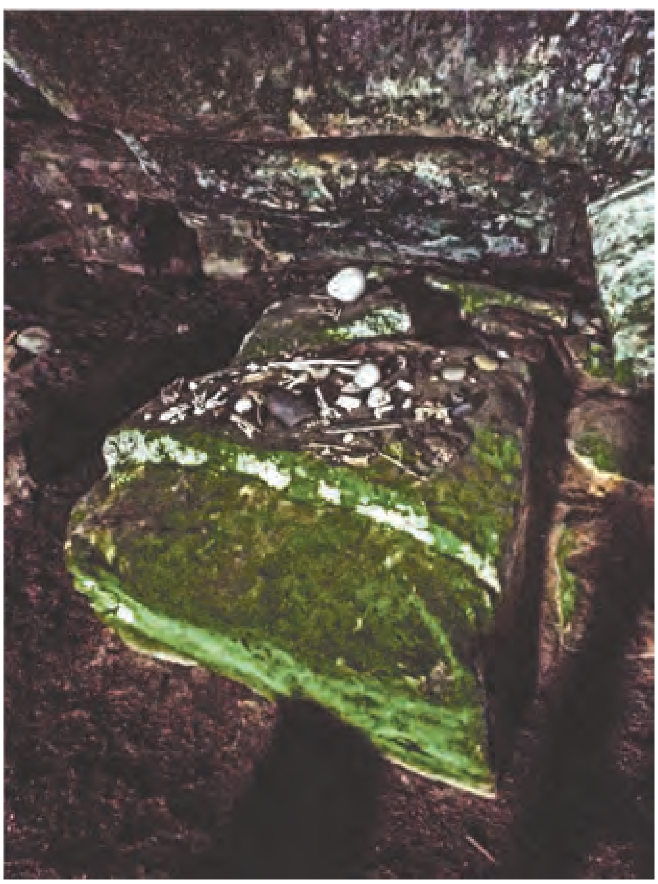

Illustration 1.12
The informal modern 'altar' taking advantage of a large rockfall at the rear of the cave. The offerings vary but tend to include bones, unusual stones and feathers

implement a post-excavation strategy that would both bring the Shepherds' work at the Sculptor's Cave to final publication and realise the research potential of the site in relation to broader themes in British and European Late Bronze Age and Iron Age archaeology.

Underpinning the work was the archive from the 1979 excavations, which comprised principally field-drawn and inked-up plans, sections, slides, black and white photographs, colour slides, contour surveys, finds distribution plots, casts and rubbings of the Pictish carvings, site notebooks, artefact record cards, and records and reports relating to the excavation and initial post-excavation programme.

All of the artefacts, human remains and faunal bone from the 1979 excavations are held by National Museums Scotland (NMS) in Edinburgh, who also curate the casts of the Pictish and other carvings taken during the 1979 work. Finds and a handful of surviving human remains from Sylvia Benton's excavations are split between NMS and Elgin Museum: these were brought together at NMS to enable reanalysis alongside the Shepherd material. A significant number of soil (and other) samples from the Shepherd excavations were also held at NMS, comprising both processed and unprocessed soil samples, column samples and boxes of miscellaneous material. During preliminary work on the project it transpired that significantly more palaeoenvironmental material survived than had initially been thought. This included charred grains that had been reported on in the early 1980s but had been thought lost. Although increasing the scale of the post-excavation programme, the survival of this material was greatly beneficial in examining the palaeoenvironmental dimensions of human activity in the cave and providing samples for a Bayesian-led AMS dating strategy.

Both NMS and Elgin Museum also hold smaller amounts of material from the Covesea Caves, which almost certainly includes material from the Sculptor's Cave, collected illicitly during the 50 years that passed between the two excavation campaigns. These were examined where appropriate as part of the present project.

Illustration 1.13
Sylvia Benton with Alexandra (Lekky) Shepherd in the West Passage

Although the Sculptor's Cave Project was largely desk- and laboratory-based, some fieldwork was undertaken in 2014 to conduct the digital recording of the cave and its carvings (see box sections 1 and 3) and to enable soil micromorphological sampling of the natural deposits underneath the excavated layers in order to explore the palaeoenvironmental context of the cave (see section 7.3). The opportunity was also taken to conduct small-scale excavation of Sylvia Benton's spoil heap, primarily to retrieve human remains known to have been discarded during her excavations (see box sections 2 and 4).

Problems encountered during the project were those that might generally be expected when publishing someone else's excavation. The stratigraphy uncovered by the Shepherds within the cave entrances was exceptionally fine-grained and complex. This was hard enough to disentangle at the time, particularly since individual blocks of preserved stratigraphy had been vertically and horizontally truncated by excavation in the 1920s and further disturbed by later erosion and informal, illicit excavations. The lack of first-hand experience of the actual excavation was an additional handicap. Nonetheless, the quality of the drawn and written records was extremely good and made it possible to effectively reinterpret the site from first principles using plans, sections, photographs, context descriptions and site notebooks. That full publication is possible 40 years on from excavation is a tribute to the abilities of the excavators.

The Sculptor's Cave was excavated before the general uptake in Scotland of single-context recording. The context assignment and numbering system was thus site-specific and rather complex: nonetheless, it has been retained here to ensure continuity between

Illustration 1.14
The Shepherds' excavations in 1979, showing work underway in the West Passage

Box section 1

LASER SCANNING THE CAVE

Lindsey Büster, Adrian Evans, Tom Sparrow, Rachael Kershaw, Andrew S Wilson and Ian Armit

Unlike most archaeological sites, caves survive as complex three-dimensional spaces. As a result, they are hard to capture using traditional archaeological recording methods such as conventional plans and sections. With this in mind, a terrestrial laser scan of the Sculptor's Cave interior was created in 2014. The principal aims were to record the cave in much greater detail than had previously been possible, as a basis for archaeological interpretation, and to help preserve this fragile space (at least digitally) against the threats posed by erosion and rockfall. The resulting digital model also provides the potential for a much wider audience to experience this remarkable but inaccessible site through museum display and online dissemination (Büster et al 2019a).

Terrestrial laser scanning was undertaken using a FARO (Lake Mary, FL) *Focus*^{3D} *S 120* laser scanner running FARO *Scene* software (illus B1.1). The scanner weighs 5kg and fits neatly into a hard case which could be carried 'rucksack style' down the cliff and across the beach to the Sculptor's Cave. Each laser scan comprised an average of 174.8 mega-points, with an average point distance at 10m of 3.068mm, and an average file size of 568Mb. In total, twenty-eight scans captured the entire cave interior, in around eight hours, over a two-day period. Scan positions were located using a Trimble *S6* robotic total station.

Illustration B1.1
Terrestrial laser scanner in operation in the Sculptor's Cave

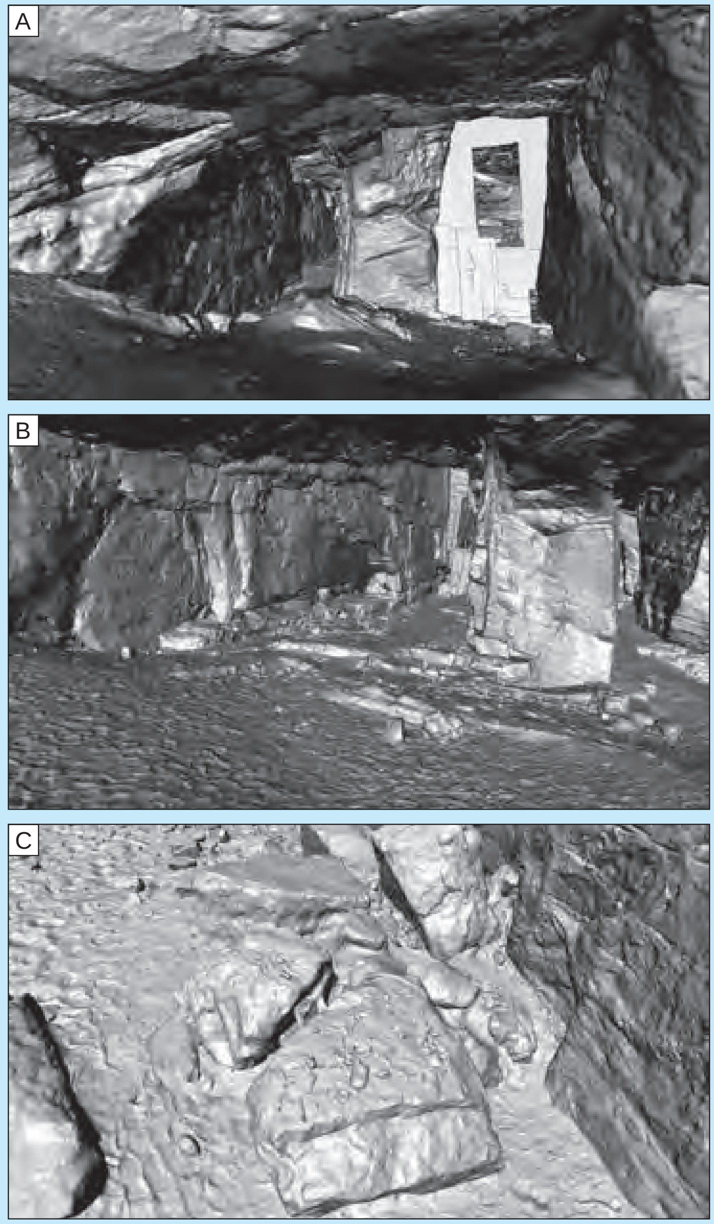

Illustration B1.2
Still images taken from walk-through animation generated from the terrestrial scan models, showing (A) the cave looking in from outside, (B) the twin entrance passages from the cave interior, (C) rockfall, now adopted as 'altar' at the rear of the cave (courtesy Fragmented Heritage and Visualising Heritage, University of Bradford)

Off site, the individual scans were combined initially into a 3D digital model in Trimble (Sunnyvale, CA) *Realworks*. For the creation of more sophisticated models, point clouds were converted into meshes in Autodesk (San Rafael, CA) *ReCap 360,* and subsequently cleaned up using open source *Cloud Compare* software. This process took approximately 48 hours. The resultant model (illus 1.4, B1.2) is nearly 2GB in size, and can be opened in open source *Cloud Compare* or *Meshlab* software, both of which are freely available online.

Finally, a walk-through animation was created using a combination of FEI (Hillsboro, OR) *Avizo* and Adobe (San Jose, CA) *After Effects* software (Büster et al 2019a: https://link-springer-com.ezproxy.is.ed.ac.uk/chapter/10.1007%2F978-3-319-99022-4_10#SupplementaryMaterial); these were outputted as '.avi' files, and can be played using open source multimedia *VLC* software. The animation combines terrestrial laser scan data with high resolution structured light scan data of the Pictish carvings (see box section 3) into one integrated model, which allows the viewer to experience the Sculptor's Cave simultaneously at a number of scales. In the future, the walk-through animation has the potential for augmentation with further sets of experiential data; for example it would be possible to add ambient sound from the cave, or digitally refill the archaeological deposits to recreate the micro-topography of the interior during the various phases of the site's use. It would also be possible to digitally reinstate the pool thought to have occupied the interior during the Late Bronze Age and Early/Middle Iron Age (see chapter 2).

the published report and the site archive. The complex nature of context recording did, however, lead to some irreconcilable confusion in labelling within the archive that could not be disentangled at 40 years remove from the excavation. Fortunately, the instances of confusion were sufficiently few as not to prejudice overall understanding of the stratigraphic sequence and location of the bulk of the artefactual and ecofactual assemblages.

As in the case of other backlog projects, the delay between excavation and publication has had the benefit of introducing some new opportunities for analysis and interpretation. As well as significant advances in the understanding and interpretation of artefactual, faunal and palaeoenvironmental datasets (chapters 5 and 7), methodological developments in osteoarchaeological analysis have enabled us to say more about the human remains from the Sculptor's Cave than would have been possible at the time of excavation (chapter 6). Most important, however, is the development of AMS (accelerator mass spectrometry) dating and, particularly, techniques of Bayesian modelling. New AMS dates have filled out the sequence of activity in the cave to span the whole period from the Late Bronze Age to the Roman Iron Age, while Bayesian analysis has enabled us to address specific questions of chronology (see chapter 4).

1.7 Structure of the volume

The present volume aims to provide a definitive report on the archaeological work undertaken at the Sculptor's Cave from the 1920s to the present. Post-excavation analyses, and particularly the radiocarbon chronology, have transformed earlier understandings of the site and greatly alter the picture adduced in earlier reports, although many interpretive ideas put forward by the original excavators remain important.

Chapter 2 details the results of excavations at the cave. The overwhelming majority of this evidence derives from the Shepherd excavations, though the limited stratigraphic evidence from the Benton archive is also examined. Activity within the cave is divided into three phases:

- Phase 1: Late Bronze Age (*c* 1100–750 BC)
- Phase 2: Iron Age (*c* 750 BC – AD 100)
- Phase 3: Roman Iron Age (*c* AD 100–400)

Phases 1 and 3 reflect the major episodes of activity recognised by both Benton and the Shepherds in their successive excavations. Phase 2, however, has been revealed by the recent programme of radiocarbon dating, which has demonstrated that many of the deposits within the cave relate to ongoing activity between the two more obvious episodes of archaeological visibility. This is especially important, since it changes the character of the cave from a place that witnessed two essentially isolated periods of activity to one that may have been visited and venerated more or less continuously for around 1500 years.

The Pictish symbols and other carvings that first drew the attention of archaeologists to the Sculptor's Cave form the focus of chapter 3. Although the conventional chronology for the symbols would place them in the early medieval period, recent re-evaluation of the dating evidence suggests that they need not be significantly later than the Roman Iron Age activity in the cave. This chapter contextualises the Sculptor's Cave symbols in relation to the wider Pictish corpus.

Chapter 4 examines the chronology of human activity in the cave, primarily on the basis of the 51 radiocarbon dates that have been obtained during the post-excavation programme. It develops a series of Bayesian analyses intended to answer questions concerning the duration and tempo of activity within the cave and the relationship between activities in each of the two entrance passages. Bayesian analysis is also employed to assess the dating of unstratified human remains excavated by Sylvia Benton and to place them within the wider chronology of the cave.

The rich and extensive finds assemblage from both the Benton and Shepherd excavations is examined in chapter 5. The problematic lack of clear stratigraphic understanding in Sylvia Benton's excavations (from which the majority of the finds derive) is a pervasive issue, but it is nonetheless possible to draw out some important observations about the changing nature of activity in the cave throughout its lengthy period of use.

Central to the importance of the cave is the large and complex assemblage of human remains, many of them (from Benton's excavations) now lost and known only through scant written descriptions (see box section 4). These form the basis of chapter 6, which considers the role of the cave in Late Bronze Age mortuary rites, as well as the extraordinary evidence for a mass execution event within the cave during the Roman Iron Age.

In chapter 7, the economic and palaeoenvironmental evidence is examined, much of it based on rediscovered palaeoenvironmental samples found during the recent post-excavation programme. These analyses have much to add to our understanding of the nature of activity in the cave, including the persistent evidence for the preparation, cooking and consumption of food in the entrance area, even at times when the cave was clearly active as a mortuary site.

Chapter 8 draws together the various threads of the project, considering the biography of the Sculptor's Cave over more than 1500 years of human activity. This period, of course, saw huge social, political and economic changes, and it is important to consider the shifting context of the cave's use against this backdrop. The apparent continuity of the cave as a special place in the landscape over this immense span of time raises interesting questions in relation to the maintenance of social memory in periods of major cultural change. Beyond the region, the detailed evidence from the Sculptor's Cave has important implications for the ways in which we interpret prehistoric cave use elsewhere in Scotland and Europe. In particular, we examine what the Sculptor's Cave can tell us about complex treatments of the dead in later prehistory, a period when funerary evidence is at best elusive and frequently entirely absent across most parts of Britain. We also return to some of the broader themes outlined at the beginning of this chapter. The Sculptor's Cave was a liminal place in every sense; a sea cave, set between above and below, between land and sea, between this world and the next. Nothing was ever done in the cave that could not more easily have been done somewhere else. It was a place that people visited very deliberately and for reasons that had much more to do with the liminal and numinous qualities of the place itself than with any sort of mundane practicality. The Sculptor's Cave was, above all else, a place of encounters with the underworld.

Chapter 2

EXCAVATION RESULTS

2.1 Introduction

2.1.1 General

The Sculptor's Cave has been subject to two major campaigns of excavation, firstly by Sylvia Benton (1928–30) and secondly by Ian and Alexandra Shepherd (1979), though these were preceded by at least one antiquarian excavation (Anon 1868a; see section 1.5). While good by the standards of the time, Benton's (1931) work inevitably lacked stratigraphic detail and failed to provide much information on the nature of the internal deposits and structures. The Shepherds' work was the first exploration of the cave to be conducted to modern standards but has remained unpublished until now. This chapter describes the results of the Shepherds' excavations and their implications for our understanding of human activity in the Sculptor's Cave from the Late Bronze Age to the Roman Iron Age. It also reviews the Benton excavations and examines some of the problems associated with their interpretation.

What follows is a summary of the site stratigraphy organised according to the three main chronological phases of occupation: Late Bronze Age, Iron Age and Roman Iron Age. Although sufficient information has been retained to relate these summary discussions to the primary site archive, contexts are individually discussed only where they contribute to an understanding of the overall sequence or where they contain significant artefacts or ecofacts. The inclusion of significant context numbers in the text and on the illustrations enables the published descriptions to be related to the more detailed context-by-context descriptions in the site archive.

2.1.2 Notes on the Shepherd recording system

General

Before proceeding to detail the sequence of activity in the cave, it is helpful to explain the recording systems used during the original excavations and recent post-excavation analysis. It is worth stressing from the outset that, contrary to what was originally thought, human activity in the cave seems to have continued, with varying levels of intensity, from the Late Bronze Age to the latter part of the Roman Iron Age (chapter 4). Given this essential continuity, the phasing proposed below should be seen as a tool for analysis, rather than implying a series of disconnected episodes of activity.

Context recording

The Sculptor's Cave excavations were carried out before the widespread adoption in Scotland of single-context recording as it is currently understood. While the excavators gave separate context identifiers to most (though not all) anthropogenic sediments encountered during the excavations, they did not, for example, routinely number cuts and fills separately or provide codes for non-anthropogenic or putatively modern features. Context codes comprised two elements: trench identification represented by Roman numerals and an individual context identifier in Arabic numbers. Although this could generate quite complicated context codes and occasionally cause confusion in the duplication of deposit numbers between different trenches within the cave, the recording system provided a perfectly good basis for analysis, even after the passage of more than 40 years between excavation and post-excavation. The original context labelling system, despite its occasional ungainliness, has been retained in this report, principally in order to preserve a direct link between the publication and the site archive. Given the complexities of cave stratigraphy, the recording system holds up remarkably well and led to generally few problems in reassessing the archive.

Finds recording

Small finds were recorded using a single running numbering system for all material including human (but not faunal) bone. These have been prefixed with 'SF' throughout this report with the exception of pottery, which is recorded to fabric, or occasionally vessel (V) (section 5.2.1), and coins that are prefixed with 'C'. All stratified finds are mentioned at the appropriate point in the following sections, other than crumbs of pottery too small for identification to fabric (though these are included in the weights given). Where individual finds were three-dimensionally recorded, they have generally been plotted on the appropriate plan in the stratigraphic sections below. The principal exception is pottery, since only a small minority of sherds were recorded in this way and to plot them might give a false impression of their distribution.

Plans, sections and photographs

All original plans and sections were digitised as part of the recent post-excavation programme and are available in the site archive. The most informative have been selected to convey the stratigraphic sequence in this report. As with any large excavation, there are inevitably some inconsistencies in the plans and sections. These have generally not been particularly problematic in terms of understanding the sequence of activity within the cave. No attempt has been made to retrospectively 'tidy up' such discrepancies. Certain types of deposits (eg sand, charcoal and clay) have been shaded to aid visual interpretation.

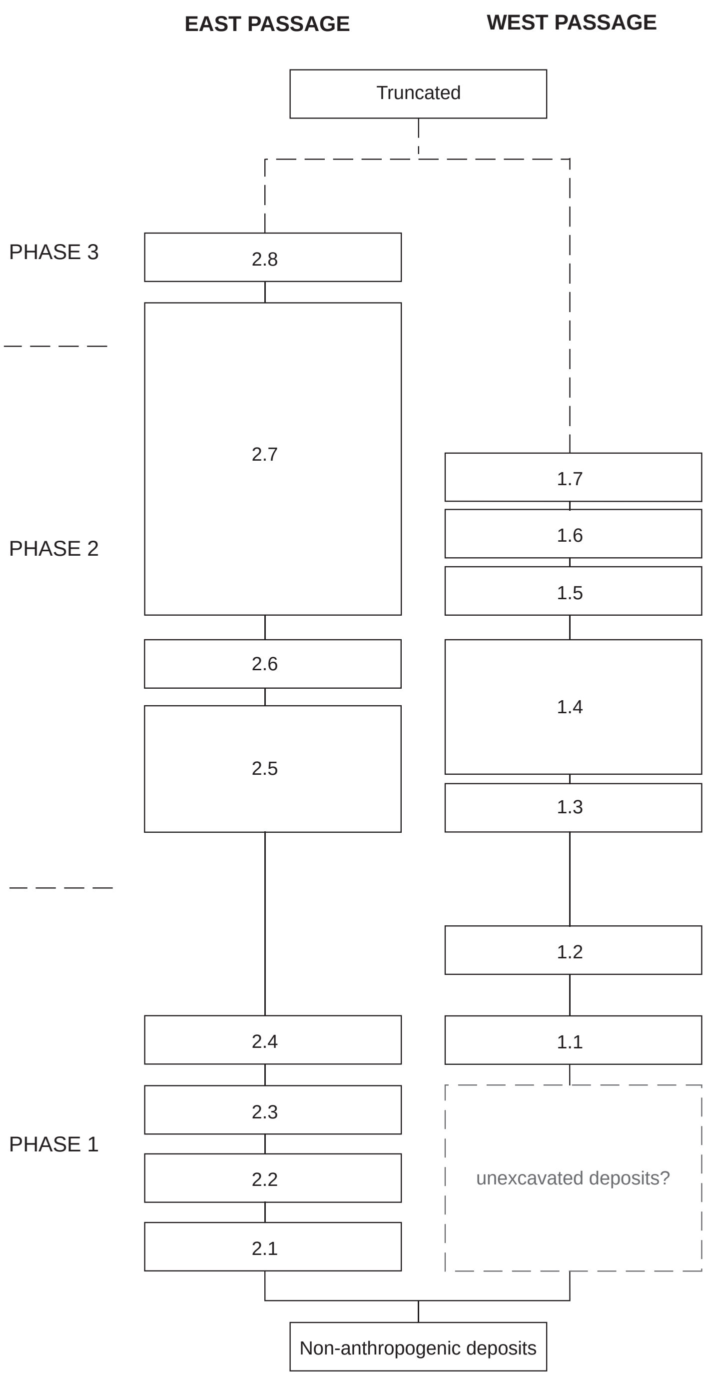

Illustration 2.1
Matrix showing the relationship between stratigraphic blocks from the entrance passages, based on deposits excavated by the Shepherds. The relative vertical placement of the East versus West Passage deposits is based on AMS dating

2.1.3 Stratigraphic blocks

For the purposes of this volume, individual contexts from the Shepherds' excavations have been grouped into stratigraphic blocks which form, effectively, detachable elements of the overall site stratigraphy (illus 2.1). Each context within a given block will have an identical relationship to any context within any other block. Thus, any context within Block 2.3, for example, will be stratigraphically below any context within Block 2.4. These blocks form a starting point for understanding the overall stratigraphy of the site. As there were no surviving stratigraphic links between the two entrance passages (other than in the underlying, non-anthropogenic layers), the relationship between the blocks in either passage are necessarily interpretive, based primarily on the results of Bayesian analysis of the AMS dates.

2.1.4 Phasing

The deposits within the cave have been grouped into three broad phases based on the results of AMS dating (illus 2.1): Late Bronze Age (Phase 1), Iron Age (Phase 2) and Roman Iron Age (Phase 3). The AMS dating evidence was not of course available to the original excavators who were reliant, in published interim statements, on a combination of stratigraphy and artefact typology. Thus, the commonly understood narrative of the site (eg Shepherd 1983; 1993) largely omits the Pre-Roman Iron Age part of the sequence which, as for most of Scotland, lacks distinctive artefactual material.

A Bayesian analysis of the AMS dates and the overall chronology of the cave are presented in detail in chapter 4, but individual dates are presented in the discussion of relevant contexts in this chapter.

2.1.5 The excavated areas

Sylvia Benton's excavations in 1928–30 resulted in the removal of the great majority of archaeological deposits within the Sculptor's Cave. Over three seasons, she excavated the whole of the interior and much of the two entrance passages, leaving only a few areas intact for future work. Her published plan (illus 2.2) shows the entire cave divided into a series of 10 × 10ft grid squares, the majority of which were excavated to the level of the underlying natural deposits. The exceptions were strips of unexcavated deposits running along each of the twin entrance passages (illus 2.3) and a small area of deposits in the interior, immediately behind the central spine of rock which separates them. This area was preserved because of the presence of a 'Romano-British hearth' (labelled 'W' on the published plan; Benton 1931: 180; illus 2.2, 2.4), but appears to have been thoroughly disturbed by the time of the Shepherds' excavations. Even in these preserved areas, however, Benton had removed the upper archaeological deposits, associated principally with the Roman Iron Age occupation of the cave (but also including some earlier material, which may date to the Pre-Roman Iron Age). Benton also noted that 'a good deal of excavation has been done outside the cave' (ibid). Although the location and extent of this work is unrecorded, some excavation outside the entrance is shown in photographs from the Benton archive (illus 2.5).

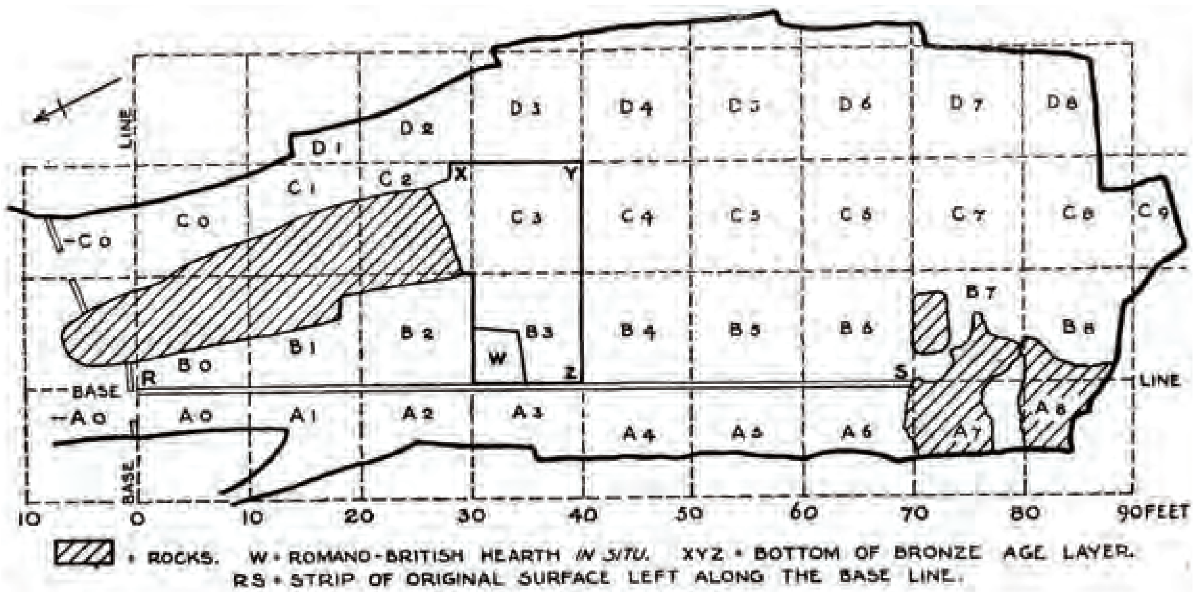

Illustration 2.2
Sylvia Benton's published plan (1931: 179, fig 2)

The Shepherds' excavations in 1979 set out to remove all remaining anthropogenic deposits within the cave and the entrance passages (although see section 2.3.4). These were divided into three principal areas: the East Passage, the West Passage and Area III (the small area within the interior left by Benton) (illus 2.6). The latter area appears to have been highly disturbed and no securely stratified deposits were recorded; it is not discussed further in this chapter.

The excavated deposits in the East Passage were divided into three trenches: IIa, IIb and IIc. These formed a coherent block extending along the entrance passage and projecting to the exterior.

The excavated deposits in the West Passage were also divided into three trenches: Ia, Ib and Ic. However, Benton's excavations here had removed all archaeological deposits along the centre of the passage. The bulk of the deposits lay on the east side, comprising Trenches Ia and Ib (the latter contained a few contexts prefixed 'III', which extended northwards into Trench Ia from the disturbed Area III). Trench Ic lay partly under the overhang on the west wall of the passage. A small area, Trench Id, measuring around 1m by 3m, was also excavated immediately north of the modern wooden door that blocks the entrance to the West Passage. Deposits here were found to have been removed by Benton's excavations and are not considered further in this volume.

2.1.6 Stratigraphic recording prior to the Shepherds' excavations

Sylvia Benton's (1931: 177–8) report is frank about the difficulties encountered in excavating the cave. Excavation methods of the period were of course relatively crude, even when applied to

Illustration 2.3
In situ material left by Benton in (A) the East Passage (looking south) and (B) the West Passage (looking north) at the start of the 1979 excavations. Note that much of the lower part of the section in the West Passage (B) comprises naturally deposited material

Illustration 2.4
The 'Romano-British' hearth excavated by Benton (area 'W'; illus 2.2)

Illustration 2.5
Excavations outside the West Passage during 1928–30

conventional open-air sites, and they were ill-equipped to cope with the stratigraphic and taphonomic complexities of the cave environment. Excavation in 1928 comprised 'a week of trial trenches' by Benton and a friend (ibid: 177), while the more extensive excavations of 1929 and 1930, each lasting for five weeks, were aided by a team of four workers borrowed from the Gordonstoun Estate. Given the physical restrictions of light and space, Benton devised a simple working method whereby deposits were initially dug out by workmen according to her grid system and then transported by wheelbarrow to the front of the cave for sieving. This seems to have been carried out quite thoroughly, with Benton noting that 'tearing lumps of clay to pieces hour after hour is a most severe test of human patience' (ibid: 178). It is worth noting, however, that some finds from the 1928 season in particular are attributed to seemingly unintelligible locations, suggesting the formal grid as shown in the published report may not have been established until 1929.

Benton proposed a basic stratigraphic sequence, comprising three principal 'layers', which can be related to her published section (illus 2.7A). There are, however, several ambiguities within the published text and a number of inconsistencies between the published section, the plan, and the sole surviving field drawing. For example, the 'R' used to indicate the north end of Benton's section through the West Passage on the published plan is placed in a different grid square in the accompanying section: illus 2.2, 2.7A). Although these inconsistencies create sometimes unsurmountable problems of interpretation, Benton's descriptions are important as they represent the only stratigraphic account of the cave interior, and the only description (however ambiguous) of the upper (most likely Roman Iron Age) deposits in the entrance passages.

Layer 1: 'occupation earth'

Layer 1 is described as an 'occupation earth', filling the whole of the cave interior (Benton 1931: 180) and:

> varying in depth from 2 inches to 2 feet. It is composed of the black of many fires mixed with sand, gravel, and debris . . . it is divided by floors hardened by fire and trampling. The gravel was so loose that coins were found in every layer, and pottery from different levels joined. Objects from the Bronze Age to a Viking rivet were found in this layer, but objects from the second century to the fourth century AD predominated.

This description of Layer 1 appears to be consistent with its depiction in Benton's published section, which shows Layer 1 as a thin deposit in the entrance passage, thickening slightly southwards (ie towards the cave interior) from grid square A1 (illus 2.7A). The published section is not, however, consistent with Benton's unpublished field sketch, surviving in the site archive, which shows Layer 1 as deepening considerably near the entrance (illus 2.7B). This substantial discrepancy is particularly problematic as the field drawing was clearly made at the end of the excavation when the lower deposits had been fully exposed. This implies that the depth of Layer 1 was radically reinterpreted between the completion of excavations and the preparation of the published section, casting significant doubt over the attribution to layer of objects recovered during the excavation.

Overlaying a simplified version of the Shepherds' section (illus 2.7C) onto the published section indicates that Layer 1 had probably been removed in its entirety during Benton's excavations (illus 2.7D). Benton's report mentions a narrow baulk, around one foot wide, running down the centre of the West Passage (indicated as R–S on the published plan; illus 2.2). This had apparently disappeared by 1979, however, and the Shepherds' excavation records make no mention of it.

Taking the published section at face value, Layer 1 appears to have been a shallow spread of material no more than 0.1m or so deep along the West Entrance Passage, deepening to around 0.5m in the cave interior. From Benton's description, it appears to have been a stratigraphically complex group of deposits representing numerous episodes of activity.

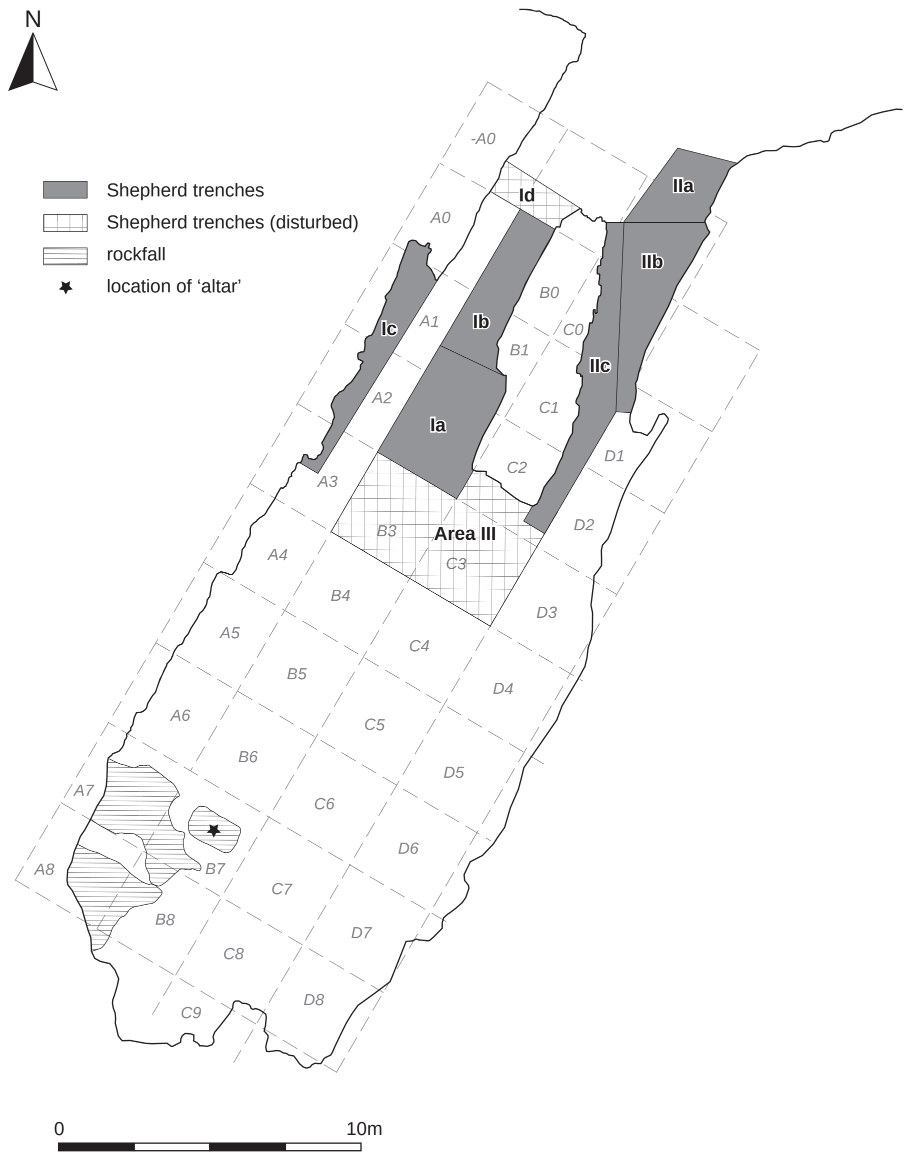

Illustration 2.6
Outline floor plan of the cave as it appears today (based on laser-scan data) overlain with Benton's excavation grid and the Shepherds' areas of excavation. Since the walls of the cave are not vertical, the current outline differs in minor details from Benton's original plan, which was drawn when the deposits within the cave were at a higher level

Layer 2: 'clay and layered sand'

Benton's Layer 2, comprising 'clay and layered sand', is described somewhat cryptically (1931: 180) as follows:

> These are mixed in the upper part. This dotted division below is composed of glutinous clay. It contains laminations from outside the door to (A2), and has this character in crevices of the rock beyond this point. From 25 feet to 40 feet from the base line it is full of burnt black marks, charcoal, and Bronze Age objects. The clay dies out where the beach slopes up, about 45 feet from the door.

Overlying the Shepherds' section onto the published section (illus 2.7D) indicates that Benton had removed the upper portion of Layer 2 in the outer half of the West Passage (her grid squares A0 and half of A1), but that it was probably left more or less intact in the inner half of the passage. It also illustrates that all of the anthropogenic deposits excavated by the Shepherds (incorporating deposits from the Late Bronze Age to the Roman Iron Age) formed part of Benton's Layer 2. Finally, it indicates that the lower half of Benton's Layer 2 (ie below the level of the Shepherds' excavations and forming around half of the excavated material in the West Passage) comprised non-anthropogenic deposits.

Despite all these problems of interpretation, however, Benton's section is useful in demonstrating that this group of deposits (her Layer 2) seems to have extended only a relatively short distance into the cave interior, stopping in the middle of her A4 grid square.

Layer 3: natural

Benton (1931: 181) describes this layer very briefly, as the 'shingle of the 25-foot beach' which 'was barren except for the black line and a few bones'. One such 'black line', indicating burning, is represented on the published section in grid squares A2 and A3 (illus 2.7A).

Overall, Benton's work demonstrated the complexity of the cave deposits and established that they included activity and objects of Late Bronze Age and Roman Iron Age date. Her division of the deposits into two anthropogenic layers, however, is problematic and the attribution of finds to either of these layers should be treated with caution. It is additionally worth noting that Benton nowhere acknowledges the potential problems caused by earlier antiquarian excavation of the cave deposits. The first exploration, in 1868, was said to have involved 'deep excavations' (Anon 1868a: 5), and some decades later it was still obvious that the cave floor had been 'disturbed by explorers' (Allen and Anderson 1903: 130). Although the scale of these operations is unknown, it is likely that they would have significantly disturbed the stratigraphy in certain areas of the cave. Bearing all of these problems in mind, finds from Benton's excavations have been treated as effectively unphased (chapter 5).

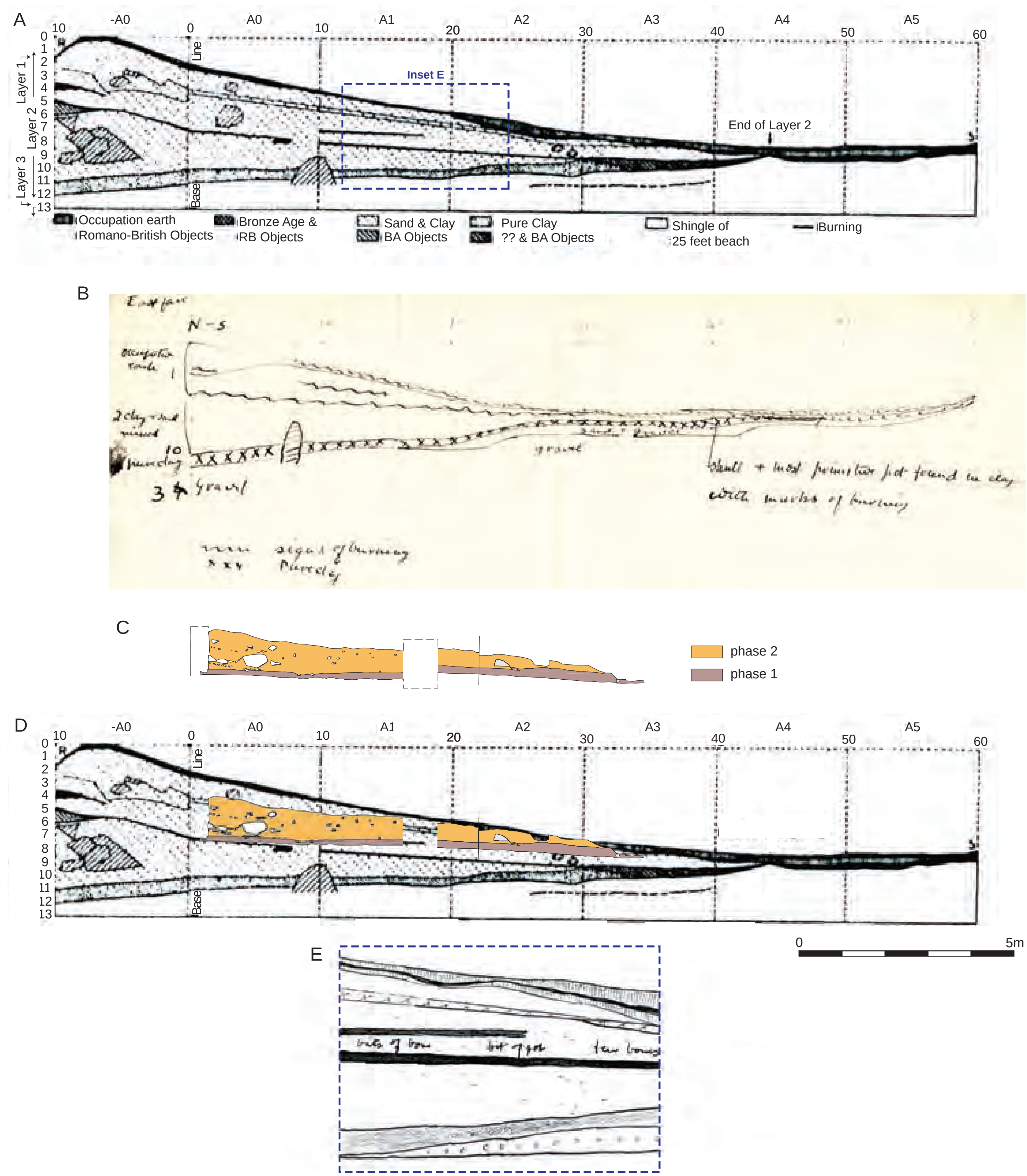

Illustration 2.7

Sylvia Benton's west-facing section through the West Passage (measurements are in feet) (A) as published (Benton 1931: 179, fig 3; text has been digitised), (B) field sketch from Benton's archive, (C) part of the same section (to the same scale) showing deposits excavated by the hepherds' in 1979 (see illus 2.8 for detail view), (D) a 'best-fit' of the 1930 and 1979 sections, (E) detail from Benton's archive section on which the published version (A) was based

Box section 2
SPOIL HEAP EXCAVATIONS (2014)

Letters contained within Sylvia Benton's archive state that human bones excavated during her final (1930) excavation season were only selectively collected (see box section 4). According to a letter from Benton to the anatomist, Professor Alexander Low, dated 14 July 1930, only 'skulls and leg-bones' were retained, while the remainder went 'into the dump'. Since the letter was addressed from the nearby Covesea Cottages and dated to the period of the excavation, it seemed most likely that this material had been discarded on site, presumably in Benton's spoil heap. Limited excavations in 2014 set out to confirm the location of this material and to recover, if possible, a sample of the discarded human bone (Büster and Armit 2014).

The most likely location of the spoil heap lay immediately outside the cave entrance where a thickly vegetated area with a markedly convex profile was visible (illus 1.2). A rare surviving photograph from the Benton archive, showing the 1928–30 excavation in progress, supported this suggestion (illus 2.5), as did the retrieval of a human tibia fragment from the same area by Rick Schulting in 2006 (Armit et al 2011: 257).

Two sondages (in a single trench) were excavated in this area in 2014, approximately 4m from the cave entrance (illus B2.1). Among the first finds recovered were two scaffolding feet (illus B2.2) and other pieces of modern iron apparently deriving from the 1979 scaffolding tower. This was useful, as it confirmed that the underlying spoil heap deposits must derive from Benton's excavations rather than the Shepherds'.

A total of 104 fragments of human bone (including 13 teeth) was recovered from the upper 0.6–0.8m of the spoil heap (see chapter 6; table 6.1). Faunal bone, including bird and fish bone, was also recovered in small quantities (chapter 7). Other than fragments of iron that are most likely modern, the few objects that were recovered comprised an Iron Age opaque yellow glass bead (SF860; illus 5.58) and two sherds of pottery that were most likely missed during sieving of the deposits in 1928–30. The contribution of the human bone recovered from the spoil heap to our wider understanding of human activity in the Sculptor's Cave is explored in chapter 6.

Illustration B2.1
Benton spoil heap under excavation in 2014

Illustration B2.2
Shepherd scaffolding tower foot, found during excavations in 2014

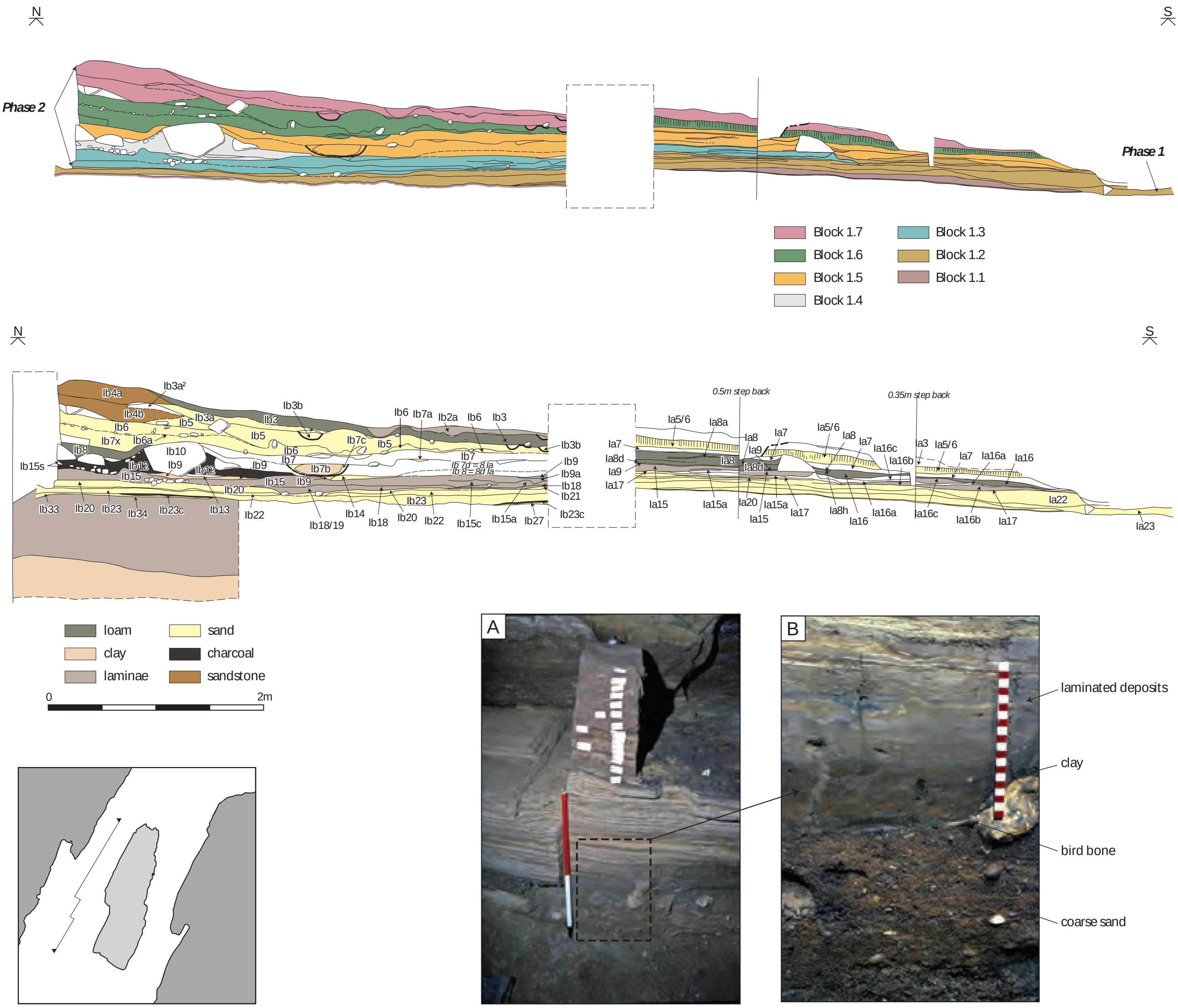

Illustration 2.8

West-facing section through the West Passage (Trenches Ia/Ib). (A) naturally deposited laminae below the 1979 baulk, (B) detail of the seabird tibiotarsus, AMS dated to 1380–970 cal BC (marine corrected; SUERC-65445)

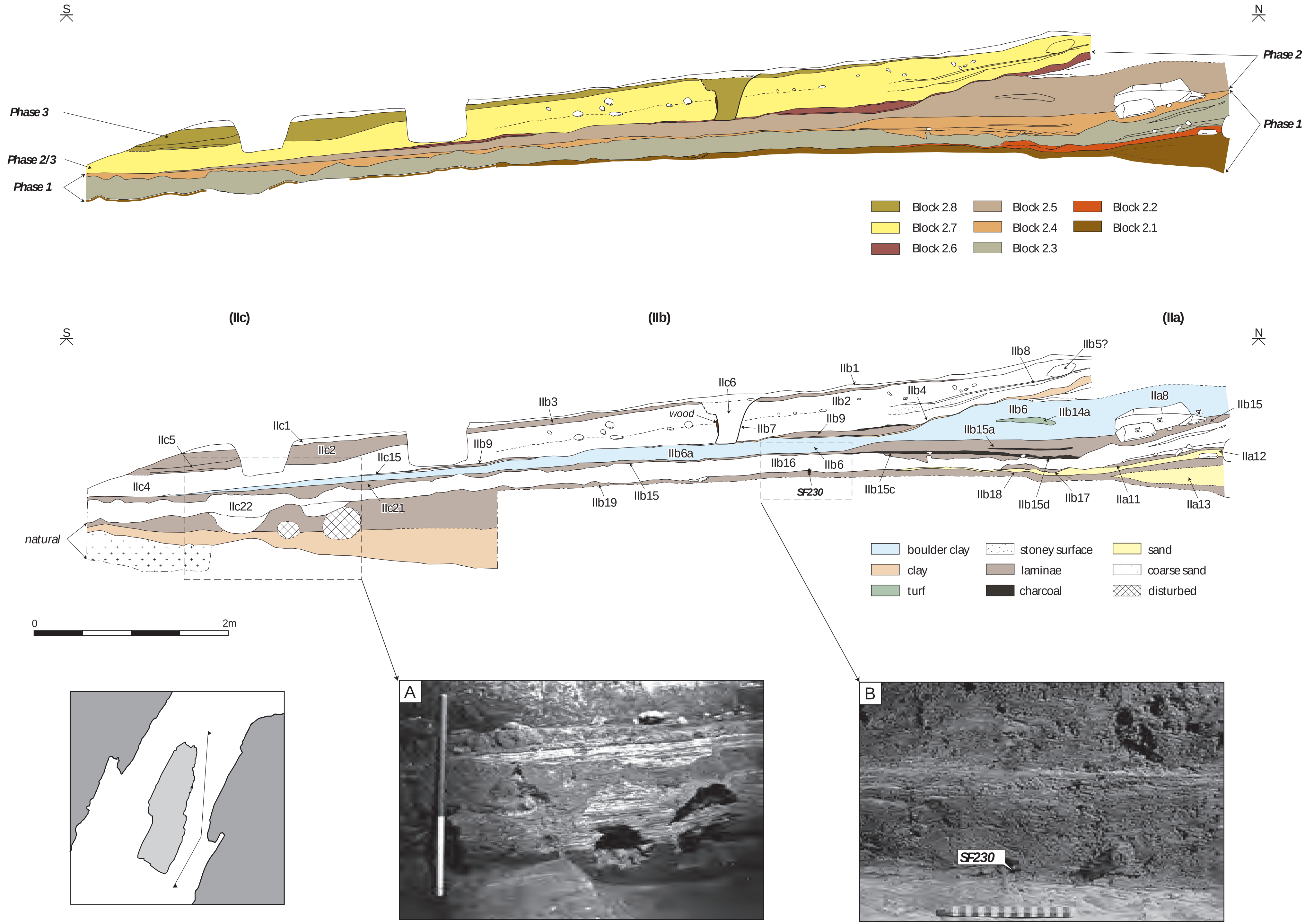

Illustration 2.9

East-facing section through the East Passage. (A) Natural deposits with evidence of modern disturbance (bottom right), (B) copper alloy pin SF230 at the interface of IIb16 and IIb17

2.2 Early non-anthropogenic deposits

2.2.1 Introduction

Deposits within both entrance passages had begun to form long before the start of intense human activity in the cave. Even today, deep, natural deposits remain partially exposed in the West Passage, in the slit trench dug during Benton's excavations. The sequence outlined below is based on a combination of photographs of these deposits taken during the Shepherds' excavations, recent visual inspection and the results of soil micromorphological analysis (see section 7.3), and provides information on the processes responsible for their formation.

2.2.2 Coarse sands

The lowest exposed deposits (illus 2.8B) visible in Benton's section through the West Passage (cleaned and photographed by the Shepherds in 1979) appear as coarse sands, described as 'shingle' by Benton (1931: 181). The top of this deposit can also be seen at the base of the Shepherds' section through the East Passage at its inner (southern) end (illus 2.9). The sand appears to be naturally formed, and presumably washed into the cave. It is no longer visible, having since been buried by material eroded from the upper parts of the extant section.

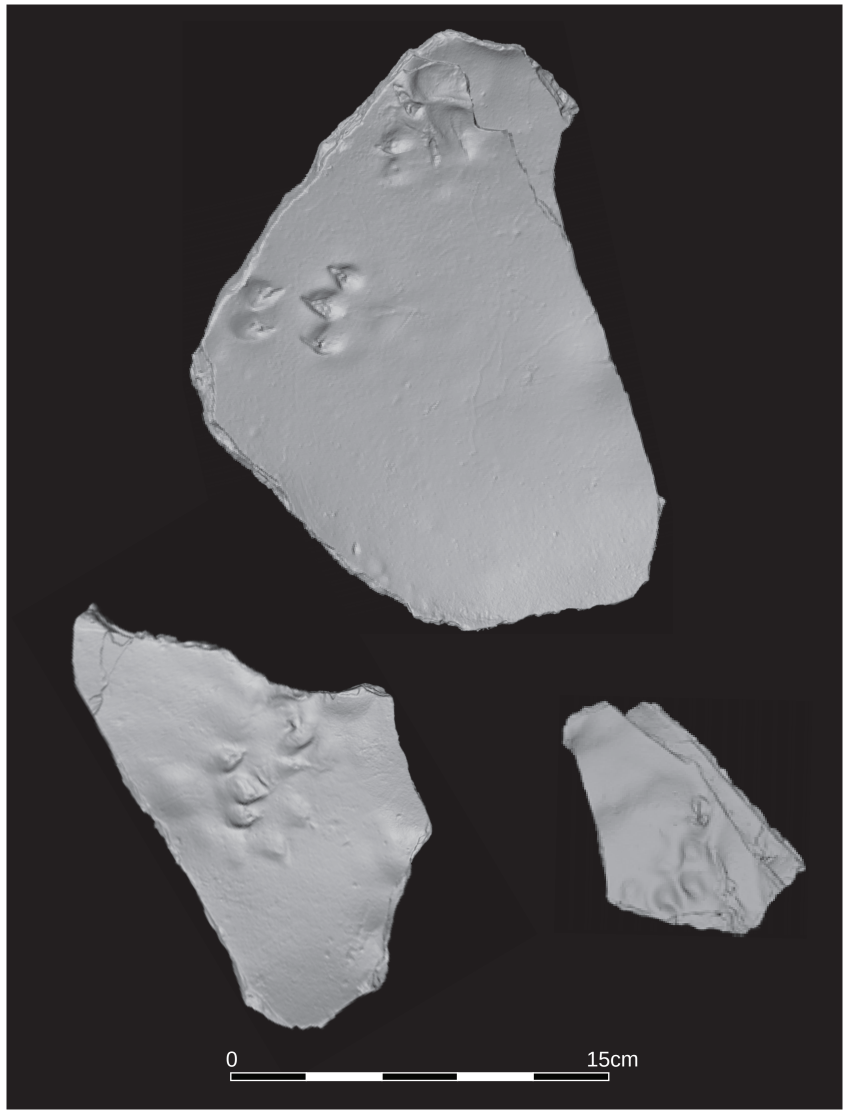

Illustration 2.10
Structured light scan image of animal footprints in clay surface, preserved in the site archive (courtesy Visualising Heritage, University of Bradford)

A tibiotarsus from a seabird, belonging to the cormorant family, was recovered from the interface between the coarse sand and the clay-dominated deposits that overlie it (section 2.2.3) in the West Passage. This bone, which is visible in the photograph of the cleaned section (illus 2.8, inset b), has been AMS dated to 1380–970 cal BC (marine corrected using Marine13; SUERC-65445) and can be taken as a *terminus ante quem* for the deposition of the coarse sand. The length of time that elapsed between the deposition of the bird bone and the commencement of intense human activity in the cave can be modelled as *30–290 years* (*95% probability*), or probably *95–235 years* (*68% probability*) (see chapter 4).

There are some indications that the coarse sand deposits contained evidence of episodic human activity. A worked red deer antler (SF847), which has been identified as a possible tool-rest, was recovered by Benton near the entrance of the West Passage (grid square A0), some 'two feet' (*c* 0.6m) below the base of her Layer 2 (1931: 188). This would place it firmly within the underlying coarse sands. Benton's published section (illus 2.7A) also indicates a line of burning in the cave interior (in grid squares A2–A3) within the sand. All this activity pre-dates the deposition of the bird bone and must therefore date to the Middle Bronze Age or earlier. Small quantities of worked flint, redeposited in later layers, are also suggestive of occasional human activity pre-dating the Middle Bronze Age (section 5.6).

2.2.3 Clay-dominated deposits

The coarse sands at the base of the sequence are overlain by a distinct series of clay-dominated deposits up to 0.4m thick (illus 2.8A, B; see also illus 7.4B), indicating a significant change in the depositional environment. These clays, although non-anthropogenic, form the lowest part of Benton's Layer 2 (illus 2.7A). They appear to have sloped gently upwards from the exterior of the cave, as far as the middle of Benton's A4 grid square. What is presumed to be the same clay deposit can be seen towards the base of the section through the East Passage at its inner (southern) end (illus 2.9).

The derivation of these clays and the processes underlying their deposition within the cave is unclear. One possibility is that they represent the erosion of material that had banked up in front of the cave, perhaps due to rockfalls or slumping of material from the cliff top. During the period of their deposition, based on the results of soil micromorphological analysis (see section 7.3), it is likely that the interior would have been wet, perhaps with standing water pooling in the entrance passages and in the central part of the cave. A few fragments of clay surface, contained in the site archive, display animal footprints (illus 2.10), again suggestive of a wet environment.

2.2.4 Windblown sand and clay laminae

These clays are overlain by a further series of deposits dominated by windblown laminated sands that represent a further change in the local environment. Given the short timescales over which these deposits must have formed (see section 2.2.2), it is possible that the laminations represent annual accumulations caused by seasonal changes in wind speed and direction (section 7.3). In the West Passage, these sands formed to a maximum thickness of 0.6m (illus 2.8A, 2.11), and the same set of deposits can be seen in the section through the East Passage at its inner (southern) end (illus 2.9). Stratified within the laminated sands are a series of clay-dominated deposits similar to those described above (section 2.2.3).

The formation of these sand-dominated deposits would have progressively dried out the entrance passages. Tiny quantities of windblown particles of carbonised material, detectable in the laminated sands (section 7.3), are suggestive of some occasional human presence during their formation. There is, however, nothing to suggest any intensive human activity at this time.

It does not appear that these windblown sands extended into the cave any further than the middle of Benton's grid square A4 (illus 2.7A).

2.2.5 Summary

Perhaps the most remarkable feature of these early deposits is the rapidity with which they must have formed. The Middle Bronze Age AMS date provided by the bird bone (see above) demonstrates that around 1m of material – the clay-dominated layer and the windblown sands and clays above it (illus 2.8A) – formed over *95–235 years* (*68% probability*). Soil micromorphological analysis identified 35 separate deposits within a column totalling 21mm; around 20% of this material (section 7.3). In crude terms, therefore, we might expect the full section to contain somewhere in the region of 175 such layers, suggesting that they may very well represent annual depositional events. All of this suggests a dynamic depositional environment in the last few centuries of the second millennium BC, prior to the period of intensive human activity.

From Benton's published section, it is possible to understand something of the nature of the cave at the beginning of the Late Bronze Age. The surface of the West Passage at that time appears to have been the top of the non-anthropogenic laminated sands and silts that had formed along the entrance passage (represented by the deposits between the 6- and 11-foot markers on Benton's published section; illus 2.7A, D). Upon entering the cave, one would have walked over a low mound of this material and followed a very shallow slope down into the entrance passages (illus 2.7A). The passage would most likely have been relatively

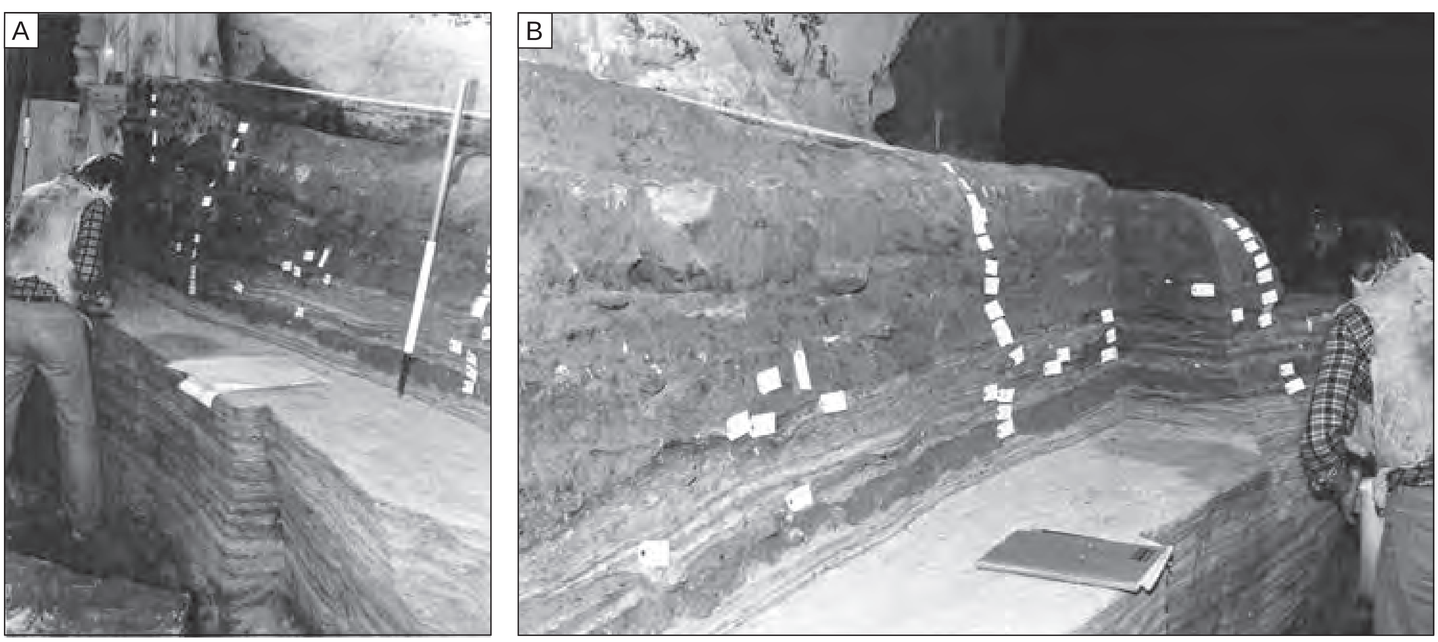

Illustration 2.11
Photographs of west-facing section through the West Passage (Trenches Ia/Ib), looking (A) north-east and (B) south-east

well drained. Beyond the inner end of the entrance passage, this material petered out and the surface of the cave interior comprised the natural 'shingle' beach deposits that underlay the deposits in the entrance passage. Given the presence of the buried natural clay layers within the entrance passage, which may have impeded drainage, the interior would most likely have been wet, perhaps with standing water (section 7.3). A similar situation can be seen elsewhere along the coast, in the cave known as the Laird's Stable, some 500m east of the Sculptor's Cave (illus 1.1), where a shallow pool of water occupies the central part of the interior, trapped by mounded deposits at the cave entrance.

2.3 Phase 1: Late Bronze Age

2.3.1 General

At the time of the Shepherds' excavations, Phase 1 deposits survived in both the East Passage and the West Passage, where they had been deliberately left in situ by Benton. In the East Passage, the Phase 1 deposits have been divided into four stratigraphic blocks (2.1–2.4; illus 2.1). Together these have a maximum depth of *c* 0.7m at the front of the passage, reducing to around 0.2m at the rear (illus 2.9). In the West Passage, the Phase 1 deposits form two stratigraphic blocks (1.1–1.2), with a maximum depth of *c* 0.25m towards the rear of the passage (illus 2.8).

Bayesian modelling of the radiocarbon dates suggests that Phase 1 activity began in *1050–975 cal* BC (*68% probability*) and spanned *85–210 years* (*68% probability*), ending in either *910–885 cal* BC (*26% probability*) or *870–830 cal* BC (*43% probability*).

2.3.2 East Passage

Block 2.1

In the East Passage, the upper layers of the natural laminated sands (IIa14, IIb19; illus 2.9, 2.12A) contained domestic faunal remains, suggesting increased human use of the cave (although these initial deposits were not regarded as anthropogenic by the excavators). Several immature goat bones from IIb19 probably derive from a single animal, representing most of the skeleton (see section 7.4.3). Although these might conceivably have belonged to a young goat that had accidentally wandered into the cave and died naturally, it is perhaps more likely, in view of the subsequent activity, that they represent the deliberate deposition of an unbutchered animal. A femur from this associated bone group produced an AMS date of 1130–910 cal BC (SUERC-16613).

At the north end of the passage, the laminated sands contained a wedge-shaped deposit of sand, pebbles and some large cobbles (IIa13; illus 2.9, 2.12B), thickest (0.7m) against the wall of the entrance area. During excavation this was thought potentially to represent an artificial bank, protecting the entrance to the East Passage, although a natural origin cannot be excluded (the feature does not appear on plan); perhaps the most likely explanation is that the material derives from a fall of material from the cliff top. A cattle scapula from laminated deposits (IIa10/14) overlying this wedge of deposits at the cave wall produced an AMS date of 1120–900 cal BC (SUERC-16611).

The laminated nature of the majority of the deposits within Block 1.1 suggests that the natural processes responsible for the formation of the underlying windblown sands (section 7.3) continued to operate. The integrity of these deposits suggests that human use of the cave remained relatively light and that there was no formal entrance or barrier at the front of the passage. Despite the presence of domestic animal remains indicative of a human presence, there was no pottery or other artefactual material from Block 2.1.

Block 2.2

Sealing these laminated deposits was a hard-packed and distinct 'trampled' layer (IIa12, IIb18, IIc24), deepest (0.05–0.07m) at the north end of the passage and in the entrance area (illus 2.9, 2.12B). It consisted of sand with pebbles and large quantities of charcoal. Towards the south, the layer became thin and patchy, and in places was represented only by charcoal staining of the hard-packed surface of the underlying Block 2.1 deposits; it is not visible in the southern part of the section (illus 2.9). A worked bone point (SF801; table 2.1) from IIa12 and four sherds of pottery (Fabrics B, C and D) from IIc24 represent the earliest stratified artefacts from the East Passage and, together with the presence of charcoal, may suggest that activity was becoming rather more intense at this time.

These deposits also produced the earliest stratified human remains within the cave. A cranial fragment (a frontal bone; SF231) from an individual aged around 2 years and found towards the front of the entrance passage in IIb18 (illus 2.13) displayed a dense pattern of fine, multi-directional striations, suggestive of deliberate defleshing (section 6.8.2). Unfortunately, this bone failed to produce sufficient collagen for dating. A sheep/goat long bone from IIc24, however, produced an AMS date of 1060–900 cal BC (SUERC-16612).

Overlying these deposits was a further series of laminated sands and fine silts (IIa11, IIb17, IIc23; illus 2.9; 2.12A, B), up to 0.1m thick at the north end of the passage but becoming almost imperceptible to the south. Three human cranial fragments were recovered from IIc23 (a left and right temporal and an occipital, respectively SF243, SF245, SF244), while another sub-adult cranial fragment (an occipital, SF234) was recovered from IIb17. The first three of these were clustered against the west wall at the front of the entrance passage (and may belong to the same individual, aged less than 5 or 6 years), with the latter located close by, in the central part of the passage (illus 2.13). IIb17 also contained the mandible of an individual aged around 4–6 years (SF225), found by the east wall of the passage (illus 2.13), which produced an AMS date of 1120–910 cal BC (SUERC-16623). Further AMS dates were obtained from a cattle femur from IIc23 (1210–970 cal BC; SUERC-16608), a sheep/goat femur from IIa11 (1060–890 cal BC; SUERC-16609) and a pig/boar tibia from IIb17 (1120–910 cal BC; SUERC-16610). The faunal assemblage from this context included the humerus of a white-tailed eagle.

As well as the human remains, IIc23 produced several worked bone objects: a hide-rubber (SF240), two points (SF242, SF247) and a cylindrical bone fitting (SF241). IIc23 also yielded a small amount of pottery (Fabrics A, B and E), while IIb17 contained a sherd of Fabric D pottery and IIa11 yielded one sherd of Fabric E.

Although the pottery assemblage from Block 2.2 is small in absolute terms (12 sherds and associated crumbs; see table 5.4), it nonetheless represents 62% (by weight) of all pottery recovered

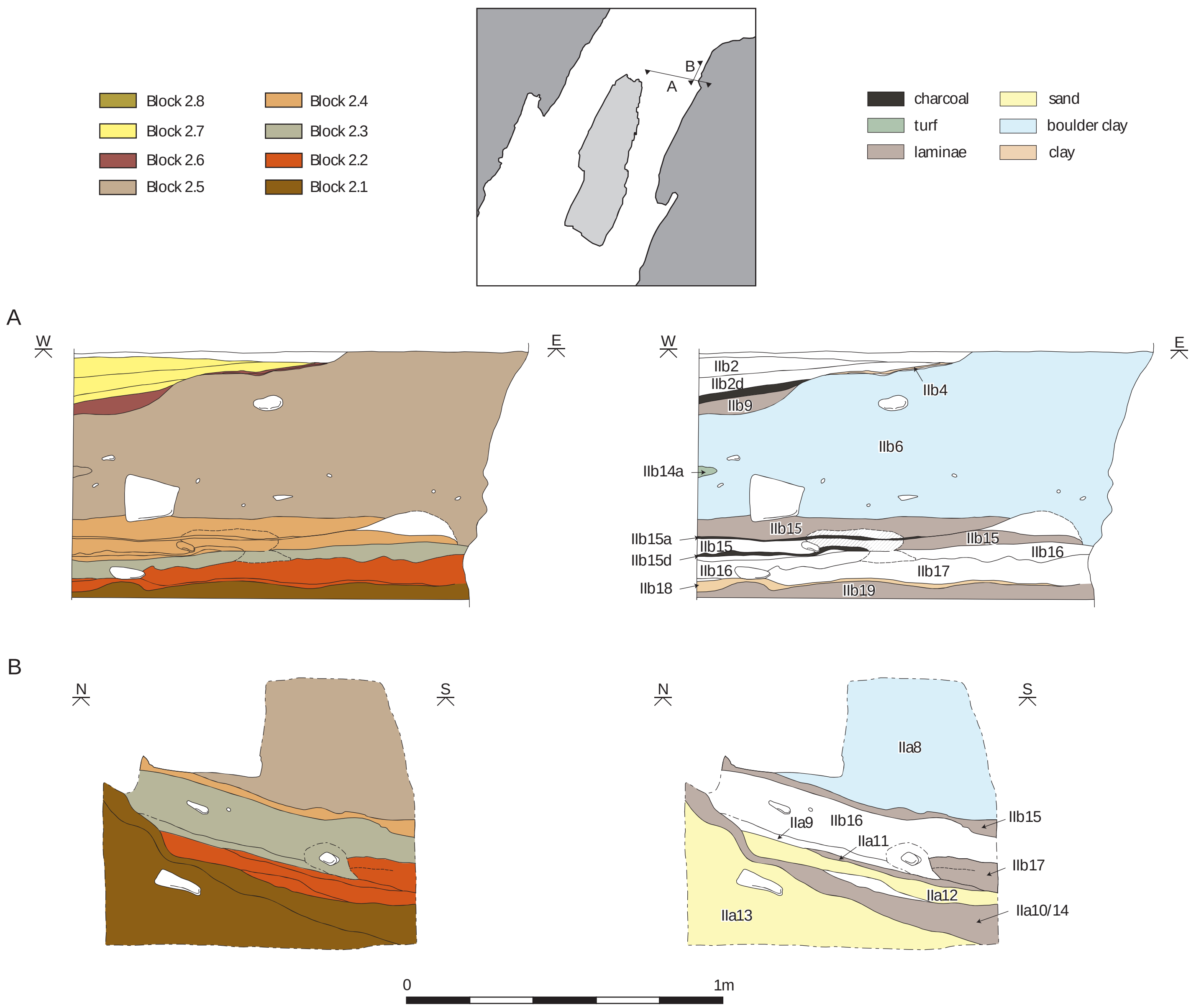

Illustration 2.12
Sections through north end of East Passage

from the East Passage during the whole of its use (see table 5.5). All fabrics recorded in the Sculptor's Cave pottery assemblage, with the exception of Fabric F, are represented.

The concentration of juvenile human cranial remains in Block 2.2 is remarkable (illus 2.13), and highlights the mortuary use of the cave at this time. These still, however, appear to have been deposited within an environment where windblown, laminated sands were naturally forming, suggesting that the cave remained open to the elements. The absence of any built features, such as hearths, fences, barriers etc, adds to the impression that the cave remained an essentially unmodified natural place. Nonetheless, the presence of human remains, pottery, worked bone objects and charcoal testifies to increasingly intensive activity.

Block 2.3

Block 2.2 was sealed by a thick (0.2m) deposit of silty clay (IIb16, IIc22; illus 2.9; 2.12A, B) containing a few stones, quantities of charcoal and crumbs of pottery.

As with the underlying Block 2.2, these deposits contained a number of human remains (illus 2.13). A mandible fragment from an individual aged around 7 years (SF227), several human teeth (SF111, SF116a, SF116b, SF226), a sub-adult clavicle (SF1116) and a further humerus (SF1117) were recovered from IIb16, together with nine sherds, plus crumbs, of Fabric D pottery. Further human remains, including the mandible of an individual aged around 2–4 years (SF235; illus 2.13) and two sub-adult cranial fragments (a parietal and occipital respectively: SF232, SF233; illus 2.13), were found at the interface between IIb16 and IIb17. Further

Table 2.1
Chronological distribution of artefacts through the East Passage sequence

Block	Human bone		Worked bone	Copper alloy	Iron	Stone	Pottery (g)
	Cranial	Post-cranial					
2.1	–	–	–	–	–	–	–
2.2	6	–	3 points (SF242, SF247, SF801) 1 hide-rubber (SF240) 1 fitting (SF241)	–	–	–	316.4
2.3	4	15	3 points (SF118, SF223, SF228) 1 fragment with handling polish (SF119) 1 double-ended tool (SF229)	1 pin shank (SF230)	–	–	123.7
2.4	–	–	–	–	–	–	'spread'
2.5	–	–	–	–	1 wire fragment (SF877)	–	21.3
2.6	–	–	–	–	1 rod (nail, pin or tool) (SF108)	1 grinder (SF944)	7.9
2.7	1	–	–	1 pin shank (SF114)	–	–	37.3
2.8	–	–	–	Sheet fragments (SF100, SF101)	–	–	–

post-cranial elements were recovered from this interface, including a sub-adult humerus (SF1103), three sub-adult ulnae (SF1104, SF1105, SF1107), one sub-adult radius (SF1106), three ribs and one possible rib fragment (SF1108, SF1109, SF1110, SF1115), a long bone fragment (SF1111) and three further fragments of human bone (SF1112, SF1113, SF1114). One sherd of Fabric C and seven sherds of Fabric D pottery were also recovered from IIc22.

Mandible SF235 produced an AMS date of 1120–910 cal BC (SUERC-16622), while a sheep/goat thoracic vertebra from IIb16 produced an AMS date of 1050–850 cal BC (SUERC-16603). A sheep/goat long bone from the same context produced an AMS date of 1120–910 cal BC (SUERC-16607).

IIb16 also contained several worked bone artefacts: three points (SF118, SF223, SF228), a broken red deer ulna fragment with handling polish (SF119) and a double-ended tool (SF229), possibly used for modelling clay. A copper alloy pin shank (SF230; see illus 2.9B) – possibly belonging to a sunflower pin – was also found at the interface between IIb16 and IIb17.

As with the underlying block, the concentration of sub-adult cranial remains in Block 2.3 is striking, and demonstrates some time-depth to the mortuary use of the cave. Unlike Block 2.2, these deposits also contained a concentration of juvenile post-cranial bones. Most of the cranial fragments were clustered in the eastern half of the passage, around halfway along, although one mandible (SF235) was found at the centre of the passage opening (illus 2.13). The post-cranial elements were extracted from the faunal assemblage after excavation and are therefore not plotted. The artefactual assemblage is also similar in character to that of the earlier deposits. Although the number of sherds (17; see table 5.4) is slightly larger, the amount of pottery by weight is lower, comprising 24% (by weight) of the overall ceramic assemblage recovered from the East Passage (see table 5.5). It is striking, however, that Blocks 2.2 and 2.3 together contain 87% of the overall ceramic assemblage recovered from the East Passage despite the relatively limited volume of the deposits (illus 2.9). There appears, therefore, to be a clear linkage between the deposition of human remains and the deposition of pottery within the East Passage.

Block 2.4

The Block 2.3 deposits were overlain by another series of shell-rich laminated sands and fine silts (IIb15, IIc21; illus 2.9; 2.12A, B), varying in depth from around 0.2m at the north end of the passage

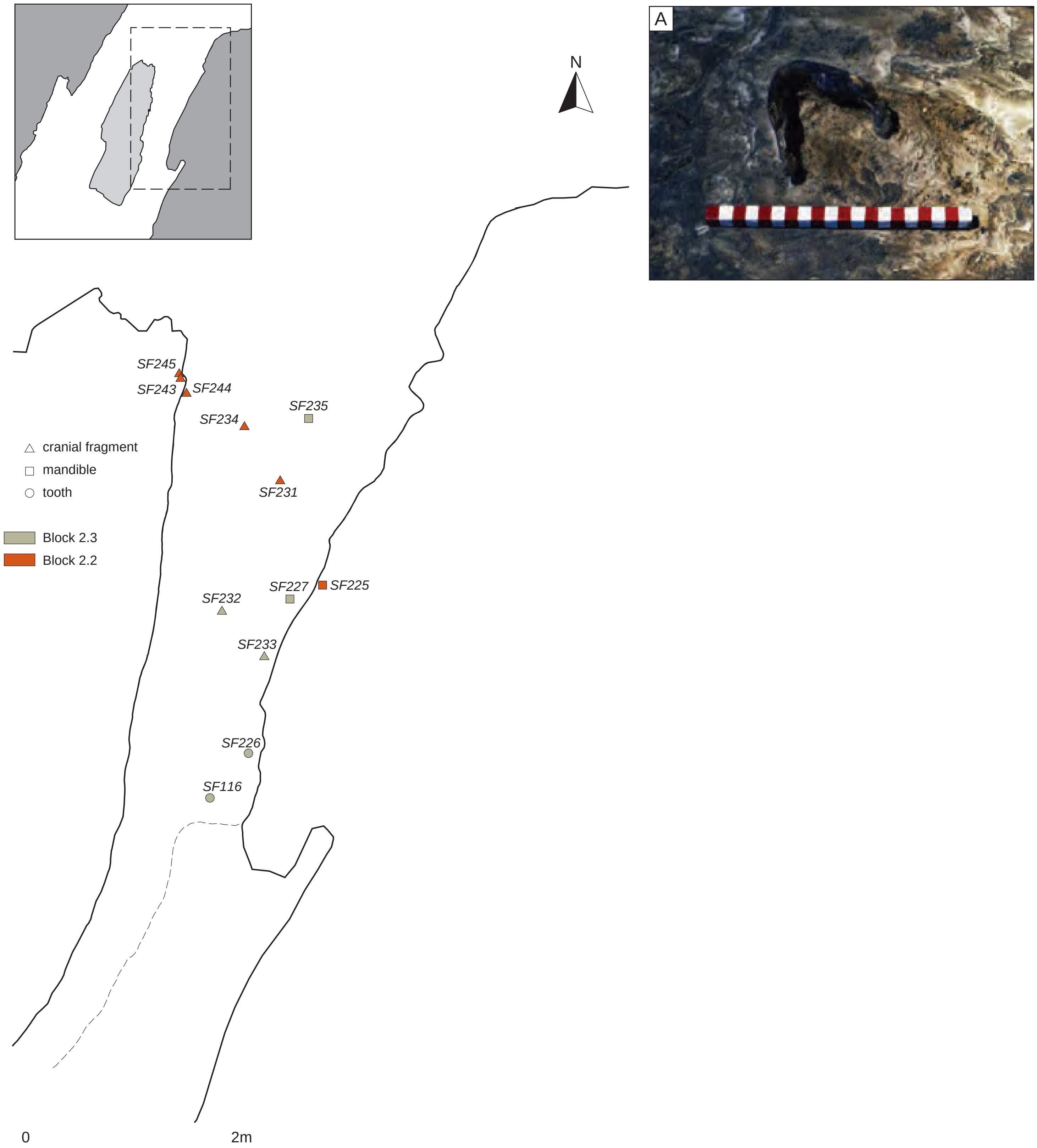

Illustration 2.13
Distribution of human remains (Blocks 2.2 and 2.3) in East Passage. (A) shows a human mandible in Trench IIb. Tooth SF111 and various post-cranial elements were recovered from the faunal assemblage after excavation and were not plotted

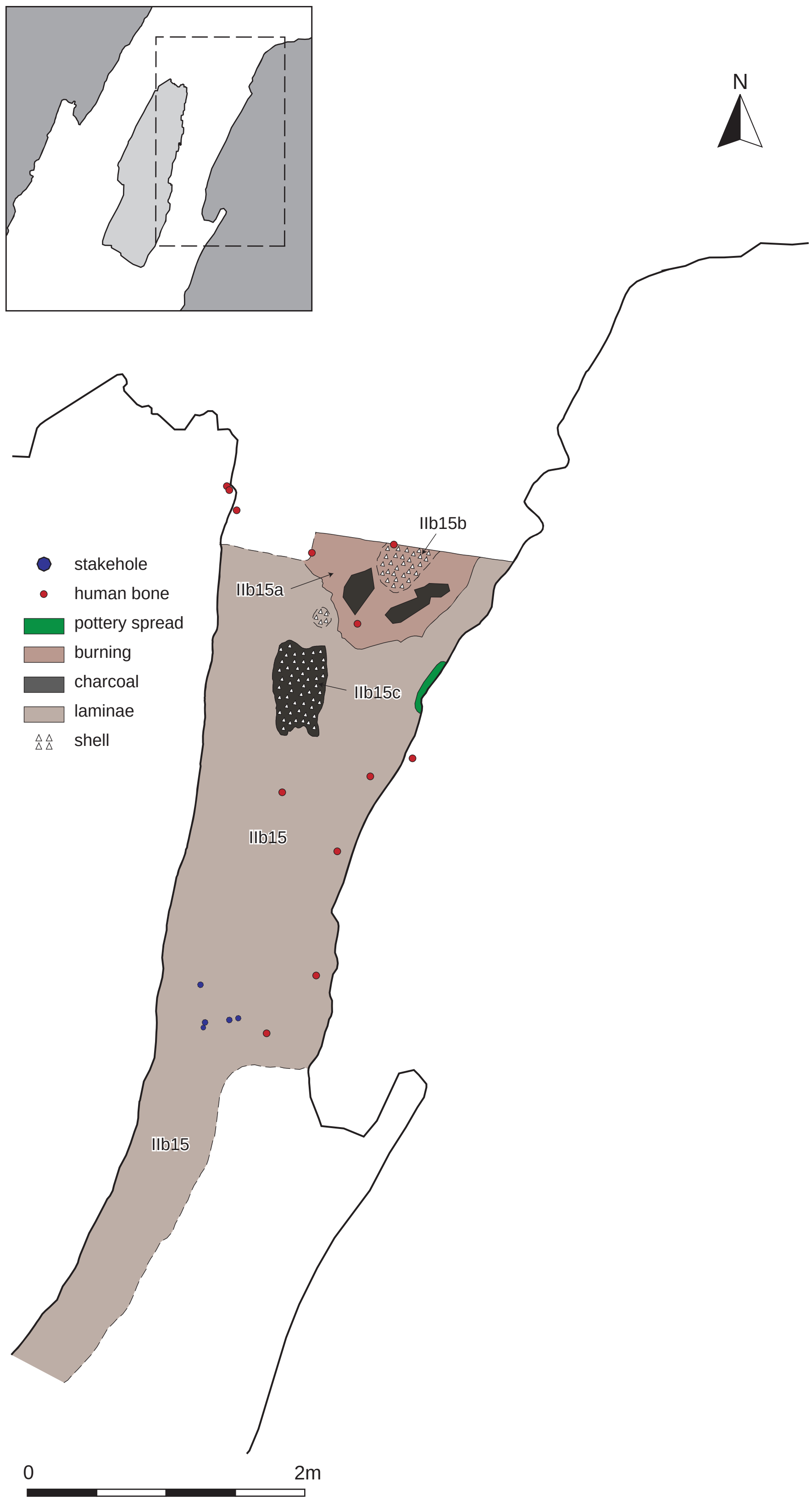

Illustration 2.14
Plan of Block 2.4 in the East Passage (also showing the location of human remains from Blocks 2.2 and 2.3)

to 0.03m at the south. Within these laminations, each around 1mm thick, were fine lenses of burnt material (IIb15a, IIb15d), shell (IIb15b), shell-rich charcoal (IIb15c) and a spread of pottery (illus 2.14).

A group of five stakeholes appear to have been cut through the Block 2.4 deposits, although it is possible that they may relate to the underlying Block 2.3. They lie at the narrowest point of the passage, *c* 6m from the entrance.

A cattle scapula from IIb15 produced an AMS date of 1020–840 cal BC (SUERC-16602). No artefactual material was recorded from this block apart from the spread of pottery in IIb15 (illus 2.14), which could not be identified in the site archive and most probably represented largely disintegrated crumbs. The more intense evidence of burning and the presence of domestic animal bones suggest, however, that activity continued with at least the intensity of earlier blocks, though without the presence of human remains.

The finely laminated nature of the Block 2.4 deposits (and intermittently in the blocks below) appears to confirm that the East Passage remained open throughout Phase 1, allowing windblown deposits to gradually accumulate.

2.3.3 *West Passage*

Block 1.1

The surface of what were presumed to be natural deposits within the West Passage (but see section 2.3.4) was a hard-packed and 'trampled' layer some 0.01m deep (Ib34, Ib27, Ia27, Ia27a; illus 2.8, 2.15, 2.16, 2.17). Ia27 contained areas of burning represented by red staining (Ia27b; illus 2.15), charcoal (Ia27x) and burnt hazelnut shells. Two bone points (SF381, SF382; table 2.2) and a stone grinder/hammer (SF941) from Ia27 represent the earliest stratified artefacts in the West Passage. Two fragments of carbonised hazelnut shell from the same context produced AMS dates of 1000–830 cal BC (SUERC-65420) and 980–820 cal BC (SUERC-65421), somewhat later than the earliest dates from the East Passage (chapter 4).

Cutting the surface of Ia27 at the south end of the West Passage were two lines of stakes running east–west, 1.5m apart (Alignments 1 and 2; illus 2.15, 2.18).

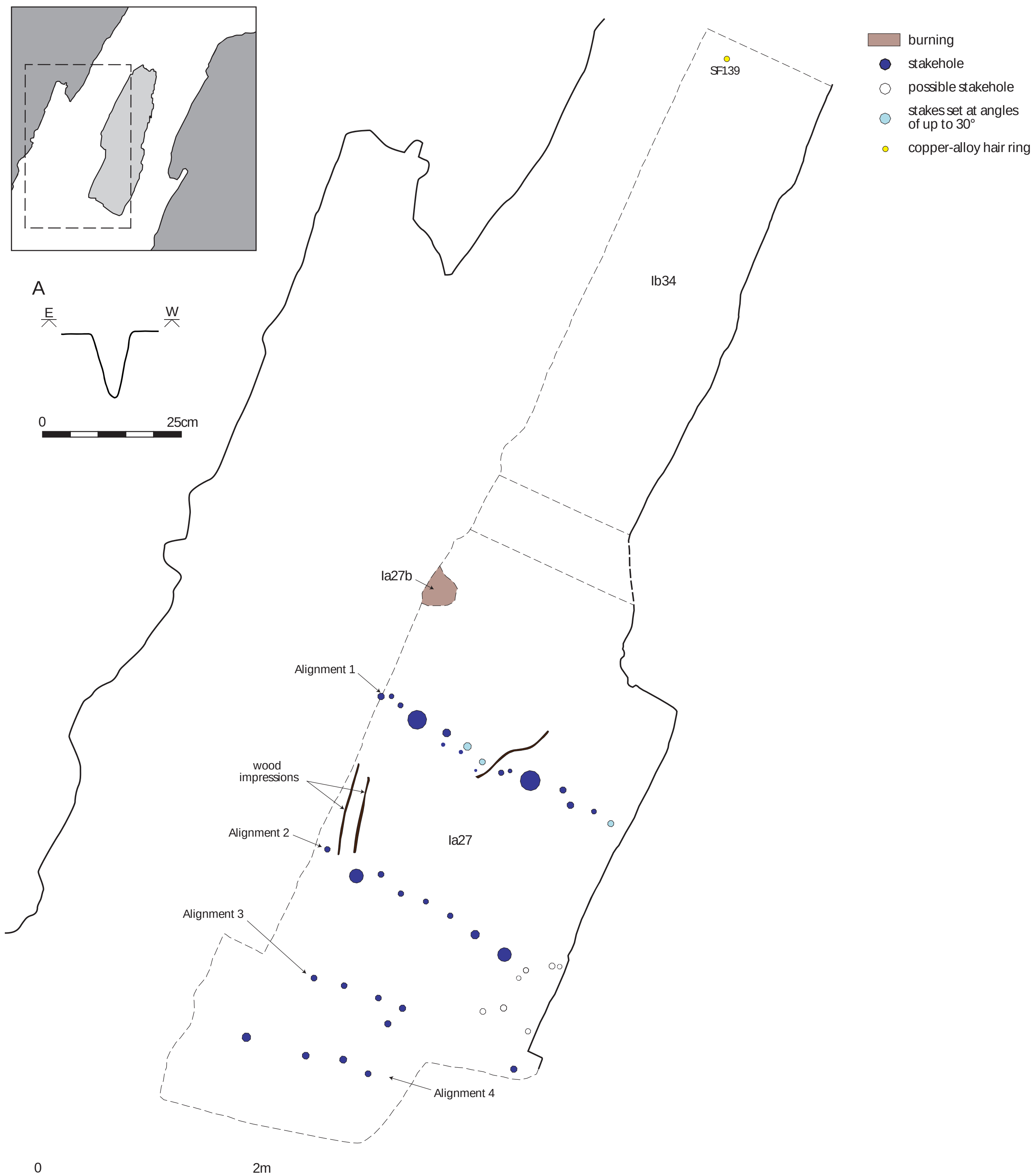

Illustration 2.15
Plan of Block 1.1 in the West Passage. (A) shows profile through the most westerly of the large stakeholes in Alignment 1

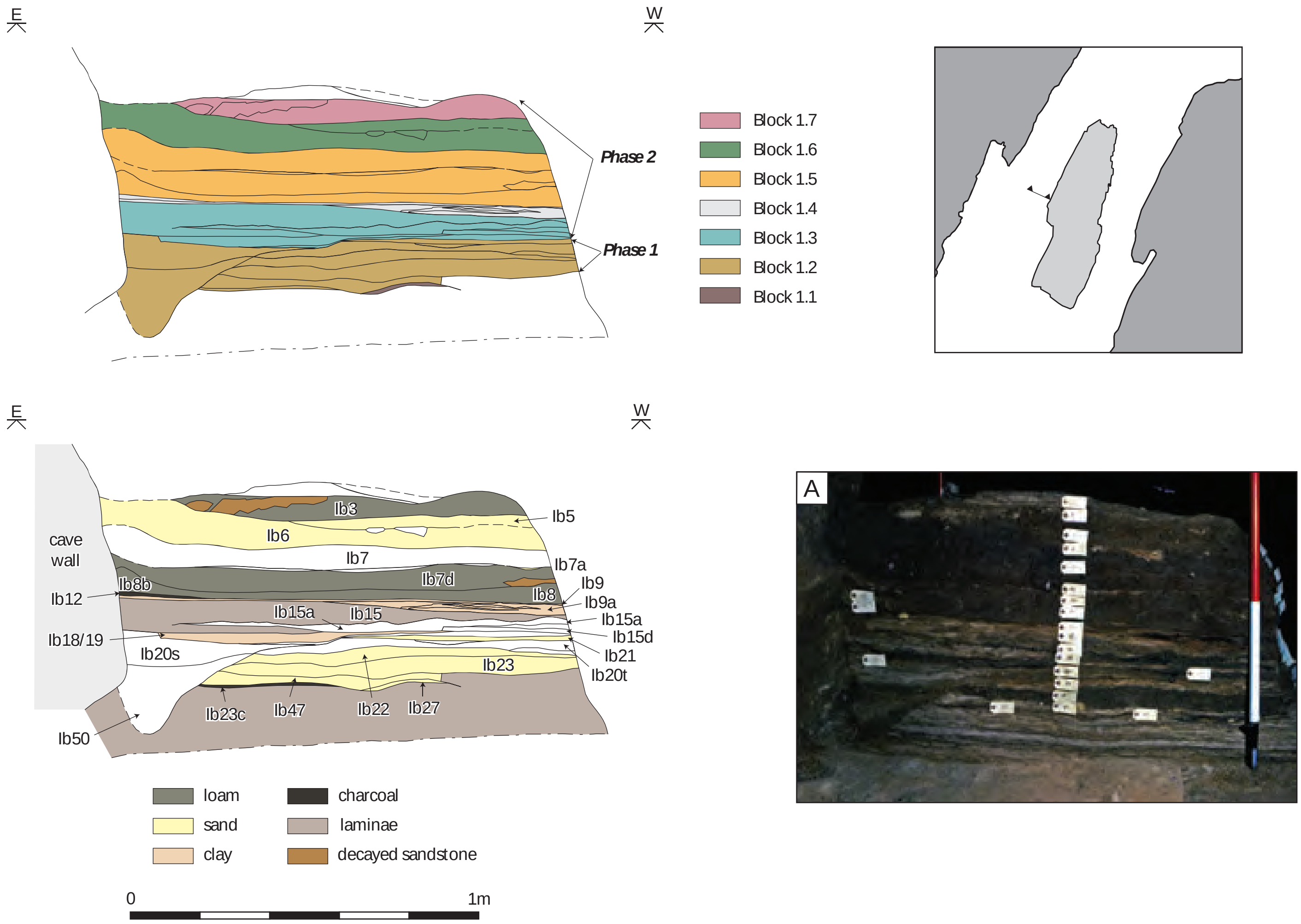

Illustration 2.16
North-facing section and (A) photograph of baulk in the West Passage

Table 2.2
Chronological distribution of artefacts through the West Passage sequence

Block	Human bone		Worked bone	Copper alloy	Iron	Stone	Pottery (g)
	Cranial	Post-cranial					
1.1	–	–	2 points (SF381, SF382)	1 hair ring (SF139)	–	1 grinder/hammer (SF941)	0.7
1.2	2	1	1 point (SF802)	1 hair ring (SF372) 1 bracelet (SF391)	1 rod tip (SF876)	1 oil shale armlet	1743.3
1.3	–	–	–	–	–	1 hammer (SF943) 1 pounder/hammer (SF940)	1835.9
1.4	–	–	–	–	–	–	31.3
1.5	–	–	–	–	–	–	3.3
1.6	–	–	–	–	–	–	34.6
1.7	–	–	–	–	–	–	0.2

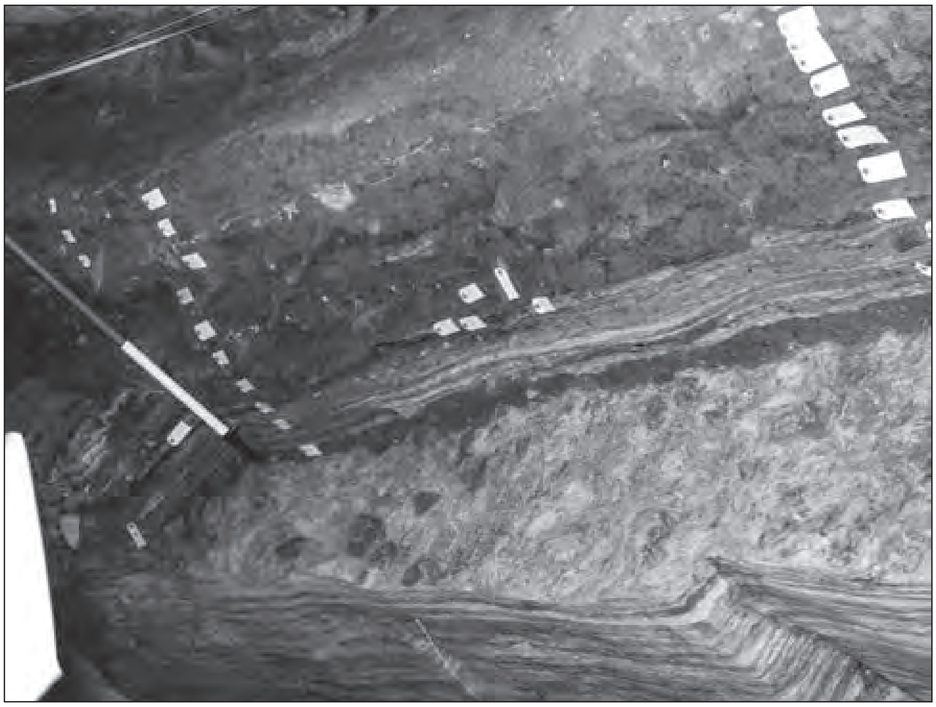

Illustration 2.17
Surface of Ib34 in the West Passage, looking north

Each consisted of larger stakes, 0.15m in diameter and 0.22m deep (illus 2.15A), with four or five intervening smaller stakes, averaging 0.04m in diameter and 0.07m deep. Each had a pointed end and some were set at angles of up to 30°. Uncarbonised wood survived in some of the stakeholes (illus 2.18C). The north line (Alignment 1) appeared to have a partial 'supplementary' line of very small stakeholes, which averaged 15mm in diameter and 0.02m in depth. The excavators recorded that twig impressions were visible in the surface of the underlying 'trampled' layer (Ia27; illus 2.15), potentially deriving from the collapse of a hurdle structure supported by these stakes. If so, this would suggest that the structure collapsed before any subsequent deposits had formed.

To the south, two further lines of stakeholes (Alignments 3 and 4) were aligned east–west and located approximately 0.7m apart (illus 2.15). The stakeholes in Alignment 3 were approximately 0.03m in diameter, 0.05m in depth and 0.3m apart. Those comprising Alignment 4 were approximately 0.05m in diameter, 0.1m in depth and approximately 0.3m apart. There was also a small cluster of possible stakeholes near the cave wall.

Overlying these deposits to the north was a series of interleaved sand and clay laminae (Ib33). Close to the entrance, this layer contained a copper alloy hair ring (SF139; illus 2.15).

The only pottery recovered from this block comprised a few crumbs of unidentifiable fabric.

Block 1.2

Overlying the laminae (Ib33) at the north end of the passage was a thin, mixed deposit of compacted charcoal, sand, red ashy material and clay (Ib23c; illus 2.8, 2.16) which contained an adult human metatarsal (SF1120), numerous pot sherds including 26 sherds and crumbs of Fabric B (weighing 178g), 11 further sherds of Fabrics D and E, 19 sherds not assigned to fabric, plus crumbs of Fabric A. They were overlain by a clay lens (Ib23a). A sherd of Fabric B pottery and a further sherd (not assigned to fabric) were recovered from Ib23b (the interface between Ib23 and Ib23a).

To the south, the Block 1.1 stakeholes were sealed by a similar deposit (Ia23c/Ic11; illus 2.19) containing large quantities of charcoal, bone, shell, five sherds of pottery (including Fabrics D and E), a worked bone point (SF802; possibly reused as a cutting surface) and a fragment of an oil shale armlet that appears to have been undergoing reworking to produce beads (SF911). This was overlain by a lens of clean sand (Ia23h/Ic10a; illus 2.19) which contained charcoal, bone and two pot sherds (Fabric D and E). Carbonised cereal grains from Ia23c and Ia23h produced AMS dates of 930–810 cal BC (SUERC-65414) and 980–820 cal BC (SUERC-65416) respectively.

Sealing these deposits was an undulating sand surface (Ib47; illus 2.16) containing three pot sherds (two of Fabric B and one not assigned to fabric) plus crumbs of Fabric E and one of only two stratified roe deer bones from the cave (see section 7.4.3). Overlying this was a 0.1m-deep sandy layer (Ib23, Ia23; illus 2.8, 2.16, 2.20) with flecks of charcoal. At the north end of the passage the surface of this layer was covered by a scatter of pebbles and stones while, towards the south end of the passage, it had a thick charcoal surface (Ia23d). Ib23 contained a human cranial fragment (an occipital, SF342) from an individual aged 11–12 years located close to the entrance (illus 2.21), a sub-adult human tooth (SF1123) and numerous sherds of pottery (mainly Fabrics B and E but with some sherds of Fabrics A, D and F). The deposit was sealed by a thin lens of clay (Ia22a, Ib22a), which contained crumbs of Fabric A pottery. Ia22a and Ia23d also produced a large amount of burnt hazelnut shells (section 7.6).

The interface of Ia23/27 yielded a fragment of a copper alloy bracelet (SF391; illus 2.21), a copper alloy hair ring with an adhering fragment of gold covering (SF372), two pot sherds (Fabrics D and E) and a concentration of burnt hazelnut shells (section 7.6). Carbonised cereal grains from Ia23 and Ia23d produced AMS dates of 970–820 cal BC (SUERC-65413) and 980–830 cal BC (SUERC-65415) respectively.

Overlying these deposits was a very mixed sandy layer (Ia22, Ib22, Ic9; illus 2.8, 2.19, 2.21) containing charcoal, shell, concentrations of burnt hazelnut shells and areas of burning (eg Ia20a), which itself contained crumbs of Fabric A pottery. This was 0.05m deep in the north of the passage and 0.15m in the south. Ia22 contained three pot sherds (including one sherd of Fabric B), while Ib22 yielded a further sherd not assigned to fabric. A human mandible from an individual aged around 14–16 years (SF312; illus 2.21, 2.22A) was also recovered from Ia22.

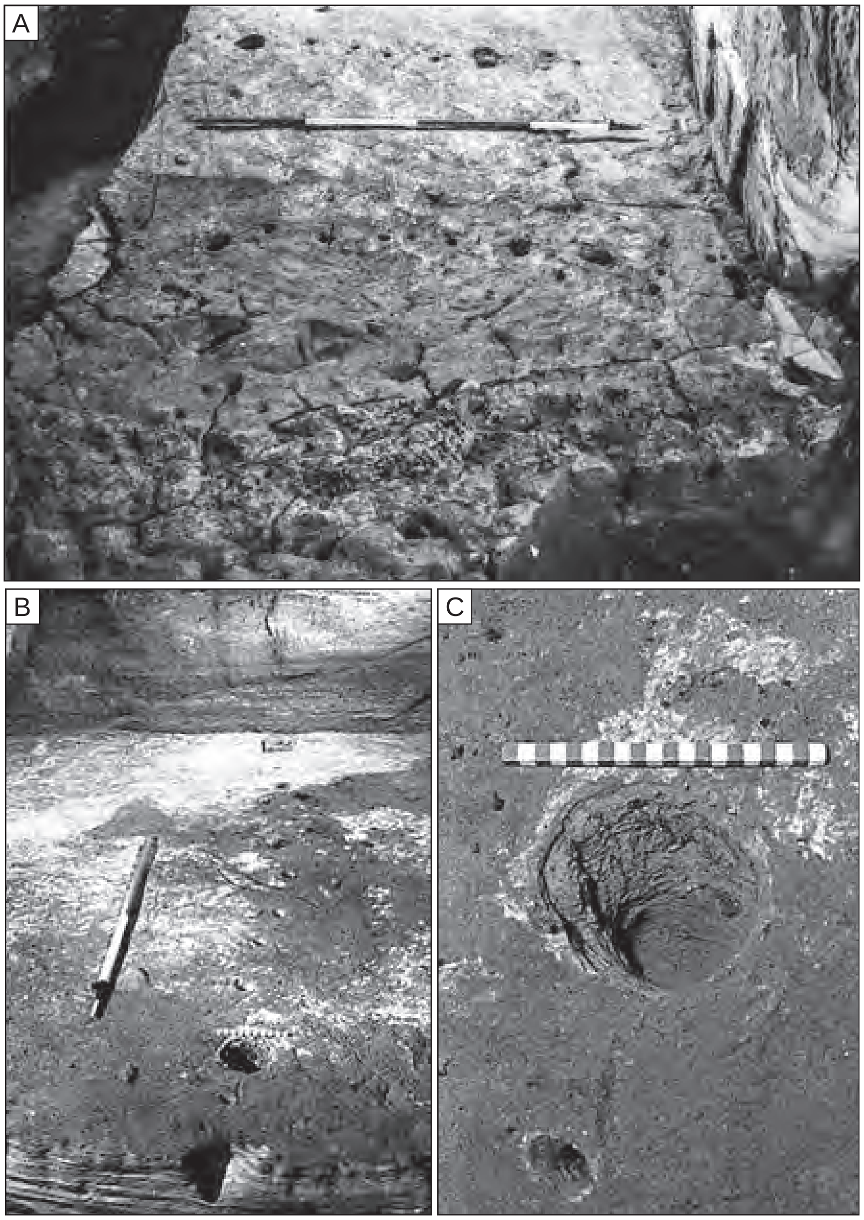

Illustration 2.18
Stakehole alignments in Block 1.1 in the West Passage: (A) Alignments 1 (background) and 2 (middle ground), (B) Alignment 1, (C) detail of preserved wood in the most westerly of the large stakeholes in Alignment 1

These deposits were overlain by fine laminated deposits of sand and clay, themselves overlain by sand (Ia20, Ib20t). Ia20 contained a sub-adult human tooth (SF1129) and the tip of an iron pin or tool, or possibly a fragment of wire (SF876), which is probably intrusive, together with one sherd of Fabric A pottery and crumbs of Fabric B. Ib20t contained four pot sherds (Fabrics B and E and one sherd not assigned to fabric) and a concentration of Fabric C (six sherds weighing 304g). The interface between Ib20t and underlying deposit Ib22 yielded a sherd of pottery not assigned to fabric, plus crumbs of Fabric F pottery.

Block 1.2 deposits were cut by a line of thirteen stakeholes (Alignment 8), aligned east–west and spaced at 0.2m intervals at the south end of the passage. Each was approximately 0.04m in diameter, 0.09m in depth and had been driven vertically into the deposits. The stakeholes were filled by an orange sand with a few charcoal flecks (IIIN6), demonstrating that they had gone out of use before the formation of the latter deposit. A carbonised cereal grain from Ia20 produced an AMS date of 1010–830 cal BC (SUERC-65749).

Closer to the entrance, the Block 1.2 deposits were cut by four stakeholes (Alignment 6) aligned approximately north–south and running down the centre of the passage. These measured 0.04m in diameter and 0.06m deep (illus 2.21A).

In the south half of the passage this deposit (Ia20, Ib20t) was cut by a series of slight gullies (illus 2.21, 2.22B); this area also contained patches of burnt material, but their stratigraphic relationships to surrounding features is unclear. West of the main gulley was an arc of stakeholes (Alignment 9). The northern six measured around 0.04m in diameter, 0.1m deep and lay 0.2m apart (illus 2.22C), while the remaining five measured 0.04m in diameter, 0.08m deep and were 0.2m apart. The mandible (SF312), mentioned above, lay on the arc of these stakeholes (illus 2.21). At the south end of the area were four possible stakeholes aligned east–west and measuring approximately 0.03m in diameter and 0.03m deep (illus 2.21).

In the north half of the passage, three gullies (Ib23f, Ib49, Ib50), each approximately 1.0m long, 0.25m wide and 0.15m deep (illus 2.16, 2.20, 2.21, 2.23), cut Ib20t. The fill of Ib23f comprised a mixture of sand, clay and charcoal and contained two sherds of Fabric B pottery. The fill of Ib50 also contained two sherds of Fabric B pottery and a further sherd not assigned to fabric.

In the west of the passage, Block 1.2 deposits were cut by two groups of stakeholes (Alignments 5 and 7; illus 2.21). Alignment 5 comprised three stakeholes, *c* 0.03m in diameter, 0.07–0.11m deep (illus 2.21A) and *c* 0.2m apart. The three stakeholes forming Alignment 7 measured *c* 0.2m in diameter and *c* 0.25m deep. A further stakehole (dimensions unrecorded) lay further to the north. Against the passage wall was a patch of charcoal and clay (Ic10/11f), 0.2m in diameter and 0.1m deep.

The quantity of pottery from Block 1.2 was substantial, comprising some 155 sherds and associated crumbs (see table 5.4): 42% by weight of the entire stratified pottery assemblage from the Shepherd excavations (see table 5.5). All fabrics found in the overall site assemblage are represented. Block 1.2 also contained

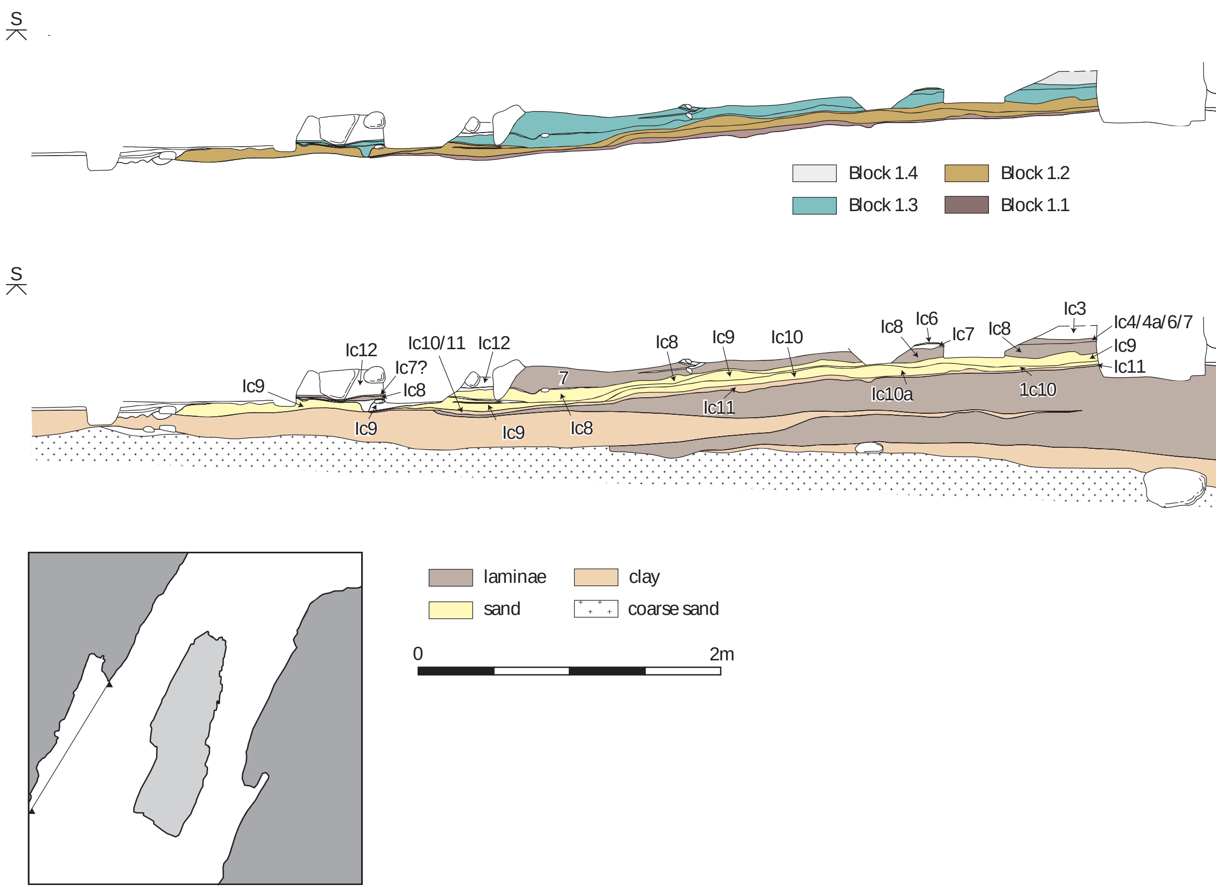

Illustration 2.19
East-facing section through the West Passage (Trench Ic)

by far the greatest concentrations of plant macrofossils from the Phase 1 deposits. Cereal grains were relatively plentiful and there were significant concentrations of burnt hazelnut shells (section 7.6), suggesting that the cooking and consumption of food was a frequent activity. Charcoal too was relatively abundant; while much of this (eg the heather and gorse) may represent kindling and firewood, it is also possible that some of the more substantial pieces of oak, hazel, alder, willow etc may derive from the structures represented by the many stakeholes within this block.

2.3.4 Discussion

The nature and extent of the Phase 1 deposits

The lack of any physical connection between the excavated deposits within each of the two entrance passages makes it impossible to establish definitive chronological relationships between them. This is made even more problematic by the striking differences in the composition, types of features and depth of deposits in each passage. The major differences can be summarised as follows:

1. The West Passage contains considerable evidence for the presence of timber structures, represented by multiple lines and arcs of stakeholes; these are seemingly absent from the East Passage.
2. The West Passage deposits contain significantly greater quantities of pottery and carbonised plant remains.
3. Human bones and teeth are overwhelmingly concentrated in the East Passage (29 compared to only 5 in the West Passage).

These differences are reflected in the AMS dates which, at first glance, appear to suggest that deposition began somewhat earlier in the East Passage than in the West Passage (chapter 4).

There is, however, an alternative possibility. Midway down Sylvia Benton's published section (illus 2.7A), at around the 5-foot mark, is a clearly marked black line, indicative of 'burning'. This runs through her grid squares –A0 and A0 where, after a short hiatus, it resolves into two black lines visible in grid square A1. The lower of these two lines continues through grid square A2. Overlaying this with the Shepherds' section (illus 2.7D), it becomes apparent that the Phase 1 deposits excavated by the Shepherds closely follow Benton's single line of 'burning' in the outer part of the West Passage (grid square A0); indeed, Ian Shepherd (2007: 195) confirms that this line marks the base of the Late Bronze Age layer. Further into the passage (in grid square A1), however, the Shepherds' Phase 1 deposits appear to follow the *upper* black line

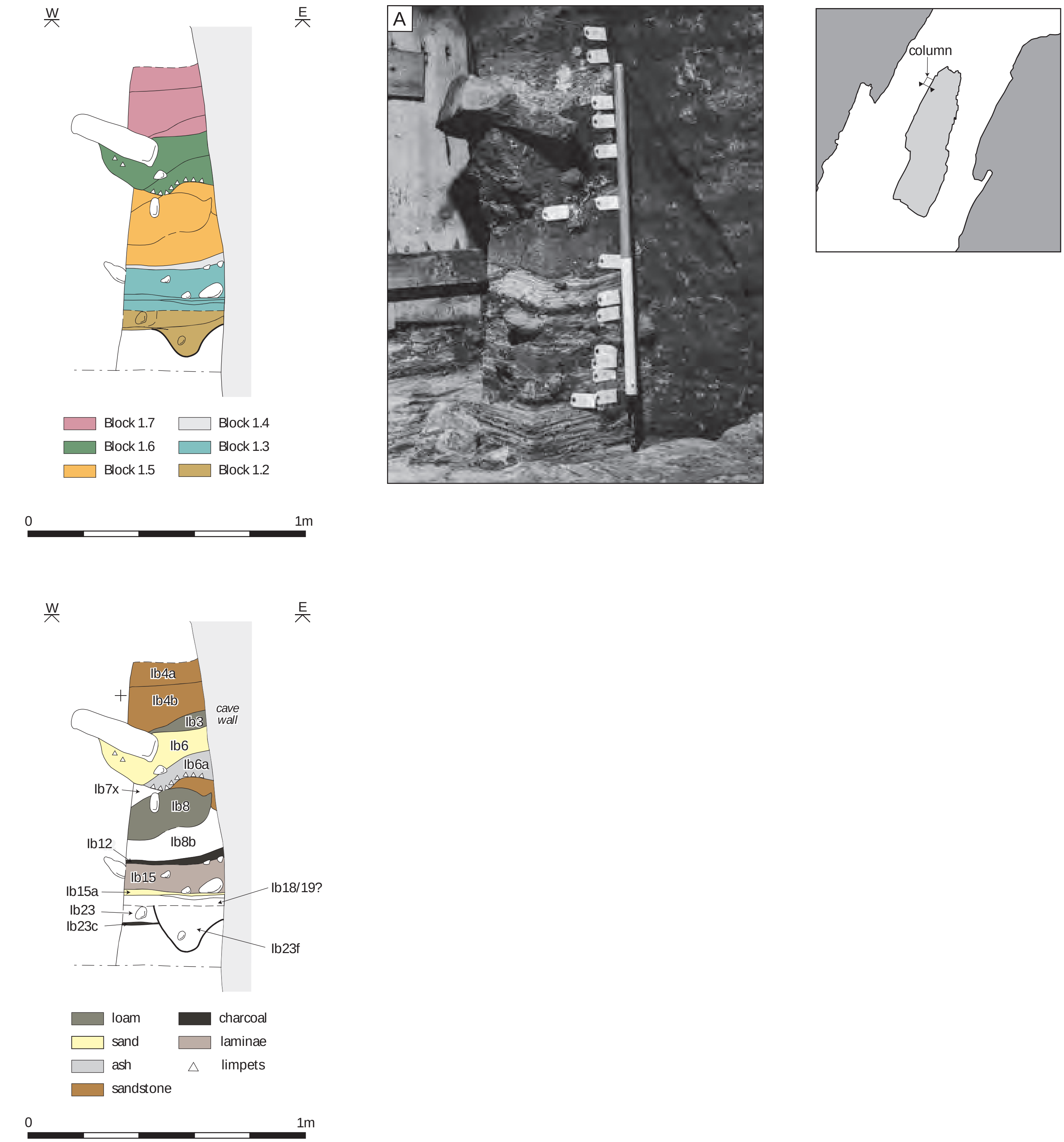

Illustration 2.20

South-facing section and (A) photograph of 'column' of deposits at the north end of the West Passage, adjacent to modern door

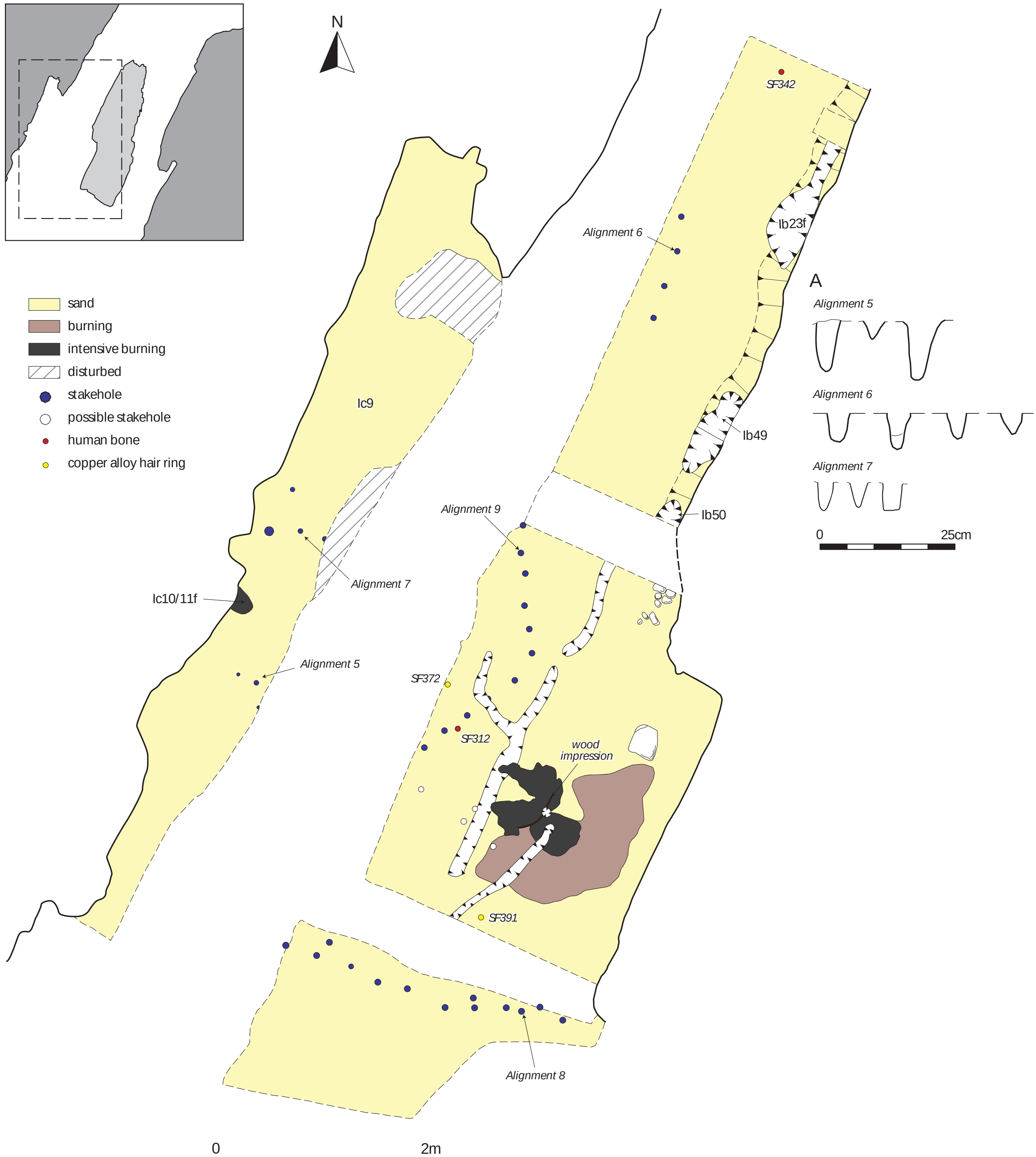

Illustration 2.21
Plan of Block 1.2 in the West Passage. (A) shows profiles through stakeholes in Alignments 5, 6 and 7

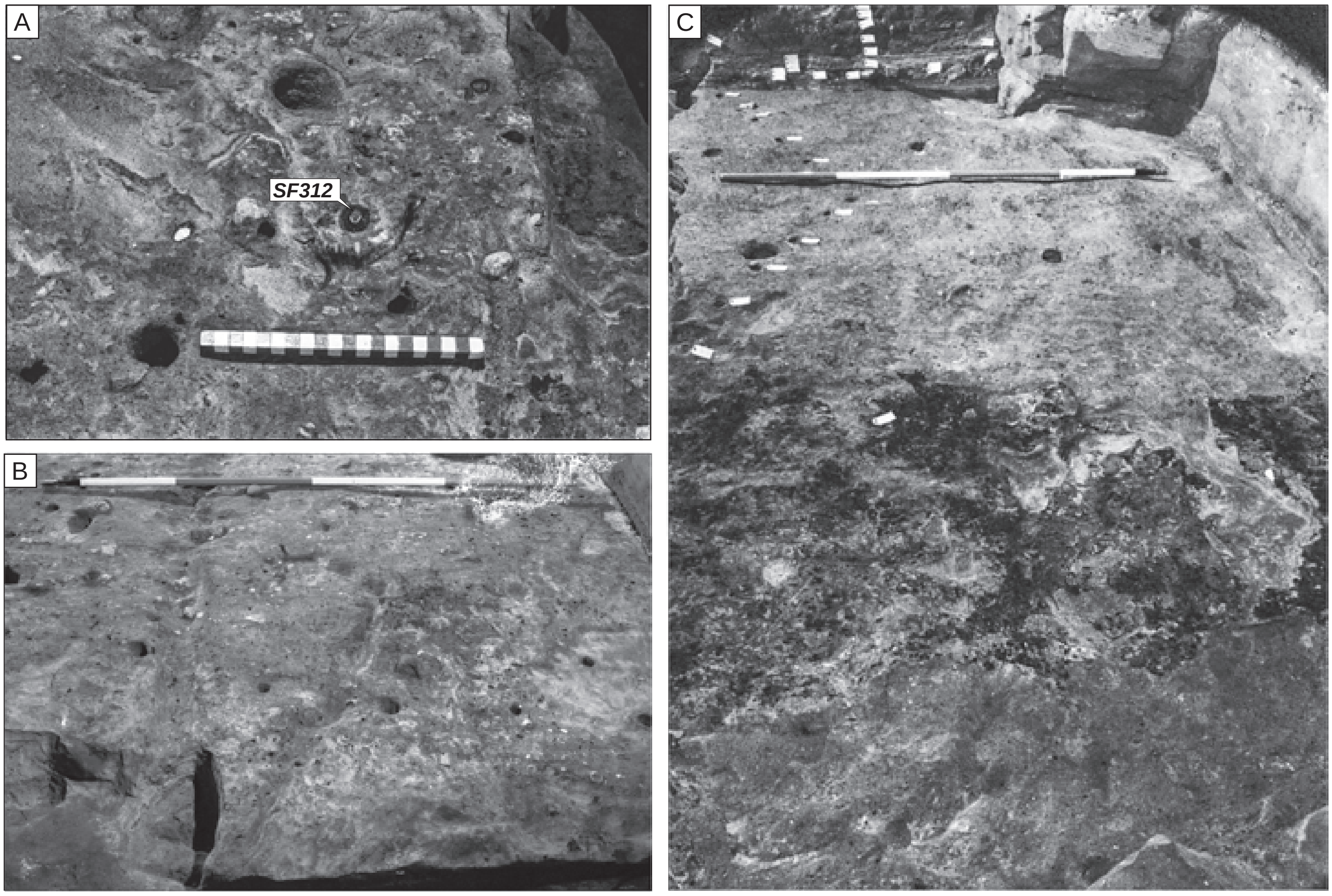

Illustration 2.22
Photographs of (A) child's mandible (SF312) in Ia22, (B) surface of Ia20, looking north (gullies are visible in the foreground), (C) surface of Ia23, looking north, showing stakehole Alignment 9 (top left)

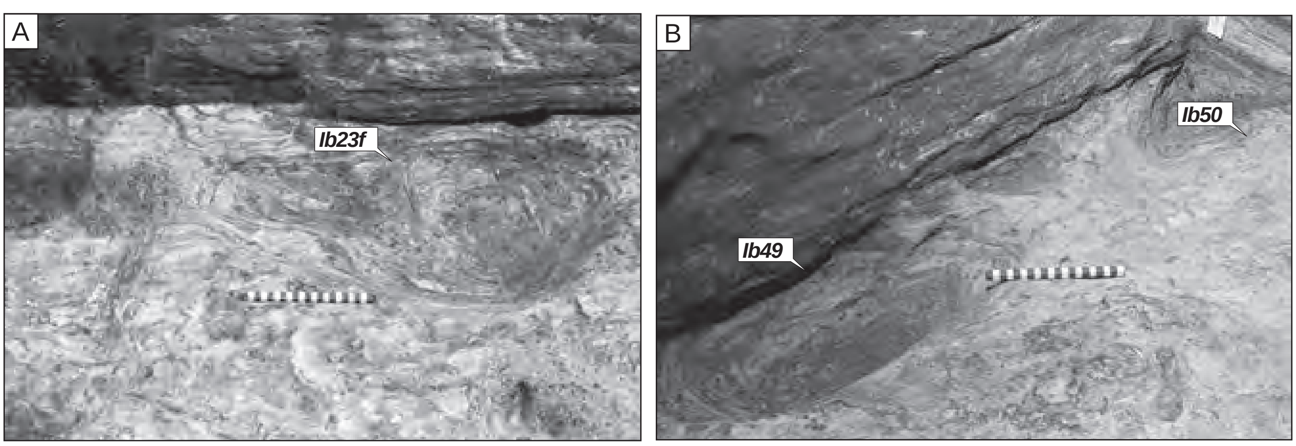

Illustration 2.23
Gullies (A) Ib23f and (B) Ib49, Ib50 against cave wall in Block 1.1 in the West Passage

rather than the lower. If we assume that Benton's lines of 'burning' represent Phase 1 deposits, it becomes possible that around 0.2m of unexcavated material (ie the deposits between the two lines of burning) may not have been excavated by the Shepherds. This material may still survive in situ across much of the West Passage (illus 2.7D).

This scenario is not as unlikely as it may at first seem, since it is clear from field notes contained in the site archive that it was extremely difficult to gauge the point at which anthropogenic activity in the cave began; a problem shared by Sylvia Benton and the Shepherds. In part, this is because the finely laminated deposits of windblown sand and clay particles which formed in the entrance passages for up to several centuries prior to the intensification of Late Bronze Age human activity continued to form throughout Phase 1. Indeed, the earliest deposits within Block 2.1 in the East Passage were regarded as non-anthropogenic by the Shepherds at the time of excavation. In this context, it is entirely possible that deposits underlying Block 1.1 in the southern part of the West Passage were perceived as non-anthropogenic during the 1979 excavations and were therefore not excavated. The drawn section (illus 2.8) does not indicate the nature of the deposits underlying Block 1.1 in this part of the passage, suggesting that these were indeed not excavated.

This interpretation gains further support from an annotation on one of Sylvia Benton's hand-drawn archive sections (the one on which her published section is based), where the deposits between the two black lines are labelled as containing 'bits of bone' (illus 2.7E). It seems highly likely that this denotes human bone, since Benton was very sparing in the use of such annotations on the section. Indeed, none of the deposits later excavated by the Shepherds are annotated in this way, even though we know that animal bone was plentiful. Several tentative conclusions can thus be drawn:

1. Rather than indicating an earlier commencement of human activity in the East Passage, the AMS dates may simply reflect the incomplete excavation of the earliest deposits in the West Passage. That being so, there is no reason to believe that Phase 1 activity did not begin in both passages at the same time.
2. The apparent paucity of human remains in the West Passage may simply reflect the absence of excavation of the earliest Phase 1 deposits in that area. There is thus no reason to assume that funerary activity within Phase 1 was necessarily concentrated in the East Passage.
3. Significant archaeological deposits, potentially including Late Bronze Age human remains, may still be preserved in the West Passage, primarily in the areas of Benton's grid squares A1–A4.

The Phase 1 deposits excavated by the Shepherds extend into the cave only as far as grid square A3, where they quickly peter out. Returning to Benton's published section (illus 2.7A), however, we can see that the deposits between her two lines of burning (ie what are likely to be unexcavated Phase 1 deposits) extend to the middle of grid square A4, where they disappear at a point coterminous with the underlying laminated sand and silt deposits (section 2.2.5). There is no evidence, from either the Shepherd or the Benton excavations, that Phase 1 deposits extended across the whole of the cave interior, the surface of which would have been formed by the coarse sand of the underlying raised beach deposits (see section 2.2.2). Whatever Late Bronze Age cultural activity led to the formation of the Phase 1 deposits must, therefore, have been focused almost exclusively in the entrance passages and in the lee of the entrance canopy. Any activities that might have been conducted inside the cave did not lead to the formation of archaeological deposits.

One potential explanation for this sharp disjunction in the distribution of Phase 1 deposits is the likely presence of water within the cave during the Late Bronze Age (see sections 2.2.3 and 7.3) in contrast to the dry surface formed by accumulations of windblown sand within the entrance passages. This division of the cave into two zones (wet and dry) would have been accentuated as deposits mounded within the entrance passages during Phase 1.

The distribution of objects that can be confidently dated to the Late Bronze Age generally mirrors the location of Phase 1 deposits; metalwork of this period, for example, focuses on the entrance passages and into the interior as far as D5 (illus 5.64A, B). The sole exception is a remarkable cache of six gold-covered hair rings at the rear of the cave, which appear to have been placed (perhaps hidden) there as a special deposit (section 5.7.1; illus 5.64B). Overall, however, there is no suggestion from the finds distribution maps that Late Bronze Age objects were deliberately deposited as votives into standing water within the cave (section 5.14).

Mortuary activity

Human remains in Phase 1 are represented by 25 bones and 4 teeth from the East Passage, compared to only 3 human bones and 2 teeth from the West Passage. As we have seen, however, the latter total may be an under-representation of the original extent of mortuary activity in the West Passage.

The bones are overwhelmingly those of young children, making this a highly unusual collection, since this age group are normally under-represented in prehistoric funerary assemblages. Initial interpretations that the entrance passages were used for the display of children's heads (Shepherd 2007: 199) were based on the apparently exclusive presence of cranial fragments and mandibles (illus 2.13); this idea is undermined, however, by the subsequent recovery from the same excavated deposits of 16 post-cranial bones during post-excavation analysis of the faunal assemblage. Nevertheless, the disarticulated state of the bones, along with evidence for defleshing or polishing on the frontal bone from Block 2.2 (SF231), suggests that these bodies were not simply buried in the cave (chapter 6).

In the context of the human remains, it is interesting to note that many of the objects recovered from the Late Bronze Age deposits appear to be personal ornaments and thus may have been associated with the bodies. They are certainly not the sorts of objects that would be expected on an occupation site. Of particular interest, given the prominence of cranial bones and mandibles, are ten hair rings (or alternatively nose/septum rings; illus 5.35), including two from the Shepherds' excavations (SF139, SF372); on the Continent, such rings are commonly associated with burials (see section 5.7.1). A copper alloy pin shank (SF230) and bracelet (SF391) and an oil shale armlet (SF911) from the

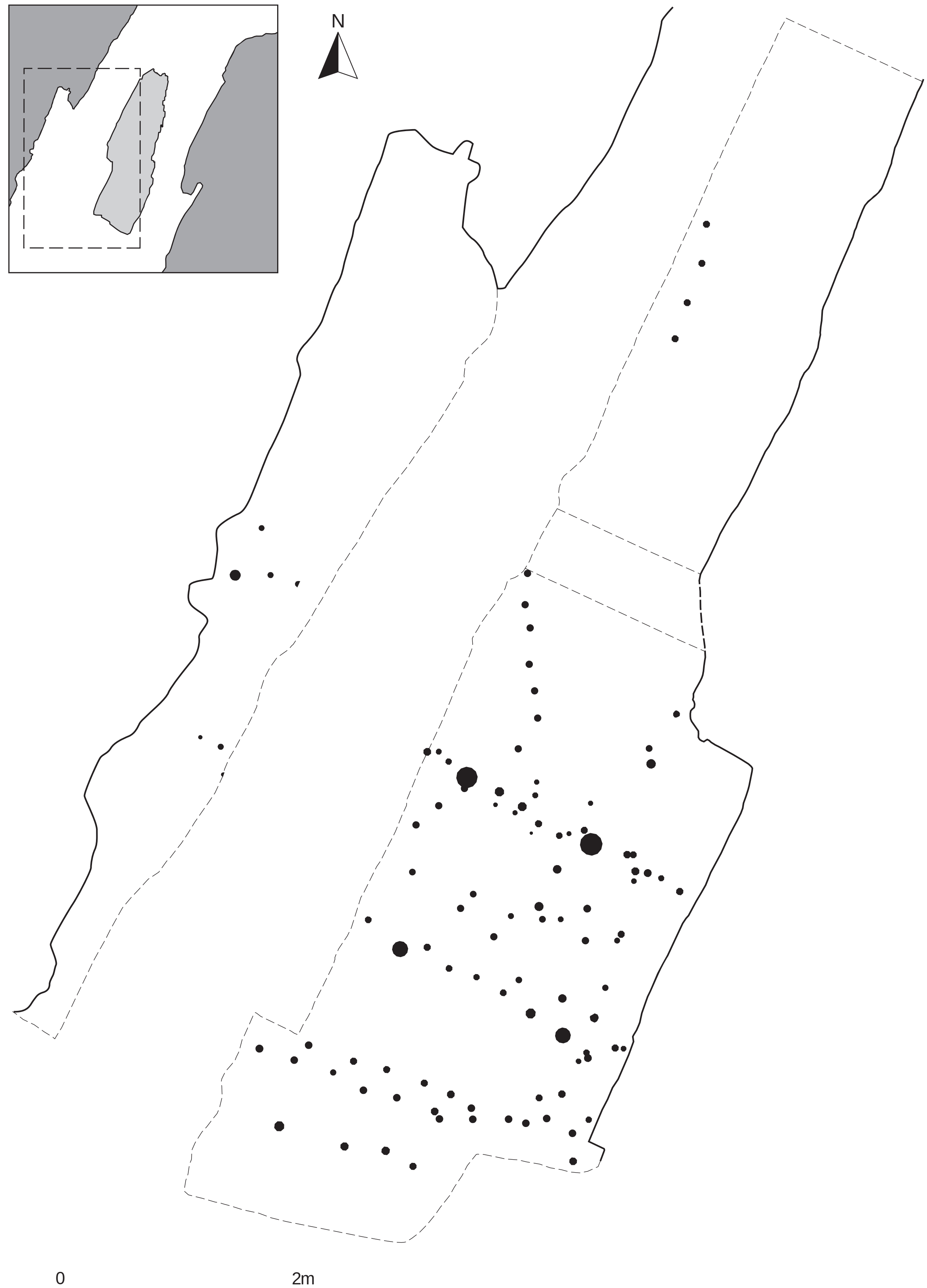

Illustration 2.24
Plan showing all stakeholes recorded in the West Passage

Shepherds' excavations also represent objects worn on the body, as do numerous objects found by Benton (illus 5.64A, B). While these objects may be votives, it seems at least equally likely that they arrived in the cave on the bodies of the dead.

The stake-built structures

Perhaps the most obvious difference between the two passages in Phase 1 is the appearance of a series of apparently sequential stake-built structures in the West Passage. These first appear in Block 1.1, being apparently cut through the earliest identified cultural layer (trampled surface Ia27 and associated contexts). As we have seen above, however, there is reason to believe that there may be earlier unrecognised Phase 1 activity below them. They occur mostly within what would have been Benton's grid square B2 (though Benton does not mention having noticed any stakeholes or postholes in the cave) and were not observed in significant numbers in the outer part of the entrance passage.

There are perhaps three main possible explanations for the presence of so many stakeholes within the West Passage. These can be outlined as follows:

1. They may represent a series of successive wooden barriers or screens across the inner end of the West Passage intended to control access or define activity areas.
2. They may represent the remains of timber structures associated with the mortuary use of the cave; for example, as scaffolds or racks intended to receive and/or display human bodies.
3. They may represent foundations for a sequence of timber platforms.

One key question concerns whether the apparent absence of stake-built structures in the East Passage is genuine or simply an artefact of excavation. There is certainly no indication that access through the East Passage was obstructed during Phase 1, since it appears that the formation of windblown laminae of sand and fine clay particles continued throughout this whole period. It should be noted, however, that the stake-built structures are concentrated in the inner half of the West Passage and that only a relatively small area of the equivalent sector in the East Passage was preserved after Benton's excavations: it is, therefore, impossible to be sure that stake-built structures never existed in the East Passage. Nonetheless, one might expect that, if similar structures had existed in the East Passage, some evidence for stakeholes might have been expected in Trench IIc (illus 2.6). Instead, only a rather formless cluster around the midpoint of the passage is represented (illus 2.14). The tentative conclusion must be, therefore, that the stake-built structures were restricted to the West Passage.

The Phase 1 stakeholes in the West Passage are represented on illus 2.24. Most were in the range of 0.1–0.2m deep and seem to have held wooden stakes around 0.05–0.08m in diameter (illus 2.25). A few, notably in Alignments 1 and 2, were significantly larger, up to around 0.15m in diameter (illus 2.25, 2.26). The excellent preservational environment of the cave meant that some stakes partially survived as charred or even unburnt wood (illus 2.18). Unburnt wood preserved in two unstratified stakeholes

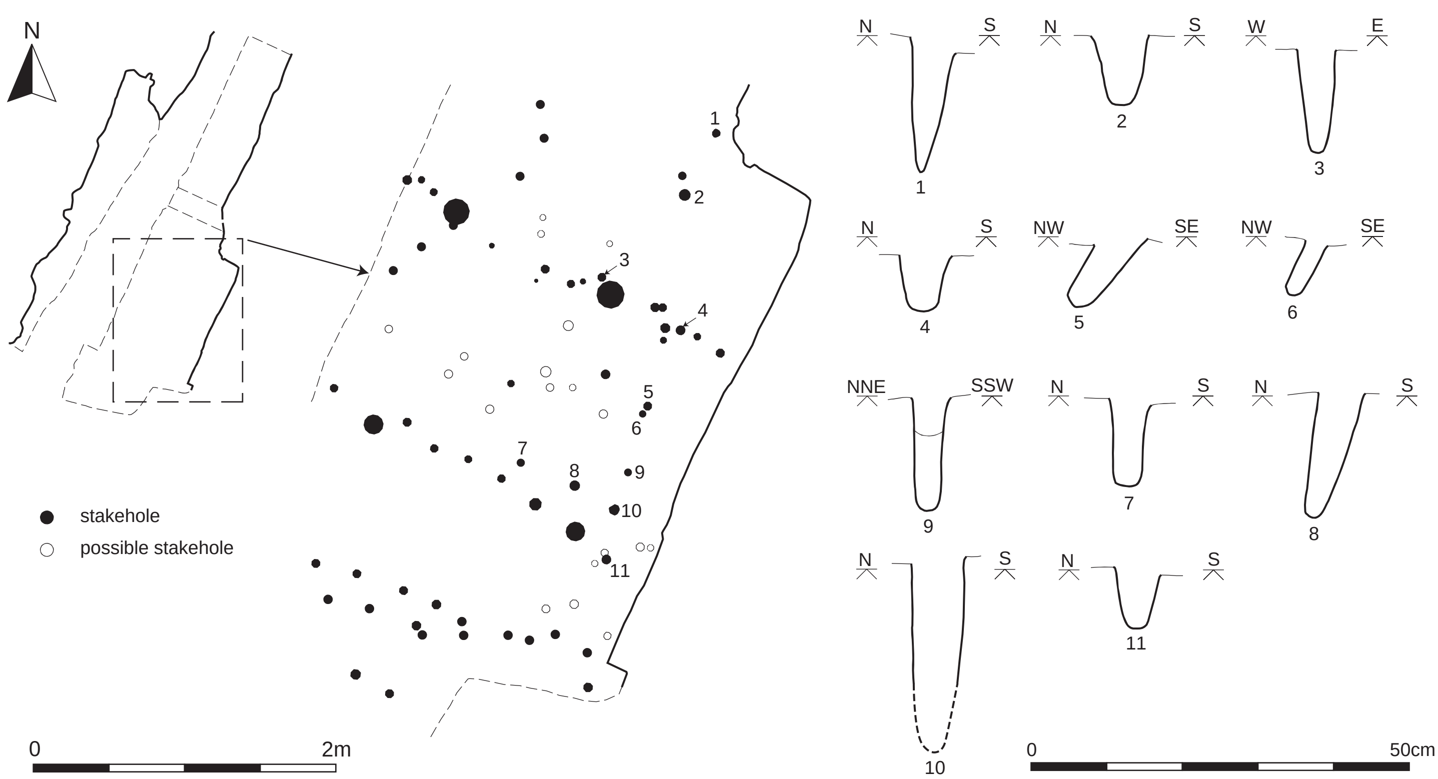

Illustration 2.25
Stakehole sections and profiles in the West Passage

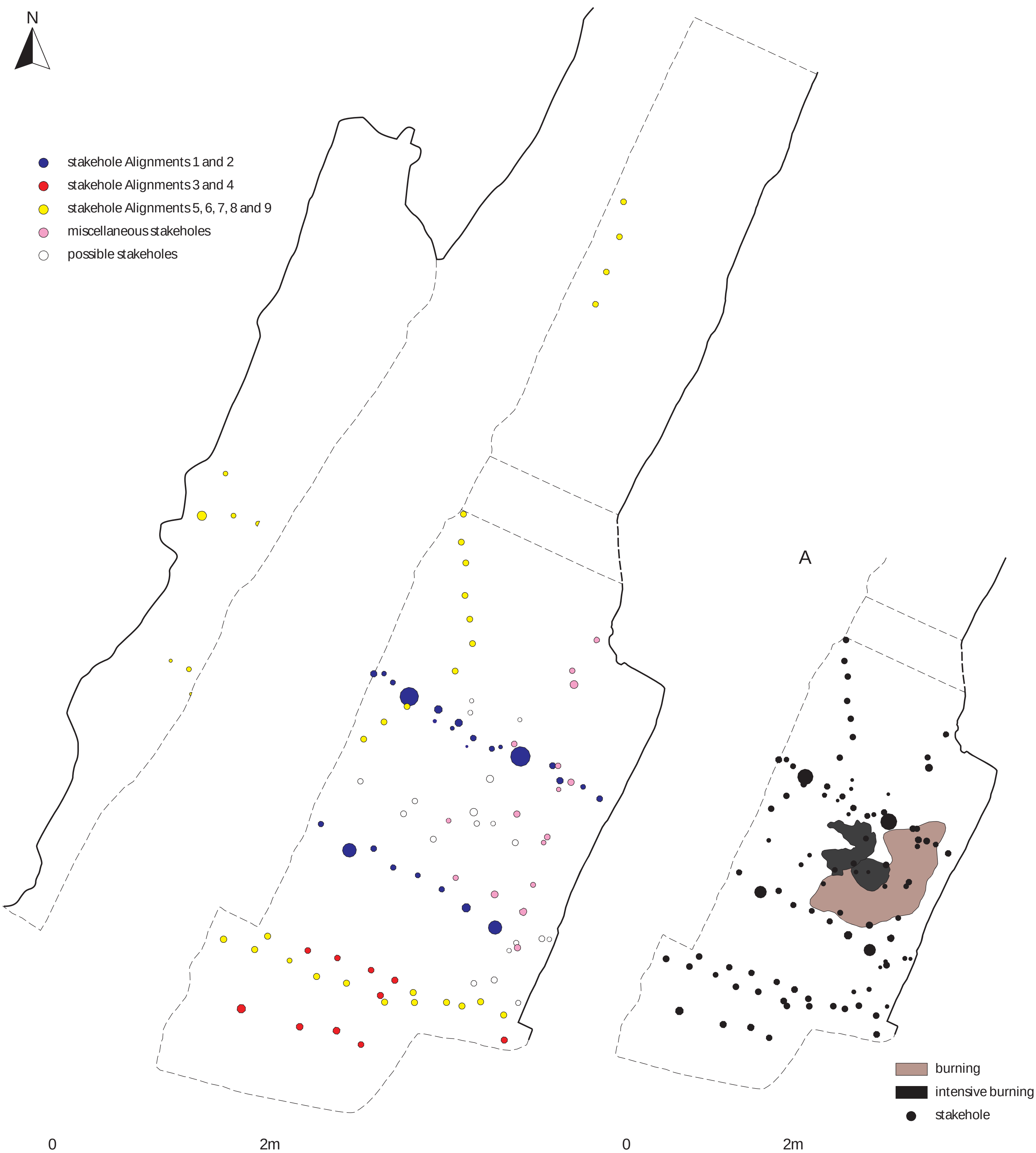

Illustration 2.26
Plan of stakeholes recorded in the West Passage showing the distinct alignments noted during the Shepherd excavations. (A) shows areas of burning

from the East Passage proved to derive from minimally modified hazel branches (section 7.6.4).

Although the majority appear to resolve into a series of discrete alignments, it proved extremely difficult for the excavators to identify the levels from which the stakeholes had been cut, ie to distinguish which deposits had been driven through by the stakes and which had formed around them; in the exceptional preservational environment of the cave, the structural integrity of the stakes may have been retained long after any superstructure had decayed or gone out of use. For those that do not belong to a specific alignment, therefore, it is often impossible to be sure that they necessarily even relate to Phase 1 rather than Phase 2. Given the exceptional survival of unburnt stakes, there is the additional potential problem of modern disturbance, since it is clear that Sylvia Benton used small wooden stakes to mark out areas within the cave during her excavations (see for example illus 2.4). However, given the well-stratified nature of many of the Phase 1 stakeholes and the wood impressions in Block 1.1 (illus 2.15), it seems unlikely that this is a significant issue.

With the above caveats in mind, the Phase 1 stakeholes can be separated into four broad groups (illus 2.26). The earliest, largest and best-defined of these comprises Alignments 1 and 2 and may represent the foundations of a single structure, apparently constructed during the formation of Block 1.1. The form of construction (large stakes interspersed with four or more smaller ones) suggests that it may have been built of wooden hurdling. Assuming that the two alignments formed part of a unitary structure, this would have been set more or less at right angles to the passage, forming a barrier with a width of approximately 1.5m (north–south) and a length of at least 2.5m (east–west). It may have continued across the whole passage, although any evidence for this will have been entirely removed by Benton's excavation. The lack of stakeholes in Trench Ic on the west side of the passage is probably due to the presence of an overhang of rock and the consequent lack of headroom in this area; the paucity of stakeholes there is thus not especially informative. It is especially noteworthy that the majority of the 'miscellaneous' (ie generally unphased) and 'possible' stakeholes cluster in the space between Alignments 1 and 2, strengthening the interpretation that the latter formed the outer walls of a unitary structure. Several of the internal stakes are set at sharp angles (illus 2.25, eg nos 5, 6, 8), suggesting that they may represent internal supports or *ad hoc* maintenance of the walls of the structure. This would suggest that the structure did not contain any solid packing but may have been of a more open, rack-like configuration, perhaps reinforced using crossbeams.

Alignments 1 and 2 show some evidence for having fallen out of use during the formation of Block 1.1. Windblown sand and clay laminae (Ib33), belonging to this series of deposits, appear to have overlain the stakeholes which, combined with the evidence for collapsed structural elements (in the form of wood impressions on the surface of Block 1.1), suggest that the first stake-built structure fell out of use during this time. Against this, however, it should be noted that the intense area of burning identified in Block 1.2 (illus 2.21) corresponds quite precisely with the footprint of this putative structure (see overlay in illus 2.26A), suggesting that it may have persisted in some form (perhaps with a non-earthfast superstructure, or in a ruinous state) for a longer period.

The second series of stake-built structures comprised Alignments 3 and 4, lying around 1m to the south of the structure just described (illus 2.26). These stakeholes were thought by the Shepherds to be slightly later than Alignments 1 and 2, but the Phase 1 deposits in this area were close to the surface (as left at the end of Sylvia Benton's excavations; illus 2.7D, 2.8) and adjacent to the highly disturbed Area III, so it is harder to be confident of their precise stratigraphic relationships. They still appear to be contained within Block 1.1. Assuming that Alignments 3 and 4 formed a unitary structure, this would have been some 0.6m wide and rather slighter in construction, lacking the larger stakes and internal supports seen in the earlier structure. As before, they potentially formed a barrier extending across the whole entrance passage, though possibly leaving a gap around 1.4m wide at the east end, where the structure would have met the inner end of the central spine of rock that divides the two entrance passages.

The construction of stake-built structures continued into the later part of Phase 1 (Block 1.2). A new, single row of stakes (Alignment 8) appears to have replaced Alignments 3 and 4, suggesting the presence of an even slighter structure (illus 2.21). Two further alignments represent a departure from what had gone before in terms of orientation and position within the entrance. Alignment 6 (illus 2.21) was a simple row of four stakes running parallel with the entrance passage and more or less bisecting its outer part. It would presumably have channelled access to either the right or left. Alignment 9 was an unusual curving structure that cut across the line of the former Alignment 1. Overall, the stake alignments within Block 1.2 suggest a more varied, and perhaps *ad hoc*, set of constructions than those in Block 1.1.

It is tempting to relate the stake-built structures to the exposure, display or storage of human remains. This interpretation, however, has little direct supporting evidence. Only one human bone (a mandible from an individual aged around 14–16 years; SF312) appeared to have any direct association with these constructions, having been found on the line of Alignment 9 (illus 2.21) and above Alignment 1 (illus 2.15). The bulk of the human remains were found in the East Passage and appear to pre-date the stake-built structures. As discussed above, similar evidence may exist in unexcavated deposits within the West Passage, but at a level below the excavated stake-built structures.

It is of course possible that the construction of these timber racks or frames represents a formalisation of mortuary activity within the cave, turning a previously unmodified, natural place into a more organised, built space. In such a context, it may be that human remains were less likely to find their way into the accumulating archaeological deposits. This cannot of course be proven, but it is certainly unlikely that the cave served any mundane domestic purpose. Visits by the Late Bronze Age inhabitants of the region presumably retained a religious or funerary intent, and the stake-built structures must have played some role in the activities carried out there.

Cooking, eating and other activities

Whatever formal, ritualised activity was conducted within the cave, it is clear that it included the preparation, cooking and consumption of meals involving meat, cereals, hazelnuts and other plant foods. This suggests that visits to the cave may have involved

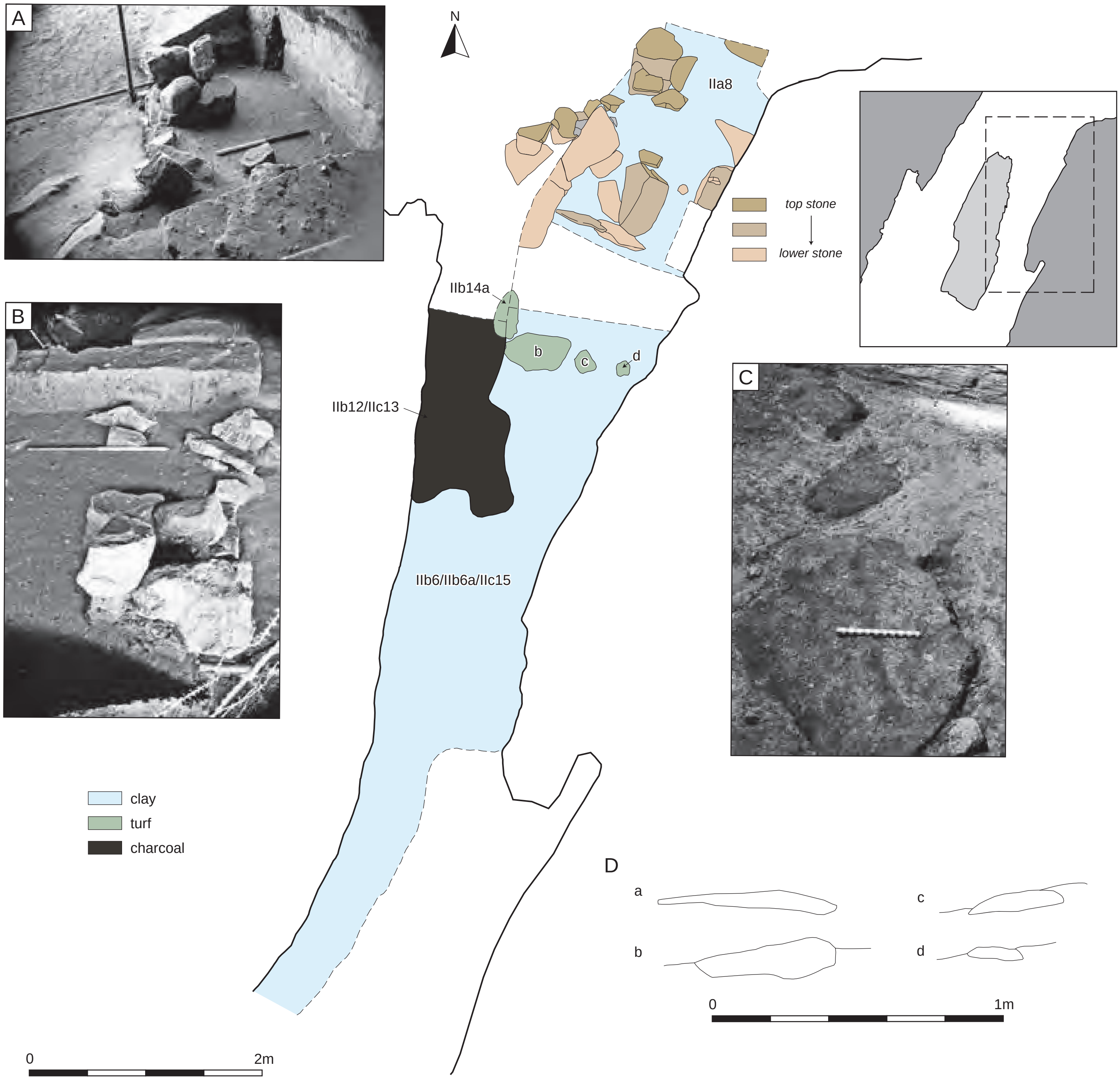

Illustration 2.27
Plan of Block 2.5 in the East Passage. (A) Stones in IIa8 looking north, (B) stones in IIa8 looking south, (C) turves (IIb14) looking east, (D) sections through turves

small groups or families cooking and eating together, perhaps over a few hours or even days. The evidence for such commensal activity is markedly concentrated in the West Passage and particularly in deposits relating to Block 1.2. Phase 1 pottery in the West Passage comprised some 155 sherds weighing 1744g (42% of the stratified pottery assemblage from the cave, with all but a few crumbs deriving from Block 1.2), compared to the East Passage which yielded only 29 sherds weighing 440.1g (11%; tables 5.4, 5.5). Zoning between the two passages is also evident in terms of the relative concentrations of carbonised plant macrofossils (section 7.6.5), which demonstrate a clear focus in Block 1.2 in the West Passage.

Importantly, all of the pottery fabrics identified at the site are represented in well-stratified deposits within Phase 1, suggesting that fabric alone is insufficient to distinguish chronological changes in the ceramic assemblage. The small number of bone tools suggests that some small-scale craft activity was also practised in the cave, perhaps as an incidental by-product of protracted visits.

2.4 Phase 2: Iron Age

2.4.1 General

Phase 2 deposits survived in both the East Passage and the West Passage. In the East Passage, they have been divided into three stratigraphic blocks (2.5–2.7; illus 2.1) with a combined maximum depth of *c* 0.8m at the front of the passage, reducing to around 0.4m at the rear (illus 2.9). In the West Passage, the Phase 2 deposits form five stratigraphic blocks (1.3–1.7), with a maximum depth of *c* 1m at the front of the entrance passage, gradually tapering off to the south (illus 2.8, 2.16). In the West Passage especially, the Phase 2 deposits form by far the majority of the excavated material, greatly exceeding the Phase 1 deposits in volume (illus 2.8).

Phase 2 activity ran from the end of Bronze Age activity, around either *910–885 cal BC* (*26% probability*) or *870–830 cal BC* (*43% probability*); the distinction is in any case rather arbitrary since there is no reason to believe that there was any break in deposition between the two.

Although the Phase 2 deposits seem to date primarily to the Pre-Roman Iron Age, one AMS determination (cal AD 140–390; SUERC-16599) from the Block 2.7 deposits dates to the Roman Iron Age. As will be discussed in more detail below, this sample derives from a deep, mixed layer (IIb2) containing numerous surfaces and deposits that were all excavated under a single context code. Thus, although the great majority of the Phase 2 deposits pre-date the Roman Iron Age, it is impossible to separate these periods entirely and the Block 2.7 deposits are best regarded as belonging to Phase 2/3.

2.4.2 East Passage

Block 2.5

Overlying the Phase 1 material in the East Passage was a thick deposit of stony clay (IIa8, IIb6/6a, IIc15; illus 2.9, 2.12), described by the excavators as redeposited boulder clay. At the mouth of the passage and in the entrance area, this formed a wedge-shaped mound around 0.75m deep (illus 2.9, 2.12), the lower part of which contained many large, angular boulders. On plan, these appear to form a structureless mass around the cave entrance (illus 2.27); photographs taken when the upper stones had been removed, however, appear to show the lower course of a wall around 1m wide running for just over 2m on the same alignment as the East Passage (illus 2.27A, B). It seems probable that the redeposited boulder clay may have formed the core of this wall. Unfortunately, the lower stones were not planned together and the interpretation must be based solely on the photographic evidence. There is no indication that the wall projected into the entrance passage itself and it seems most likely to have formed part of a structure in the lee of the entrance (where most deposits had previously been removed by Sylvia Benton).

Within the boulder clay were four patches of soft dark brown material that appear to represent preserved turves (IIb14a–d; illus 2.27C, D). These form a line perpendicular to the stone-footed wall and seem likely to derive from the same putative structure as that described above. IIb14 contained a fine, bent iron wire fragment (SF877) which presumably comes from one of the turves, though it is unclear which one.

A lens of shell-rich charcoal (IIb12, IIc13, IIc13a), *c* 2–5mm deep, trampled into the surface of the boulder clay, covered an irregular area in the west half of the passage (illus 2.27). This material yielded the largest plant macrofossil assemblage from the excavations, including evidence for a broad range of weed seeds indicative of cereal processing (section 7.6). It also contained 21% of the shell assemblage recovered from the Shepherds' excavations (table 7.9), the vast majority of it deriving from context IIc13a, which also yielded eight perforated shells (32% of the perforated shell assemblage; section 7.5). Although shell was not systematically collected during the excavations, this is still a remarkable concentration in such a thin deposit. IIc13 yielded crumbs of Fabric A pottery, while a sheep/goat metatarsal from IIc13a produced an AMS date of 810–540 cal BC (SUERC-16601).

This block of deposits, which appear to date to the Early Iron Age, suggests continuing human activity involving the construction and collapse of at least one structure, though this activity may have been focused outside the cave or under its entrance canopy.

Block 2.6

Within the entrance area, the deposits of Block 2.5 were overlain by highly mixed layers of clay, sand and ash (IIa6a), in turn overlain in parts by a 2–5mm thick layer of burning (IIa7/IIa7a/IIa7b; illus 2.28). A cattle radius from IIa7 produced an AMS date of 900–790 cal BC (SUERC-16600).

Within the west half of the passage, a series of sand and silt laminae some 15–20mm thick (IIc11), containing lenses of charcoal, overlay the Block 2.5 deposits. These suggest that windblown material continued to be periodically deposited within the entrance passages at this time, interspersed with episodes of human activity. IIc11 yielded a stone grinder (SF944). A long bone shaft fragment from a large terrestrial mammal and a rib from a small terrestrial mammal, both from IIc11, returned AMS dates of 770–410 cal BC (SUERC-65441) and 800–510 cal BC (SUERC-65442) respectively.

Illustration 2.28
Plan of Block 2.6 in the East Passage

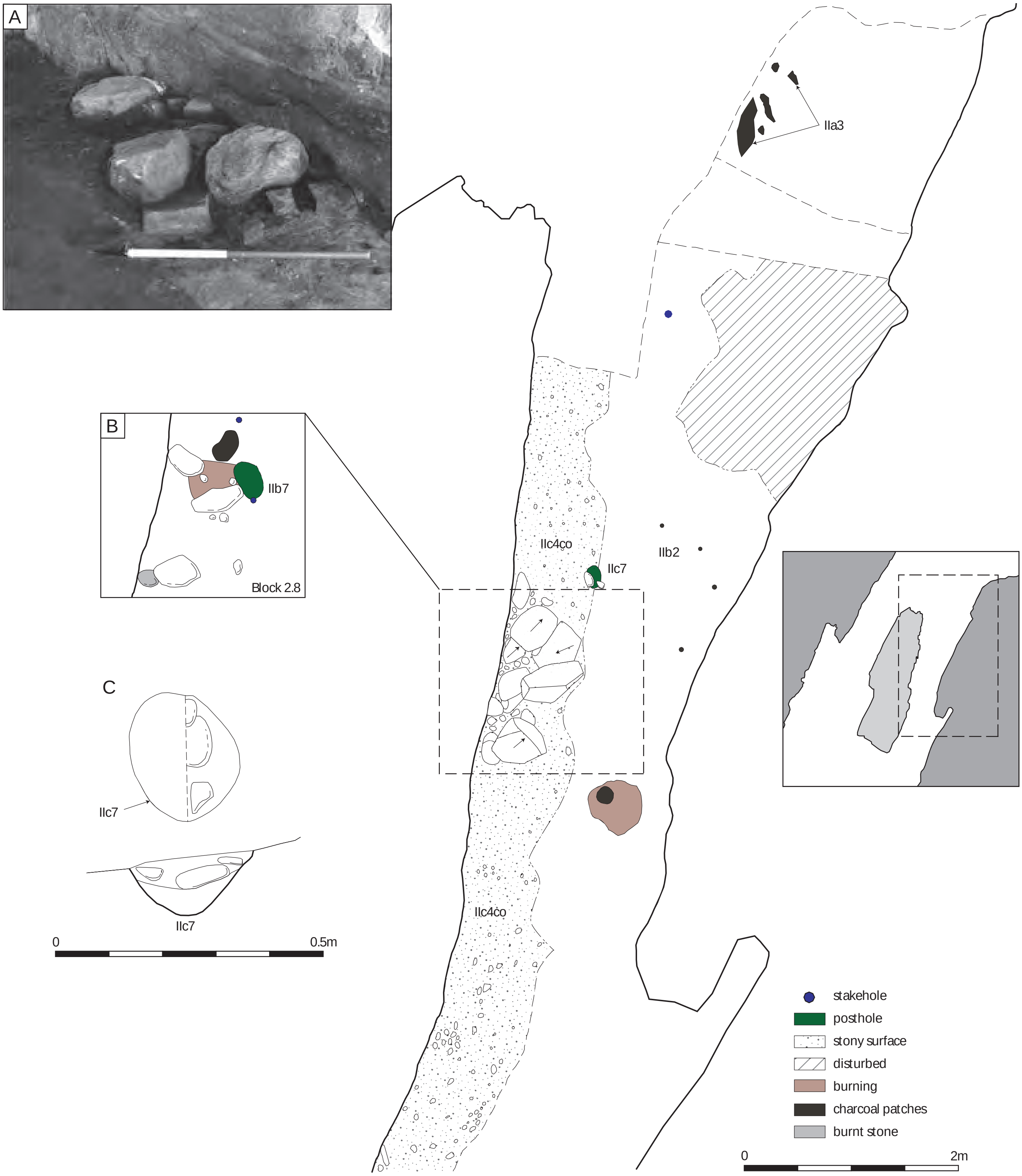

Illustration 2.29

Plan of Block 2.7 in the East Passage. (A) Photograph showing group of boulders within stony surface IIc4co, from the north-east, (B) plan of Block 2.8 features, (C) plan and section of posthole IIc7

In the east half of the passage, these windblown deposits were apparently absent, suggesting that the collapsed remnants of the Block 2.5 wall (see above) may have blocked windblown material from entering this part of the passage. Here, a layer of charcoal-stained, dark grey clay, some 10–20mm thick (IIb4; illus 2.9, 2.12), contained a fragment of iron (SF108), possibly from a nail, pin or tool.

In the north half of the passage, IIc11 was covered by a layer of cobbles in a matrix of soft brown earth and sand-silt laminae (IIc10). Overlying these deposits, predominantly in the west half of the passage, was an extensive layer of ash, mixed with sand and silt laminae, sealed by a distinct and extensive deposit of charcoal (IIb9/IIc9; illus 2.9, 2.12A, 2.28). At the south end of the passage this layer was only 2mm thick but increased to 0.06m thick at the north end. A single sherd of Fabric F pottery was recovered from IIb9.

This block of deposits appears to represent ongoing human activity in the entrance passage during the Early Iron Age. The deposition of large quantities of burnt material (the upper part of IIb9/IIc9) across the East Passage suggests that some form of conflagration may have taken place at the entrance, perhaps affecting the stone-footed structure described in Block 2.5 and/or other structures beyond the excavated area. Natural windblown deposits also continued to form in parts of the entrance passage.

Block 2.7 (Phase 2/3)

Overlying the Block 2.6 deposits was a thick layer of soft silty clay (IIa5, IIb2, IIc4), varying from 0.4m deep at the north end of the passage to 0.25m thick at the south (illus 2.9, 2.12A, 2.29). This was by far the thickest anthropogenic deposit within the East Passage and the drawn section shows indications of some internal complexity (illus 2.9). The deposits that comprise the block clearly formed over a significant period and incorporate many individual layers that were not differentiated during excavation, leading to some problems of interpretation.

Among these discrete deposits, towards the bottom of Block 2.7 in the west half of the passage, was a stony surface (IIc4co; illus 2.29) formed largely of small rounded stones. This surface also contained a group of larger boulders forming a distinct, low feature butted against the west wall of the passage, some 4m from the entrance (illus 2.29A). The presence of this feature effectively narrowed the passage at this point from *c* 1.7m to *c* 1m. A small posthole some 0.24m deep (IIc7) lay close to the north of the feature (illus 2.29C).

At the bottom of the silty clay (IIb2) in the east half of the passage, *c* 5.2m from the entrance, was a sub-circular area of laminated deposits, 0.5m in diameter and 0.08m thick (no context code recorded). This had a surface of grey crumbly clay and charcoal and appears to represent the remains of a hearth (illus 2.29). If contemporary with the stone feature described above, it would create a further obstacle to accessing the passage.

High within the soft silty clay, in the north end of the passage, was a hard-packed surface of small, angular stones, some 0.05m thick (IIb8, IIc8, IIb2a; illus 2.9), containing quantities of charcoal. A scatter of large stones/cobbles (IIb2b), many of which were fire-cracked or blackened, lay above this surface. Five circular patches of charcoal, around 0.04m in diameter, were also observed within IIb2 (illus 2.29); these may be the remains of stakeholes, though the attribution is uncertain.

Despite the large volume of material contained within Block 2.7, finds were sparse. A patch of soft clay and sand (IIb5) within IIb2 (illus 2.9) contained a copper alloy pin fragment (SF114). IIb2 itself produced eight sherds of Fabric F pottery, while a few crumbs of Fabric D pottery were recovered from IIc8 and IIb10 (the latter being a patch of clay at the base of IIb2). IIa5 contained a small fragment of a sub-adult human maxilla (SF1121), which is the only human bone recovered from post-Phase 1 deposits. IIb2 also produced a dense concentration of Scots pine charcoal (section 7.6); since coniferous wood is otherwise extremely unusual on the site, this might derive from a single piece of driftwood.

The dating evidence from this complex group of deposits is problematic. A cattle femur from IIc4 produced an AMS date of 770–410 cal BC (SUERC-16597), while a sheep/goat tibia from the same context produced an AMS date of 810–670 cal BC (SUERC-16598). These both suggest a date in the Early Iron Age. A pig/boar radius from IIb2, however, produced an AMS date of cal AD 140–390 (SUERC-16599), dating to the Roman Iron Age. Although this seems a highly disparate collection of AMS dates, the complexity of the Block 2.7 deposits (evidenced by the occurrence of various, unnumbered surfaces and layers within IIa5, IIb2, IIc4) is such that it is entirely possible that they formed over a period of several centuries. This hypothesis finds support in the ceramic evidence, since the Fabric F sherds appear to belong to V16: a fine orangey-red vessel with crude geometric decoration which suggests a date in the latter part of the Iron Age (section 5.2). The presence of human bone (if not redeposited) might also hint at a date in the Roman Iron Age, since all the directly dated human bone known from the site belongs to either the Late Bronze Age or the Roman Iron Age (see table 4.1).

Given that there is no stratigraphic reason to dispute the veracity of the AMS dates, or the late date suggested by sherds of V16, the Block 2.7 deposits are interpreted as having formed over a prolonged period of low-intensity human activity within the East Passage. The structural features (eg IIc4co) observed within Block 2.7 appear to have been constructed relatively early within the formation of the deposits, though there is clear evidence for the creation of various surfaces at higher levels within the block.

2.4.3 West Passage

Block 1.3

The Phase 1 deposits in the north half of the passage were sealed by a thin lens of sand (IIIN6, Ia18) overlain by deposits of sand and clay (IIIN5, Ia17a). Ia17a contained 14 sherds, plus crumbs, of Fabric A pottery (weighing 321g) and a further 4 not identified to fabric. IIIN5 contained 18 sherds of Fabric A pottery (weighing 847g) plus 1 sherd not identified to fabric. These deposits were in turn sealed by a 0.01m thick sandy surface (Ia17, Ib20, Ib21; illus 2.8) containing charcoal and shell. Ia17 contained 17 sherds, plus crumbs, of Fabric A pottery (weighing 176g) along with 3 further sherds (Fabrics C and D). A further 11 Fabric A pot sherds, plus crumbs (weighing 348g), and 6 sherds not identified to fabric, were recovered from Ia17/17a.

This series of contexts yielded the greatest amount of pottery by weight (table 2.2) of any of the deposits from the Shepherd

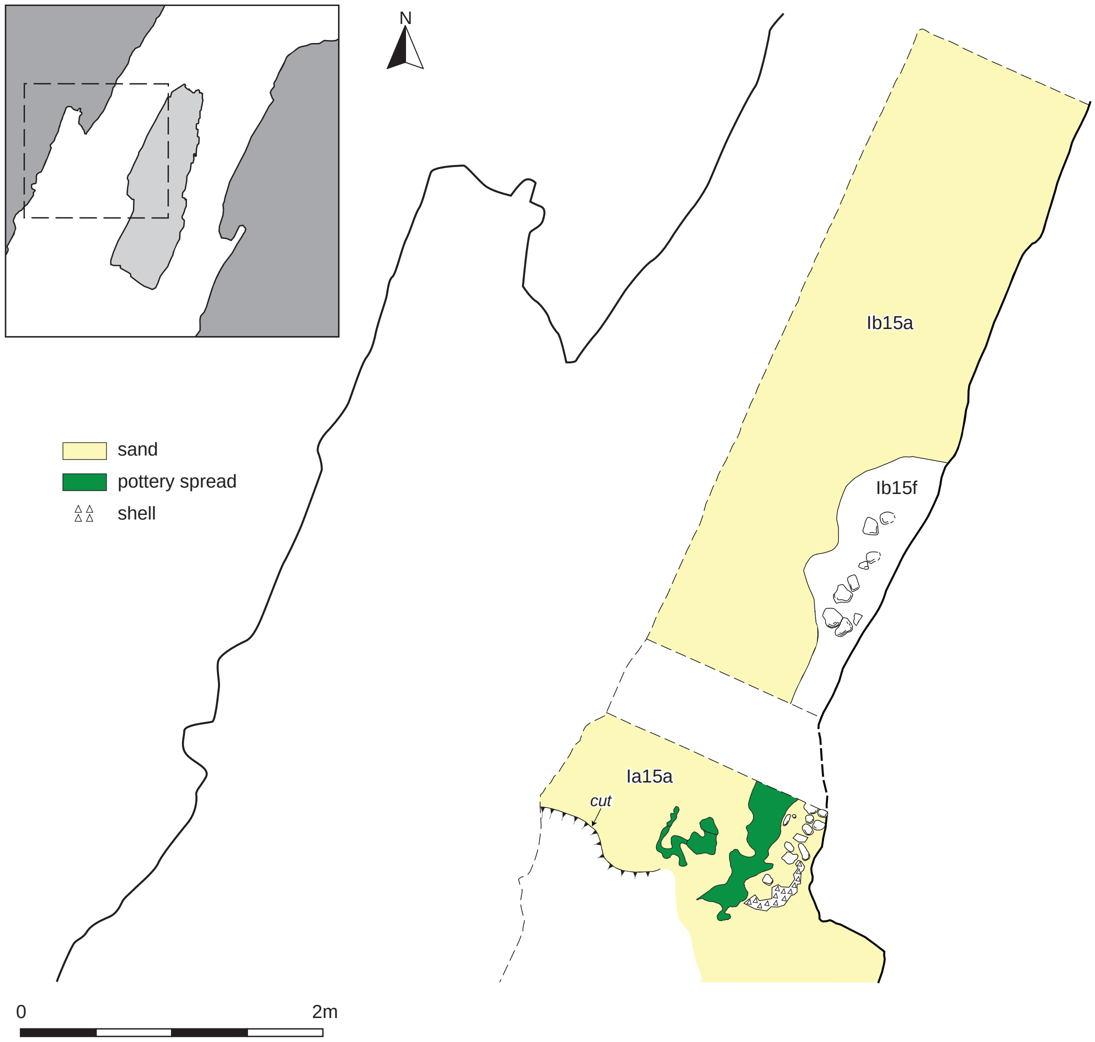

Illustration 2.30
Plan of Block 1.3 in the West Passage

excavations; it is possible that they contained at least one or two complete Fabric A vessels (V1/2). Further spreads of Fabric A pottery were associated with stones and shell (illus 2.30); the former had become so embedded within the clay matrix of the deposits that they could not be recovered as individual sherds. A fragment of carbonised hazelnut shell from Ia17 (part of a large quantity of hazelnut shells from this context; see section 7.6) produced an AMS date of 800–540 cal BC (SUERC-65412). Despite the large amounts of cultural material in these deposits, however, no features of any kind were evident.

These deposits were overlain by sand and clay laminae containing shell and charcoal up to 0.07m thick (Ib18/19; illus 2.8, 2.16, 2.20). A carbonised cereal grain from Ib18/19 produced an AMS date of 770–400 cal BC (SUERC-65423).

These laminae were overlain by further deposits of sand and clay (Ib15a–d, Ia15a) with a maximum depth of 0.07m (illus 2.8, 2.30). Ia15a/Ib15a is described as having an undulating or puddled surface (illus 2.16, 2.20, 2.31), suggesting the presence of standing water in the entrance passage during its formation. It yielded crumbs of Fabric A pottery, as did the interface between Ia15a and underlying deposit Ia17. The equivalent of these deposits in the west part of the passage (Ic8) contained charcoal, bone and a large quantity of burnt hazelnut shells (illus 2.19). Ia15a/Ib15a were in turn overlain by a mixed deposit of sand, clay, charcoal and stones (Ib15f) butting against the east wall of the passage and measuring approximately 1.5m by 0.4m (illus 2.30). Ib15f yielded a stone hammer (SF943).

All of these deposits were sealed by finely laminated deposits of sand and clay (Ib15, Ia15, Ic7), varying from 0.02 to 0.16m deep with indications of iron panning (illus 2.8, 2.16, 2.20). These deposits appear very similar to the windblown laminated sands that underlie the main phases of human activity in the cave, although they contain small quantities of cultural material. Ib15 yielded a stone pounder/hammer (SF940). The mandible of a large terrestrial mammal from Ia15 produced an AMS date of 770–400 cal BC (SUERC-65424).

The quantities of pottery from Block 1.3 suggest relatively intense human activity (tables 5.4, 5.5) dating to the Early Iron

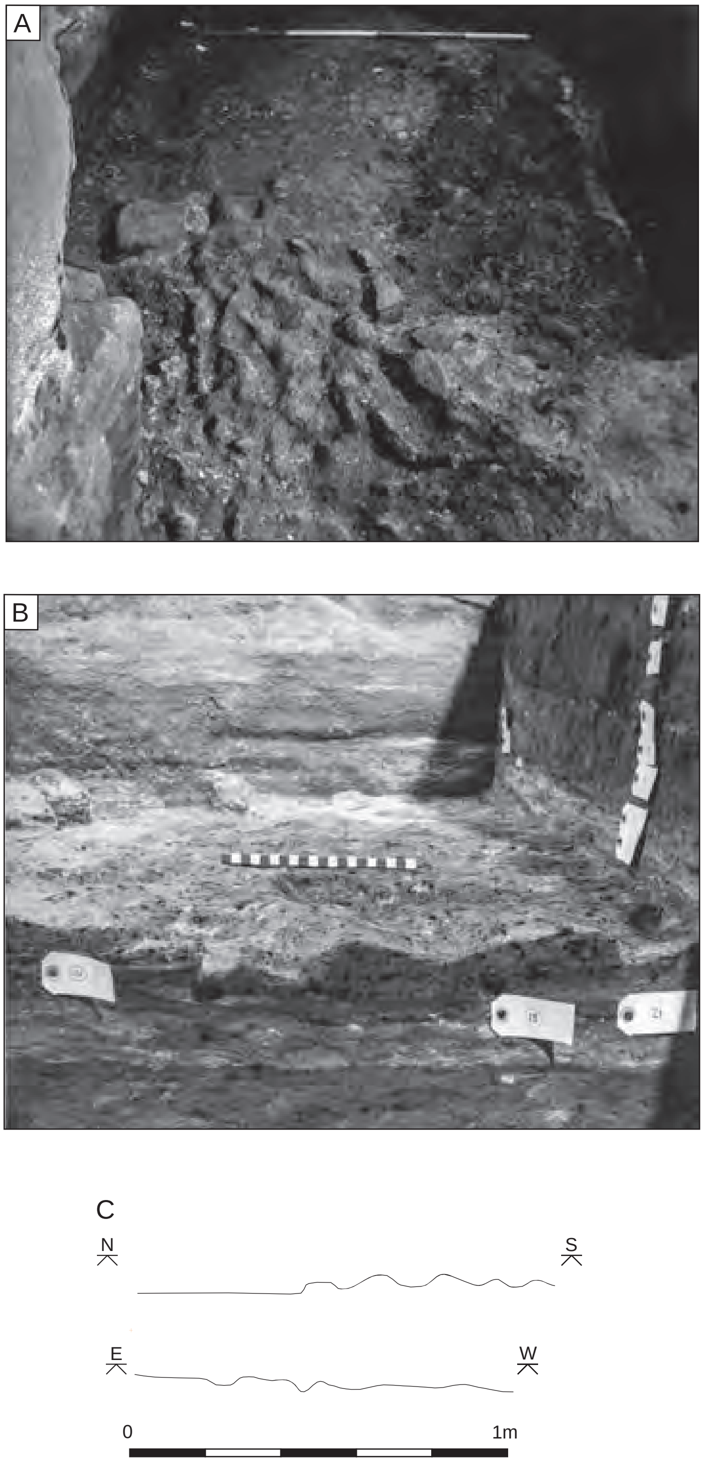

Illustration 2.31
Photographs of Block 1.3 in the West Passage. (A) Undulating surface of Ia15a, looking south, (B) section through surface Ia15a, (C) profiles showing the surface of Ia15a (not precisely located)

Age. This comprised some 70 sherds weighing 1835.9g (44% by weight of the stratified pottery assemblage from the cave). Block 1.2 (Phase 1) had a similar density of ceramics, and together the two blocks contain 86% by weight of all pottery from the stratified deposits. This suggests that some aspects of the spatial organisation of human activity within the cave did not necessarily materially change between the two periods, despite the apparent cessation of mortuary activity. Aside from pottery, however, other indicators (notably the formation of windblown laminae and the apparent evidence for waterlogging) suggest less intense activity. It seems likely that the block formed over a protracted period during which human visitations were interspersed with periods of abandonment.

Block 1.4

Block 1.4 deposits were largely restricted to the northern part of the passage (illus 2.8). Close to the entrance and extending for 2.8m, the central part of the passage was ‘cobbled’ with small stones (Ib15s; illus 2.8, 2.32C), which yielded crumbs of Fabric A pottery. This cobbling appeared to be associated with a posthole (Ib9p; illus 2.32) cut into the surface of the underlying Ib15 (Block 1.3) close to the wall. This measured approximately 0.35m by 0.48m by 0.18m deep (illus 2.32B). The overhang of the passage wall would have limited the height of any post within this posthole. A pig femur and a sheep/goat ulna from the cobbled surface (Ib15s) produced AMS dates of 790–430 cal BC (SUERC-65425) and 800–540 cal BC (SUERC-65426) respectively.

Overlying these deposits was a distinct hard clay and charcoal floor up to 0.01m thick (Ib9, Ia9; illus 2.8, 2.16) marked by iron panning. These deposits were in turn overlain by a charcoal layer (Ib12) some 0.02m thick (illus 2.8, 2.16, 2.20, 2.32A). A group of large stones (Ib10; illus 2.32A, D) lay on this layer, approximately 1.4m from the entrance. These may, as Ian Shepherd (1983: 333) suggested, have formed the base of a barrier across the entrance passage, perhaps integrated with a timber gate supported in the pit/posthole Ib9p. A carbonised cereal grain from Ib12 produced an AMS date of 750–400 cal BC (SUERC-65422).

Ian Shepherd (1983: 333) regarded Ib12 as a highly significant context, marking for him (in the absence at that time of any radiocarbon dates) the end of the intense Late Bronze Age activity and associated ‘hard floors’. The layers above he characterised as ‘thick, soft, grey and brown loams’ (ibid). This marked change in the nature of the deposits is obvious from the photograph of the section through the baulk in the West Passage (illus 2.16A). Although it is now evident that Block 1.4 formed during the Early Iron Age, the change in the character of the deposits is nonetheless likely to be significant in terms of the intensity of human activity within the entrance passage.

Although these deposits were more similar in nature to those underlying them than to those that formed subsequently, it is perhaps significant that the amount of pottery recovered from Block 1.4 (31.3g) was almost negligible compared with quantities in the underlying Blocks 1.2 and 1.3, suggesting a change in the nature of human activity within the passage.

Illustration 2.32
Plan of Block 1.4 (lower deposits) in the West Passage. (A) Plan of stones Ib10, which overlay Ib12 (upper deposits), (B) profile of posthole Ib9p, (C) photograph of posthole Ib9p and cobbled surface Ib15s, (D) photograph of stones Ib10

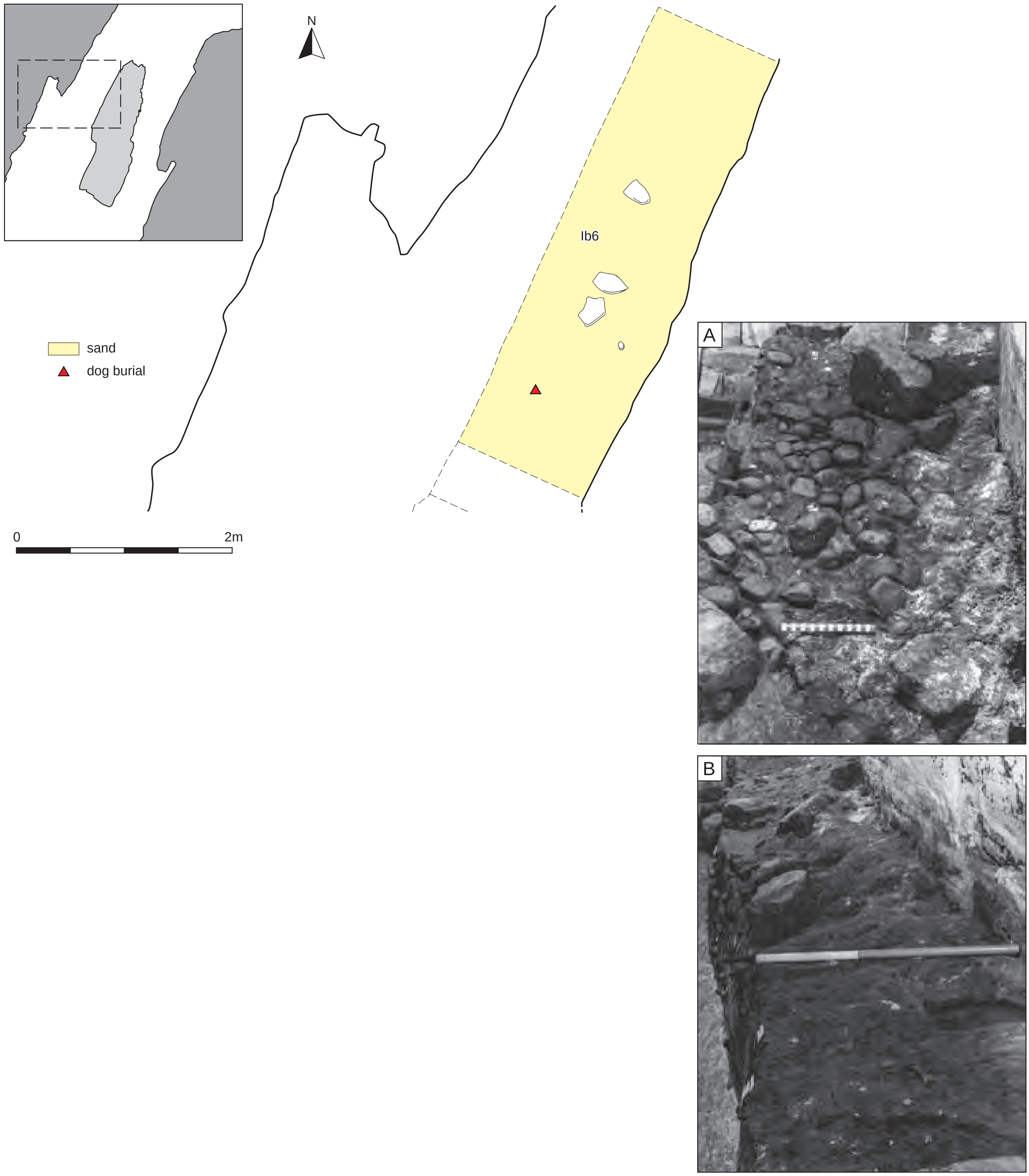

Illustration 2.33
Plan of Block 1.6 in the West Passage (also indicating the position of the articulated dog remains from Block 1.7). (A) Photograph of Ib6a, (B) photograph of the uneven surface of Ib6

Block 1.5

The Block 1.4 deposits were overlain by relatively soft, silty sediments (Ib8, Ib8b, Ia8d/16d; illus 2.8, 2.16) which were shallow in the entrance area (although they mounded against the passage wall; illus 2.20) and became deeper further to the south. In the southern part of the passage these deposits had apparently been affected by water/sloughing from the cave wall to a width of 0.3m. Overlying these deposits was another mixed deposit (Ib7r/7d, Ia8/16; illus 2.8, 2.16), around 0.15m deep and containing crumbs of Fabric A pottery. A cattle mandible and the sacrum from a medium terrestrial mammal from Ia16 produced AMS dates of 770–410 cal BC (SUERC-65430) and 800–540 cal BC (SUERC-65431) respectively.

Approximately 2.5m from the entrance, what appears in section (illus 2.8) to be a small pit was cut through Ib7r and Ib8; this was approximately 0.12m by 0.5m long in section. This cut was lined with a thin sand lens (Ib7c), which was overlain by clay containing charcoal flecks (Ib7b).

Overlying this material was a deposit (Ib7, Ia7; illus 2.8, 2.16) measuring 0.1m thick and containing high concentrations of shell in the north part of the passage and thinning to 0.05m in the south, where it contained shell, bone, charcoal and pebbles. Ib7 yielded a sherd of pottery not identified to fabric. A sheep metatarsal and a fragment of long bone from a medium terrestrial mammal, recovered from Ia7, produced AMS dates of 800–540 cal BC (SUERC-65433) and 800–510 cal BC (SUERC-65432) respectively.

Although Block 1.5 made up a significant proportion of the West Passage deposits by volume, there was no indication of any structural features within it, other than the pit identified in section. It appears to represent lower-intensity activity than in earlier periods, though it still dates to the Early Iron Age.

Block 1.6

Sealing Block 1.5 was a sandy deposit containing charcoal flecks, pebbles and iron pan staining (Ib6, Ia5/6, Ib5). It was up to 0.2m deep at the north end of the passage and thinned to 0.05m at the south (illus 2.8, 2.16, 2.20, 2.33). Ib6 contained the only stratified horse bone from the site (a left lateral metacarpal) as well as one of only two roe deer bones (see section 7.4.3). The northern part of Ib6 contained a layer of densely packed stones and cobbles (Ib6a), some blackened and many split, within a matrix of dark grey ash, extending for some 2m into the passage (not planned; see illus 2.8, 2.33A) and sealing a concentration of limpet shells (illus 2.20) which itself yielded nine perforated shells (section 7.5). Against the east wall of the passage, the cobbling was sealed by eroded sandstone from the cave wall (illus 2.20). The surface of Ib6 was markedly uneven (illus 2.33B).

A sheep mandible from Ib5 returned an AMS date of 770–400 cal BC (SUERC-65436), while, from Ib6a, a phalanx bone from a calf and a fragment of a long bone from a medium terrestrial mammal produced AMS dates of 770–410 cal BC (SUERC-65434) and 790–430 cal BC (SUERC-65435) respectively.

As with Block 1.5, Block 1.6 comprised relatively soft, sandy and silty deposits that appear to represent generally low-intensity activity, though with greater evidence for anthropogenic activity in the form of cobbled surfaces. It is also noteworthy that this block contained 44% of the shell assemblage recovered from the Shepherds' excavations (table 7.9), the vast majority of it deriving from context Ib6a (which also yielded 45% of the perforated shell assemblage; section 7.5). Although shell was not systematically collected during the excavations, this is still a remarkable concentration. Block 1.6 contained no artefactual material.

Block 1.7

The deposits forming Block 1.7 comprised mixed sandy material up to around 0.35m deep with no evident structural components. Their composition resembles that of Blocks 1.5 and 1.6. Within the passage, the Block 1.6 deposits were cut by several small features filled with sand (Ib3b; illus 2.8), but these appear to be rather ephemeral and are not indicated on plan. At the north end of the passage is a deposit of degraded sandstone (Ib4, Ib3a, Ib4a, Ia4b; illus 2.8, 2.20) up to 0.35m thick that appears to have formed either through erosion of the cave roof (perhaps the most likely scenario, since it is confined to the more exposed part of the passage) or from decomposed rockfall material. A long bone shaft fragment from a large terrestrial mammal from Ib3a produced an AMS date of 410–230 cal BC (SUERC-65440).

Overlying the decayed sandstone was mixed sandy deposit Ib3, which formed the most extensive deposit in Block 1.7, covering most of the passage to a depth of around 0.2m (illus 2.8, 2.16, 2.20). The surface of Ib3 was cut by a small, truncated feature (Ib2b) containing an articulated adult dog 'burial' (illus 2.8, 2.33; see section 7.4.3), which has been AMS dated to 400–200 cal BC (SUERC-16593). The partial skeleton comprised mainly the skull, torso and lower right leg, but it is likely that other elements had been disturbed, as the burial lay virtually on the surface of the deposits left exposed at the end of Benton's excavations. The dog skeleton was partially sealed by sand and clay laminae (Ib2a) containing a small area of cobbling.

The Block 1.7 deposits contained no artefactual material. The consistency of the two AMS dates, however, suggests that they can be reliably placed in the Middle Iron Age.

2.4.4 Discussion

The nature and extent of the Phase 2 deposits

Overlaying the Shepherds' section onto that published by Sylvia Benton (illus 2.7D), it is apparent that the Phase 2 deposits (at least in the West Passage) broadly equate to the upper part of Benton's Layer 2. Comparison of the sections further demonstrates that, in the outer part of the West Passage (grid squares A0 and A1), the upper part of these deposits had been removed prior to the 1979 excavations. Further into the passage, however, there is little evidence of truncation.

The Phase 2 deposits in the West Passage extend into the cave only as far as the northern part of grid square A3, where they terminate slightly north of the underlying Phase 1 deposits (illus 2.7D). As in the Late Bronze Age, therefore, Pre-Roman Iron Age activity seems to have been restricted to the entrance passages and the area immediately inside the cave. The surface of the cave interior, as before, would have been formed by the coarse sand of the underlying raised beach (see section 2.2.2). It is likely, therefore, that the interior remained wet; indeed, it may have become even wetter as deposits built up in the entrance passage, further impeding drainage. Since artefactual material of the

Pre-Roman Iron Age is generally undiagnostic, it is impossible to determine whether any objects were deposited into the wet interior during Phase 2.

There are a number of deposits within the West Passage that seem to suggest the presence of standing water, at least for short periods of time. These comprise 'puddled' laminae (Ia15a) in Block 1.3 and evidence of iron-panning in various deposits within Blocks 1.3, 1.4 and 1.6. The cobbles laid down at various times within Phase 2 in the West Passage may reflect the need for a dry and consolidated floor surface. None of these indicators of waterlogging was reported in the East Passage, suggesting that such conditions must have been highly localised and possibly of limited duration.

As with Phase 1, it is impossible to establish definitive chronological or stratigraphic links between Phase 2 deposits in each of the two entrance passages (although see below). Unlike Phase 1, however, the general character of the two passages is similar; both comprise highly mixed deposits containing persistent evidence of a human presence in the form of pottery, animal bone, areas of burning and other anthropogenic indicators, but with few structural elements. The presence of windblown sand layers, though less obvious than in Phase 1, suggests that the passages remained open to the elements. During Phase 2, in both passages, the deposits become softer and less consolidated, suggesting a reduction in trampling as the result of less intensive use of the cave; this is particularly so for Block 1.5 and above in the West Passage and for Block 2.7 in the East Passage.

Mortuary activity

Human remains from Phase 2 deposits were limited to a single small fragment of sub-adult human maxilla from Block 2.7 (IIa5; SF1121). As discussed above, Block 2.7 should be treated as containing both Phase 2 and 3 deposits; the most parsimonious interpretation, therefore, would be to see this solitary bone as belonging with the corpus of human remains from Sylvia Benton's excavations now known to date to the Roman Iron Age (chapter 6). There is, therefore, nothing to suggest that there was any mortuary activity within the cave during the Pre-Roman Iron Age.

Structures

There is no evidence in Phase 2 for the sorts of stake-built constructions seen in Phase 1. There is, however, evidence in each of the passages for two episodes of structural activity and the laying of surfaces.

The first Phase 2 structural evidence in the East Passage comprises the collapsed wall and turves (IIb14) in the entrance area (Block 2.5). These suggest the presence of a stone-footed structure in the lee of the entrance canopy, with most of the building presumably lying outside the limits of the 1979 excavation. The earliest Phase 2 activity in the West Passage (Block 1.3), by contrast, contains no obvious structural features, although the density of pottery suggests relatively intensive activity. In the succeeding Block 1.4, however, a posthole (Ib9p) and associated cobbled surface (Ib15s) suggest some form of gated access. In both passages, these features are covered by layers of intense burning: notably deposit IIa9/IIc9 in the East Passage and IIb12 in the West Passage. Although these episodes cannot be directly linked stratigraphically, the extent and intensity of burning in both passages is unusual and it is tempting to relate them to destruction by fire of a structure or structures in the entrance area, located largely outside the area of the 1979 excavations. The construction of a wall-footing (Ib10) in the West Passage appears to represent the remodelling of the entrance barrier after the burning episode, suggesting that the cave was not abandoned following the fire.

Following a period when no structures can be detected, a group of features in Block 2.7 appears to represent a barrier or doorway intended to control access through the East Passage (illus 2.29). This seems to have begun with the construction of a stone feature that may have supported some form of timber superstructure (set in posthole IIc7) and an associated cobbled surface (IIc4co). Interestingly, the cobbled surface was preserved only along the west half of the passage: if we see the stone feature as representing an entrance structure, it is possible that it acted to concentrate footfall along the east half of the passage, which may have degraded and removed the cobbled surface in this area. A later posthole (IIb7; Block 2.8) hints at the maintenance of this feature into Phase 3 (sections 2.5.2, 2.5.3). While no equivalent structure can be detected in the West Passage, Block 1.6 contains a built surface of stones and cobbles (Ib6a) that may equate to the cobbled surface IIc4co in the East Passage.

Cooking, eating and other activities

The evidence for the use and discard of pottery that we see in the West Passage during the Late Bronze Age (Block 1.2) seems to continue into the Early Iron Age (Block 1.3). The 70 sherds from Block 1.3 form 44% by weight of the stratified pottery assemblage from the Shepherd excavations (Blocks 1.2 and 1.3 together form 86%). As before, visitors to the cave engaged in the preparation, cooking and consumption of meals, involving meat, cereals, hazelnuts and other plant foods (see section 7.6). It appears, therefore, that there was no real break in the nature or spatial organisation of the activities carried out in this part of the cave between the Late Bronze Age and the Early Iron Age.

After Block 1.3, however, the quantities of pottery found in the Phase 2 deposits declines markedly. For Blocks 1.5–1.7 in the West Passage and Block 2.7 in the East Passage, anthropogenic material is relatively sparse and the deposits themselves are softer and less consolidated (although it is noteworthy that Blocks 1.5 and 1.6 account for 57% of the entire marine shell assemblage recovered from the Shepherds' excavations). Although visits to the cave undoubtedly continued through the middle centuries of the first millennium BC, the paucity of artefactual material other than pottery (notably the absence of bone tools) suggests that the craft activities practised in the cave in Phase 1 had declined in importance. Indeed, non-ceramic artefactual material is limited to a few coarse stone tools that may have been used in food preparation and some fragments of iron.

Closing deposit?

Among the last deposits in the West Passage was the dog burial from Block 1.7. The burial of articulated animals in the cave is very rare (the only other example being the goat in Block 1.1) and it is likely that this dog represents a votive offering. Although it is tempting to regard this as a closing deposit of some kind, it should be borne in mind that an estimated 0.2–0.3m of deposits had been removed by Benton's excavations in this area (illus 2.7D), so its near-surface location is essentially fortuitous.

2.5 Phase 3: Roman Iron Age

2.5.1 General

The only deposits from the Shepherds' excavations that can be linked unequivocally to Phase 3 are the uppermost deposits in the East Passage (Block 2.8). The attribution of this material is based on the presence of typologically distinct Roman Iron Age pottery (V16) and an AMS date of cal AD 140–390 (SUERC-16599) in underlying Block 2.7.

All other potentially related material in both the entrance passages appears to have been removed during Sylvia Benton's excavations. Overlaying the Shepherd section onto that published by Benton (illus 2.7D) shows that up to 0.5m of deposits (all of Benton's Layer 1 and the upper part of her Layer 2) had been removed from the West Passage in the area closest to the cave entrance.

It is unlikely, though it cannot be proven, that there was any significant break between Phases 2 and 3. There is certainly no indication of a break in the Phase 2/3 deposits of Block 2.7. Bayesian modelling of radiocarbon dates (chapter 4) suggests that Roman Iron Age activity in the cave ended in *cal AD 270–380* (*68% probability*), while the deposition of Roman coins indicates that the end date cannot have been before AD 364 (see section 5.7.3).

2.5.2 East Passage

Block 2.8

The layers overlying Block 2.7 in the East Passage were heavily truncated and difficult for the excavators to interpret. A layer of ash and sand laminae (IIb3, IIc2) covered most of the passage to a depth of 0.05–0.2m (illus 2.9). Cutting this layer was a posthole (IIb7; illus 2.9, 2.29B), some 3.8m from the entrance and 0.8m from the west wall. It measured some 0.5m by 0.25m at the top, narrowing to around 0.25m in diameter (illus 2.29C). Part of the wooden post was preserved within the cut. What appears to be a small hearth is indicated on plan adjacent to the posthole (illus 2.29). Patches of charcoal (IIa3) some 5mm thick were also observed in the west part of the entrance area.

IIb3 contained five fragments of what was probably a single copper alloy sheet object of uncertain form (SF100, SF101). No pottery was recovered. A rib and a humerus from medium terrestrial mammals, recovered from IIb3, returned AMS dates of 370–160 cal BC (SUERC-65443) and 1270–1050 cal BC (SUERC-65444) respectively. Both appear to represent residual material and suggest that all material from these very disturbed upper deposits should be treated with caution.

The residual material identified by the AMS dates and the survival of wood in the posthole (IIb7) may raise doubts over the antiquity of any of the deposits within Block 2.8. It is worth noting, however, that the posthole does appear to relate spatially to the earlier stone feature in Block 2.7, which appeared to form some deliberate constriction of the entrance passage (illus 2.29). The two features are stratigraphically quite separate, but they do hint at some persistent structural arrangement by which access to the inner part of the passage could be controlled, even if the archaeological manifestations of this are only sporadically preserved. The survival of unburnt wood is not unequivocally an indicator of contamination given the presence of other organic material (eg human hair; chapter 6) from Sylvia Benton's excavations.

2.5.3 Discussion

Given the taphonomic uncertainties associated with Block 2.8, almost all of our information about the Phase 3 deposits must come from Benton's excavations, where they appear to equate to her 'Layer 1'. What is most immediately striking is the quite different spatial distribution of Layer 1 relative to earlier deposits. Based on Benton's published section (illus 2.7A), it appears that the Roman Iron Age deposits were relatively thin both in the West Passage (perhaps around 0.2m in maximum depth) and in the lee of the entrance canopy; unlike the earlier deposits, however, they not only extended across the interior of the cave at least as far as the end of grid square A5 (where the published section ends), but grow thicker in the interior, where they are up to around 0.4m deep.

This spatial patterning, which is reflected in the distribution of finds relating to the Roman Iron Age (chapter 5), would appear to suggest that the interior of the cave had dried out by this time. Entering the cave by this point would have involved walking up and over the mound of material at the entrance, itself formed by Late Bronze Age and Pre-Roman Iron Age activity, and descending the gentle slope into the interior.

Roman Iron Age features appear to have existed within the cave interior. An 'absidal' hearth (illus 2.4), identified in Area III, was believed to date to this period (Benton 1931: 181) and is described as being 'at the bottom of the Roman period layer'. Benton also mentions that other similar features had been found, though she does not describe them in any detail (ibid). A posthole (IIb7) in Block 2.8 (see below) may represent the maintenance or re-establishment of the entrance feature identified in the East Passage in the latter part of Phase 2 (section 2.4.4).

Overall, our understanding of the Phase 3 deposits is insufficient as the basis for any detailed interpretation of the activities carried out within the cave at this time. Instead, this will have to wait until we have considered the other strands of evidence from Benton's excavations, notably the human remains and artefactual assemblage (chapters 5 and 6).

2.6 Later activity

Aside from various superficial features indicative of modern disturbance, none of the excavated deposits within the Sculptor's Cave appear to post-date the Roman Iron Age. It is of course impossible now to be sure that deposits relating to later activity did not exist in the upper levels removed by Benton (especially given the presence of a small number of early medieval artefacts, see section 5.14.3) but, if such deposits were present, they are unlikely to have been substantial or extensive.

Chapter 3

THE PICTISH AND LATER CARVINGS

3.1 Introduction

3.1.1 Pictish symbols

Pictish symbols are among the most striking features of Scottish archaeology, with a rich tradition of study extending from the mid-nineteenth century to the present (eg Stuart 1867; Allen and Anderson 1903; Henderson and Henderson 2004). Combining stylised but highly accomplished images of animals with a complex and recurring set of more abstract motifs, they represent a highly evolved communicative system that emerged in north-east Scotland during the mid-first millennium AD. Despite the large assemblages of later prehistoric and Roman Iron Age material recovered from the Sculptor's Cave, it is the Pictish symbols carved around its twin entrance passages that gave the site its name. It was also these carvings that first drew Sylvia Benton to the cave in 1928, initiating the first programme of excavation.

The term Picti, first recorded in a Latin poem by Eumenius in AD 297 (Nixon et al 1994), was used by the Romans to describe peoples living beyond the Roman province, north of the Forth and Clyde, during the Late Roman Iron Age. Initially, it most likely applied to a broad range of communities whose potential for coordinated corporate action was quite limited (although it evidently included the ability to come together militarily for raiding inside the province and for resistance against Roman aggression). The creation of a unified Pictland came much later, probably in the wake of the Pictish victory over Ecgfrith of Northumbria at the Battle of Nechtansmere in AD 685 (Fraser 2009; Woolf 2017), following which the Picts became one of the major early medieval kingdoms of the British Isles. The political heartland of this consolidated Pictish kingdom was Fortriu, now understood to be centred on the Moray Firth (Woolf 2006; 2007), a region which undoubtedly encompassed the Sculptor's Cave.

The association between the carved symbols and the Picts is founded both on the geographical distribution of the symbols, which are overwhelmingly concentrated in north-east Scotland and the Northern and Western Isles (plausibly equating to the extent of Pictland in the eighth century; cf Woolf 2017: 216), and on their chronology, which spans the transition to Christianity in the later first millennium AD (although they probably originated much earlier; see section 3.1.3). Although found on the walls of a handful of caves (section 3.5.4), on a few natural outcrops and on a small number of portable objects, Pictish symbols are overwhelming found on free-standing stones and it is with these that past scholarship has been primarily concerned. These symbol stones, of which around 200 are known, are conventionally divided between Class I (undressed stones bearing symbols) and Class II (elaborately carved cross-slabs incorporating a range of Christian iconography). The examples at the Sculptor's Cave, as we shall see, share much in common with the imagery on the Class I stones, but with significant differences that will be explored below.

3.1.2 The meaning of the symbols

A huge amount of ink has been spilt in debates over the meaning of Pictish symbols. They have been argued to be, *inter alia*, symbols of clan affiliation, profession, totem or rank (eg Thomas 1963; Foster 2004: 70; Carver 2008: 94). In recent years, however, there has been an increasing tendency to see the symbols as a form of language, based on three key strands of evidence.

The first was an important analysis by Ross Samson (1992) which suggested that the frequency of various symbols and symbol pairs reflected similar frequencies among personal names and name elements in northern European societies of the period. The pairing of motifs on symbol stones, according to Samson, thus represented two-part (di-thematic) personal names. Following this initial breakthrough, Katherine Forsyth (1995) sought to situate the symbols as a writing system parallel to the broadly contemporary emergence of ogham script in Ireland and runic writing systems in Scandinavia. Importantly, Forsyth (ibid: 87) pointed out that 'the overwhelming majority of monumental inscriptions consists largely or solely of personal names' (rather than tribes, totems etc). Forsyth has provided the most exhaustive attempt to date to elucidate the structure of this putative writing system, defining a series of core symbols (those that form the symbol pairs) and qualifiers; most obviously the mirror and comb symbols which have been suggested to indicate that a given name is female (Samson 1992).

Most recently, a statistical analysis of the symbols concluded that they 'exhibit the characteristics of a written language', with individual symbols representing specific words (Lee at al 2010: 2545). Although the conclusions of this particular analysis have been disputed on the basis that the methods used cannot definitively prove that any given symbol system represents a written language (Sproat 2010), it nonetheless provides independent support for the view that the symbols *could* represent a written language.

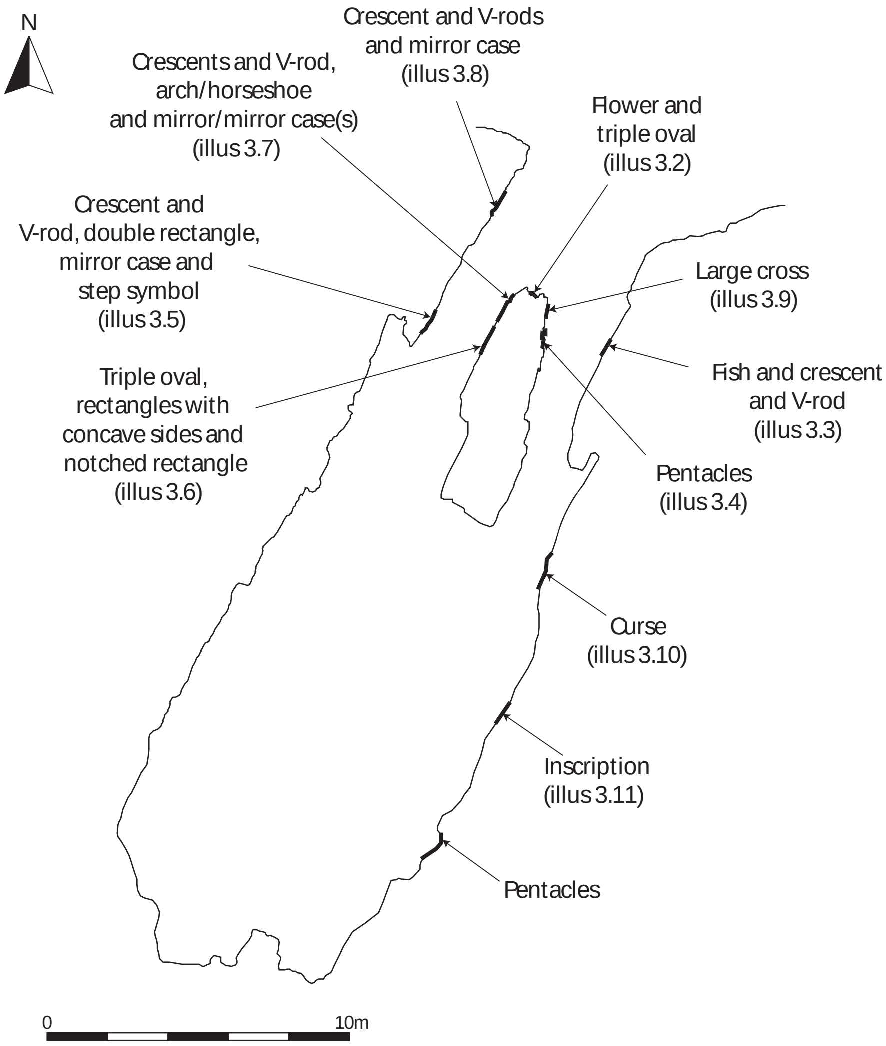

Illustration 3.1
Location of the Pictish symbols and selected other carvings within the Sculptor's Cave

The recognition that the symbols represent a simple form of written communication and that the symbol pairs are most likely personal names is an important step forward, even if it does not necessarily explain the meaning of any given symbol stone. Individual stones might, for example, have acted as funerary monuments, territorial markers, genealogical statements or religious dedications, or may have served a range of other purposes associated with power, status and religion (cf Foster 2004: 76–7). Away from the monumental symbol stones which have dominated past scholarship, the prevalence of symbol pairs is much less obvious in caves (D V Clarke 2007: 31), natural rock surfaces and portable objects (cf Fraser 2008: 138–9), suggesting that the symbols could also be used more flexibly, beyond the simple recording of personal names. Indeed, David Clarke (2007) sees the Class I symbol stones as a specific (and late) manifestation of a broader communication system. It is thus entirely possible that the symbols were widely used in a range of perishable media such as body art (Thomas 1961: 57) or textiles (Henderson and Henderson 2004: 84). Certainly, the presence of incised symbols on animal bones from the Broch of Burrian and Pool, Sanday (Fraser 2008: 139) suggests that such motifs were at least occasionally used to decorate a range of perishable organic materials which have not survived in the archaeological record.

3.1.3 Chronology

Although Class I symbol stones have conventionally been seen as originating in the sixth or seventh centuries AD, with Class II appearing from the mid-eighth century (eg Fraser 2008: 1), it has long been suspected that the symbols themselves have earlier origins. Charles Thomas (1961), for example, argued for a fifth-century date, based on perceived links to animal art of the Late Iron Age, while some of the objects represented by the symbols (eg mirrors) appear to significantly pre-date the sixth to eighth century floruit of the symbol stones (D V Clarke 2007: 35).

The earliest secure date for a Pictish symbol is currently provided by an ox phalange decorated with a crescent and V-rod from the settlement of Pool in Orkney, AMS dated to cal AD 410–570 at 95% probability (Noble et al 2018: 1336). An even earlier date is suggested, however, by recent excavations at the sea-stack of Dunnicaer, Aberdeenshire, where a series of radiocarbon determinations have been obtained for a rampart which is thought to have been the source of several carved stones recovered during the nineteenth century (ibid: 1339). Bayesian modelling of these dates suggests that the rampart was constructed around *cal AD 250–400* at *95% probability* (ibid). It is possible, therefore, that Pictish symbols were being carved as early as the third century AD.

3.2 Pictish carvings at the Sculptor's Cave

3.2.1 General

The Pictish symbols at the Sculptor's Cave are located primarily on the walls of the twin entrance passages (illus 3.1), while later carvings and other graffiti extend into the main body of the cave. Despite careful inspection with floodlights by Ian Shepherd during the 1979 excavations, no definitively Pictish carvings have been found in the cave interior (Fraser 2008: 106; though see section 3.2.4). Given that the interior walls are significantly less eroded than those of the exposed entrance passages, it seems highly probable that the present distribution of the carvings is a genuine reflection of their original locations.

The entrance passages are today large enough to walk through comfortably. During the early medieval period, however, they would have been partially clogged with (now excavated) later prehistoric deposits. This would have raised the floor level by up to 1.8m in the West Passage and 1.5m in East Passage, with a pronounced mound under the entrance canopy (see illus 2.7–2.9). Indeed, Allen and Anderson (1903: 130), who visited the cave prior to any removal of deposits through excavation, describe the passages as being '8 feet' (roughly 2.5m) high, in contrast to their height of roughly 5m today (illus 1.4). We thus must envisage the creation of the carvings in this setting; being somewhat closer to ground level and having possibly been carved from a crouched position.

There have been a number of previous recordings of the Pictish symbols in the Sculptor's Cave (principally Stuart 1867; Allen and Anderson 1903; Fraser 2008; RCAHMS 2011), each containing a somewhat different selection of carvings. This is partly because of the relatively poor condition of many of the symbols, which has led to some being unrecognised or omitted from the various studies, but also because of disagreements over which carvings should be considered as genuinely Pictish (table 3.1). As a result, it is hard to confirm a definitive corpus. Indeed Fraser's (2008: 106–7) descriptive list does not tally exactly with the numbers of symbols depicted in the accompanying illustrations (which are mainly from Stuart 1867). Based on the carvings visible in the cave today, however, we can be reasonably confident in identifying some 24 symbols (table 3.1), several of them arranged in pairs or groups. The most common symbol is the crescent and V-rod, of which there are five clear examples and one further, heavily eroded, example where only the crescent can be discerned (although, judging from the wider corpus, the likelihood must be that this did originally have an accompanying V-rod). Next most common is the mirror case, of which three clear examples appear, along with a further more tentative example that could be either a mirror or mirror case (see illus 3.7C); like the crescent and V-rod, the mirror case is one of the most common symbols in the overall Pictish corpus. Taken together, these groups form 46% of the identifiable symbols at the Sculptor's Cave. The remaining symbols represent a wide range, with no more than two examples of each (table 3.1). Two fish symbols are the only animal motifs. The following sections describe the main groups of carvings identified on illus 3.1.

3.2.2 Flower and triple oval (illus 3.2)

The first carvings that would have been seen when approaching the cave form a symbol pair on the canopy of rock above and between the two entrance passages. These comprise a Pictish 'flower' symbol and a much smaller triple oval. Despite their prominent position, the pair was first identified only during the Shepherds' work (Shepherd and Shepherd 1979: 15). The carvings are unusual among the Sculptor's Cave corpus in being located on what is either an artificially enhanced or (more likely) fortuitously smooth, flat surface. There are no other examples in the Pictish corpus of a flower and triple oval pairing.

The flower is a highly stylised Pictish motif, essentially comprising a curvilinear frond, occasionally embellished (as in the Sculptor's Cave example) with secondary fronds and often containing internal decoration. Although not among the most common of the Pictish symbols, the flower is distributed reasonably widely on Class I stones from Angus to the Western Isles and is usually paired with other symbols. It also appears on the walls of Doo Cave at Wemyss, Fife (Fraser 2008: 81.2; Hambly et al 2019). While Laing and Laing (1984: 268) have suggested that the symbol has its origins in stylised plant iconography depicted on Roman artefacts, such as a fourth-century silver dish from Corbridge, a range of other speculative interpretations have included its identification as some form of wooden churn or 'sprinkler' (Brodie 1996: 24), or even the hindquarters of a seal (Thomas 1963: 57). More convincing, perhaps, is Thomas' suggestion (ibid) that the symbol probably belongs to the group of motifs portraying metal objects, in this case perhaps an

Table 3.1
Pictish symbols in the Sculptor's Cave as recorded by Fraser (2008), RCAHMS (2011) and in the present study. *Interpreted as 'probably not Pictish' (Fraser 2008: 106)

	Fraser (2008: text)	RCAHMS (2011)	Present study
Crescent and V-rod	3	5	5
Crescent (isolated)	1	–	1
Mirror/mirror case	3	4	4
Fish	1	2	2
Triple oval	2	2	2
Pentacle	2	2	2
Rectangle with concave sides	2*	2	2
Flower	1	1	1
Step	1	1	1
Double rectangle	1	1	1
Notched rectangle	–	1	1
Arch/horseshoe	–	1	1
Tree/feather?	–	–	1
Total	**17**	**22**	**24**

Box section 3

STRUCTURED LIGHT SCANNING OF THE CARVINGS

Lindsey Büster, Adrian Evans, Tom Sparrow, Rachael Kershaw, Andrew S Wilson and Ian Armit

The position of the Pictish symbols in the entrance passages at the Sculptor's Cave makes them highly vulnerable to weathering and erosion. The surface of the coarse-grained sandstone is particularly susceptible to delaminating in large sheets; enough to destroy entire symbols in a single event. Furthermore, exposure to rockfalls and damage (intentional or otherwise) by visitors creates further risks to the long term survival of the carvings. In order to digitally document and preserve them for future generations, some of the most important carvings were subject to structured light scanning during fieldwork in 2014 (see illus 3.2, 3.3, 3.5, 3.9; Büster et al 2019a).

Scanning was undertaken using a *Mechscan* (illus B3.1): a specially commissioned macro structured light scanner produced by Mechinnovation Ltd (Leamington Spa). This scanner has a field of view of 30–110mm and approximate point to point distance of 0.01–0.05mm, capturing up to 2.6 million points per scan; individual carvings required between 39–140 scans each, taking between 4 hours and 12 hours to complete. The weight of the scanner (*c* 30kg) made its transportation to site a major logistical exercise (illus B3.2). Scan data was captured and processed using LMI Technologies (Vancouver) *FlexScan 3D* software.

Colour photographs of the carvings were taken to complement the greyscale scan data; these were then enhanced using synthetic Reflectance Transformation Imaging (RTI). This uses light sources at various angles to illuminate details not visible under static lighting conditions (Earl et al 2011). RTI can be done in the field, but in the case of the Sculptor's Cave carvings, it was created digitally using a combination of photographs and structured light scan data. Synthetic RTI of the structured light scans was achieved by creating 3D models from these ortho-images, and artificially lighting them using open source *Blender* software (illus B3.3). RTI files were created using open source *RTI Builder* software and open source *PTM (Polynomial Texture Mapping) Builder* algorithms (ibid), which allowed for interactive light source control and export of images using *RTI Viewer* software.

Some new details of the carvings were observed using combined structured light scan data and virtual RTI. The scan of the

Illustration B3.1
Structured light scanning of the salmon and V-rod in the East Passage

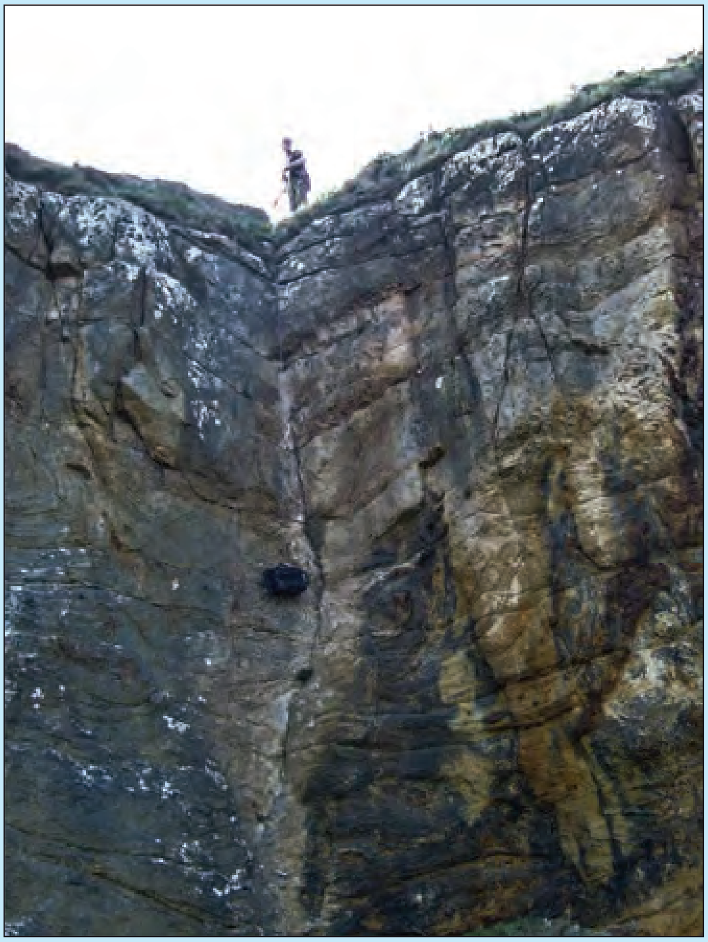

Illustration B3.2
Lowering the *Mechscan* structured light scanner to the Sculptor's Cave

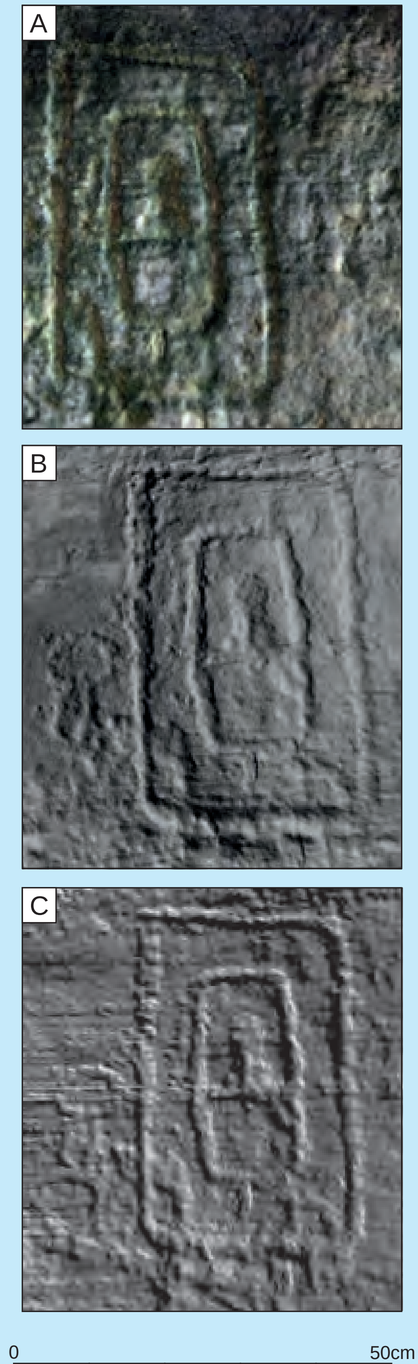

Illustration B3.3
Paired double rectangle and mirror/mirror case symbol (and partial crescent and V-rod) on the west wall of the West Passage: (A) photograph, (B) decimated structured light scan data, (C) virtual RTI (Reflectance Transformation Imaging) rendering from structured light scan data (courtesy Fragmented Heritage and Visualising Heritage, University of Bradford)

upright fish revealed, for example, additional fins on the upper and lower sides of its body (illus 3.3B, C).

Structured light scanning was also undertaken of casts of the carvings made in 1979, using a structured light scanner (built in-house at the University of Bradford), with a field of view of 15–50cm and a resolution of 100μm, supporting *FlexScan 3D* software (eg illus 3.8). The casts are large, brittle and unwieldy, and have themselves deteriorated during more than three decades in storage. Digital recording thus also serves to preserve them and the information they contain.

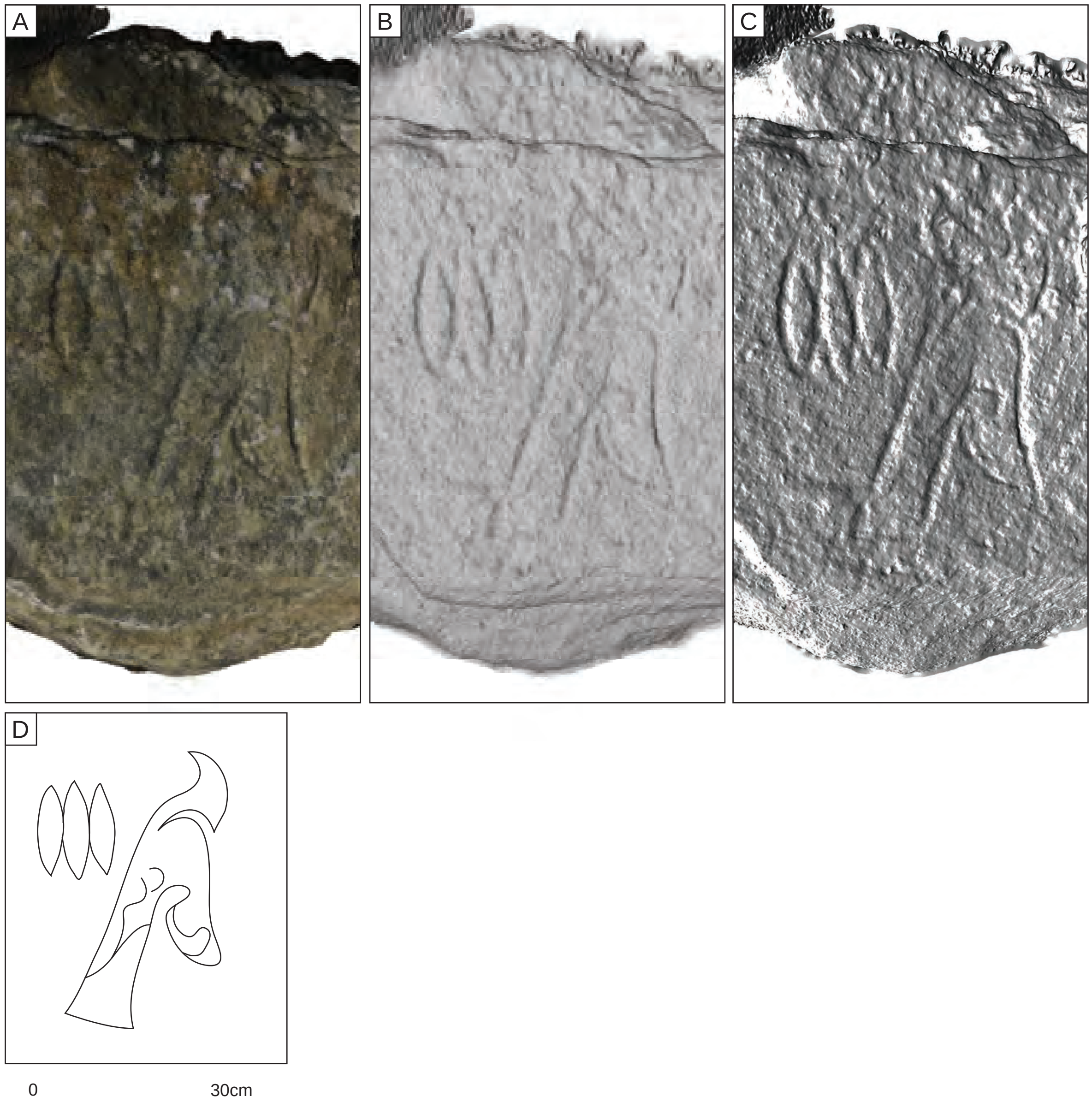

Illustration 3.2
Symbol pair formed by 'flower' and triple oval on the canopy of the rock between the two entrance passages: (A) photograph, (B) decimated structured light scan data, (C) virtual RTI (Reflectance Transformation Imaging) rendering from structured light scan data (courtesy Fragmented Heritage and Visualising Heritage, University of Bradford), (D) the same symbols based on RCAHMS 2011

archaic form of bronze harness mount (cf Fox 1958: 130 and plate 75), although the resemblances are hardly definitive.

The triple oval symbol comprises, as the name suggests, three identical conjoined vertical ellipses (or vesicas) arranged horizontally; unlike most of those found on symbol stones (eg Glamis Manse; Fraser 2008: 54), the Sculptor's Cave examples are void of internal decoration. The symbol has been interpreted as representing an armlet of the 'massive metalwork' tradition (eg Thomas 1963: 57), though Hunter (2006a: 150) suggests that this is unlikely based on the 'marginal resemblance' and different geographical distributions of the two phenomena.

3.2.3 Fish and crescent and V-rod (illus 3.3)

The most prominent group of symbols encountered on entering the cave through the East Passage comprises a symbol pair formed of a vertical fish motif and a crescent and V-rod; a second, much fainter (but more usual, horizontally positioned) fish motif appears a little further south along the cave wall. The fish, which is the only animal represented among the Sculptor's Cave carvings, is a relatively common symbol, featuring 14 times on Class I stones (Hicks 1993: 196) and occurring widely across eastern Scotland from Caithness to Angus (Alcock 1988: 18). Although it occurs often as part of a symbol pair, the Sculptor's

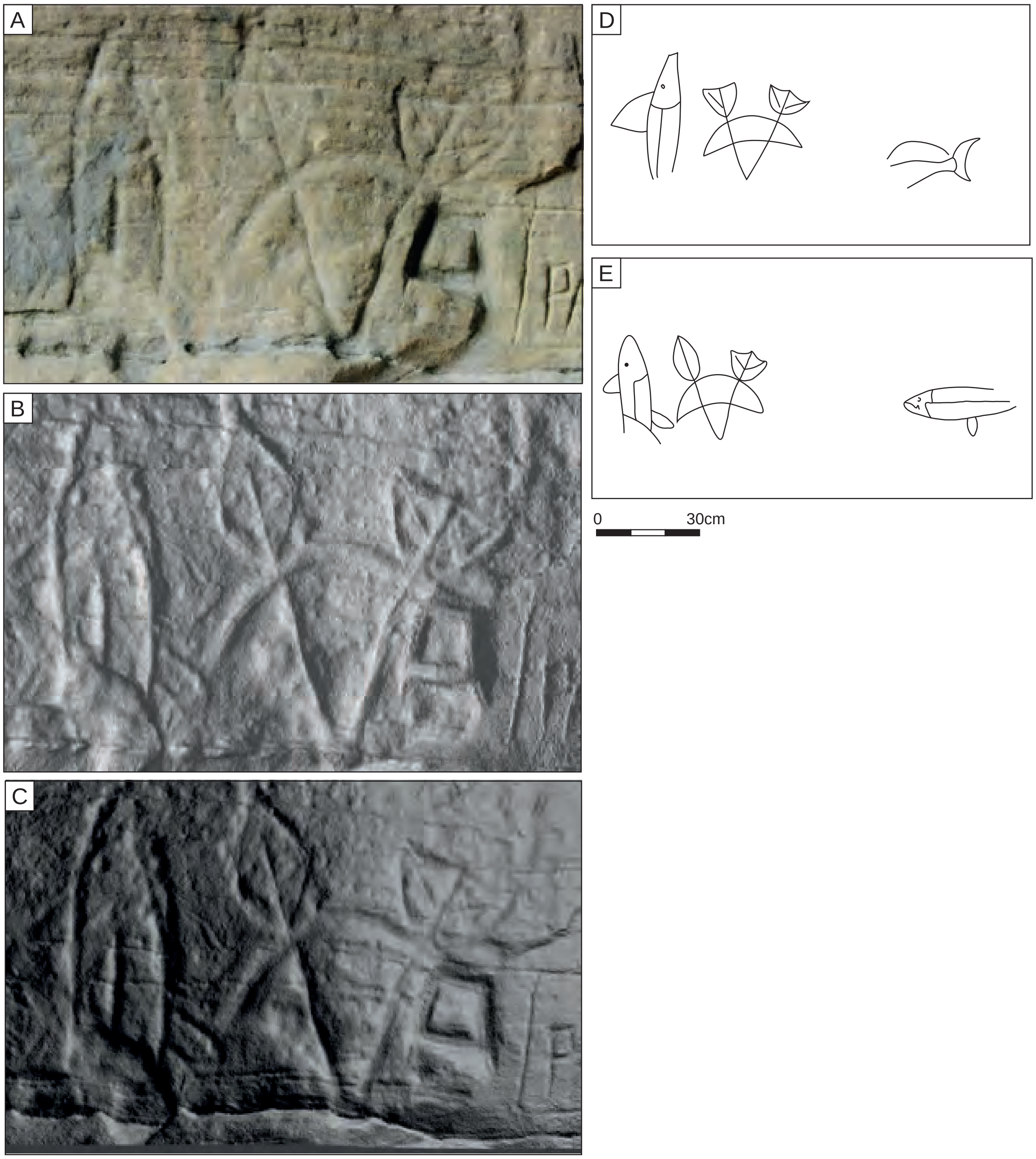

Illustration 3.3

Symbol pair formed by fish and crescent and V-rod symbols on the east wall of the East Passage: (A) photograph, (B) decimated structured light scan data, (C) virtual RTI (Reflectance Transformation Imaging) rendering from structured light scan data (courtesy Fragmented Heritage and Visualising Heritage, University of Bradford), (D) the same motifs (with additional fish symbol) redrawn from Stuart (1867: plate 37), (E) from the same symbols based on RCAHMS 2011

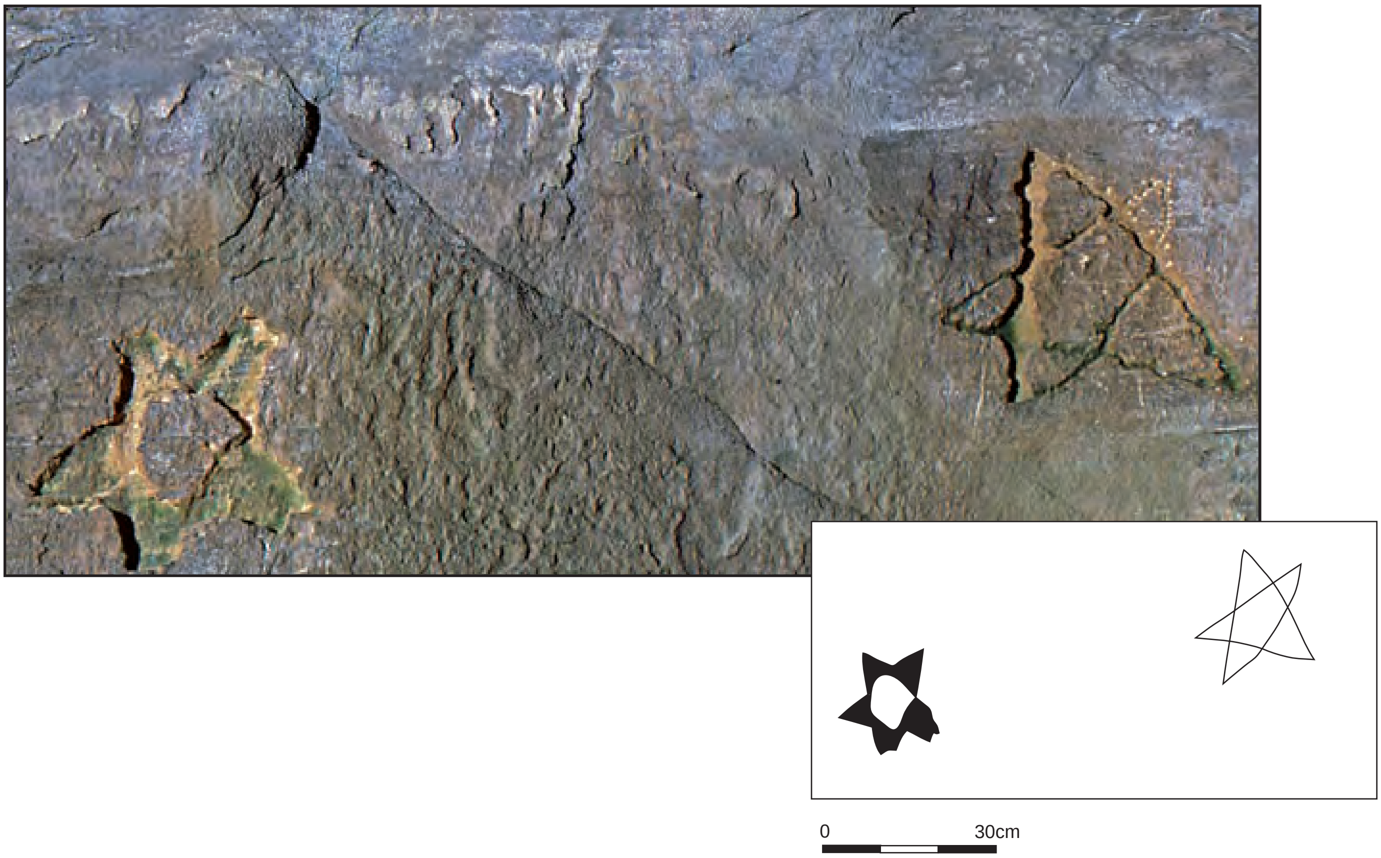

Illustration 3.4
Two pentacles on the west wall of the East Passage (Shepherd archive); inset: the same symbols based on RCAHMS 2011

Cave example is the only one in the corpus paired with a crescent and V-rod. The only other example of a vertically placed fish motif in the Pictish corpus comes from Jonathan's Cave at Wemyss (Fraser 2008: 68).

Only the top half of the northernmost fish at the Sculptor's Cave is visible and, although the lower part may have been lost to erosion, this may be a deliberate attempt to depict a salmon in the act of leaping from the water. It is also worth noting, however, the unusual beak-shaped nose of the Sculptor's Cave example, which is suggestive of a bottle-nose dolphin, like those still observed along the Moray coast today; the position of the fins, however, suggests that a salmon is the more likely interpretation. The scan results (illus 3.3) are suggestive of some re-carving of the right upper side of the salmon and also indicate that the lower fin on the same side cuts across the accompanying crescent symbol, demonstrating some internal stratigraphy to the carving.

The accompanying crescent and V-rod is relatively common in the repertoire of Pictish motifs, occurring on more than 20 symbol stones (Foster 2004: 71). In this example, the lower right portion of the crescent has been damaged by a later carving. The leaf-shaped terminals of the V-rod motif have led to its interpretation as a broken arrow and this is quite convincingly the case for the Sculptor's Cave example, since (*contra* Stuart's drawing, illus 3.3) the two terminals are quite different and suggestive of an arrow tip (on the left) and fletching (on the right) respectively. Others, however, would prefer to see V-rods as representing sceptres, based on comparison with depictions in illuminated manuscripts such as the *Book of Kells* (Stevenson 1993: 17). The V-rod here does indeed feature large, stylised leaf-shaped terminals, but the intricate decoration which normally fills the associated crescent is absent.

3.2.4 Pentacles (illus 3.4)

Two pentacles are located high on the west wall of the East Passage. The spacing of around 0.35m between them suggests that they are not intended as a symbol pair. The northernmost pentacle is depicted by Allen and Anderson (1903: fig 135a) as containing a central dot, though this feature is absent in recordings of the carvings by both Stuart (1867: plate 37) and RCAHMS (2011). Although pentacles are not included in what is usually regarded as the formal repertoire of Pictish motifs, an example carved alongside a crescent and bird on a pebble from the Broch of Burrian, North Ronaldsay (Fraser 2008: 139), effectively proves the motif's Pictish credentials. Moreover, Alcock (1996) considered pentacles part of his original *ur*-symbol repertoire,

Illustration 3.5
Crescent and V-rod, double rectangle, mirror case and step symbol (photograph: Mhairi Maxwell and Clara Molina Sánchez, reproduced with permission); inset: the same symbols based on RCAHMS 2011

albeit one that did not become established in the more formalised corpus featured on the Class I symbol stones.

Two further pentacles can also be seen inside the cave, high on the east wall (illus 3.1). These seem less likely to be genuinely Pictish for two reasons. First, they are far removed from all the other known Pictish symbols in the cave, which entirely avoid the interior, and, second, they occur in an area of dense graffiti beside the initials 'GC', which probably stands for 'Gordon Cumming', suggesting that they may have been carved during the mid-late nineteenth century by a member of the local land-owning family who we know had a close interest in the caves. Ultimately, however, the antiquity of these particular carvings must remain uncertain.

3.2.5 Crescent and V-rod, double rectangle, mirror case and step symbol (illus 3.5)

Another crescent and V-rod occurs on the west wall of the West Passage, where it is associated with a large double rectangle and a mirror case symbol. The symbols in this area are arranged seemingly informally, along a broadly horizontal plane, with no obvious symbol pairing. The crescent and V-rod is smaller and

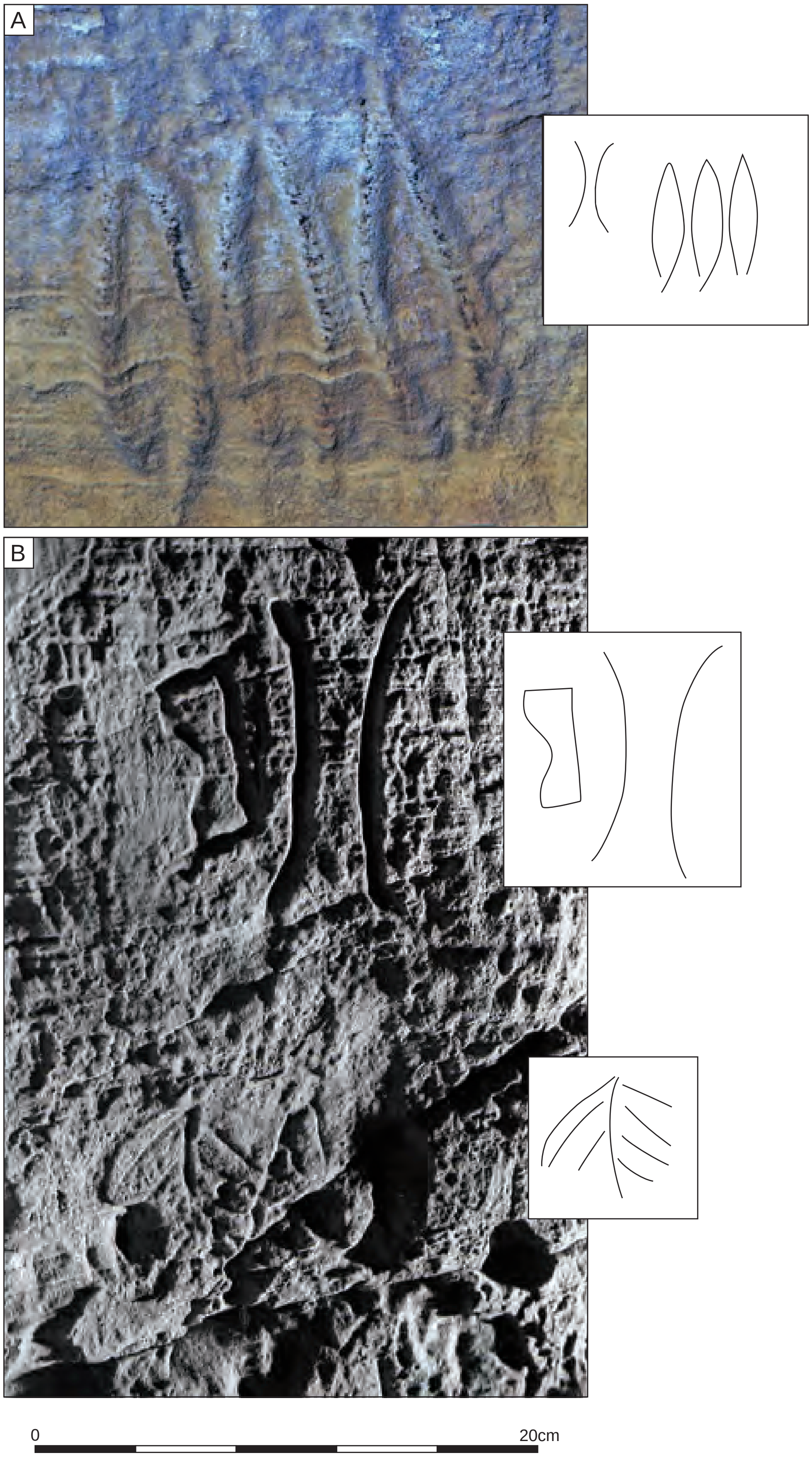

Illustration 3.6
Photograph of (A) triple oval, with inset drawing of symbol pair formed by this triple oval and rectangle with concave sides, (B) symbol pair formed by notched rectangle and rectangle with concave sides, and previously unrecorded tree/feather symbol on east wall of West Passage

simpler than the example in the East Passage (section 3.2.3); the crescent is unfilled and the V-rod lacks elaborate terminals. The mirror case too is rendered only in a simple outline, with no internal decoration. A simple cross to the upper left of the crescent and V-rod motif is discussed in section 3.3.2.

The double rectangle, measuring approximately 0.44m by 0.22m, is by far the most visually dominant motif among this group and is indeed the largest of all the Pictish symbols within the cave. At the centre of the inner rectangle is a small 'keyhole-shaped' depression (which could plausibly represent a heavily eroded mirror case or double disc, though there are no other examples of such a configuration in the corpus). While the rectangle motif is not uncommon in Pictish art, there are few parallels for the double rectangle form, the closest perhaps being an example on the Class I symbol stone at Newton of Lewesk, Aberdeenshire (Fraser 2008: 36).

Visual comparison of the double rectangle with other carvings in the cave (supported by the structured light scan in illus B3.3) attests to its rendering with more deeply incised lines, which could indeed indicate some form of re-cutting after the initial carving. It also has distinctive individual pick marks visible within the lines, indicative of a technique that is not evident elsewhere in the cave. The size and dominance of the double rectangle at the Sculptor's Cave, together with this evidence for deeper than usual (re-)carving, would seem to signal some special importance relative to the smaller symbols around it.

Rectangle symbols have sometimes been interpreted as shields (Ritchie 1969; Fraser 2008: 36) as carried, for example, by Pictish warriors on the stones from the Brough of Birsay, Orkney (Henderson and Henderson 2004: 65, fig 78) and Fowlis Wester, Perth and Kinross (Fraser 2008: 122). Alternatively, they may in some cases represent books, or perhaps more specifically the Bible (Samson 1992: 40). One further possibility, and one that accords with the position of the Sculptor's Cave example within the entrance passage to a cave, is that it could represent a door (the central 'keyhole' in this case being read more literally). If this was the case, then the carving may have served to mark the entry point between two worlds.

To the left of the double rectangle, above the mirror case, is a step symbol

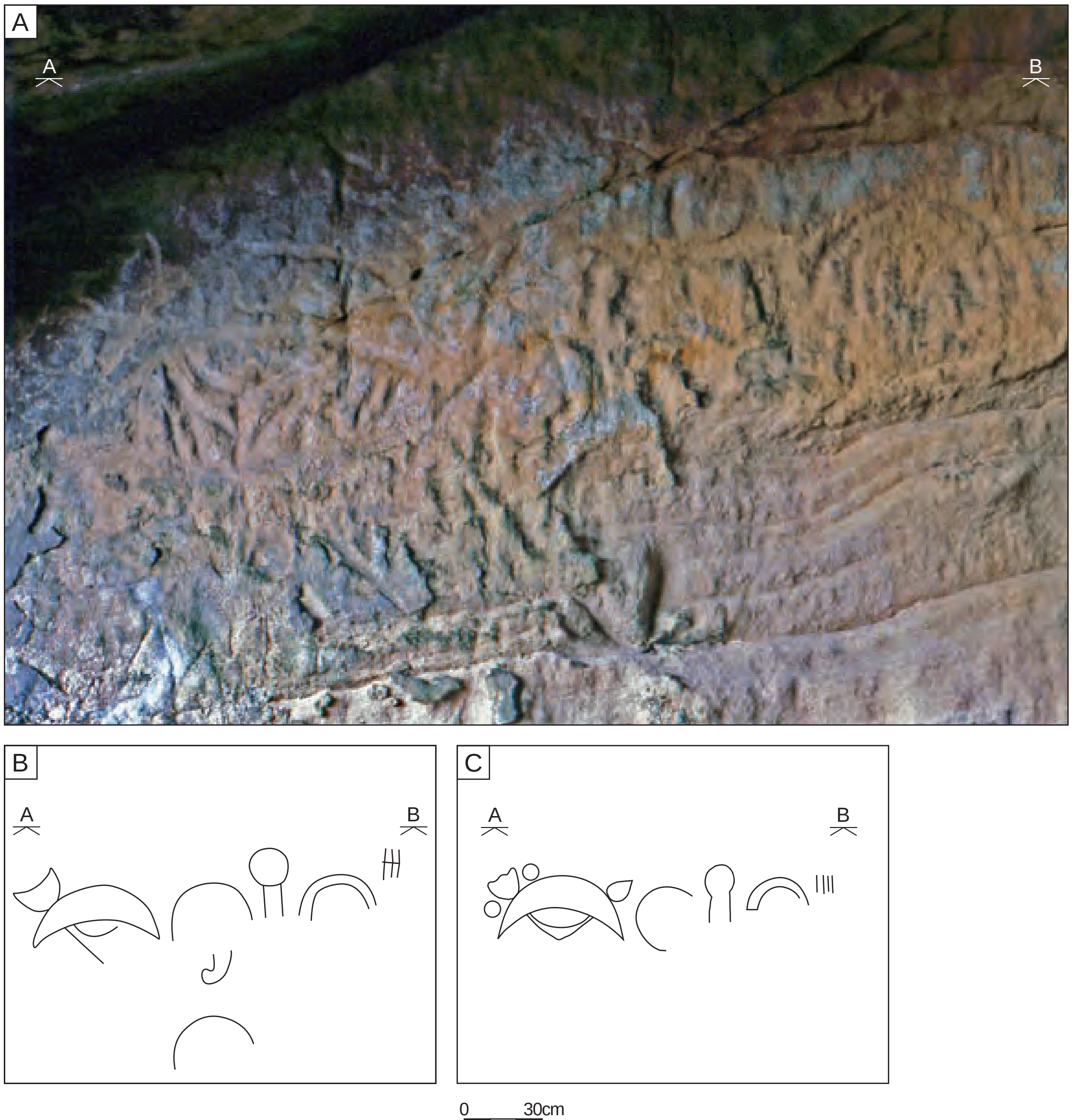

Illustration 3.7
Crescents and V-rod, arch/horseshoe and mirror/mirror case(s): (A) photograph taken in 1979 (Shepherd archive), (B) the symbols (with additional crescent) redrawn from Stuart (1867: plate 37), (C) the same symbols based on RCAHMS 2011

(upper left on illus 3.5, inset). Like the double rectangle, this is an uncommon motif, though examples very similar to the one here can be seen on two Class I stones from Ardjachie Farm, near Edderton on the Dornoch Firth, and Dalnavie Farm, near Ardross (Fraser 2008: 86–7). In the case of the Ardjachie example, the step is paired with an equally unusual spoked wheel symbol on what appears to be a prehistoric cup-marked standing stone (ibid).

3.2.6 Triple oval, rectangles with concave sides and notched rectangle (illus 3.6)

High on the east wall of the West Passage, inside the modern wooden door, are two symbol pairs and a fragmentary symbol. On the right (south) of the group is the first symbol pair, comprising a small 'rectangle' defined by two concave lines, and a triple oval symbol (illus 3.6A). Although Fraser (2008: 106) suggests that the former is 'probably not Pictish', its occurrence as part of a clearly defined pair with a recognisably Pictish symbol (ie the triple oval) would seem to suggest otherwise.

Around 0.4m to the left (north) and at a slightly higher elevation is a second symbol pair, comprising a rather larger (but otherwise identical) 'rectangle' and a smaller notched rectangle (illus 3.6B). Once again, the pairing of the concave-sided symbol with a more conventional (albeit by no means common) Pictish form strengthens the argument that this is a genuine Pictish symbol pair.

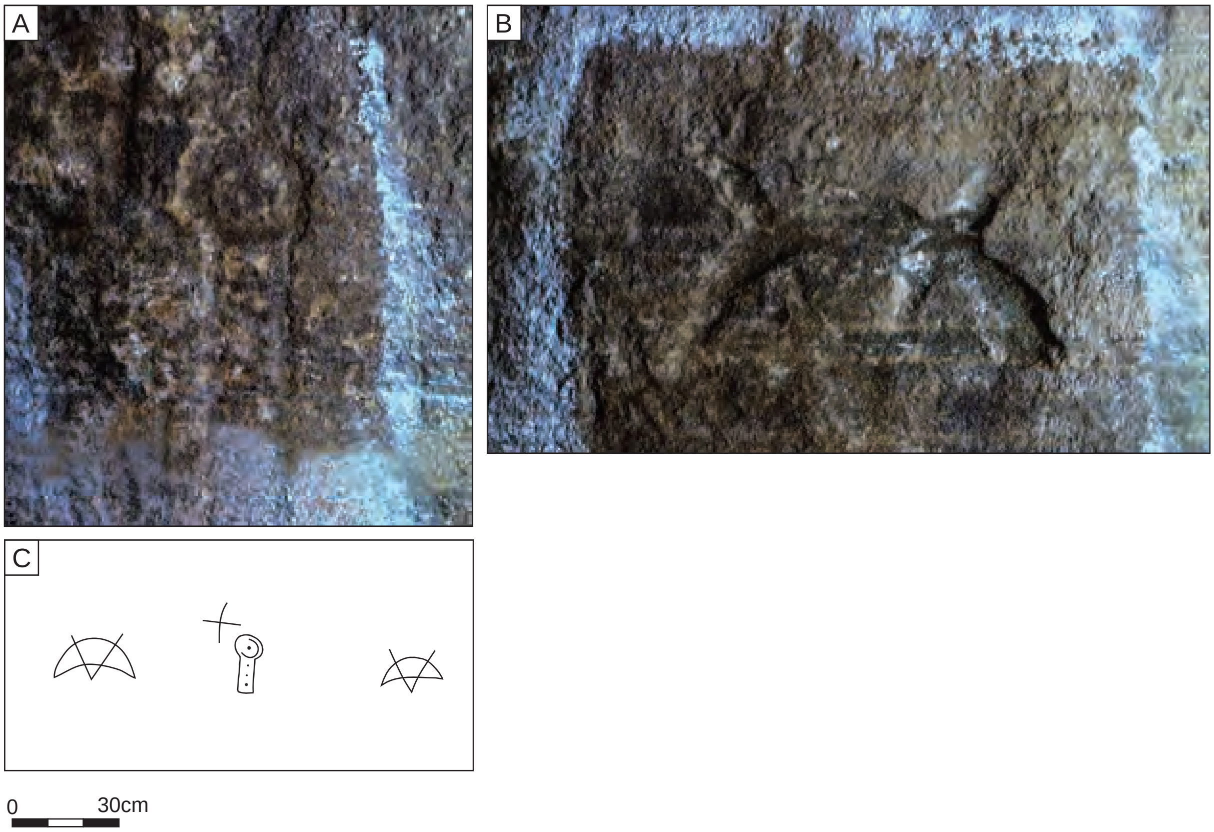

Illustration 3.8
Photographs of (A) mirror case, (B) crescent and V-rod on west wall of West Passage, (C) the same symbols based on RCAHMS 2011

One further fragmentary symbol can be seen immediately below the larger of the rectangles with concave sides. Although, superficially, this fragment recalls the 'fletching' on the terminal of a V-rod, it would be upside-down if this were the case. It seems preferable to ascribe it to some otherwise unknown symbol resembling a tree or feather (illus 3.6B).

3.2.7 Crescents and V-rod, arch/horseshoe and mirror/mirror case(s) (illus 3.7)

A series of heavily eroded symbols, arranged horizontally, can be dimly discerned along the east wall of the entrance area of the West Passage (to the north of the modern wooden door). These comprise (from left to right) a crescent and V-rod; a large but very faint mirror or mirror case; a further, smaller mirror case and an arch/horseshoe. Above and to the right of this last symbol are a series of four irregular vertical lines that do not conform to any known symbols and resemble numerous other markings in the cave that appear to be of natural origin. A further crescent (without surviving V-rod) was recorded by Stuart below the large mirror (or mirror case; illus 3.7B) but is not visible in the RCAHMS (2011) survey (illus 3.7C). None of the symbols appear to be arranged in pairs.

3.2.8 Crescent and V-rods and mirror case (illus 3.8)

High on the west wall of the West Passage, in the entrance area, are two small crescent and V-rods either side of a mirror case; the mirror case and northernmost crescent and V-rod are shown in illus 3.8A, B. There is no obvious pairing of the symbols.

3.3 Later carvings

3.3.1 General

In contrast to the confined distribution of the Pictish symbols around the cave entrance, the numerous later carvings, dating from the medieval period to the present, extend deep into the interior. While it is impractical to catalogue them all here, some are worthy of more detailed attention.

3.3.2 Simple crosses

A number of simple crosses are visible within the cave, notably on the west wall of the West Passage (Shepherd 1993: 80); examples can be seen in illus 3.5 and 3.8. Similar crosses can be seen in many caves across Scotland and could have been carved at any period, though there is a strong presumption that many may be medieval in date (Henderson 1987). Indeed, Ahronson's recent study (2018: 98) suggests that the marking of caves with crosses was a distinctive feature of 'early Christian northern Britain'.

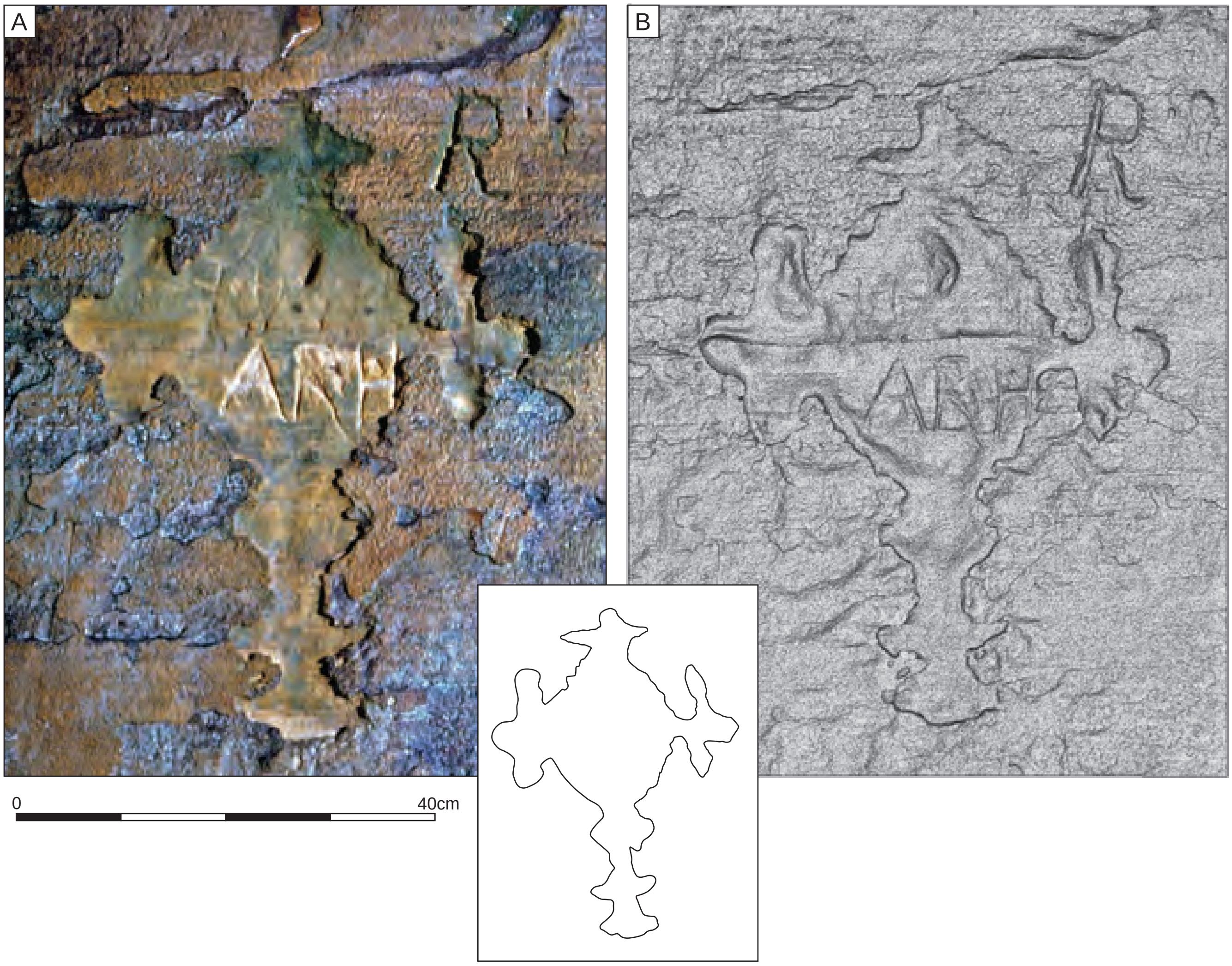

Illustration 3.9
Large cross on the west wall of the East Passage: (A) in situ, (B) scan of fibre glass cast taken in 1979

3.3.3 Large cross (illus 3.9)

A large cross on the west wall of the East Passage was first identified during the 1979 excavations. It is defined largely by a fragile and heavily eroded negative imprint on the cave wall, where the interior of the carving seems to have sheared away from the rock, and has been further damaged by modern graffiti. Referred to by Ian Shepherd (1993: 80) as a 'fine Russian cross', it probably dates to the twelfth century AD or later (R B K Stevenson pers comm to Ian Shepherd).

3.3.4 Curse and inscription (illus 3.10, 3.11)

Perhaps the most striking of the more recent carvings is a seventeenth-century curse located on the east wall of the cave interior. Inscribed in deep, well-carved lettering, it appears to read:

> 'W ENDING . . . 12 of MAR 169[?] . . . CVRSED BE THEY YT HINDER [PLUNDER/PLINDER?]'

This rendering of the date is not, however, entirely certain; Stuart, for example, read it as '1653' (1867: xciv).

The curse can be linked to another inscription located on the same wall towards the rear of the cave, just north of the potentially modern pentacles (see section 3.2.4). It reads:

> 'DVMMI JHORN . . . MAR . . . 169[?]'.

The date and style of the lettering (and adjacent scroll) suggest that it was carved at the same time, and perhaps by the same person, as the curse. The individual concerned may be the local Elgin minister James Horne, who resigned his post following the Scottish Test Act of 1681 (although the date of the inscription is possibly rather late if this is the case; Janet Trythall pers comm). While the meaning of

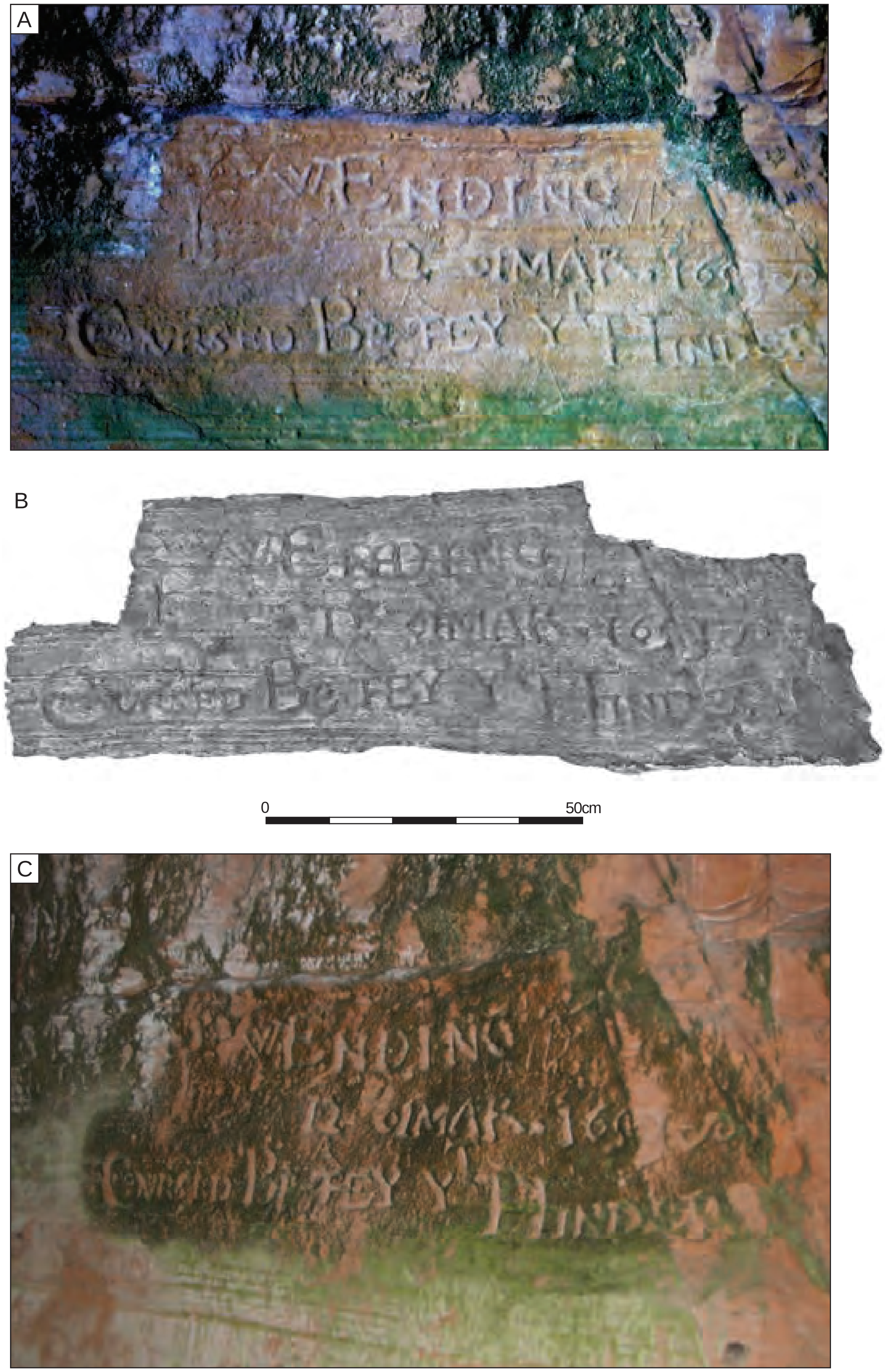

Illustration 3.10
Seventeenth-century curse on east wall of the East Passage: (A) in situ, immediately after cast was taken in 1979, (B) scan of the fibre glass cast taken in 1979, with colour removed (courtesy Fragmented Heritage and Visualising Heritage, University of Bradford), (C) in situ today, showing the effect of the cast in promoting enhanced lichen growth in relation to the surrounding cave wall

Illustration 3.11
Seventeenth-century inscription on the east wall of the East Passage

the curse is obscure, one interpretation is that it represents a warning to smugglers who may have been using the cave to store contraband (Gordon Cumming 1904: 68).

3.4 Recent and early modern graffiti

The walls of the Sculptor's Cave are also covered in graffiti dating from at least the nineteenth century to the present (illus 1.11, 3.9, B1.1, B3.1). Some of this has damaged certain of the Pictish carvings: notably the fish and crescent and V-rod symbol pair, which was defaced by the letters 'Xav' (short for 'Xavier') during the 1990s and was subsequently restored. Much of the graffiti, however, is concentrated within the cave interior, away from the Pictish carvings. What is, perhaps, most interesting is the way in which the prior existence of the Pictish carvings seems to have encouraged recent generations to leave their own physical mark on this particular cave; none of the other caves along the coast have anything approaching the concentration of graffiti seen in the Sculptor's Cave.

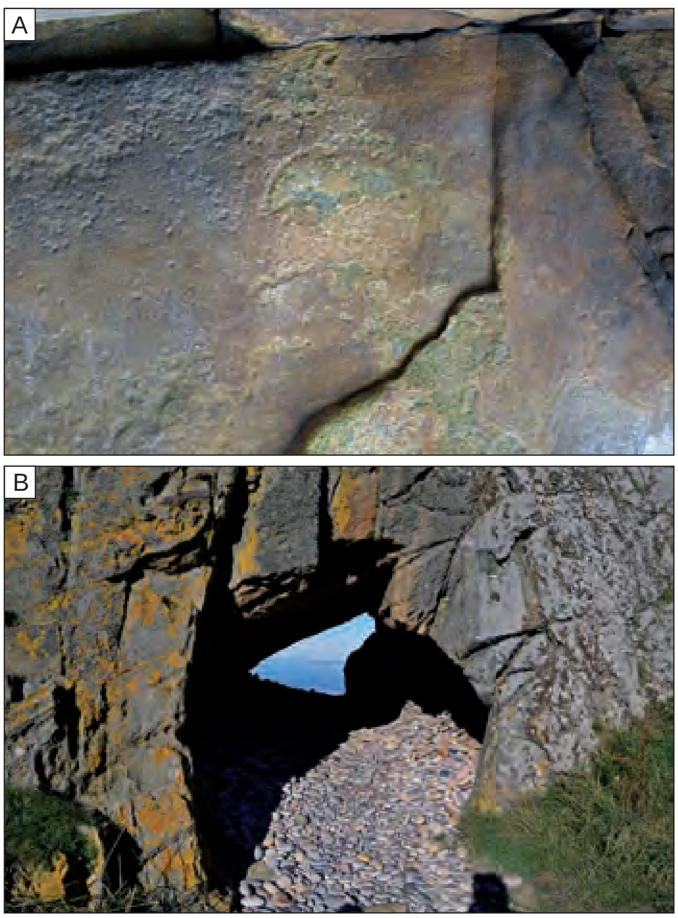

Illustration 3.12
(A) Eroded symbol in (B) the natural sea arch at Clashach Cove: the only other natural rock surface in Moray known to have had Pictish symbols carved on its walls. It is recorded as a crescent and V-rod by Fraser (2008: 106), but the V-rod is now very hard to discern

3.5 Discussion

3.5.1 The appearance of the carvings

The position of the symbols, set around the entrance area, would have made a striking sight for anyone approaching the Sculptor's Cave. Their present state probably does little justice to their original appearance. Many of the carvings now appear faint and highly eroded, which can make them seem rather crude in comparison to the symbol stones. It is important to remember, however, that their location exposes the carvings to severe wind erosion, which is particularly problematic given the coarse-grained nature of the sandstone geology of the cave. When first carved, the symbols would have been sharper, deeper and perhaps brightly painted; the abraded sherds of Roman samian pottery and fragments of orpiment recovered during Sylvia Benton's excavations could, for example, have provided the source of red and yellow pigments respectively (see sections 5.2.3 and 5.12).

In some cases, where survival is good, as with the flower and triple oval over the entrance canopy (section 3.2.2), the carvings can appear both 'stylish and orthodox' (Shepherd 1993: 81) and no less well-executed than those on many of the symbol stones. Others, including the various small symbols close to the double rectangle (section 3.2.5), seem small, simple and rather cursory in their execution. Potentially they may have been carved at different times for different purposes, or by different individuals with varying levels of skill.

3.5.2 Symbol pairs

Although there are perhaps four clear symbol pairs identifiable within the cave (the flower and triple oval (section 3.2.2), the fish and crescent and V-rod (section 3.2.3), the notched rectangle and rectangle with concave sides, and the rectangle with concave sides and triple oval (section 3.2.6)), all are paired horizontally rather than vertically as is usually the case on the symbol stones. It is also striking that none of these symbol pairs is replicated elsewhere: if they represent personal names, as Samson (1992) and others have suggested, then they are apparently unique within the corpus or else represent alternative renderings. Along with the apparently informal layout of the remaining carvings and the presence of several highly unusual symbols (eg the pentacles, rectangles with concave sides and double rectangle), this suggests significant deviation from the more canonical representations on the Pictish symbol stones.

3.5.3 Dating the symbols

The unusual qualities of the Sculptor's Cave symbols raise the possibility that they may be chronologically distinct from the corpus of symbol stones. This is not of course a new suggestion. Along with those in the Wemyss Caves (see section 3.5.4), the apparent peculiarities of the Sculptor's Cave symbols have long led to their identification as potentially early forms (eg Henderson and Henderson 2004: 171). This idea was developed, for example, by Leslie Alcock (1996), who included both the Sculptor's Cave and Wemyss carvings among a group of what he termed '*ur*-symbols', which he saw as ancestral to the more formalised repertoire commonly found on Class I symbol stones. Also included within this group were the small and atypical symbol stones from the sea-stack at Dunnicaer, Aberdeenshire (Alcock and Alcock 1992: 276–82; Noble et al 2018), and certain symbols carved on portable objects. These *ur*-symbols are defined by a number of features, including a lack of decorative infilling, the presence of non-canonical symbols (such as the pentacle and triangle) and the use of central dots within certain symbols (as is recorded in a nineteenth-century illustration of one of the pentacles at the Sculptor's Cave; see section 3.2.4).

If we accept the recent re-dating of the Dunnicaer symbols to AD 250–400 (Noble et al 2018; see section 3.1.3) then there is no reason to suppose that the Sculptor's Cave examples could not date to an equally early period. If this were the case, it would no longer be necessary to postulate any significant gap between the cessation of funerary and votive activity within the cave and the carving of the symbols around the entrance. It is important, however, to exercise some caution. The AMS dates from Dunnicaer do not date the symbols directly (ibid) and, even if they do genuinely indicate a late third or fourth century AD for the carvings, the Dunnicaer symbols have little in common with those at the Sculptor's Cave beyond a general dissimilarity with the more canonical forms present on the main corpus of symbol stones. Nonetheless, a date for the Sculptor's Cave symbols around the end of the Roman Iron Age, sometime around AD 400, is certainly now plausible.

It is additionally worth noting that the symbols at the Sculptor's Cave need not all have been carved at the same time. One might argue, for example, that the prominent and somewhat more canonical symbol pairs (the flower and triple oval, and the fish and crescent and V-rod) might be later additions, although there is presently no way to test such a proposition.

3.5.4 Pictish symbols in caves and on outcrops

Despite the large number of caves along the Covesea coast, several of which contain evidence for prehistoric human activity (Büster and Armit 2016), the only other known Pictish carving is at Clashach Cove, a natural sea arch approximately 1.5km west of the Sculptor's Cave which contains a single heavily eroded crescent and V-rod (Fraser 2008: 106; illus 3.12). Indeed, there are only a small number of sites across Scotland where Pictish symbols have been carved into natural rock surfaces. These include isolated examples associated with high-status sites outside Pictland: a boar at the Dalriadic royal site of Dunadd in the Kilmartin Valley (Lane and Campbell 2000) and a double disc and Z-rod at Trusty's Hill in Kirkcudbrightshire (Radford 1953; Toolis and Bowles 2017). Within the Pictish heartlands, however, symbols carved into natural rock are restricted to a handful of coastal cave sites. Given that more than 400 caves are recorded in Canmore, the occurrence of definitively Pictish symbols in only 8 of them would seem to suggest that carving on the walls of caves was extremely uncommon (although it is always possible of course that symbols could have been painted on cave walls).

Aside from the Sculptor's Cave, all the remaining examples are on the Fife coast, suggesting a relatively localised practice. Two caves at Caiplie each contain a single symbol (Canmore ID 34025): an arch/horseshoe in Mortuary Cave and a Z-rod overlying an unidentifiable symbol alongside numerous simple crosses in Chapel Cave, neither of which could be relocated by Fraser (2008: 66). Antiquarian excavations record at least five human burials of unknown date outside the Caiplie Caves, as well as quantities of animal bone (Stuart 1867: xc). Constantine's Cave, at Fife Ness (Canmore ID 35369), contains simple incised animal images but these cannot be definitively identified as Pictish.

The closest parallels to the Sculptor's Cave carvings, in terms of the number and type of motifs represented, are found along a 2km stretch of coastline at Wemyss in Fife (Ritchie and Stevenson 1993; Gibson and Stevens 2007; Hambly et al 2019). When documented in the mid-nineteenth century, five of these caves contained Pictish carvings (Simpson 1866; 1867) though two have since collapsed and other individual symbols have been lost to vandalism (Hambly et al 2019: 225).

There are roughly twice the number of symbols in the Wemyss Caves than in the Sculptor's Cave (49 compared to 26), although none of the individual caves at Wemyss has more than 17. As at the Sculptor's Cave, there are also later carvings, including numerous crosses. Given the larger number of carvings, it is perhaps unsurprising that the Wemyss Caves display a rather broader range of symbols, including several of the more conventional Pictish motifs (eg the 'Pictish beast', serpent, Z-rod, comb case and double disc) which are absent at the Sculptor's Cave. In general, the individual symbols at Wemyss seem haphazardly arranged, as is the case with many of the Sculptor's Cave symbols, in contrast to the careful pairing seen on the symbol stones. A striking and unusually deeply incised single rectangle with internal decoration in the Sliding Cave (Ritchie and Stevenson 1993: 207, fig 25.7) recalls the double rectangle at the Sculptor's Cave (section 3.2.5).

Excavations inside the Sliding Cave at Wemyss have produced evidence for human activity around AD 240–400 (Gibson and

Stevens 2007: 95–6), contemporary with Late Roman activity at the Sculptor's Cave. This date is also in keeping with the early chronology now suggested for the Pictish symbols at Dunnicaer (Noble et al 2018). The dating of activity at Dunnicaer, the Sliding Cave and the Sculptor's Cave thus provide mounting (albeit in the latter two cases circumstantial) evidence for the precocious emergence of Pictish symbols.

There are, however, significant differences between the Sculptor's Cave and the Wemyss Caves. In contrast to the situation at Covesea, the Wemyss Caves appear to have been relatively accessible during prehistory, and there is evidence for arable farming in their immediate vicinity (Guttmann 2002). Despite the occurrence of burials dating to the late first millennium AD (ibid), there is no evidence for the caves being used for funerary activity during the later prehistoric or Roman periods. The placement of the carvings at Wemyss is also quite different: rather than being restricted to the entrance, as at the Sculptor's Cave, the Wemyss symbols are found in various locations throughout the caves, although always 'on sunlit walls' (Hambly et al 2019: 244). The range and organisation of the symbols also differs. The only unambiguous symbol pair in the Wemyss Caves was a double disc and Z-rod and animal head, arranged vertically in the now-collapsed Doo Cave (Forsyth 1995: 95; Fraser 2008: 68), compared to four symbol pairs (each arranged horizontally) at the Sculptor's Cave. The relative lack of symbol pairs is particularly striking given the much larger absolute number of symbols found at Wemyss.

Perhaps the most striking difference between the two, however, is the paucity of crescent and V-rod and mirror/mirror case symbols from the Wemyss Caves, where together they comprise only 6% of the motifs (Hambly et al 2019: 226–7); at the Sculptor's Cave, by contrast, they make up 46% of the symbols. There are also many more animal symbols at Wemyss, especially in Jonathan's Cave; indeed, around 33% of the Wemyss carvings represent animals (ibid), compared to only 8% at the Sculptor's Cave. Thus, although the iconography of both the Sculptor's Cave and the Wemyss complex differ significantly from the standard Pictish corpus, they also differ significantly from each other, suggesting that we should not regard them as necessarily connected in terms of either the specific chronology of the carvings or the messages that they were intended to convey.

3.5.5 Interpreting the symbols

The symbols carved around the entrance to the Sculptor's Cave were evidently intended as a form of communication (cf Büster and Armit 2018). Working on the assumption that symbol pairs generally record di-thematic personal names (Samson 1992; Forsyth 1995; see section 3.1.2), we might suggest that certain symbols (including some of the most prominent) indicate named individuals. As we have seen, however (section 3.5.2), these 'names' are not otherwise recorded in the Pictish corpus. This might reflect the putatively early date of the carvings (and changing fashions in Pictish names) or it may suggest that the entities named, rather than representing the aristocratic Picts thought to be identified on the symbol stones, were perhaps ancestors or super-natural beings specifically associated with the cave.

Although the evidence for treating Pictish symbol stones as funerary monuments is weak (D V Clarke 2007), they do nonetheless appear in some cases to commemorate individuals and events, most obviously in certain Class II stones like the Aberlemno Churchyard stone, which is thought to celebrate the Pictish victory at the battle of Nechtansmere in AD 685 (Fraser 2008: 46–7). One possible reading of the Sculptor's Cave carvings, then, is that they were intended to memorialise some or all of the dead within the cave. This idea will be explored further in chapter 8.

Yet, as we have seen, the carvings are not limited to symbol pairs but encompass a range of seemingly informally placed groupings. This, along with the small size and simplicity of some of the symbols, suggests that they might communicate different forms of information from the more formal symbol pairs. Despite the uncertainties of chronology, it is likely that the carvings come at the end of the main period of human activity in the cave. It is tempting, therefore, to see them as a mark of closure, effectively putting the cave out of use for the living. Gondek has suggested that certain 'hidden symbols' on stones placed face-down in paving and other structural contexts at sites like Old Scatness in Shetland and Pool in Orkney might suggest they they served to 'close or redefine earlier activities' (2015: 101). It is not inconceivable that certain of the Pictish carvings at the entrance to the Sculptor's Cave formed a protective spiritual barrier intended to contain the dangerous forces inside.

We should also be wary of imposing too sharp a distinction between the Pictish and 'later' carvings. Given the uncertain chronology of the symbols, it is not impossible that some may have been carved in the fifth or sixth centuries AD at a time when Christianity may have begun to exert some influence in the region. If the double rectangle in the West Passage (see section 3.2.5) was indeed intended to represent a Bible, for example, then it might be seen in the same light as the simple crosses that have generally been regarded as later additions (see section 3.3.2). The Pictish and 'later' carvings may even have been carved by the same individual(s) in an attempt to Christianise the cave or act as warnings to the pious.

The interpretation of the symbols will be explored further in relation to the wider archaeology of the Sculptor's Cave in chapter 8.

3.5.6 Putting devils to flight

It is perhaps somewhat easier to offer interpretations for the carved crosses that convey an unambiguous Christian symbolism. Locally, there are associations of caves with early medieval saints: a cave near Lossiemouth, for example, was thought to have been used by the tenth century Saint Gervadius/Gerardine (Brown 1873: 327). This cave, 'ornamented with a Gothic door and window', was apparently destroyed by a 'drunken ship captain' in the eighteenth century (ibid) and cannot now be identified. Nonetheless, it is entirely possible, especially given the nearby presence of what was very possibly a Pictish monastery at Kinnedar, that the Sculptor's Cave may have been visited, perhaps even inhabited, at various times by religious individuals seeking seclusion (an association well attested in the folkloric and literary traditions of Britain and Ireland; cf Dowd 2018).

It is highly probable that some memory of the pagan funerary role of the cave would have persisted well into the medieval period; the presence of human remains would most likely have remained obvious. The crosses may thus have been intended to control or contain the forces or spirits within: effectively 'putting devils to flight' (Ahronson 2018: 102). The site's murky pagan past may even have encouraged visits by Early Christian ascetics, in emulation of Saint Anthony of Egypt who was himself famously tormented by demons in a cave. The large cross in the East Passage (section 3.3.3) suggests that such visits may have persisted well into the early second millennium AD.

Chapter 4

CHRONOLOGY: ARCHAEOLOGY, RADIOCARBON DATING AND BAYESIAN MODELLING

DEREK HAMILTON, IAN ARMIT, RICK SCHULTING AND LINDSEY BÜSTER

4.1 Introduction

4.1.1 General

Although radiocarbon dating had been planned as part of the Shepherds' work in 1979 and despite some charcoal samples having been packaged for potential submission, no dates were obtained prior to the reanalysis of the human remains in 2006 (Armit et al 2011). Chronological understanding of the site sequence thus remained firmly focused on the presence of diagnostic artefacts. Consequently, Ian Shepherd's final published statement on the site's chronology identified a period of Late Bronze Age activity 'between around 1000 and 800 BC', based on the presence of diagnostic copper alloy bracelets and 'an event in the Sub-Roman Iron Age defined by the deposition of a quantity of fourth-century bronze coins and a series of Pictish pins' (2007: 194). Human activity relating to the intervening centuries, from the Early Iron Age to the Roman Iron Age, was thus entirely unsuspected.

4.1.2 Radiocarbon dates

A total of 51 dates are now available for the site (illus 4.1; table 4.1) and these form the basis for the chronology of the site as now understood. Twenty-four of these dates were obtained as part of the re-examination of the human remains in 2006/7 (Armit et al 2011) and 26 as part of the present programme. The final date was obtained as part of a wider programme investigating ancient DNA of individuals from prehistoric Scotland (Armit et al 2016). With the exception of an initial measurement done at the ^{14}CHRONO facility at Queen's University Belfast, all AMS radiocarbon measurements were undertaken at the Scottish Universities Environmental Research Centre (SUERC).

4.1.3 Sample selection and strategy: 2006/7

The initial dating programme in 2006/7 focused on contextualising the human remains from the Benton and Shepherd excavations (although most of the human skeletal material recovered during Sylvia Benton's excavations has been lost, with the exception of a series of cervical vertebrae showing evidence for decapitation; box section 4). Samples for AMS dating were taken from 11 human bones: 5 of the cut-marked vertebrae from Benton's excavations; 3 juvenile mandibles, a child's frontal with indications of post-mortem modification and an immature thoracic vertebra, all from the Shepherds' excavations; and a tibia fragment, showing signs of peri-mortem trauma, which was found in 2006 eroding from Benton's spoil heap immediately outside the cave. One of the mandibles (SF312) and the frontal (SF231) failed to provide dates.

In addition, a selection of mammal bones was identified from stratified deposits from the Shepherds' excavations (the charred cereal grain assemblage, which would have been preferable for dating, could not be traced at that time, although it was subsequently recovered in the course of work for the present post-excavation programme; see section 4.1.4 below). These were selected from a range of contexts in the East Passage to provide an indication of the chronological range of the entrance deposits, as well as to enable a proper assessment of the degree to which human remains were 'fresh' at the time of their deposition. Bone was selected from large and medium terrestrial mammals. Although only one sample derived from articulated bone (SUERC-16593), the material was generally well preserved, with good surface integrity. Sample selection focused on large elements less likely to have moved through stratigraphic layers. Where possible, only one bone from each species (cattle, sheep/goat, pig/boar) was selected for any given context so as to avoid the possibility of duplicating an individual from the same layer. A sample from the articulated dog burial in the uppermost surviving layers of the West Passage appeared to represent the latest stratigraphically datable sample from the 1979 excavations.

4.1.4 Sample selection and strategy: 2015

A further series of 26 samples was submitted in 2015 to enable the construction of a chronological model for deposition in the West Passage and to refine the existing model for the East Passage.

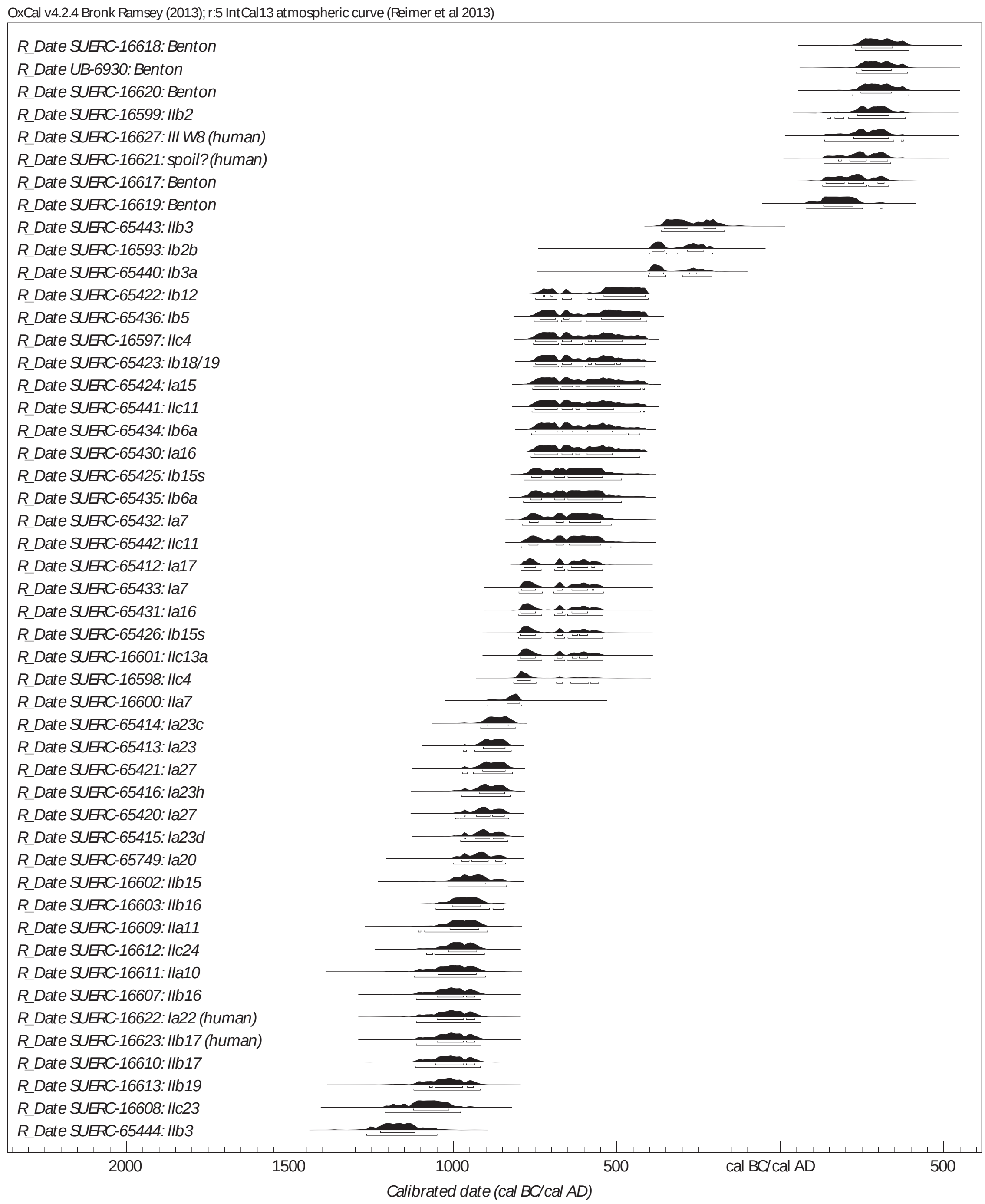

Illustration 4.1

Radiocarbon dates from the Sculptor's Cave plotted in date order. These appear to show broad continuity from the Late Bronze Age to the later centuries BC. The apparent hiatus in the last centuries BC/first centuries AD is likely to relate to the truncation of the upper deposits during Sylvia Benton's excavations. The later dates are from human bone excavated from these 'lost' deposits

Sample selection was hampered by the biases of preservation within different parts of the cave stratigraphy. Large quantities of carbonised organic material (charred cereal grains, hazelnut shell etc) survived from the lower levels (having been rediscovered during the course of the recent post-excavation programme). However, in the upper parts of the sequence, the few surviving charred grains were too sparse to be reliably interpreted as relating to contemporary deposition. There was however sufficient animal bone present to indicate continued deposition of food debris throughout the sequence. Given the nature of deposition and limitations of preservation, the following priority system for dating was adopted:

Table 4.1
Radiocarbon dates from the Sculptor's Cave. *Result calibrated using Marine13

Lab ID	Context	Block	Context description	Material	Species	Element	δ13C (‰)	δ15N (‰)	C:N	Radiocarbon age (BP)	Calibrated date (95% confidence)
SUERC-16593	Ib2b	1.7	Articulated dog burial	Bone	*Canis familiaris*	Radius	–21.3	9.0	3.3	2265±35	400–200 cal BC
SUERC-16597	IIc4	2.7	Thick deposit of soft silty clay	Bone	*Bos taurus*	Femur	–22.2	6.0	3.6	2455±30	770–410 cal BC
SUERC-16598	IIc4	2.7	Thick deposit of soft silty clay	Bone	Ovicaprid	Tibia	–21.7	6.1	3.5	2580±35	810–670 cal BC
SUERC-16599	IIb2	2.7	Thick deposit of soft silty clay	Bone	*Sus scrofa*	Radius	–22.3	7.1	3.4	1760±35	cal AD 140–390
SUERC-16600	IIa7	2.6	Burnt deposit	Bone	*Bos taurus*	Radius	–22.2	7.2	3.5	2565±35	900–790 cal BC
SUERC-16601	IIc13a	2.5	Lens of charcoal	Bone	Ovicaprid	Metatarsal	–21.0	5.8	3.2	2545±35	810–540 cal BC
SUERC-16602	IIb15	2.4	Laminated sands and fine silts	Bone	*Bos taurus*	Scapula	–22.4	7.4	3.5	2790±35	1020–840 cal BC
SUERC-16603	IIb16	2.3	Thick (0.2m) deposit of silty clay	Bone	Ovicaprid	Thoracic vertebra	–22.3	4.4	3.3	2810±35	1050–850 cal BC
SUERC-16607	IIb16	2.3	Thick (0.2m) deposit of silty clay	Bone	Ovicaprid	Long bone	–22.1	9.5	3.3	2845±35	1120–910 cal BC
SUERC-16608	IIc23	2.2	Laminated sands and fine silts	Bone	*Bos taurus*	Femur	–21.7	5.7	3.5	2895±35	1210–970 cal BC
SUERC-16609	IIa11	2.2	Laminated sands and fine silts	Bone	Ovicaprid	Femur	–22.2	4.1	3.2	2820±35	1060–890 cal BC
SUERC-16610	IIb17	2.2	Laminated sands and fine silts	Bone	*Sus scrofa*	Tibia	–22.3	6.4	3.2	2850±35	1120–910 cal BC
SUERC-16611	IIa10	2.1	Mid-brown sandy clay	Bone	*Bos taurus*	Scapula	–22.4	4.7	3.3	2840±40	1120–900 cal BC
SUERC-16612	IIc24	2.2	Hard-packed 'trampled' layer	Bone	Ovicaprid	Long bone	–21.8	7.7	3.3	2830±30	1060–900 cal BC
SUERC-16613	IIb19	2.1	Laminated sands	Bone	Caprine	Femur	–21.8	9.2	3.2	2855±35	1130–910 cal BC
SUERC-16617	Benton	n/a	No contextual information	Bone	*Homo sapiens*	Axis vertebra (CV2)	–21.1	10.0	3.1	1795±35	cal AD 120–340
SUERC-16618	Benton	n/a	No contextual information	Bone	*Homo sapiens*	Axis vertebra (CV3)	–22.0	10.8	3.2	1735±35	cal AD 220–400

Lab ID	Context	Block	Context description	Material	Species	Element	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	C:N	Radiocarbon age (BP)	Calibrated date (95% confidence)
SUERC-16619	Benton gnd square D7	n/a	No contextual information	Bone	*Homo sapiens*	Axis vertebra (CV5)	–21.0	11.0	2.9	1835±35	cal AD 80–320
SUERC-16620	Benton gnd square B4	n/a	No contextual information	Bone	*Homo sapiens*	Axis vertebra (CV6)	–21.4	11.0	3.2	1740±35	cal AD 220–400
SUERC-16621	Spoil heap erosion	n/a	Eroding from spoil at front of cave: likely from Benton's excavations	Bone	*Homo sapiens*	Tibia (right) (SF1100)	–20.9	10.4	3.1	1780±35	cal AD 130–350
SUERC-16622	IIb16/17	2.3	Thin lens of clay	Bone	*Homo sapiens*	Mandible (SF235)	–21.2	10.6	3.3	2845±35	1120–910 cal BC
SUERC-16623	IIb17	2.2	Laminated sands and fine silts	Bone	*Homo sapiens*	Mandible (SF225)	–21.5	11.3	3.5	2845±35	1120–910 cal BC
SUERC-16627	III	n/a	Unstratified	Bone	*Homo sapiens*	Thoracic vertebra (SF1101)	–21.3	11.2	3.0	1770±35	cal AD 130–380
SUERC-65412	Ia17	1.3	Sandy surface	Carbonised nutshell	*Corylus avellana*	n/a	–24.0	n/a	n/a	2522±26	800–540 cal BC
SUERC-65749	Ia20	1.2	Sand deposit	Carbonised cereal	*Hordeum vulgare* var. *nudum*	n/a	–22.2	n/a	n/a	2775±30	1010–830 cal BC
SUERC-65413	Ia23	1.2	Sand layer	Carbonised cereal	*Hordeum* sp.	n/a	–23.8	n/a	n/a	2744±26	970–820 cal BC
SUERC-65414	Ia23c	1.2	Clay deposit	Carbonised cereal	*Hordeum vulgare* var. *vulgare*	n/a	–25.0	n/a	n/a	2720±29	930–810 cal BC
SUERC-65415	Ia23d	1.2	Charcoal surface	Carbonised nutshell	*Corylus avellana*	n/a	–23.8	n/a	n/a	2764±26	980–830 cal BC
SUERC-65416	Ia23h	1.2	Sand lens	Carbonised cereal	*Hordeum vulgare* var. *nudum*	n/a	–23.3	n/a	n/a	2754±29	980–820 cal BC
SUERC-65420	Ia27	1.1	Trampled surface	Carbonised nutshell	*Corylus avellana*	n/a	–24.2	n/a	n/a	2762±29	1000–830 cal BC
SUERC-65421	Ia27	1.1	Trampled surface	Carbonised nutshell	*Corylus avellana*	n/a	–25.3	n/a	n/a	2745±29	980–820 cal BC
SUERC-65422	Ib12	1.4	Charcoal layer	Carbonised cereal	*Hordeum vulgare* var. *nudum*	n/a	–25.7	n/a	n/a	2429±29	750–400 cal BC
SUERC-65423	Ib18/19	1.3	Sand and clay laminae	Carbonised cereal	*Hordeum vulgare* var. *vulgare*	n/a	–24.6	n/a	n/a	2457±26	770–400 cal BC
SUERC-65424	Ia15	1.3	Sand and clay laminae	Bone	Large terrestrial mammal	Mandible	–21.5	7.0	3.2	2460±34	770–400 cal BC

Lab ID	Context	Block	Context description	Material	Species	Element	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	C:N	Radiocarbon age (BP)	Calibrated date (95% confidence)
SUERC-65425	Ib15s	1.4	Cobbled surface	Bone	*Sus scrofa*	Femur	–21.1	6.5	3.2	2488±33	790–430 cal BC
SUERC-65426	Ib15s	1.4	Cobbled surface	Bone	*Ovis aries*	Ulna	–21.1	5.8	3.2	2543±34	800–540 cal BC
SUERC-65430	Ia16	1.5	Loamy deposit	Bone	*Bos taurus*	Mandible	–21.2	5.9	3.2	2464±31	770–410 cal BC
SUERC-65431	Ia16	1.5	Loamy deposit	Bone	Medium terrestrial mammal	Sacrum	–21.9	5.9	3.2	2539±34	800–540 cal BC
SUERC-65432	Ia7	1.5	Thick mixed deposit	Bone	Medium terrestrial mammal	Long bone	–22.5	6.5	3.2	2502±34	800–510 cal BC
SUERC-65433	Ia7	1.5	Thick mixed deposit	Bone	*Ovis aries*	Metatarsal	–21.5	7.2	3.2	2534±34	800–540 cal BC
SUERC-65434	Ib6a	1.6	Burnt cobbles and ash	Bone	*Bos taurus*	2nd phalanx	–21.9	7.1	3.3	2463±26	770–410 cal BC
SUERC-65435	Ib6a	1.6	Burnt cobbles and ash	Bone	Medium terrestrial mammal	Long bone	–21.6	7.1	3.3	2489±34	790–430 cal BC
SUERC-65436	Ib5	1.6	Mixed sandy deposit	Bone	*Ovis aries*	Mandible	–21.9	8.3	3.2	2444±33	770–400 cal BC
SUERC-65440	Ib3a	1.7	Degraded sandstone deposit	Bone	Large terrestrial mammal	Long bone	–22.3	6.4	3.2	2283±33	410–230 cal BC
SUERC-65441	IIc11	2.6	Sand and silt laminae	Bone	Large terrestrial mammal	Long bone	–21.7	6.7	3.2	2461±33	770–410 cal BC
SUERC-65442	IIc11	2.6	Sand and silt laminae	Bone	Small/medium terrestrial mammal	Rib	–21.6	7.6	3.2	2504±34	800–510 cal BC
SUERC-65443	IIb3	2.8	Ash and sand laminae	Bone	Medium terrestrial mammal	Rib	–21.9	4.4	3.2	2189±33	370–160 cal BC
SUERC-65444	IIb3	2.8	Ash and sand laminae	Bone	Medium/large terrestrial mammal	Humerus	–22.7	6.4	3.2	2958±34	1270–1050 cal BC
SUERC-65445	Ia/Ib baulk	n/a	Interface between natural clay and laminated sands in West Passage	Bone	*Phalacrocoracidae* (cormorant family)	Tibiotarsus	–12.5	16.4	3.3	3284±34	*1380–970 cal BC
SUERC-68717	Spoil heap (2014)	n/a	Spoil at front of cave: likely from Benton's excavations	Bone	*Homo sapiens*	Left temporal (SF1130) (aDNA: male)	–21.7	11.0	3.2	1696±29	cal AD 250–420
UB-6930	Benton gnd square D4	n/a	No contextual information	Bone	*Homo sapiens*	Axis vertebra (CV4)	–20.9	11.5	2.9	1738±33	cal AD 230–400

1. The preferred sample type was individual charred cereal grains from contexts in which such grains were sufficiently numerous to suggest that the grain was incorporated into accumulating deposits shortly after burning.
2. Where charred cereal grains were not available, charred hazelnut shells were selected from contexts in which they were sufficiently numerous to suggest that they were incorporated into accumulating deposits shortly after burning. In one case, hazelnut shell was preferentially selected, despite the presence of charred grains, because of the very large concentration of hazelnuts in that particular context (Ia17; SUERC-65412).
3. Where the preferred materials were unavailable, bone deriving from large and medium terrestrial mammals was selected. All the available mammal bone was disarticulated and there was not, therefore, the opportunity to select articulated material. The animal bone was, however, well preserved, with good surface integrity. To aid the identification of any potential residuality within this material, wherever possible, two paired samples were selected from each context: where possible, these paired samples were from separate species or, where this was not possible, from different individuals as identified by size. Wherever possible, bones from identified species were submitted but, in a few cases, identification was only possible to the level of large or medium terrestrial mammal. Since no evidence for residuality was identified in the 2006/7 dating programme, it was possible to have some confidence that this would not be a major issue.
4. A single seabird bone was selected from the junction of natural sand and clay deposits underlying the anthropogenic deposits.

4.1.5 Additional sample: 2016

In 2016, the opportunity was taken to obtain a further determination as part of the GenScot Project, investigating the ancient DNA of selected individuals from prehistoric Scotland (Armit et al 2016). A single left temporal bone (SF35/GenScot 69) retrieved from the excavation of Benton's spoil heap was selected. The result obtained is consistent with the date range of other Roman Iron Age human remains from the cave.

4.2 Results and calibration

All 50 samples submitted to SUERC were processed following methods outlined in Dunbar et al (2016) and were graphitised and measured following Naysmith et al (2010). The human bone dated at Queens University Belfast was pretreated according to methods outlined in Longin (1971) and Pearson (1984). The pretreated and freeze-dried QUB sample was placed in a quartz tube with a strip of silver ribbon to remove nitrates, chlorides and CuO; it was then sealed under vacuum and combusted to CO_2 overnight at 850°C. The CO_2 was converted to graphite on an iron catalyst using the zinc reduction method (Vogel et al 1984). The graphite sample was sent to the Oxford Radiocarbon Accelerator Unit (ORAU) where it was measured as described by Bronk Ramsey et al (2004). Both the SUERC and Belfast laboratories maintain continual programmes of quality assurance procedures, in addition to participation in international intercomparisons (Scott 2003; Scott et al 2010). These tests indicate no laboratory offsets and demonstrate the validity of the measurements quoted.

The results of all 51 radiocarbon age determinations are presented in table 4.1, where they are quoted in accordance with the Trondheim Convention (Stuiver and Kra 1986) as conventional radiocarbon ages (Stuiver and Polach 1977). Calibrated date ranges were calculated using the calibration curves of Reimer et al (2013) and OxCal v4.2 (Bronk Ramsey 1995; 1998; 2001; 2009). The terrestrial calibration curve, IntCal13, was used for all samples, with the exception of the sample on a seabird bone, which was calibrated using Marine13. The simple calibrated dates are cited in the text, both here and in other chapters, at 95% confidence, and quoted with the end points rounded outwards to 10 years. Ranges quoted in italics are posterior density estimates derived from mathematical modelling of archaeological problems (below). Ranges in plain type have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

4.3 Methodological approach

A Bayesian approach has been applied to the interpretation of the Sculptor's Cave chronology (Buck et al 1996). Although simple calibrated dates are accurate estimates of the age of samples, this is not usually what archaeologists really wish to know. It is the dates of the archaeological events represented by those samples that are of interest. At the Sculptor's Cave, for example, it is the dating and duration of activity in the East and West Passages, rather than the dates of individual samples per se, that are of interest. The chronology of this activity can be estimated not only by using the absolute dating from the radiocarbon measurements but also by deploying the stratigraphic relationships between samples and the relative dating information provided by the archaeological phasing.

Methodology is now available which allows the combination of these different types of information explicitly, producing realistic estimates of the dates of archaeological interest. It should be emphasised that the posterior density estimates produced by this modelling are not absolute. Rather, they are interpretative estimates, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives. The technique used is a form of Markov Chain Monte Carlo sampling and has been applied using the program OxCal v4.2 (http://c14.arch.ox.ac.uk/). Details of the algorithms employed by this program are available in Bronk Ramsey (1995; 1998; 2001; 2009) or from the online manual. The algorithm used in the model can be derived from the OxCal keywords and bracket structure shown in illus 4.2.

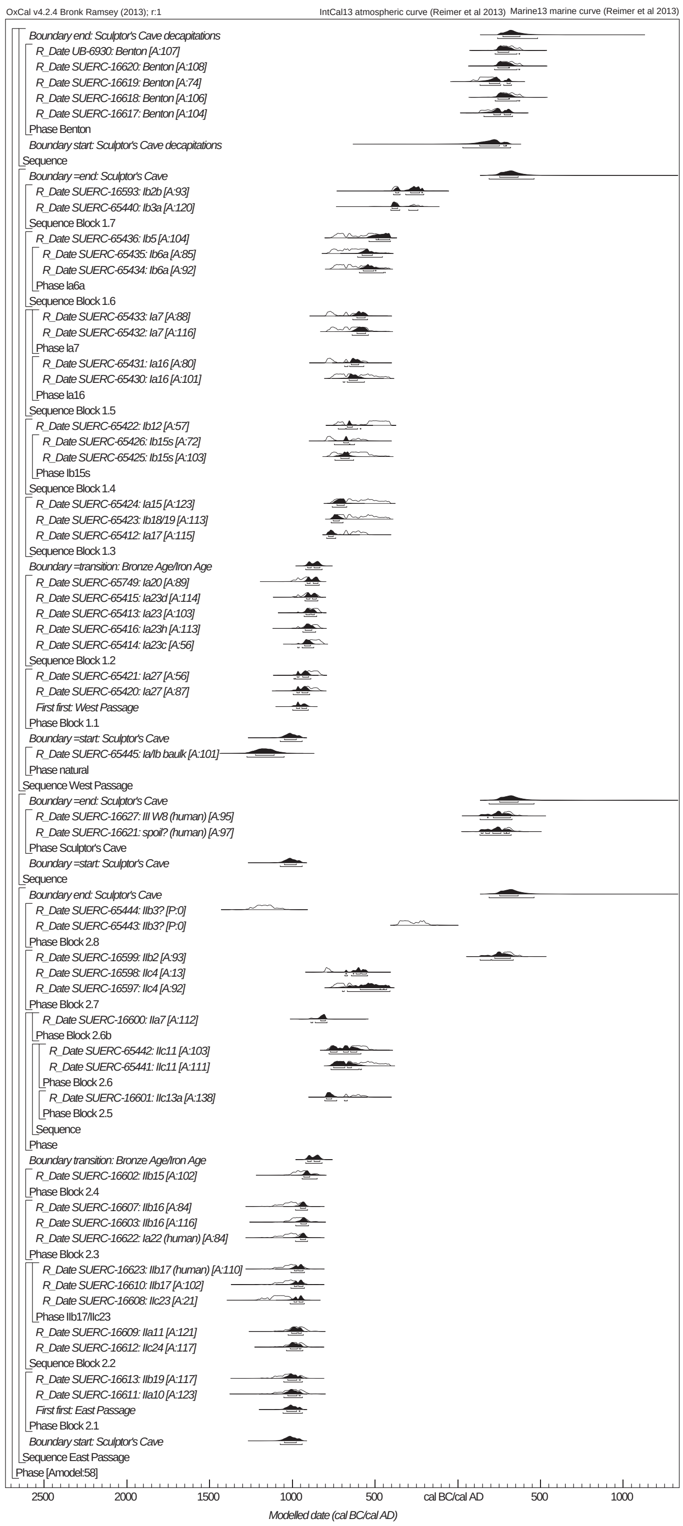

Illustration 4.2
Chronological model for the excavated activity at Sculptor's Cave. Each distribution represents the relative probability of an archaeological event. The distributions in outline show the calibration of each result by the probability method (Stuiver and Reimer 1993). The solid distributions are ***posterior density estimates*** derived from the chronological model. This model is exactly defined by the square brackets and OxCal keywords at the left of the diagram

4.4 Samples and models

The chronological model was developed to answer a series of questions:

- What are the overall start and end dates for human activity in the cave?
- What is the temporal relationship of the deposition of human remains in the East and West Passages? Did human activity within the excavated deposits begin in one passage before the other?
- Does the dating evidence demonstrate continuity or discontinuity in the accumulation of deposits in the entrance passages?

Additional queries were also made of the model:

- Is it possible that the vertebrae showing signs of decapitation are indicative of a single event?
- Can we estimate the time elapsed between the beginning of natural clay formation in the cave (immediately overlying the seabird bone) and the beginning of human activity?
- What were the start and end dates and duration of the deposition of human remains in the Late Bronze Age?

To address these questions, the radiocarbon dates from the Sculptor's Cave were divided into three broad groups:

1. Samples that derived from stratified deposits in the East Passage.
2. Samples that derived from stratified deposits in the West Passage.
3. Unstratified remains recovered from the Benton human bone archive and the spoil heap outside the entrance to the cave.

4.4.1 East Passage

There are 20 radiocarbon dates from the East Passage (illus 4.3) that are stratified within 8 blocks. At the base of the sequence are two results (SUERC-16611, -16613) from a cattle scapula and goat femur in Block 2.1. This is followed by a stratified sequence of dates on material from within Block 2.2, beginning with a sheep/goat long bone shaft fragment (SUERC-16612), followed by a sheep/goat femur (SUERC-16609) and finally three results (SUERC-16608, -16610, -16623) on a cattle femur, pig tibia, and human mandible (SF225). Block 2.3 begins with a date from a human mandible (SF235; SUERC-16622) followed by two results (SUERC-16603, -16607) on a sheep/goat vertebra and long bone shaft fragment. Rounding out the Bronze Age layers is a single result (SUERC-16602) on a cattle scapula in Block 2.4.

The Iron Age layers in the East Passage begin with Block 2.5, from which there is a radiocarbon date (SUERC-16601) on a sheep/goat metatarsal. Two results (SUERC-65441, -65442) from the overlying Block 2.6 were made on a fragment of large terrestrial mammal long bone and a small/medium terrestrial mammal rib. A

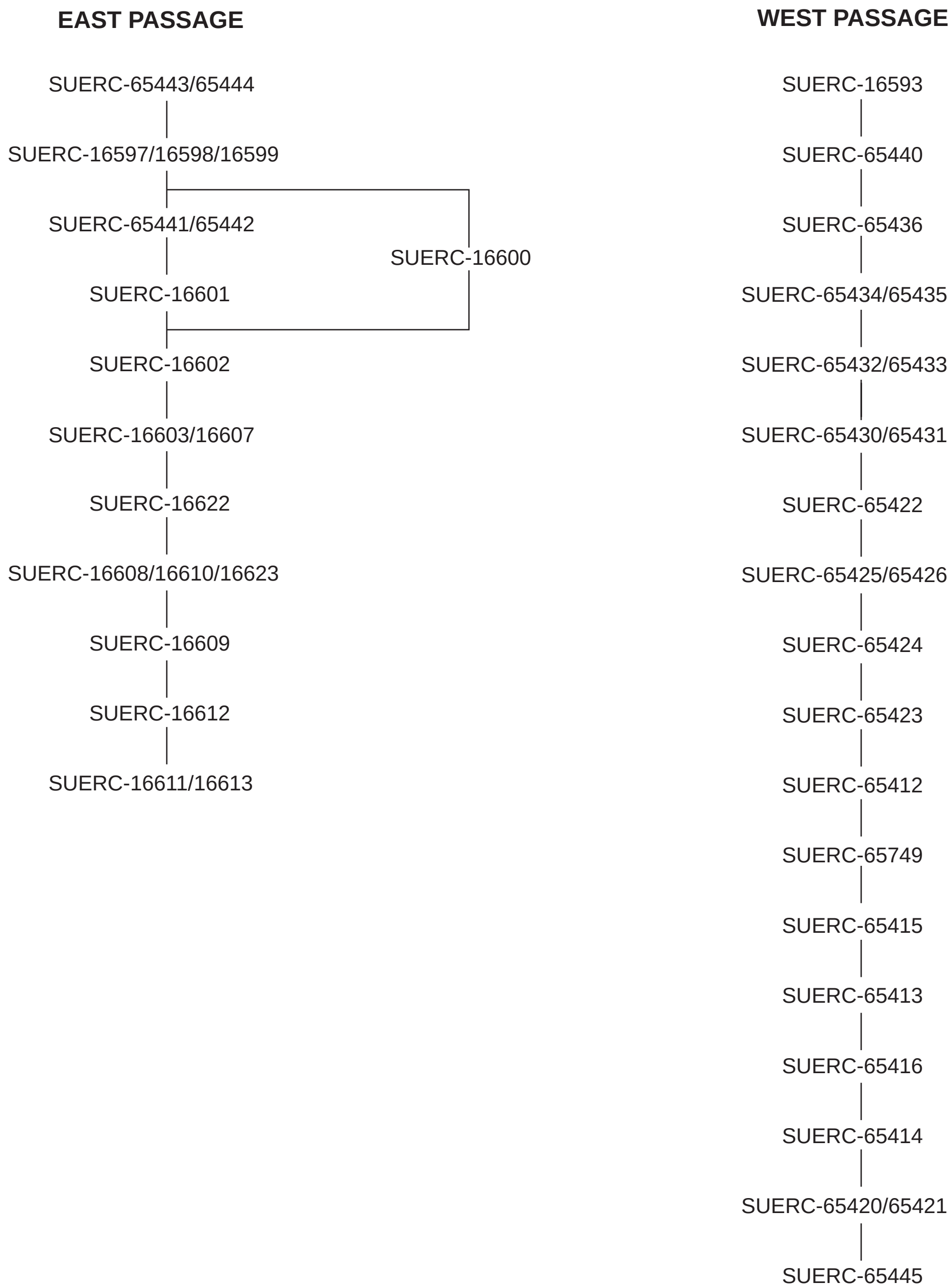

Illustration 4.3
Schematic showing stratigraphic relationships between AMS determinations

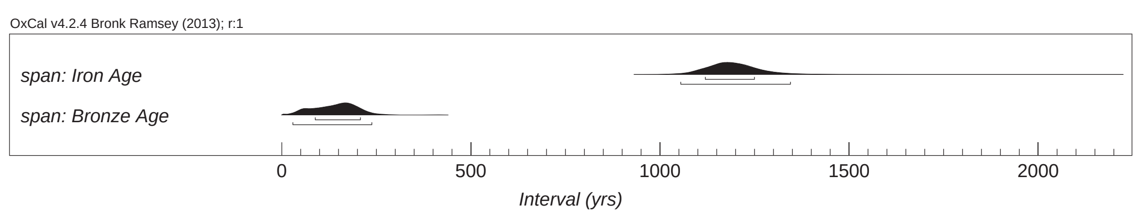

Illustration 4.4
The estimated span of activity in the Sculptor's Cave in the Bronze and Iron Ages, as modelled in illus 4.2

third result (SUERC-16600), on a cattle radius, also derives from Block 2.6, although stratigraphically it could be argued equally to sit alongside deposits in Block 2.5; the model could associate it with either block but it remains assigned, on interpretive grounds, to Block 2.6. Block 2.7 was very thick and combines individual layers that were not excavated separately by the Shepherds. There are three results (SUERC-16597, -16598, -16599) on a cattle femur, sheep/goat tibia and pig radius. From the final Block 2.8 there are two results (SUERC-65443, -65444) from a medium terrestrial mammal rib and a medium/large terrestrial mammal humerus.

4.4.2 West Passage

There are a total of 22 radiocarbon dates from 7 excavated blocks of anthropogenic deposits in the West Passage and an additional date (SUERC-65445) on a tibiotarsus from a seabird of the cormorant family that was recovered from the interface between the underlying natural clay and gravel deposits (illus 4.3). From the Late Bronze Age levels there are two dates (SUERC-65420, -65421) on single fragments of carbonised hazelnut shell in Block 1.1, which are followed by 5 dates in stratigraphic sequence within Block 1.2. Most of the dates come from charred plant material that was described as coming from discrete deposits and interpreted as belonging to separate events. At the base of the Block 1.2 sequence is a result (SUERC-65414) from a grain of barley, above which there are two further results (SUERC-65416, -65413) on barley grains from other sequential deposits. These three barley grains are followed by a result (SUERC-65415) on a charred hazelnut shell. The Late Bronze Age portion of the sequence is capped by a result (SUERC-65749) on a further barley grain.

From Block 1.3, there are three results (SUERC-65412, -65423, -65424) in sequence, from lowest to highest, on a charred hazelnut shell, carbonised barley grain and large terrestrial mammal mandible fragment. Block 1.4 has three results: SUERC-65425 and -65426 are on a pig femur and sheep/goat ulna, overlain by a deposit from which a charred barley grain was dated (SUERC-65422). Block 1.5 has four results: two paired dates (SUERC-65430, -65431) on a cattle mandible and medium terrestrial mammal sacrum and a further pair (SUERC-65432, -65433) on a medium terrestrial mammal long bone shaft fragment and a sheep/goat metatarsal from an overlying deposit. The three results from Block 1.6 are from two levels, with two dates (SUERC-65434, -65435) on a calf phalanx and medium terrestrial mammal long bone shaft fragment from the lower level, and a result (SUERC-65436) from a sheep/goat mandible from the upper level. The Iron Age portion of the sequence finishes with two dates (SUERC-65440, -16593) on a large terrestrial mammal long bone shaft fragment and dog radius in sequence in Block 1.7.

4.4.3 Unstratified remains

There are eight results on unstratified human remains from the Sculptor's Cave. Three results (SUERC-16621 -16627, -68717) are from a tibia shaft, a thoracic vertebra and a left temporal. The tibia was recovered from the surface of the Benton spoil heap outside the cave entrance, the thoracic vertebra was excavated from disturbed remains in Area III (section 2.1.5; illus 2.6) and the temporal bone was recovered from Benton's spoil heap during the 2014 excavations (box section 2). The remaining five results (SUERC-16617, -16618, -16619, -16620, UB-6930) are all from cervical vertebrae that present evidence for decapitation.

4.4.4 The model

The chronological model developed stipulates that all of the material recovered from the anthropogenic deposits belongs to one of two phases of activity – Late Bronze Age or Iron Age – and that these two phases are sequential but not necessarily contiguous. This allows for calculation of the overall start and end dates of activity in the cave as well as dates for the end of the Late Bronze Age activity and beginning of the Iron Age activity. It also enables a determination of whether the dating supports a hiatus in the activity. Although subtle and subjective, there is a change from fairly thin deposits of sands and clays to thick deposits of looser material with hearth debris that the Shepherds took to mark the end of Late Bronze Age activity. This transition can be identified in the East Passage at the boundary between Blocks 2.4 and 2.5 and in the West Passage at the boundary between Blocks 1.2 and 1.3.

Before commencing with the modelling, it was noticed that the two results (SUERC-65443 and -65444) from East Passage Block 2.8 are from the second or first millennia cal BC and are approximately 1000 years different in date. The earlier date (SUERC-65444) is certainly residual and has been excluded from all modelling. However, it remains difficult to reconcile the first-millennium cal BC date (SUERC-65443) in Block 2.8 when there is a second- to third-century cal AD date (SUERC-16599) immediately below in Block 2.7. Since we know that there was modern disturbance both by Benton and by subsequent informal digging in the cave, the later date (SUERC-65443) from Block 2.8 is also excluded from all modelling. It appears likely, on the basis of the radiocarbon dates, that the deposits of Block 2.8 should be regarded as highly disturbed.

The five results representing decapitated individuals were modelled as a separate phase of activity that can be independently compared to the stratified sequence from the Shepherd excavations.

4.5 Model results

The model has low agreement (Amodel=58) between the radiocarbon dates and the recorded stratigraphic relationships between samples. The depth of the recorded stratigraphy and high number of samples is almost certainly the cause of the overall agreement dipping just below the usual threshold of 60. Given the results of the sensitivity analysis (section 4.5.1), this model should be considered robust. The model estimates that activity in the Sculptor's Cave began in *1075–940 cal BC* (*95% probability*; illus 4.2, *start: Sculptor's Cave*) and probably in *1050–975 cal BC* (*68% probability*). Bronze Age activity spanned *35–240 years* (*95% probability*; illus 4.4, *span: Bronze Age*) and probably *85–210 years* (*68% probability*). The Bronze Age activity ended in *920–820 cal BC* (*95% probability*; illus 4.2, *transition: Bronze Age/Iron Age*) and probably in either *910–885 cal BC* (*26% probability*) or *870–830 cal BC* (*43% probability*). Activity in the Sculptor's Cave ended in

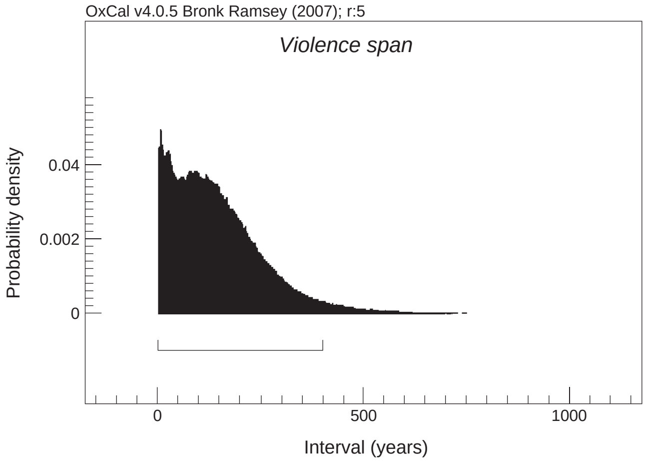

Illustration 4.5
The estimated span of the five cut-marked vertebrae, as modelled in illus 4.2

cal AD 240–485 (*95% probability*; illus 4.2, *end: Sculptor's Cave*) and probably in *cal AD 270–380* (*68% probability*). The Iron Age activity was long-lived and spanned *1055–1345 years* (*95% probability*; illus 4.4, *span: Iron Age*) and probably *1120–1250 years* (*68% probability*).

The human cervical vertebrae that exhibit signs of decapitation have radiocarbon ages that are statistically consistent (T'=6.6; ν=4; T'(5%)=9.5; Ward and Wilson 1978). This indicates that they could be the same age, with the individuals represented dying in the same 'event' (illus 4.5). If these five people were decapitated at the same time, the calibrated weighted mean of those ages suggests the event occurred in *cal AD 220–340* (*95% probability*), probably *cal AD 240–260* (*27% probability*) or *cal AD 285–290* (*4% probability*) or *cal AD 295–325* (*37% probability*) (illus 4.6). However, it is possible that the cave was used periodically for carrying out beheadings and, if this was the case, then this activity is estimated to have begun in *cal AD 30–320* (*95% probability*; illus 4.2, *start: Sculptor's Cave decapitations*) and probably in either *cal AD 130–255* (*63% probability*) or *cal AD 275–295* (*5% probability*). The activity persisted for *0–410 years* (*95% probability*; illus 4.5, *span: Sculptor's Cave decapitations*) and probably *0–190 years* (*68% probability*). The decapitations ended in *cal AD 240–485* (*95% probability*; illus 4.2, *end: Sculptor's Cave decapitations*) and probably in *cal AD 270–380* (*68% probability*).

4.5.1 Sensitivity analysis

The sensitivity analysis was used to explore the impact of the stratigraphy within the blocks to the model output, as the Primary model contained many vertical links between individual samples through the stratigraphy that could lead to over constraint in the model. The only difference between the Primary model and this Alternative model was the removal of sequencing within individual blocks, allowing the radiocarbon dates associated with each of them to be unordered. The Alternative model has good agreement between the dates and the model assumptions (Amodel=63). The date estimates for the start and end of activity at the Sculptor's Cave and the transition between the Bronze Age and Iron Age phases differ in range by 5–20 years when comparing the 95% probability ranges, and less when comparing the 68% probability ranges. This demonstrates the overall robustness of the Primary model, which is the preferred model used to address further queries.

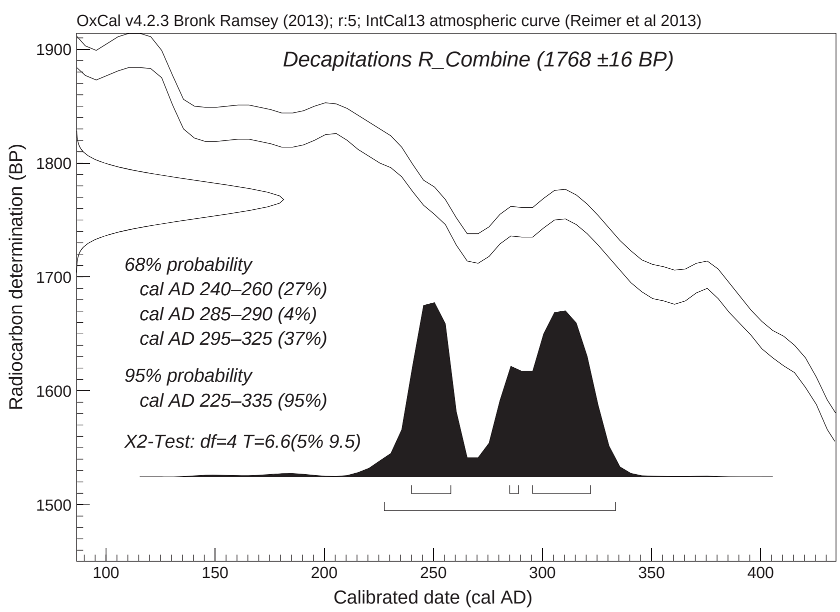

Illustration 4.6
The estimated date for the five cut-marked vertebrae if they occurred as part of a single event. The radiocarbon ages have been combined prior to calibration to form a weighted mean (Ward and Wilson 1978)

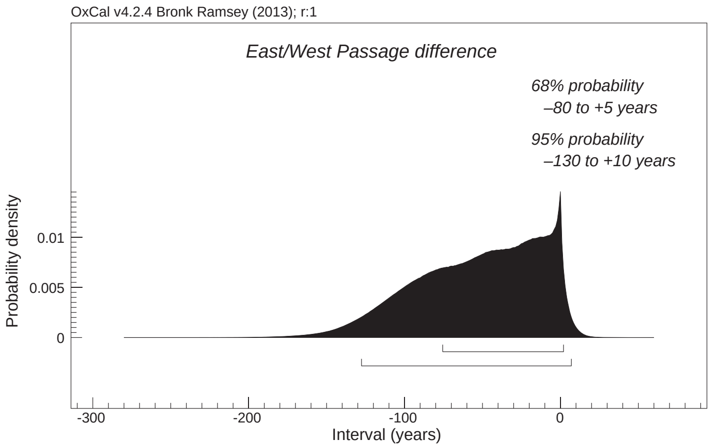

Illustration 4.7
The difference between the earliest deposit in the East and West Passages, as modelled in illus 4.2

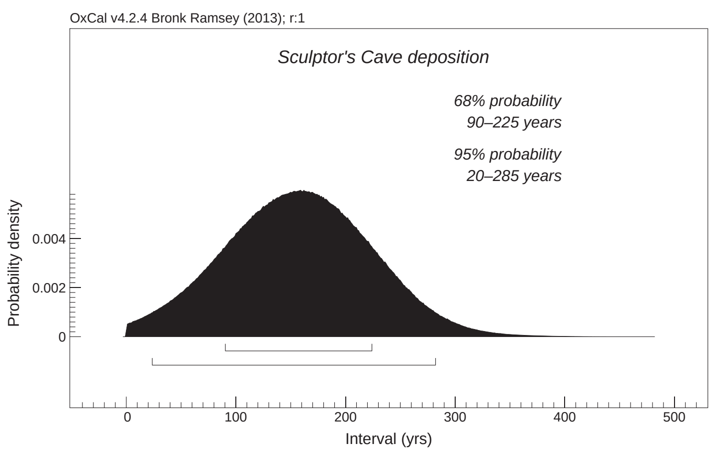

Illustration 4.8
The hiatus in time between the deposition of the seabird bone (SUERC-65445) and the start of human activity in the Sculptor's Cave (*start: Sculptor's Cave*), as modelled in illus 4.2

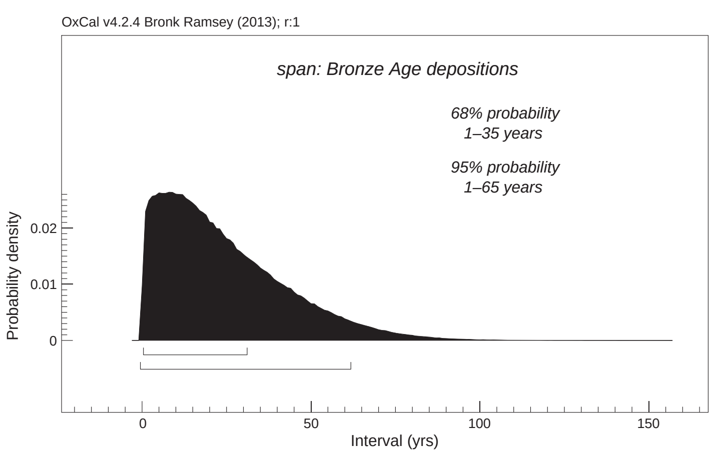

Illustration 4.9
The span of time for Bronze Age human deposition in the Sculptor's Cave, as modelled in illus 4.2

4.5.2 Further queries of the Primary model

The chronological model can be used for more than simply producing estimates for the start, end and duration of dated activity at a site. The resulting model can be queried to determine the temporal relationship between dated events (eg the order of two events), the hiatus between two dated events, or even to explore the relationship between events dated at two different sites. The remaining questions from above (section 4.4) are addressed here:

1. What is the temporal relationship between the excavated deposits in the East and West Passages? By calculating and comparing the probabilities for the 'first' depositional event in both the East and West Passages (though see section 2.3.4), the model suggests that there is a 95% probability that deposition began in the East Passage. The difference between these two probabilities is between *–130 and 10 years* (*95% probability*; illus 4.7), or *–80 and 5 years* (*68% probability*).
2. Can we estimate the time elapsed between the beginning of sand formation in the cave that contained the seabird bone and the beginning of human activity? Similar to the query above, it is possible to estimate the amount of time that elapsed between the deposition of the seabird bone (SUERC-65445) and the start of human activity in the cave (*start: Sculptor's Cave*). This calculation is *20–285 years* (*95% probability*; illus 4.8, *Sculptor's Cave deposition*) or probably *90–225 years* (*68% probability*).
3. What were the start and end dates and duration of the deposition of human remains in the Late Bronze Age? There are two dates on Late Bronze Age human depositions in the cave (SUERC-16622 and -16623). The dates on the two samples provide the start and end. *SUERC-16623: IIb17 (human)*, from Block 2.2, has a modelled date of death and deposition in *1010–925 cal BC* (*95% probability*; illus 4.2) and probably in either *990–970 cal BC* (*23% probability*) or *965–935 cal BC* (*45% probability*). *SUERC-16622: Ia22 (human)* is from Block 2.3 and has an estimated date of *985–905 cal BC* (*95% probability*; illus 4.2) and probably *955–920 cal BC* (*68% probability*). The difference between the dates provides an estimated span of *1–65 years* (*95% probability*; illus 4.9, *span: Bronze Age depositions*) and probably *1–35 years* (*68% probability*).
4. Does the dating evidence demonstrate continuity or discontinuity in the accumulation of deposits in the entrance passages? While the dating from the Sculptor's Cave might be taken to suggest a discontinuity in deposition, with a hiatus of perhaps 400–500 years – between, on the one hand, the later first-millennium cal BC material in the upper levels of both the East and West Passages and the earlier first-millennium cal AD material in Block 2.7 of the East Passage and, on the other, the various human remains from Benton's spoil heap and decapitations – Benton had removed upper deposits from both passages and so the paucity of dates before the

decapitation 'event' might reasonably be a by-product of the material remaining after her intervention.

4.6 Discussion

Many of the implications of the Bayesian analysis of the radiocarbon dates are explored elsewhere in the relevant chapters, but it is useful to summarise some of the main features here.

The Bayesian model supports the archaeological interpretation, advanced in chapter 2, that deposition at the Sculptor's Cave was more or less continuous (if low in intensity) from its beginnings in the Late Bronze Age through to at least the later first millennium BC. The removal of the upper deposits throughout the entire cave by Sylvia Benton prevents any meaningful interrogation of possible continuity after this period, but the Late Roman Iron Age dates for many of the human remains and for significant parts of the artefact assemblage (see chapters 5 and 6) are suggestive. Despite the evidence for continuity, the deposition of human remains (for which the cave is so well known) appears confined to two potentially rather brief episodes separated by more than a millennium. The implications of this will be discussed in chapter 8.

The AMS dates have been useful in confirming the generally low level of residuality throughout much of the depositional sequence while highlighting the specific difficulties associated with the uppermost surviving deposits (notably Block 2.8). This has informed the interpretations of the formation processes within the cave advanced in chapter 2.

In relation to the dating of the Late Roman Iron Age decapitations, it is interesting to compare the results of Bayesian modelling to the sparse historical record of the period. If, as seems likely, the multiple decapitations do relate to a single event (illus 4.5), then it is probable that they were related in some way to the political and/or military events of the time (see discussion in chapter 8). Bayesian modelling suggests that they are unlikely to relate to the period of the Severan campaigns against the Maetae and Caledonii in AD 211. However, it is not impossible that they do relate in some way to the next documented Roman military incursion: the invasion of Constantinius Chlorus in AD 305, which falls within the 68% confidence range. It is entirely possible of course that the putative event relates to indigenous conflicts within the region, or even to undocumented conflict with the Roman army.

Chapter 5

THE FINDS

5.1 Introduction

Both the Benton and Shepherd excavation campaigns at the Sculptor's Cave produced large finds assemblages, together totalling 1076 objects (see table 5.31). The overwhelming majority of these date from the Late Bronze Age to Roman Iron Age, though some residual earlier material (mainly lithics) and a small quantity of intrusive modern material (mainly iron) is also present.

The material from the Shepherds' excavations (*c* 350 objects) is generally well-stratified and much of it was recorded spatially. In sum, this material accounts for around one third of the assemblage. The Benton material (*c* 700 objects) is, however, much more problematic. Benton's working methods involved the removal by spade of material within each grid square, which was then sieved at the cave entrance to retrieve artefacts (see section 2.1.6). Examination of her spoil heap in 2014 appears to confirm that little artefactual material was missed (box section 2). Nonetheless, although most of her finds thus have some spatial information (ie to grid square), more detailed contextual information of the Benton material is limited to the attribution of objects to either her Layer 1 or Layer 2. As we have seen (section 2.1.6), there are significant problems with the integrity of these layers. Layer 1 was thought to date to the Roman Iron Age, but discrepancies between field and published drawings suggest that there may have been changes of mind at certain points about how exactly it was defined. Layer 2 encompasses deposits now known to date from at least the Middle Bronze Age to the Middle Iron Age and is thus of little use as a chronological indicator. While we have indicated Benton's layer attributions in the finds catalogues below, all finds from her excavations have to be treated as effectively 'unphased'. Nonetheless, some of this material is typologically distinct and can be dated with varying degrees of precision. Benton's assemblage thus makes a hugely significant contribution to our overall understanding of human activity within the cave.

5.2 Pottery

5.2.1 Later prehistoric pottery

Gemma Cruickshanks and Alison Sheridan

Introduction

Excavations at the Sculptor's Cave have produced 628 sherds of prehistoric pottery, weighing 8335.7g, along with a further 789.3g of pottery fragments (measuring less than 10mm × 10mm) (table 5.1). A minimum of 20 vessels is represented in the assemblage (table 5.2), dominated by plain, thick-walled bucket-shaped vessels with varying forms of flat rim which are found in all phases of the site. A smaller number of finer vase-shaped vessels with short everted rims are also present in the assemblage. Analysis of context and wear suggests some vessels may have been deposited intact, particularly in the East Passage.

Methods

Each sherd was weighed, measured and assigned a fabric type based on macroscopic and selected microscopic examination in accordance with the *Prehistoric Ceramics Research Group's* recommended methods (PCRG 2011). Sherds were grouped into six fabric types and assigned vessel numbers based on differences in form, surface treatments and dimensions (table 5.2; although each 'vessel' could contain sherds from more than one very similar pot). Sherds were matched across the whole assemblage rather than for each context; given the lack of contextual information for Benton's material, this allowed for a more realistic minimum number of vessels to be estimated. Degree of wear was also recorded, along with the location and extent of adhering residues or sooting. The assemblage is summarised by vessel number, each of

Table 5.1
Summary of the Sculptor's Cave pottery assemblages

Sherd type	Benton	Shepherd	Büster/Armit	Total
Rim	70	57	–	**127**
Base	23	28	–	**51**
Body	224	224	2	**450**
Total sherd no.	**317**	**309**	**2**	**628**
Total sherd weight (g)	4638	3697.7	–	**8335.7**
Fragment weight (g)	–	787.3	2	**789.3**

Table 5.2
Summary of vessel characteristics

Fabric	Vessel	Form	Rim	Est. rim diameter (mm)	Base	Wall thickness (mm)	Decoration	Total no. of sherds
A	1/2	Large bowl?	Rounded	*c* 280	–	15	–	**82**
B	3	Bucket/barrel	Internal bevel	*c* 150	Flat	8–12	–	**113**
	4	Bucket/barrel	Internal bevel with external lip	*c* 200	Flat	8–10	–	**102**
	5	Bucket/barrel	Internal bevel with external lip	170	Flat	9	–	**1**
C	6	Bucket/barrel	Internal bevel	–	Flat	12–14	–	**38**
D	7	Unknown	Rounded	*c* 240	–	12–15	–	**3**
	8	Bucket/barrel	Flat with external lip	*c* 200	–	10	–	**62**
	9	Bucket/barrel	Internal bevel	*c* 200	–	8–10	–	**2**
	10	Bucket/barrel	Internal bevel	*c* 160	–	8–10	–	**5**
E	11	Bucket/barrel	Internal bevel	*c* 140	Flat	8–10	–	**50**
	12	Bucket/barrel	Internal bevel	*c* 120	–	8	–	**2**
	13	Bucket/barrel	Internal bevel	*c* 120	–	6–8	–	**5**
	14	Bucket/barrel	Tapering, flat	*c* 200	Flat	8	–	**28**
	15	Bucket/barrel	Internal bevel	*c* 250	–	10	–	**2**
F	16	Unknown	–	–	–	11–12	Incised design	**11**
	17	Vase	Everted	*c* 110	–	5–7	Vertical wiping?	**16**
	18	Vase	Everted	*c* 190	–	9–10	–	**38**
	19	Vase?	Slightly everted	*c* 110	Flat	10–15	Fingernail impressions on rim	**18**
	20	Unknown	Tapered	*c* 160	–	10	–	**2**

Table 5.3
Petrographic fabric classifications

Fabric	Short description	Matrix texture	Large inclusions	Matrix colour	Thin sections
A	Shell tempered	Fine	Shells	Brown	1A, 1B, 2, 3
B	Fine sandy with few large rock fragments	Fine sandy	Metamorphic	Dark brown	4, 5
C	Coarse fabric	Silty	Metamorphic	Brown/dark brown	6, 7, 10
D	Coarse fabric	Fine	Igneous	Brown/dark brown	8, 9
E	Sandy/gritty	Sandy	Igneous	Brown/reddish brown	11, 12
F	Sandy	Sandy	Sandstone	Light brown/yellow	13, 14

which is illustrated by a selection of diagnostic sherds (illus 5.1–5.6). A full catalogue detailing each sherd is held in the site archive.

Assemblage characteristics

Form
The assemblage is dominated by flat-based, bucket- or barrel-shaped vessels with flat or internally bevelled rims: a form often referred to as 'flat-rimmed ware' (table 5.2). Unusual shell-tempered, thick-walled vessels with upright, rounded rims (V1 and V2) are also present, along with medium-walled, everted-rimmed vessels with rounded shoulders and narrow, flat bases.

Fabric
The following fabric types were identified by macroscopic and petrographic analysis (see section 5.2.2; table 5.3):

A. A very distinct soft, fine, orangey-pink clay with *c* 10% shell fragments (1–7mm in maximum extent).
B. Fine sandy clay with 5% fine rounded/sub-angular quartz and plagioclase feldspar inclusions (and less commonly other rock fragments, probably gneiss), 2mm in maximum extent. Fairly distinct but could include subtly different fabrics. Orangey-brown margins with grey core.
C. A very distinct fine clay with 20% large micaceous rock inclusions, 6mm maximum extent. Orange margins with grey core.
D. (i) Fine/slightly sandy clay with *c* 30% dark grey/black igneous rock inclusions, 12mm in maximum extent, and distinct hackly fracture. (ii) Very similar, but less sandy with additional small quartz inclusions.
E. A sandy homogenous clay with occasional fine quartz and feldspar inclusions. The uniformity of distribution of the sand, along with the angular nature of the mineral fragments, suggests both were deliberately added as temper.
F. Very fine sandy clay with a few small quartz and feldspar inclusions, probably deliberately added, based on their regularity. Not a particularly distinct fabric and could comprise several subtly different fabrics and many different vessels.

Fabric group summaries

Fabric A (V1 and V2)

Fabric A is represented by at least two thick-walled vessels with upright rounded rims of a very distinct shell-tempered fabric (V1 and V2). Two of the rim sherds are thinner, suggesting a minimum of two vessels are represented in this group, but most sherds could be from either. There is only one possible base sherd, identifiable by being flatter and thicker, but it is not clear if V1 and V2 had flat or rounded bases.

A further 18 bags of ceramic fragments (400.6g) were recovered by the Shepherds from Phase 1 Blocks 1.2 (Ia20, Ia20a, Ia22a, Ib23) and 2.2 (IIc23) and from Phase 2 Blocks 1.3 (Ia15a/17, Ia15a, Ia15e, Ia17, Ia17/17a, Ia17a), 1.4 (Ib15s, Ia16b), 1.5 (Ib7r) and 2.5 (IIc13). These were similar to Fabric A but also contained charcoal inclusions and patches of sandy soil. Most of these fragments comprise only one face or are amorphous lumps with no visible structure. It seems most likely they represent fragments of V1 and V2 (or vessels of similar fabric) collected along with part of their surrounding context, perhaps having been trampled into a charcoal-rich spread (Ia17/17a; section 2.4.3).

Fabric B (V3, V4 and V5)

At least three vessels (from Blocks 1.2, 2.2) were manufactured from Fabric B, all of which have internally bevelled rims. Two have an external lip (V4 and V5). The vessels were flat-based bucket-shaped forms and a large proportion of all three is probably represented, with over 100 sherds from V3 and V4 and a substantially reconstructed portion of V5.

Fabric C (V6)

Thirty-eight sherds (from Blocks 1.2, 1.3, 2.2, 2.3) represent a thick-walled, bucket-shaped vessel with an internally bevelled rim. No base sherds are present, leaving its form unclear. The fabric is very distinct due to having large micaceous inclusions and a bright orange exterior.

Fabric D (V7, V8, V9 and V10)

These four vessels have a distinctive dark brown/black colour and hackly fracture. V7 is only represented by three sherds from a thick-walled (12–15mm), round-rimmed vessel. V8–V10 are thinner-walled (8–10mm) vessels with flat (V8) or internally-bevelled (V9 and V10) rims. No base sherds, nor substantial portions of any of these vessels, survive, but it seems likely that V8, V9 and V10 were bucket- or barrel-shaped, based on the forms of other vessels with similar rims. The form of V7 is unclear.

Fabric E (V11, V12, V13, V14 and V15)

This group comprises at least five vessels with medium thickness walls (6–10mm) in a homogenous sandy fabric with no obvious temper. Four vessels have internally bevelled rims (V11, V12, V13 and V15) with varying diameters (100–300mm), while V14 has an unusual tapering flat rim and a flat base. No base sherds survive from V11, V12, V13 or V15.

Fabric F (V16, V17, V18, V19 and V20)

The five vessels in this group are all formed from similar fine, inclusion-free clay but display differing forms and methods of construction. V16 is only represented by ten body sherds in a distinct reddish-orange fabric, two of which display incised decoration. V17, V18 and V19 have varying forms of everted rims, one of which (V19) is decorated with a row of fingernail impressions, while V20 is tapered. V19 and V20 are the only vessels in the assemblage which were constructed using the tongue and groove technique. V19 has a flat base, but the form of the other bases is unclear.

Technology, surface treatments and decoration
Colour varies widely, even across single sherds, indicating open bonfire-type firing conditions where temperature and airflow were relatively uncontrolled as opposed to an enclosed kiln. Red

tones or grey tones indicate oxidising or reducing firing conditions respectively (Henderson 2000: 131). Most of the sherds show either an oxidised exterior and reduced interior (47%) or oxidised margins with a reduced core (40%).

All of the pottery was hand-made and, where discernible, all but V19 and V20 were constructed using diagonally joined coiled straps added to a moulded base. V19 and V20 were made using the tongue and groove technique.

The most common surface finishes are wiping (42%) and wet-smoothing (42%), achieved with a cloth or wet hand while the clay was still damp, either to achieve a smoother finish for aesthetic reasons or to improve waterproofing by sealing any small gaps. Both techniques most commonly occur over both the interior and exterior surfaces, with only a few examples of surface finishing on one surface only. One vessel (V17) shows burnishing on the exterior and also rough, vertical wiping. The V1 and V2 rim sherds appear to have had a slip applied over the rim section only, perhaps to strengthen it.

Only three vessels display possible decoration. V16 is represented by only a few very abraded body sherds, but two of these sherds display incoherent but deliberate incised geometric decoration on the exterior. V17 has distinct vertical rough wiping marks on the exterior, which could be decorative, and V19 has a row of fingernail impression along the top of the rim. All of the decorated pots are of Fabric F and were recovered, where stratified, from Phases 2 (Block 2.6) and 2/3 (Block 2.7) (see section 2.4.2), suggesting decorated pots were only present during the later phases of the site.

Function

All but one of the vessels have adhering burnt residues or sooting on the interior surfaces, indicating they had been used for cooking. Only V16 shows no sooting or residues but only a small number of sherds survive from this vessel and most are lacking one face. The lack of charring on the exteriors of the pots is unusual, as cooking over an open fire often creates a blackened appearance on the outside. This suggests the pots may have been used for slow cooking on the edge of a hearth rather than being placed directly on the fire.

Benton described finding a 'mutton bone' (1931: 190) inside one of the vessels (V4) which could have been the remains of a meal but which also raises the possibility of deliberate deposition. Similar deposits of animal bone and other artefacts were recovered in pots at the Iron Age wheelhouse site at Sollas (Campbell 1991: 144), while 29 burials in the Rudston-Burton Fleming cemetery, East Yorkshire, were accompanied by plain

Table 5.4
Abundance of pottery fabric per stratigraphic block (by sherd count). Lightest to darkest shades: 1–5, 6–10, 11–40, >40.
Blue shading denotes Phase 1 blocks; green, Phase 2 blocks; purple, Phase 2/3; and orange, Phase 3. C: pottery crumbs.

Passage	Block	No. of sherds								
		A	B	C	D	E	F	Unknown	Total by block	Total by passage
W	1.1	–	–	–	–	–	–	C	**C**	**226+C**
	1.2	1+C	76+C	6	7+C	34+C	1+C	30+C	**155+C**	
	1.3	60+C	–	1	2	–	–	7+C	**70+C**	
	1.4	C	–	–	–	–	–	C	**C**	
	1.5	C	–	–	–	–	–	1+C	**1+C**	
	1.6	–	–	–	–	–	–	C	**C**	
	1.7	–	–	–	–	–	–	–	**–**	
E	2.1	–	–	–	–	–	–	–	**–**	**39+C**
	2.2	3+C	2+C	1	2	2	–	2+C	**12+C**	
	2.3	–	–	1	16+C	–	–	C	**17+C**	
	2.4	–	–	–	–	–	–	C	**–**	
	2.5	C	–	–	–	–	–	–	**C**	
	2.6	–	–	–	–	–	1	C	**1+C**	
	2.7	–	–	–	C	–	9+C	C	**9+C**	
	2.8	–	–	–	–	–	–	**–**	**–**	
Total by fabric		**64+C**	**78+C**	**9**	**27+C**	**36+C**	**11+C**	**40+C**	**–**	**265+C**

bucket-shaped vessels, each containing a bone from the front left leg of a sheep (Rigby 1991: 94).

Wear

The degree of wear on each sherd was recorded on a scale of 1–4, with one being freshly broken and four very abraded. These data were used to analyse how much the pottery may have moved around since deposition, thus potentially identifying residual sherds from primary deposits. The most abraded sherds are from V1, V2 and V16 but, as they are the softest fabrics and many of the sherds were found in the same area, this does not mean they were necessarily residual. Most of the sherds are remarkably fresh and show little abrasion to the edges (especially V3, V4, V5, V6, V8, V15, V18 and V19), indicating that they are unlikely to have moved far since their deposition and may even have broken during excavation.

Distribution

Though we do not have detailed contextual information for most of the pottery recovered by Benton, some can be located to her site grid (1931: 189, fig 2; illus 2.2), which can be used to examine spatial distribution along with contextual information from the Shepherds' excavation. Though the distribution of plotted sherds from Benton's excavation suggests a clustering of pottery in the East Passage, the vast majority of the pot sherds were not plotted; meanwhile, pottery from the Shepherd excavations (tables 2.1, 2.2, 5.4, 5.5) shows an overwhelming concentration (of all fabrics, except Fabrics D and F) in the West Passage.

While some vessels are represented by many sherds and may indicate deposition of whole pots, some (V7, V9, V10, V12, V13, V15 and V20) are represented by very few sherds (five or less). It therefore seems that both whole pots and fragments were deposited.

As the Shepherds' excavations concentrated on the entrance passages and we only know the grid location of a small fraction of Benton's pottery, the pattern of deposition we now see may not be representative of the pottery's original depositional context.

Recovery bias

Most vessels are represented in both Benton's and the Shepherds' assemblages, with a few notable exceptions. V17–20 were only recovered by Benton, but V12, V13 and V16 were all recovered by Shepherd. As Benton removed almost all of the upper layers during her excavation, it is not surprising that the Shepherds did not recover sherds from Iron Age-style V17–20.

The ratio of rim or base sherds to undiagnostic wall sherds is surprisingly similar between the two assemblages, though there

Table 5.5
Abundance of pottery fabric per stratigraphic block (by weight). Lightest to darkest shades: 0–50, 51–100, 101–500, 501–1000, >1000g. Blue shading denotes Phase 1 blocks; green, Phase 2 blocks; purple, Phase 2/3; and orange, Phase 3.

Passage	Block	Fabric by weight (g)							Total by block (g)	Total by passage (g)
		A	B	C	D	E	F	Unknown		
W	1.1	–	–	–	–	–	–	0.7	**0.7**	**3649.3**
	1.2	44	863.9	303.9	96.4	276.3	2.1	156.7	**1743.3**	
	1.3	1715.5	–	49.5	61.7	–	–	9.2	**1835.9**	
	1.4	30.8	–	–	–	–	–	0.5	**31.3**	
	1.5	0.8	–	–	–	–	–	2.5	**3.3**	
	1.6	–	–	–	–	–	–	34.6	**34.6**	
	1.7	–	–	–	–	–	–	0.2	**0.2**	
E	2.1	–	–	–	–	–	–	–	**–**	**506.6**
	2.2	99.7	13.6	48.1	75.1	16.9	–	63	**316.4**	
	2.3	–	–	15.6	104.8	–	–	3.3	**123.7**	
	2.4	–	–	–	–	–	–	–	**–**	
	2.5	21.3	–	–	–	–	–	–	**21.3**	
	2.6	–	–	–	–	–	4.2	3.7	**7.9**	
	2.7	–	–	–	2.8	–	34.2	0.3	**37.3**	
	2.8	–	–	–	–	–	–	–	**–**	
Total by fabric (g)		**1912.1**	**877.5**	**417.1**	**340.8**	**293.2**	**40.5**	**274.7**	**–**	**4155.9**

are far more fragments from the Shepherds' excavations (see table 5.1). This suggests Benton did not discriminate against featureless sherds, as some early excavators did, but recovered everything she encountered. The lack of pottery encountered in recent excavations of Benton's spoil heap (only one sherd and one fragment: SF793, SF794; Büster and Armit 2014) reinforces this.

Parallels, chronology and discussion

Previous studies and 'flat-rimmed ware'

The pottery from Benton's excavations has frequently been referred to in publications (eg Childe 1935: 173; Coles and Taylor 1970: 97; Cowie 1982: 529; Halliday 1988: 108), usually as 'flat-rimmed ware' or, sometimes, 'Covesea ware' (eg Longworth 1967: 90).

'Flat-rimmed ware', and its funerary equivalent the 'bucket urn', are ubiquitous across north-east Scotland and have previously been dated to anywhere between the third and first millennia BC (Coles and Taylor 1970: 97–8), though the re-dating of material from stone circles has reduced this range and a date between the mid-second millennium BC and around 800 BC is now most likely (Bradley and Sheridan 2005: 227–8; Sheridan 2015).

Early studies of the Sculptor's Cave pottery and 'flat-rimmed ware' tended to focus on whether the pottery provided evidence of Late Bronze Age and Iron Age migrants. For example, Benton (1931: 203) was quite convinced that there had been a 'landing of foreigners' on the Moray Firth, despite scepticism from her peers. In particular, she observed the similarities between the coarse bucket-shaped vessels from the Late Bronze Age layers at the Sculptor's Cave and similar vessels in Zurich Museum and proposed that, while the Covesea pots were made using local clay, they were ultimately Swiss in form (ibid). She did, however, also mention the similarity in rim form between the Sculptor's Cave pots and native funerary bucket urns (ibid: 189). Childe also discussed the Sculptor's Cave pottery as evidence for a 'Hallstatt invasion', stating it was 'clear that flat-rimmed pottery here is not a direct evolution of the native Bronze Age fabrics but an intrusive group due to fresh settlers' (1935: 173). Piggott, however, described 'flat-rimmed ware' as simply the 'lowest common denominator of bad pottery' (1955: 57), thus highlighting the inherent problem of grouping such a long-lived, geographically diverse range of relatively plain vessels. It is now widely accepted that the term does not describe a coherent group and is likely to mask subtle chronological and local variations (Halliday 1988: 108; Sheridan 2003: 211; Bradley and Sheridan 2005: 275).

Taking the Sculptor's Cave assemblage alone, a Late Bronze Age date seems certain for many of the flat-rimmed forms due to their association with Late Bronze Age metalwork and recently acquired AMS dates (see sections 5.7.1 and chapter 4). However, due to the upper layers being so mixed, it is uncertain whether flat-rimmed pots are entirely residual in the later levels or whether the tradition continued into the Iron Age. A lack of securely dated Early Iron Age pottery assemblages from the area means we have little idea of what pottery of this period looks like; it is entirely possible that 'flat-rimmed ware' could extend into this period.

Shell-tempered fabric

The shell-tempered fabric (A) is distinct and unusual. The only parallel is from a site around 17km to the west of the Sculptor's Cave, at Culbin Sands (Coles and Taylor 1970: 96, figs 4, 5 and 6), where shell-tempered sherds from an estimated eight vessels were recovered from an eroding midden. These vary in form, from large flat-rimmed, straight-sided vessels to small bowl-shaped pots and medium-sized jars. 'Can-shaped', 'flint-gritted' vessels with flat rims were found in association with the shell-tempered vessels. The assemblage was attributed to the Late Bronze Age based on a radiocarbon date of 1259±75 BC (Q-990) from a charcoal-rich layer in the midden (ibid: 90). The stratified Sculptor's Cave material, however, is overwhelmingly concentrated in Block 1.3, dating to the Early Iron Age.

Iron Age pottery

The Fabric F vessels, with everted rims and rounded shoulders tapering to a narrow base (V16–20), have secure Roman Iron Age dates from other sites, eg at Birnie, Moray, where a similar vessel contained a hoard of late second-century AD Roman *denarii* (Holmes 2006: 3, fig 2). Several examples have been recovered from Angus souterrains, eg several vessels which date to the first few centuries AD from Redcastle (McGill 2005: 79, illus 18) and sherds from Hurly Hawkin which can be tentatively dated to the same period (Henshall 1982: 236, fig 10, 191).

In discussing the pottery assemblage from Tarradale, Easter Ross, Catherine McGill proposed a broad chronological shift from fabrics with large igneous or metamorphic inclusions in the pre-Roman period to sandy fabrics with little or no inclusions from the Roman Iron Age onwards (2001: 257–8). This would place Fabrics B–D at the Sculptor's Cave in the pre-Roman period and date Fabrics E and F to the Roman Iron Age or later, which is broadly consistent with Fabrics B–D being predominantly 'flat-rimmed ware' and Fabric F pots being Iron Age in form. Fabric E pots float somewhere between the two as they include similar forms to B–D but in a finer, sandy fabric. The stratified Fabric E sherds, however, are all from secure Late Bronze Age layers (Blocks 1.2, 2.2) dating to the ninth century BC (see sections 2.3.2, 2.3.3), indicating they are indeed from the earlier phase of the site and that fabric alone is not necessarily a reliable chronological indicator in this area.

Conclusions

While Benton thought the Sculptor's Cave pottery provided evidence of exotic new people arriving on the Moray coast, there is no reason now to suggest a non-local origin for the assemblage.

Analysis of wear and spatial distribution has allowed us to move beyond a purely typological and chronological approach to examine the nature of the pots' deposition. The high sherd-to-vessel ratio and hints of spatial concentrations suggest that some vessels were probably deposited intact. Though burnt residues on the vessel interiors indicate they were used for cooking, this did not necessarily take place here; they may have been used elsewhere and then brought to the site to leave as offerings or to play a role in ritualised events taking place in the cave. The pot containing the sheep bone has parallels in such offerings.

Catalogue by vessel

The catalogue entries below offer a description based on all sherds from each vessel, while the accompanying illustrations are based on a selection of diagnostic sherds. Detailed descriptions of all individual sherds are contained within the site archive. Numbers in brackets refer to 'wear level', described above.

V1 (illus 5.1) A thick-walled, round-rimmed vessel of shell-tempered orangey-pink fabric (A). The soft clay is fairly abraded (3) and no surface treatments or soot/residues are visible. Wall thickness: 15mm. Phase: 1, Block: 1.2, Context: Ia20, Ib23, Ib23c; Block: 2.2, Context: IIc23; Phase: 2, Block: 1.3, Context: Ia17, Ia17a, Ia17/17a; Unphased, Context: Benton Layer 1. **The majority of sherds from V1/2 are not distinguishable from one another.*

V2 (illus 5.1) A thick-walled, round-rimmed vessel with soft, orangey-pink, shell-tempered fabric (A). Both sides were smoothed and possibly had a slip applied prior to firing, while the interior is sooted and has patches of residues adhering. Slight abrasion (2). Estimated rim diameter: 280mm; wall thickness: 15mm. Phase: 1, Block: 1.2, Context: Ia20, Ib23, Ib23c; Block: 2.2, Context: IIc23; Phase: 2, Block: 1.3, Context: Ia17, Ia17a, Ia17/17a; Unphased, Context: Benton Layer 1. **The majority of sherds from V1/2 are not distinguishable from one another.*

V3 (illus 5.2) A barrel-shaped vessel with flat, slightly internally bevelled rim. Fabric B with pale orange exterior, grey core and interior. Both the interior and exterior were wiped and there are slight patches of soot on both sides. Slight abrasion on broken edges (2). Estimated rim diameter: 150mm; estimated base diameter: 120mm; wall thickness: 12mm; estimated vessel height: 220mm. Phase: 1, Block: 1.2, Context: Ia22, Ia23, Ib20t, Ib23, Ib23b, Ib23c, Ib23f, Ib23/47, Ib47; Block: 2.2, Context: IIc23, IIc24; Unphased, Context: Benton Layer 1, grid square B5, B6, C8 (and others unknown); Benton Layer 2, grid square A0, B0.

V4 (illus 5.2) Barrel- or bucket-shaped vessel, curving in slightly at the top with an internally bevelled convex rim and external lip. Fabric B with pale brown margins and grey core. Both the exterior and interior surfaces were smoothed and show patches of sooting. Slight abrasion on broken edges (2). Estimated rim diameter: 200mm; wall thickness: 8–10mm. Phase: 1, Block: 1.2, Context: Ib20t, Ib23c, Ib50; Unphased, Context: Benton Layer 1, grid square A0, B3; Benton Layer 2, grid square –A0, A0, –B0, B1, B3, C2.

V5 (illus 5.2) Around half of a reconstructed straight-sided bucket-shaped vessel with internally bevelled rim with external lip and flat base. Fabric B with pale orangey brown exterior and dark grey interior. Surface treatments are obscured by the reconstruction process but there are still patches of soot on the interior. Edges now obscured by filler, but presumably there was very little abrasion in order to refit (1). Rim diameter: 170mm; base diameter: 140mm; wall thickness: 9mm; vessel height: 150mm. Unphased, Context: Benton Layer 1.

V6 (illus 5.3) A probable bucket-shaped vessel with internally bevelled rim in Fabric C with orange exterior and grey interior. The surfaces were smoothed prior to firing and there is slight sooting on the interior. Slight abrasion around edges (2). Estimated rim diameter: unknown; wall thickness: 12–14mm. Phase: 1, Block: 2.2, Context: IIc24; Block: 2.3, Context: IIc22; Phase 2: Block 1.3, Context: Ia17; Unphased, Context: Benton Layer 1; Benton Layer 2, grid square D1, D2, D3.

V7 (illus 5.4) Chunky, round-rimmed vessel with a profile beginning to expand outwards again around the break, but the exact form of this vessel remains unclear. Fabric D with pale brown exterior, black core and interior. Both the exterior and interior surfaces were wiped but sooting is restricted to the interior. Only slightly abraded (2). Estimated rim diameter: 240mm; wall thickness: 12–15mm. Phase: 2, Block: 1.3, Context: Ia17; Unphased, Context: Benton Layer 1.

V8 (illus 5.4) Flat rim with slight internal bevel and external lip. Fabric D with pale brown exterior, grey core and interior. The interior surface is coated in thick, encrusted burnt residues and the exterior surface shows fine striations from wiping. Slightly abraded (2). Estimated rim diameter: 200mm; wall thickness: 10mm. Phase: 1, Block: 1.1/1.2, Context: Ia23/27; Block: 1.2, Context: Ia23h, Ib23, Ib23c; Block: 2.2, Context: IIc24; Block: 2.3, Context: IIb16, IIc22; Phase: 2/3, Block: 2.7, Context: IIb10; Unphased, Context: Benton Layer 1, grid square A1 (and others unknown).

V9 (illus 5.4) Rim with steep internal bevel; two refitting sherds. Fabric D with pale brown exterior, black core and interior. Both

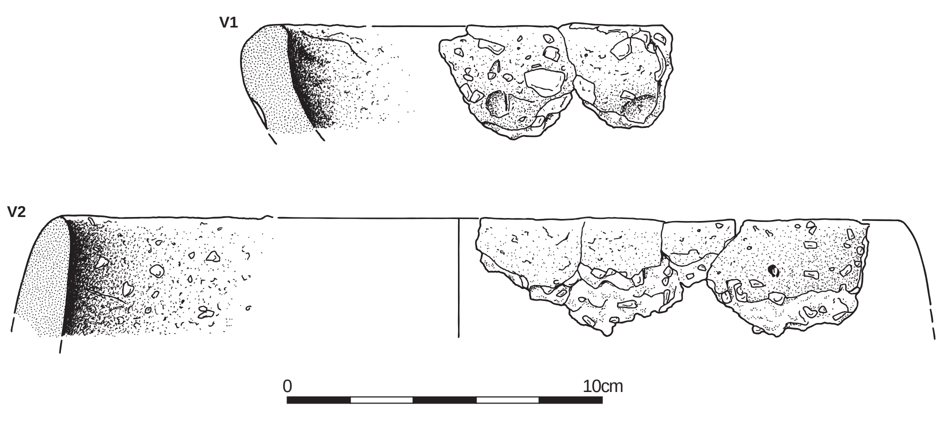

Illustration 5.1
Vessels comprising Fabric A

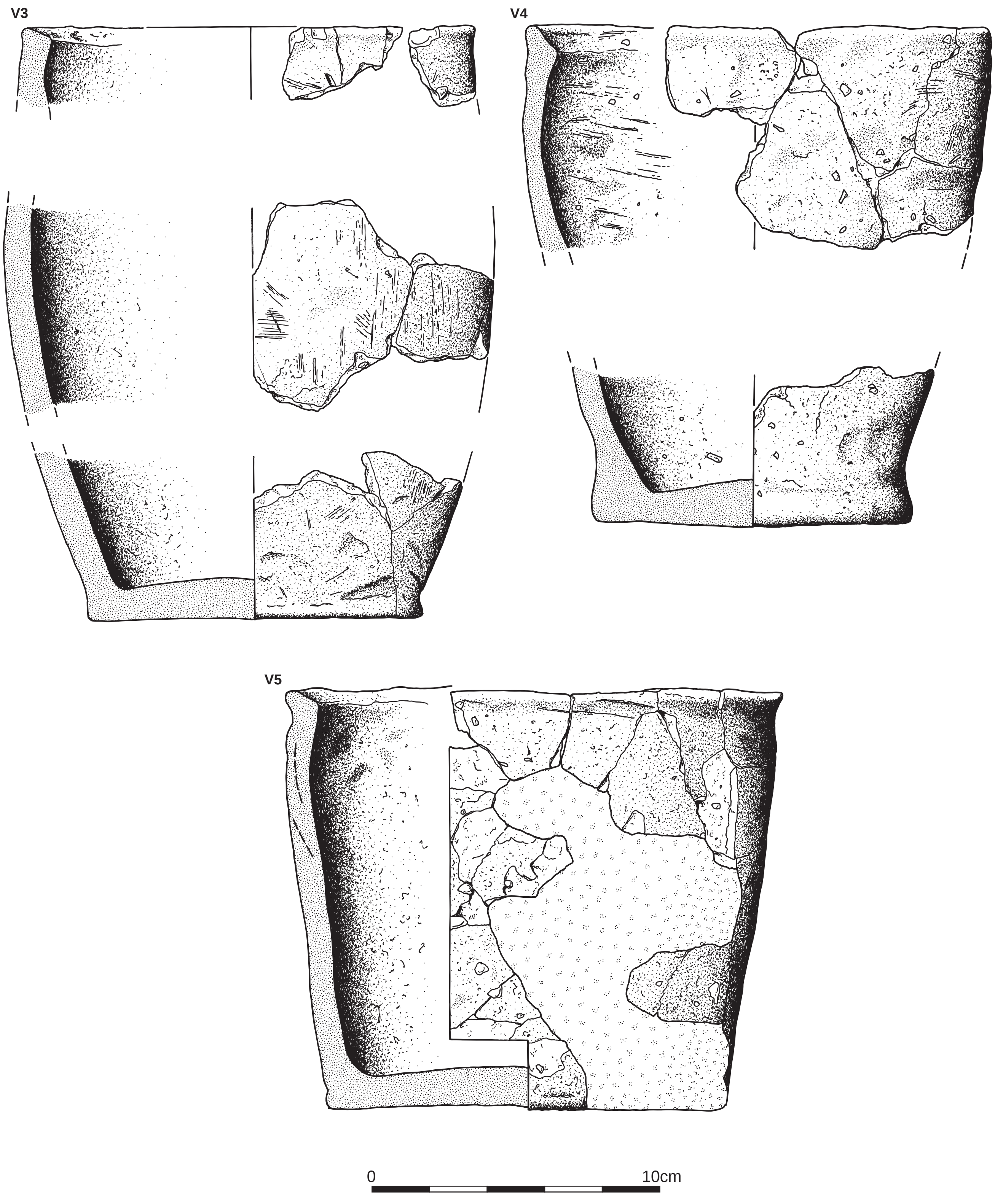

Illustration 5.2
Vessels comprising Fabric B

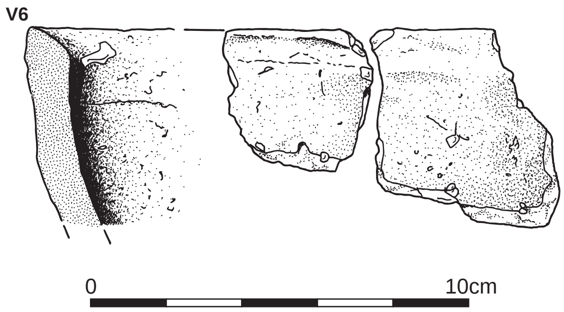

Illustration 5.3
Vessel comprising Fabric C

sherds were found in the West Passage. The surfaces were wiped and thick burnt residues adhere to the interior. Slightly abraded (2). Estimated rim diameter: 200mm; wall thickness: 8–10mm. Phase: 1, Block: 1.2, Context: Ia23c.

V10 (illus 5.4) Refitting rim sherds with steep internal bevel, probably from a small bucket-shaped vessel. Fabric type D with dark grey exterior and black interior. All five sherds from this vessel were found in the East Passage. Some smoothing on all surfaces and thick encrusted burnt residues on the interior. Slight abrasion on broken edges (2). Estimated rim diameter: 160mm; wall thickness: 8–10mm. Phase: 1, Block: 2.3, Context: IIb16; Unphased, Context: Benton Layer 1.

V11 (illus 5.5) Internally bevelled rim from vessel with incurving walls. Orangey-brown sandy fabric (E) with no obvious surface finish and residues adhering to the interior. Slightly abraded (2). Estimated rim diameter: 140mm; wall thickness: 8–10mm. Phase: 1, Block: 1.1/1.2, Context: Ia23/27; Block: 1.2, Context: Ia23c, Ia23h, Ib20t, Ib23, Ib23c; Block: 2.2, Context: IIc23; Unphased, Context: Benton Layer 1, grid square A1, A2, B1, B6.

V12 (illus 5.5) Small vessel with straight walls and internally bevelled rim represented by two refitting sherds. Grey exterior with orange interior and core (Fabric E). Both sherds were found in the West Passage. Surfaces were smoothed and residues adhere to the interior. Slightly abraded (2). Estimated rim diameter: 120mm; wall thickness: 8mm. Phase: 1, Block: 1.2, Context: Ib23c.

V13 (illus 5.5) Small vessel with incurving walls and internally bevelled rim. Grey sandy fabric (E). All five sherds were found in the West Passage. No obvious surface treatments and no sooting or residues. Slightly abraded (2). Estimated rim diameter: 120mm; wall thickness: 6–8mm. Phase: 1, Block: 1.2, Context: Ib23c.

V14 (illus 5.5) Flat-rimmed vessel with walls tapering in towards rim. Pale brown with grey core and interior (Fabric E). The 28 sherds were found in the cave interior. The surfaces were wiped and there are adhering residues on the interior. Slightly abraded (2). Estimated rim diameter: 200mm; wall thickness: 8mm. Unphased, Context: Benton Layer 1, grid square B4.

V15 (illus 5.5) Two refitting rim sherds from a vessel with finely shaped internally bevelled rim and slight shoulder. Fabric E with orange exterior, grey core and interior. Only the interior wiped

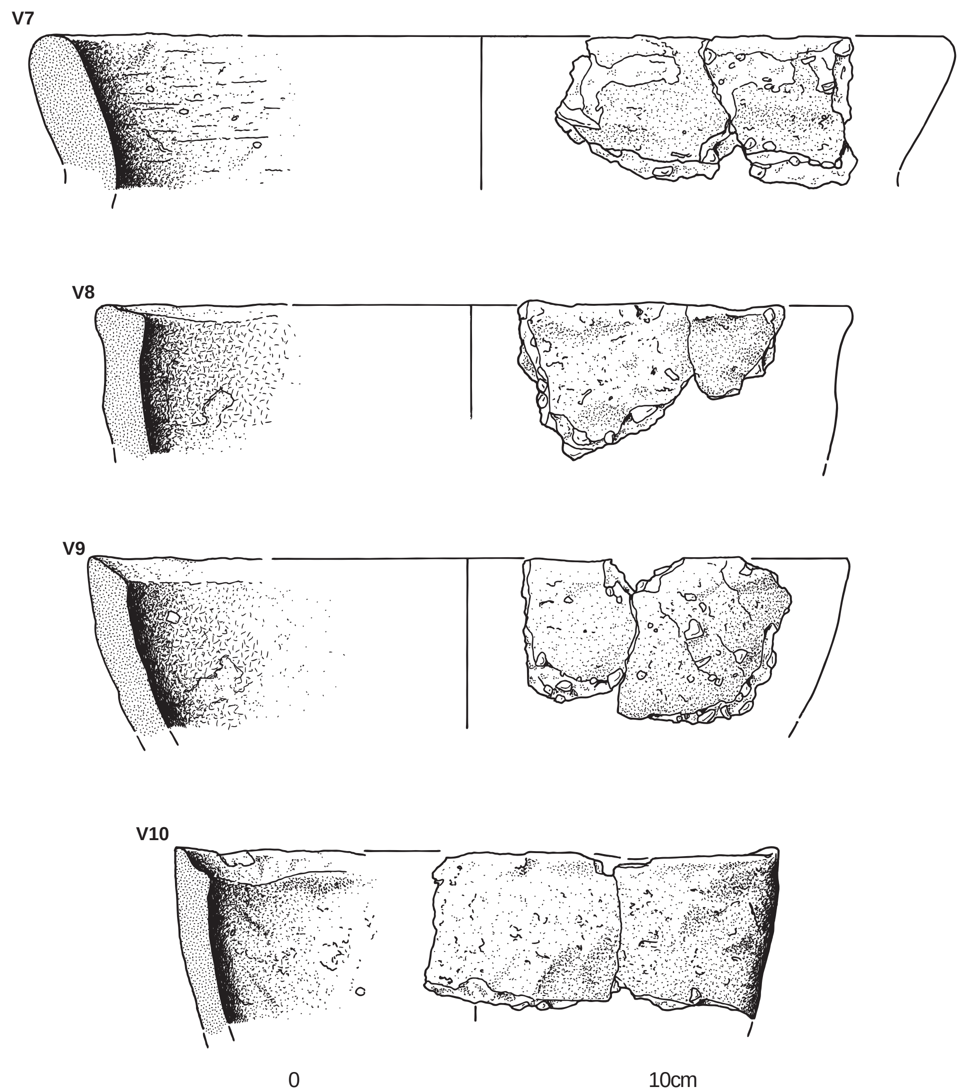

Illustration 5.4
Vessels comprising Fabric D

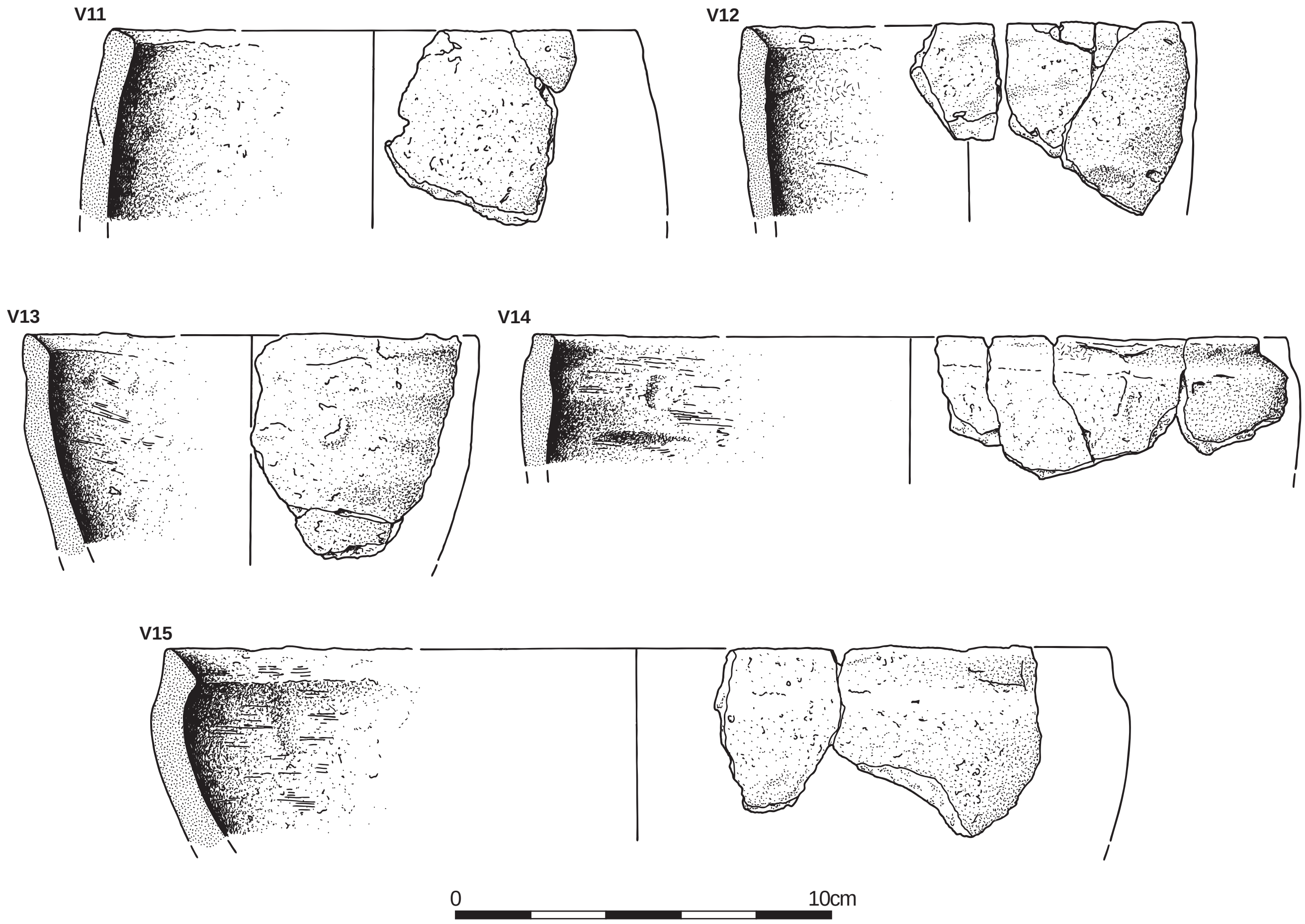

Illustration 5.5
Vessels comprising Fabric E

and shows sooting. Fresh breaks; very little abrasion (1). Estimated rim diameter: 250mm; wall thickness: 10mm. Unphased, Context: Benton Layer 2, grid square D2.

V16 (illus 5.6) Two body sherds show incised decoration. Soft orangey-red fine clay (Fabric F) with smoothed surface. Very abraded (4). Dimensions of illustrated sherds: 54mm × 38mm; 37mm × 31mm; wall thickness: 11–12mm. Phase: 2, Block: 2.6, Context: IIb9; Phase: 2/3, Block: 2.7, Context: IIb2, IIb2b, IIb2c.

V17 (illus 5.6) Finely shaped vessel with short everted rim and shouldered profile, tapering to narrow, flat base. Dark grey-black exterior and core with a thin buff zone on the interior (Fabric F). The upper portion has fine horizontal wiping marks, while the lower half has deeper, diagonal/almost vertical rough wiping marks. Parts of the exterior have a black sheen which may be due to burnishing. Very slight abrasion (1/2). Estimated rim diameter: 110mm; wall thickness: 5–7mm. Unphased, Context: Benton Layer 1, grid square B6 (and others unknown).

V18 (illus 5.6) A vessel with everted rim and rounded shoulder, tapering to narrow base. Fine buff clay with a dark grey core (Fabric F). Twenty-eight sherds from this vessel were found across the cave interior. The surfaces were wiped (more roughly on the interior) and there are patches of soot and burnt residues on both the exterior and interior. Sherds are only slightly abraded (2). Estimated rim diameter: 190mm; wall thickness: 9–10mm; vessel height: at least 180mm. Unphased, Context: Benton Layer 1, grid square A4, A5, B6, B7, C0 (and others unknown).

V19 (illus 5.6) Small globular or vase-shaped vessel with slightly everted/internally bevelled rim decorated with row of fingernail impressions along the top. Tongue and groove construction visible in broken edges. Dark grey exterior and pale brown interior in Fabric F. Exterior and interior are both smoothed and there are patches of soot and residues on both sides. No abrasion (1). Estimated rim diameter: 110mm; wall thickness: 10–15mm. Unphased, Context: Benton Layer 1, grid square A5, A6, B5, B6, C5 (and others unknown).

V20 (not illustrated) A small, tapering rim sherd and conjoining body sherd in fine, light brown sandy clay with no temper (Fabric F). Both sherds were recorded in the west part of the cave interior. Both surfaces display sooting and the broken edges suggest the vessel was constructed using the tongue and groove method. Very abraded (3). External rim diameter: *c* 160mm; wall thickness: 10mm. Unphased, Context: Benton Layer 1, grid square B5.

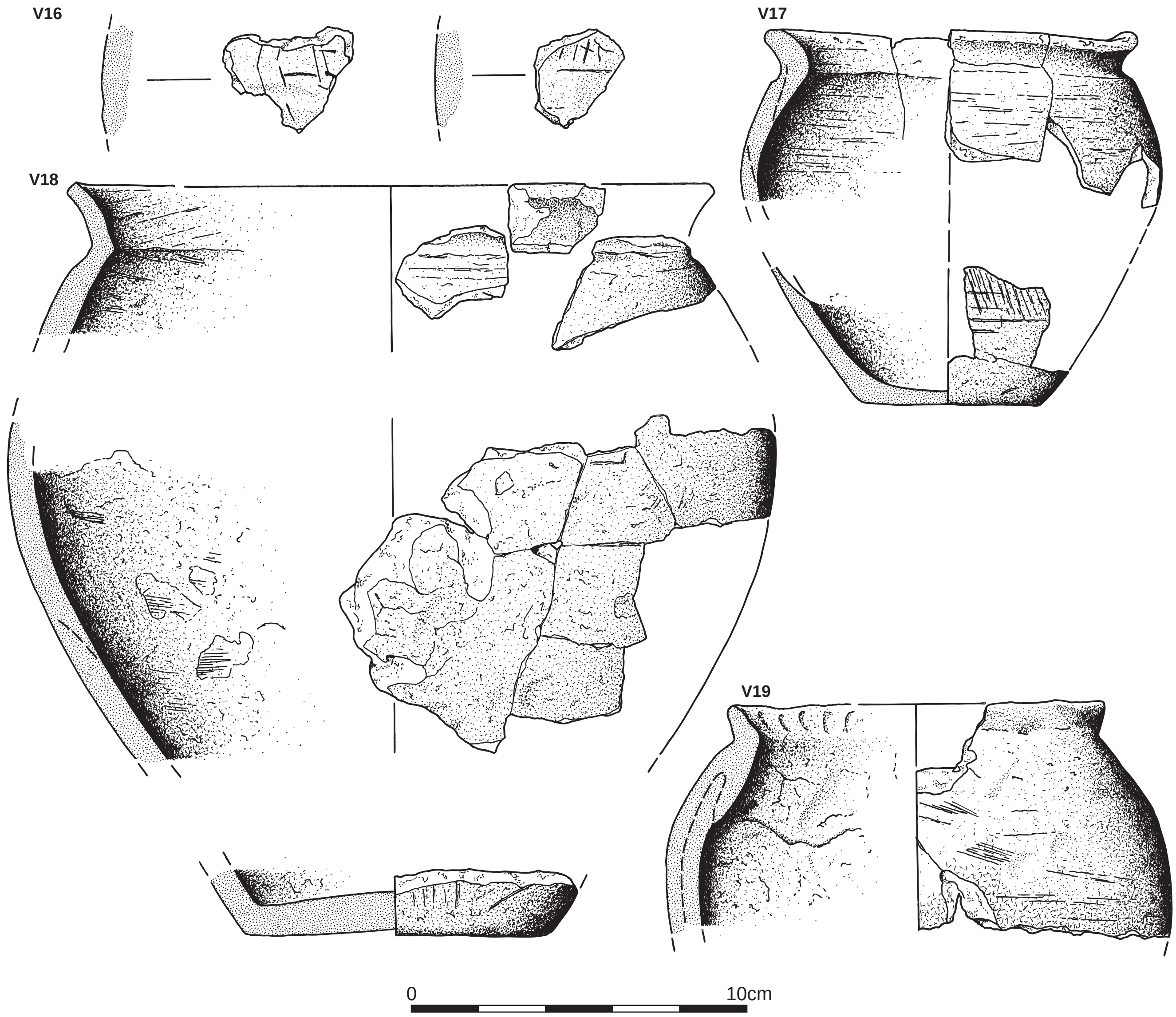

Illustration 5.6
Vessels comprising Fabric F

5.2.2 Petrographic analysis

Daniel Sahlén

Petrographic analysis was undertaken on 14 thin sections of pottery from the Sculptor's Cave (tables 5.3, 5.6; thin sections prepared by Suzie Stevenson of NMS Natural Sciences). The pottery has been made from local fine to fine sandy sedimentary clay. Although all of the pottery has been made from similar clay, it is possible that the potters have used two types: one fine (Fabric A and possibly Fabric D) and one fine sandy clay. However, these differences are vaguely defined and possibly due to variability within the material sampled, particularly in the case of Fabric D.

The pottery is of relatively high technological quality. It is well fired to a moderate temperature, not much higher than 800°C, and there is clear evidence of the use of different recipes in the preparation of the clay. Three main classes of pottery can be seen: shell temper, Fabric A, which might possibly be divided into different sub-fabrics; sandy/silty clay, Fabrics B–D, which do not form a uniform material and for which the division of different fabrics is not certain; and sand-tempered Fabrics E–F. The clear difference between fabrics at the Sculptor's Cave is unusual for mainland Scotland (Sahlén 2011) and it would be interesting to compare these results with other contemporary assemblages. A full report on the petrographic analysis is contained in the site archive.

Illustration 5.7
Samian fragments

Table 5.6
Summary of grain size analysis

Fabric	Sample	Mean	Max.	STD	Prop.
A	TS1 (n20)	0.12	0.36	0.7	0.7
	TS2 (n19)	0.17	0.35	0.10	1.3
	TS3 (n11)	0.09	0.13	0.02	0.2
B	TS4 (n169)	0.14	0.47	0.07	7.9
	TS5 (n169)	0.13	0.47	0.06	6.8
C	TS6 (n43)	0.13	0.36	0.06	1.7
	TS7 (n66)	0.12	0.42	0.07	2.3
D	TS8 (n14)	0.15	0.27	0.7	0.7
	TS9 (n70)	0.14	0.37	0.07	3.3
E	TS11 (n132)	0.17	0.42	0.07	9
	TS12 (n191)	0.15	0.47	0.07	10
F	TS13 (n160)	0.14	0.42	0.05	7.5
	TS14 (n173)	0.15	0.43	0.05	9.2

5.2.3 Samian pottery

Colin Wallace

General

The Roman pottery from the Sculptor's Cave consists of fragments from four or five vessels, all imported from Roman Gaul. Based on general decorative scheme (SF918) and form (SF915), they represent an early–mid Antonine collection of vessels, although one (SF916) may be rather earlier. While the vessels may well have arrived in the region during the second century AD, the condition and associations of the excavated fragments suggest that most of them had an extended life, leading to deposition – as discarded fragments, some perhaps utilised for making pigment – during the Late Roman Iron Age.

Method

The Roman pottery has been recorded to the Ceramic Archive Level set out in the *Study Group for Roman Pottery* guidelines (Darling 1994). Wares have been linked as far as possible to the published descriptions of the *National Roman Fabric Reference Collection* (Tomber and Dore 1998). The full report is included in the site archive.

Catalogue

Minimum number of vessels: four (SF917 and SF919 could be from the same vessel).

SF915 (illus 5.7) Plain samian, f33 cup rim and body sherd; internal rim-groove, mid-body groove on outside. Length: max. 54mm; width: 40mm; thickness: 7mm; weight: 18.9g. Unphased, Context: Benton Layer 1.

SF916 (illus 5.7) Decorated samian, small f37 bowl, broken off at the start of the decoration; where the ovolo ought to have been, there is instead a band of small circles in relief, smudged through their centres. Rim rubbed smooth in places. Length: 33mm; width: 32mm; thickness: 5.5mm; weight: 8.2g. Unphased, Context: Benton Layer 1.

SF917 (illus 5.7) Decorated samian, f37 bowl, flattened and worn bead rim, fire-hardened as SF919; broken off at the worn-away ovolo. Length: 35mm; width: 25mm; thickness: 7mm; weight: 7.2g. Unphased, Context: Benton Layer 1.

SF918 (illus 5.7) Decorated samian, f37 bowl, worn body sherd; the figure decoration worn down and too much detail of the ovolo lost the same way, but it looks like that of the potter Cinnamus. Length: 41mm; width: 27mm; thickness: 7mm; weight: 10.1g. Unphased, Context: Benton Layer 1.

SF919 (illus 5.7) Decorated samian, f37 chip, fire-hardened (ie surfaces still red, not black, as they would be if burnt); traces of figure decoration (body-side and arm?) can be made out. Length: 13mm; width: 12mm; thickness: 8mm; weight: 1.3g. Unphased, Context: Benton Layer 1.

Discussion

Aside from a relatively large, unaltered, plain samian body sherd (SF915), the decorated samian sherds were either fire-hardened (SF919), definitely reworked (SF916, SF918) or both (SF917). Some may have been prepared as a source of red pigment, perhaps for parchment or stone.

The original pottery vessels could have arrived in the region in the second century, as they compare broadly with finds of central Gaulish plain samian from Birnie, Brackla, Deskford and Tillydrone and with decorated samian from further south, in the souterrains of Angus and Perthshire (unpublished work by author). This background, including the possible original use of samian forms 37 and 33 as drinking bowls and cups, is discussed elsewhere (Wallace in prep).

The original vessel from which SF916 derived may have been earlier than the rest, and/or a 'second'. Peter Webster (pers comm) suggests that the potter may have removed the top of the decoration in subsequently finishing the rim, obliterating the ovolo (the characteristic 'egg and tongue' pattern) completely so that what remained was a row of circles. On the other hand, both Peter Webster and Joanna Bird (pers comm) point out that in the work of one central Gaulish samian potter we can find plain circles used as an ovolo-alternative: Potter X-13 (called Donnaucus in older literature) of Les Martres-de-Veyre regularly used such a row of small rings in just this way, as, for example, on Stanfield and Simpson (1958: plate 45: 521, 522, 524, 525, 527; or even his 'DD' ovolo on plate 43: 491, 494–96, 498 if the centre has been smoothed away). Potter X-13's bowls are sometimes found in a fine Lezoux fabric (Joanna Bird pers comm), as here, so he may have moved there or sold his moulds (as did other LMdV potters); his work is dated *c* AD 100–25.

5.3 Worked bone, antler, teeth and shell

Gemma Cruickshanks and Fraser Hunter

5.3.1 Introduction

Sixty-five worked bone, antler, teeth and shell artefacts were recovered from excavations in the Sculptor's Cave (table 5.7). Tools, especially a range of points, dominate the assemblage along with a smaller number of personal items such as decorative pins, two beads and a fragment of decorated comb. There is a small amount of evidence for manufacturing, with four unfinished objects. The few firmly stratified artefacts are all from Phase 1 (Late Bronze Age), though a few others, eg the decorated pins and comb, are typologically from the later part of the Iron Age (last centuries BC/early AD).

5.3.2 Raw materials

Two objects are manufactured from red deer antler (SF820, SF847), one of boar tusk (SF849), one from a canine tooth (SF70) and the others from bone, though it is not always possible to more precisely identify heavily modified objects. There are also eight shell discs, their flat shape suggesting they were made from a large bivalve shell, now too modified to identify to species. Of the two antler objects, SF820 has the burr still attached: its rounded form indicating that it was gathered as a shed antler rather than butchered.

Where determinable, all the bone artefacts have utilised mammal or occasionally bird long bones, apart from the perforated plate (SF824), which is made from a scapula. Where identifiable, red deer, pig and sheep/goat dominate. Such bones would have been readily available as a butchery by-product, and a few bones bear fine lateral cut marks from this process (SF247, SF835, SF836). Pig bones are exclusively fibulae, which were used to manufacture pins and fine points, while red deer and sheep/goat lower limb bones, particularly metapodials, were favoured for points. The size of the single bird long bone is consistent with a large goose or swan (SF823). All the raw materials used could have been sourced locally.

5.3.3 Manufacturing

Tool marks (table 5.8) provide clues as to how items were made. The most common type of working trace is irregular striations created by abrading with pumice or sandstone, often used to blunt the sharp edges of split shaft points but also present on finer items such as pins. Blade-trimmed facets are visible on seven artefacts, all personal items apart from a shaft point (SF843), which had its point reworked by blade-trimming. Two items show the use of saws: the faces of the pendant roughout were sawn (SF820) and the decoration on the comb was formed using a fine saw (SF822). Neither blade nor saw marks are present on items certainly from Phase 1 (Late Bronze Age), which were exclusively abraded to shape. This is likely to correspond with the increase in iron tools throughout the Iron Age, which would have greatly benefited crafts like bone- and antler- working. No drilled perforations are present; all are biconical, having been worked from both sides to meet in the middle.

Table 5.7
Summary of the Sculptor's Cave worked bone, antler and shell assemblage

Group	Type	Excavator		Total	Phase	
		Benton	Shepherd		1	Unphased
Tool	Point	17	10	**27**	9	18
	Hide-rubber	2	1	**3**	1	2
	Weaving baton	2	–	**2**	–	2
	Needle	1	–	**1**	–	1
	Double-pointed needle	2	–	**2**	–	2
	Double-ended	–	1	**1**	1	–
Personal	Pin	7	–	**7**	–	7
	Bead	1	1	**2**	–	2
	Comb	1	–	**1**	–	1
	Pin case	1	–	**1**	–	1
Fitting	Cylinder	–	1	**1**	1	–
Unfinished	Pin	3	–	**3**	–	3
	Pendant	1	–	**1**	–	1
	Peg	–	1	**1**	–	1
Miscellaneous	Perforated plate	1	–	**1**	–	1
	Worked tusk	1	–	**1**	–	1
	Worked antler	1	–	**1**	–	1
	Polished	–	1	**1**	1	–
	Shell disc	8	–	**8**	–	8
Total		**49**	**16**	**65**	**13**	**52**

Table 5.8
Summary of tool marks

Manufacturing traces	Phase 1	Unphased	Total
Abrasion	9	35	**44**
Blade-trimmed facets	–	7	**7**
Saw marks	–	2	**2**
No traces	4	9	**13**
Total	**13**	**53**	**66**

5.3.4 Chronology

Thirteen of the sixty-four items can be attributed stratigraphically to Phase 1 (table 5.7). Most of the assemblage is not chronologically distinct, especially the tools, with the exception of the most decorative pins (SF807–9), which find parallels in the later first millennium AD and the comb fragment (SF822), which could date to the last few centuries BC or early into the first millennium AD. All four are from Benton's mixed layer (Layer 1).

5.3.5 Recovery/preservation bias

Most of the artefacts were recovered from Benton's more extensive excavations. The few typologically later items, such as the comb and some of the pins, were also all discovered by Benton; relatively little of the post-Bronze Age levels remained by the time the Shepherds undertook their excavation. The Shepherds' bone/antler assemblage is notably less well preserved than Benton's. This could be due to their trench locations being primarily at the front of the cave and therefore more at risk from moisture/weather.

5.3.6 Discussion

Benton highlighted the similarities between her worked bone and antler assemblage with objects found in Switzerland as evidence of her theory that Swiss migrants had landed on the Moray coast (1931: 184–8). She divided the items into 'Scottish or Swiss', 'Swiss' or 'indeterminate' and stated that 'out of the twenty-six objects, twelve are certainly foreign and a good many more may be foreign' (ibid: 188). Re-examination of the assemblage finds many parallels with other Scottish sites and there is no reason to believe any of the artefacts need not be local.

Several objects show evidence of extended use-lives prior to deposition, such as the kite-shaped needle (SF815) and point (SF841), which have broken tips overlain by polish, indicating they had continued in use after breaking. Shaft point SF843 had been repaired by knife-trimming the tip. This evidence of extended use and repair suggests they were valued objects. Forty-seven of the objects are intact, while a further seven have recent breaks, suggesting they were probably intact when deposited. That 84% of the artefacts were intact, and therefore still usable, at the time of deposition strongly suggests that they were deliberately deposited rather than casually discarded.

This assemblage would not be out of place on a domestic site, but the overtly ritual practices undertaken in the cave support the argument that they were not casually lost or discarded but rather were deliberately deposited. There is further supporting evidence for the later material, which includes mostly intact personal items, some of which are decorated. Decoration is relatively rare in most Iron Age assemblages and any items which do display ornamentation are likely to have been special. The decorated pins were also all intact and still usable at the time of deposition, strongly suggesting they were deliberately left in the cave. This deposition of decorative personal items is mirrored in the later metalwork assemblage (see section 5.7.2).

Though this assemblage can now be compared to others from Scotland to show that there is no need to seek exotic parallels, there are no comparable worked bone/antler assemblages from the north-east. The closest well-dated sites with comparable material are in the Northern and Western Isles, or at Broxmouth in East Lothian (Armit and McKenzie 2013). This is due to issues of preservation, as the acid soils of the Moray Firth and much of lowland Scotland rarely preserve bone. For example, almost no worked bone/antler artefacts were recovered from the recently excavated settlements at Birnie, Moray (Hunter 2010b) or Culduthel, Inverness (Hunter forthcoming a), which otherwise produced rich assemblages. This makes the Sculptor's Cave assemblage stand out, with the lack of local comparanda creating a false exoticism. The assemblage therefore provides a valuable glimpse of artefacts which are likely to have been commonplace but rarely survive in this area outwith the special environment of caves.

5.3.7 Catalogue

The artefact groups are discussed in turn, followed by catalogue entries.

Tools

Points

Points are the most common bone artefact in the assemblage, with 27 examples present. They have been grouped according to the scheme used by Hunter et al's analysis of the large assemblage from Broxmouth (2013: 279–83) (summarised in table 5.9). The points are divided into groups based upon how they were made, ie retaining the form of the bone shaft ('shaft points'), either intact ('whole') or longitudinally split, or using a splinter of bone ('splinter points'), and whether the tips are fine/sharp or blunt, in an effort to identify different functional groups within this ubiquitous category.

Table 5.9
Summary of point forms by phase. Under tip form: S represents sharp or fine, B blunt and M missing. Broken points are missing their head

Form	Tip	Phase 1	Unphased	Total
Shaft point: whole	S	2	3	**5**
	B	1	2	**3**
Shaft point: split	S	2	1	**3**
	B	2	4	**6**
Splinter point	S	1	–	**1**
	B	–	2	**2**
	M	–	1	**1**
Broken	S	–	2	**2**
	B	1	3	**4**
Total		**9**	**18**	**27**

Shaft points are more common than splinter points here, with similar numbers of split versus whole shaft points. Over half have robust blunt points which could have been used for a wide variety of tasks. The 11 sharp-/fine-pointed examples are more likely to be piercing tools and could be categorised as awls, probably for hide-working. More of the whole shaft points have sharp points compared to the split types. Most of the points were roughly abraded down the edges and sometimes around the head, probably with pumice or coarse-grained sandstone. This is likely to be from initial shaping, probably to blunt sharp edges, making the tool more comfortable to use.

Nine of the twenty-seven points are from Phase 1 (Late Bronze Age), while the others are all from mixed/unstratified layers. Such points are basic tools with a long history of use from early prehistory onwards. Where identifiable, the points have been manufactured from sheep/goat and red deer long bones, predominantly metapodials but also one ulna and a radius.

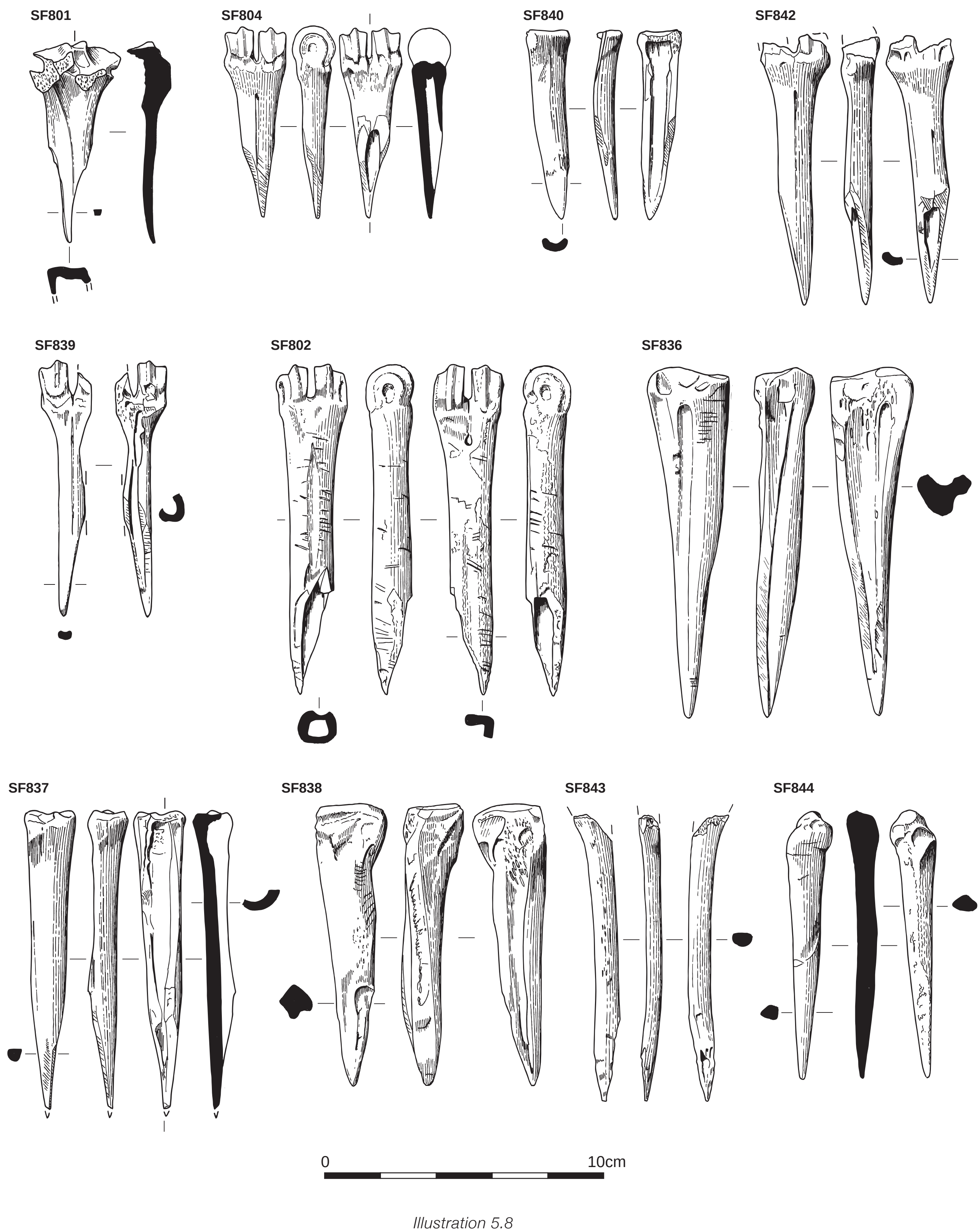

Illustration 5.8
Worked bone shaft points

Shaft points (whole): sharp tip

SF242 (not illustrated) Long bone splinter tapering suddenly to a fine point at one end, broken at the other. The split edge is stepped on one side, suggesting it may have broken in use then been reworked. There is slight abrasion and polish but much of the exterior surface has weathered. Length: 54mm; max. width: 10mm; thickness: 4mm. Phase: 1, Block: 2.2, Context: IIc23.

SF802 (illus 5.8) Sheep/goat metacarpal with intact articular end, shaft broken diagonally to create a fine, sharp point. Surface is very degraded and there are many lateral V-sectioned cuts around the surface, suggesting it may also have been used as a cutting surface. Length: 118mm; width: 25mm; thickness: 17mm. Phase: 1, Block: 1.2, Context: Ia23c.

SF804 (illus 5.8) Sheep/goat metacarpal shaft point with intact articular end forming the head and diagonally split shaft with abraded edges, tapering to sharp point which was chipped in use. Length: 67mm; width: 22mm; thickness: 14mm. Unphased, Context: Benton Layer 1.

SF843 (illus 5.8) Red deer ulna, trimmed down one side to create a plano-convex-sectioned rod, though most of the working is polished away. One end expands before a recent break while the other tapers to a roughly trimmed angled point. This is at odds with the finely polished shaft, suggesting it may have been expediently repaired. The slightly blunted tip suggests it saw slight use after this. Length: 103mm; width: 10mm; thickness: 6mm. Unphased, Context: Benton Layer 1, grid square C1.

SF844 (illus 5.8) Point formed from a horse metacarpal with articular end forming the head, then tapering to a sharp point. There are traces of longitudinal abrasion from shaping and some polish around the tip. Length: 96mm; head: 17mm × 11mm. Unphased, Context: Benton Layer 2, grid square D2.

Shaft points (whole): blunt tip

SF223 (not illustrated) Long bone with damaged articular end forming the head. The damaged nature of the head suggests it may have split during use and was whole to begin with. The shaft has abraded edges and tapers to tip, which had broken in use. Slight polish before the break. Length: 78mm; width: 15mm; thickness: 10mm. Phase: 1, Block: 2.3, Context: IIb16.

SF839 (illus 5.8) Point formed from a sheep/goat metacarpal/metatarsal, with articular end forming head then tapering to a robust tip. Longitudinally split, but the irregular edges suggest this happened accidentally through use rather than starting out as a split shaft point. The edges have been roughly abraded and the tip displays use-polish. Length: 91mm; head: 20mm × 15mm. Unphased, Context: Benton Layer 1, grid square C0.

SF842 (illus 5.8) Shaft point formed from a sheep/goat metacarpal with intact articular end forming the head and shaft; split at an angle to create a robust point. The edges were roughly abraded and the tip is slightly polished from use. Recently broken head and signs of rodent gnawing. Length: 96mm; head: 24mm × 13mm. Unphased, Context: Benton Layer 1.

Shaft point (split): sharp tip

SF382 (not illustrated) Long bone longitudinally split through the articular end, which forms the head. The shaft tapers to a sharp point with traces of abrasion on the exterior surface. The edges are rounded from weathering and abrasion/shaping marks are not clear. Length: 89mm; head: 16mm × 9mm. Phase: 1, Block: 1.2, Context: Ic11.

Illustration 5.9
Group of worked bone tools, from left to right: SF818, SF817, SF836, SF835, SF833, SF834, SF841, SF816

SF801 (illus 5.8) Radius split longitudinally through the articular end with shaft tapering suddenly to a fine point. Perhaps slightly abraded down one edge but not much used. Quite short compared to other examples of this type. Length: 71mm; head width: 34mm, thickness: 18mm. Phase: 1, Block: 2.2, Context: IIa12.

SF837 (illus 5.8) Longitudinally split sheep/goat metapodial with articular end forming the head and tapering to a fine point, now fractured. The irregularity of the split edges suggests it was split accidentally during use and that it originally utilised the full shaft. The edges of the bottom third around the tip show facetted abrasion from shaping and very slight use-polish. Not much used. Length: 107mm; head: 20mm × 13mm. Unphased, Context: Benton Layer 1, grid square C7.

Shaft point (split): blunt tip

SF247 (not illustrated) Long bone split longitudinally through the articular end, which forms the head, then tapering to a robust, blunt point missing its tip. Lateral fine cuts across the exterior surface could be butchery marks. The edges were roughly abraded and there is slight use-/handling polish on the exterior. Length:

155mm; head: 28mm × 12mm. Phase: 1, Block: 2.2, Context: IIc23.

SF381 (not illustrated) Point formed from longitudinally splitting a long bone through the articular end, which forms the head, then tapering to a robust, blunt tip. Some use-/handling polish survives around the head; all the edges and the exterior surface display lateral striations from abrading to shape. Length: 165mm; head width: 31mm, thickness: 9mm. Phase: 1, Block: 1.2, Context: Ic11.

SF836 (illus 5.8, 5.9) Shaft point formed from a longitudinally split red deer metacarpal with split articular end forming head, tapering to a robust tip. The end was flattened for ease of use, while the edges were roughly abraded and the whole tool has handling polish. Length: 124mm; max. width: 30mm; max. thickness: 22mm. Unphased, Context: Benton Layer 2, grid square B4.

SF838 (illus 5.8) Longitudinally split red deer metacarpal (proximal end) with split articular end forming head, tapering to a robust tip. The edges were roughly abraded and the bottom third displays fine striations and slight use-polish. Length: 101mm; max. width: 26mm; max. thickness: 20mm. Unphased, Context: Benton Layer 2, grid square B1.

SF840 (illus 5.8) Point formed from a longitudinally split sheep/goat metacarpal with split articular end forming head then tapering to a robust tip. The edges were roughly abraded and the tip is polished through use. Length: 68mm; head: 17mm × 9mm. Unphased, Context: Benton Layer 2, grid square –B0.

SF848 (illus 5.10) Longitudinally split long bone fragment which has been fashioned into a tapering, robust point with broken tip at one end (old break). The other end has been shaped by abraded facets into a tapering and asymmetric curved head which is vaguely decorative. It may have been refashioned or broken during perforation. There is a series of fine lateral cuts across the object from use as a cutting surface. This is an unusual item and its function is not clear (see section 5.5). Benton (1931: 186) noted that it 'has a freakish resemblance to a human face', though not apparent to the current writers. Length: 121mm; width: 19mm; thickness: 8.5mm. Unphased, Context: Benton Layer 1, grid square C9.

Splinter point: sharp tip

SF118 (illus 5.11) Long bone splinter, tapering from broken head to highly polished tip with lateral indents suggesting circumferential wear. The edges are abraded but this is overlain by the polish around the fine tip, indicating the abrasion was from initial shaping rather than use. Length: 70mm; width: 12mm; thickness: 7mm. Phase: 1, Block: 2.3, Context: IIb16.

Splinter point: blunt tip

SF825 (illus 5.11) Point formed from a longitudinally split bone splinter. The edges were roughly abraded, as was the head, which is now mostly broken. The splinter tapers from head to a slightly polished point, which has seen only limited use. Length: 86mm; head: 18mm × 6mm. Unphased, Context: Benton Layer 2, grid square –B1.

SF845 (illus 5.11) Longitudinally split long bone tapering from the very irregular head, which retains part of the epiphysis, down abraded edges to a polished, blunt point. Quite short. Length: 63mm; head: 12mm × 10mm. Unphased, Context: Benton Layer 2, grid square B3.

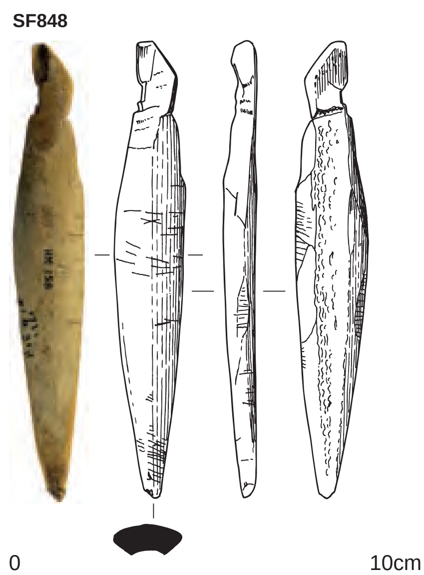

Illustration 5.10
Shaft point

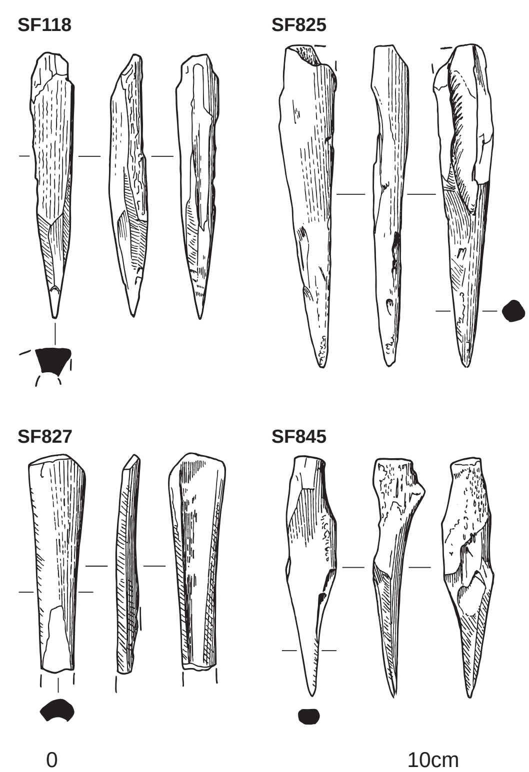

Illustration 5.11
Worked bone splinter points

Splinter point: missing tip

SF827 (illus 5.11) Fragment of longitudinally split long bone, tapering from roughly rounded head to a broken shaft, forming the head of a splinter point. There are abraded facets around the head and edges. Quite finely shaped for a splinter point. Length: 57mm; width: 16mm; thickness: 5mm. Unphased, Context: Benton Layer 2, grid square C2/3.

Broken point: sharp

SF813 (not illustrated) Finely shaped point tip with broken shaft. Polished around the tip but rougher with fine abrasion marks further up. Length: 64mm; diameter: 6mm. Unphased, Context: Benton Layer 1, grid square D4.

SF846 (not illustrated) Long bone splinter with broken head, tapering to a slightly polished, heavy, sharp point. The edges were roughly abraded. Length: 56mm; head: 10mm × 7mm. Unphased, Benton Layer 2, grid square B3.

Broken point: blunt

SF228 (not illustrated) Tapering tip of a bone point with broken shaft and polish around the slightly rounded tip. Length: 40mm; width: 6mm; thickness: 3.5mm. Phase: 1, Block: 2.3, Context: IIb16.

SF800 (not illustrated) Recently broken point tip in two refitting fragments. The robust, blunt tip is polished and there are abrasion marks down the edges, suggesting it is from a point, not a pin or needle, which tend to be finely finished. Length: 64mm; max. dimensions: 11mm × 8mm. Unphased, Unstratified (Area III).

SF826 (not illustrated) Sturdy point tip, slightly wedge-shaped, with recent break on shaft. The edges were abraded and there is some polish on the surface, but it has not been much used. Length: 72.5mm; width: 10mm × 8mm. Unphased, Context: Benton Layer 2, grid square C3.

SF829 (not illustrated) Long bone splinter with broken head and abraded edges, tapering to a polished point. Length: 72mm; head: 13mm × 6mm. Unphased, Context: Benton Layer 1, grid square C1.

Hide-rubbers
Three tools have blunt tips displaying glossy polish consistent with use during hide-processing. The blunt ends suggest they were more likely to have been used for softening rather than defleshing hides (Christidou and Legrand 2005: 386). All three are manufactured from long bones: two are split longitudinally through the articular end (SF240, SF835) while the other utilises the whole articular end and is then diagonally split to form the working end (SF841). The tip forms vary, suggesting they could have different functions within the hide-working process. Hide-rubbers are tools which commonly appear throughout prehistory in Scotland and hide-processing was probably undertaken on most sites (Hunter 2015a: 228).

SF240 (not illustrated) Robust bone point formed from longitudinally split long bone, broken before head. There is some abrasion down the edges and use-polish around the blunt tip. Either a very blunt point or a narrow rubber. Length: 87.5mm; width: 13mm; thickness: 7mm. Phase: 1, Block: 2.2, Context: IIc23.

SF835 (illus 5.9, 5.12) Longitudinally split red deer metapodial with articular end forming the head, tapering to a rounded tip. The edges show transverse striations from shaping, though the whole tool is now very polished from use, especially on the front and around the tip. Speckled dark discolouration. Length: 122mm; head: 25mm × 14mm. Unphased, Context: Benton Layer 2, grid square –B0.

SF841 (illus 5.9, 5.12) Tool formed from a red deer metapodial with intact articular end forming the head and shaft split at an angle to create a robust wedge tip. The broken edges were roughly abraded and the tip is chipped, probably through use, but polish indicates it continued to be used. The head has been flattened and partially hollowed but the function of this is unclear. Length: 88mm; head: 20mm × 14mm; socket depth: 8.5mm, diameter: 9mm. Unphased, Context: Benton Layer 1, grid square C6.

Weaving batons?
SF833 and SF834 are longitudinally split, carefully shaped strips of long bone with rounded edges and ends. Benton referred to them

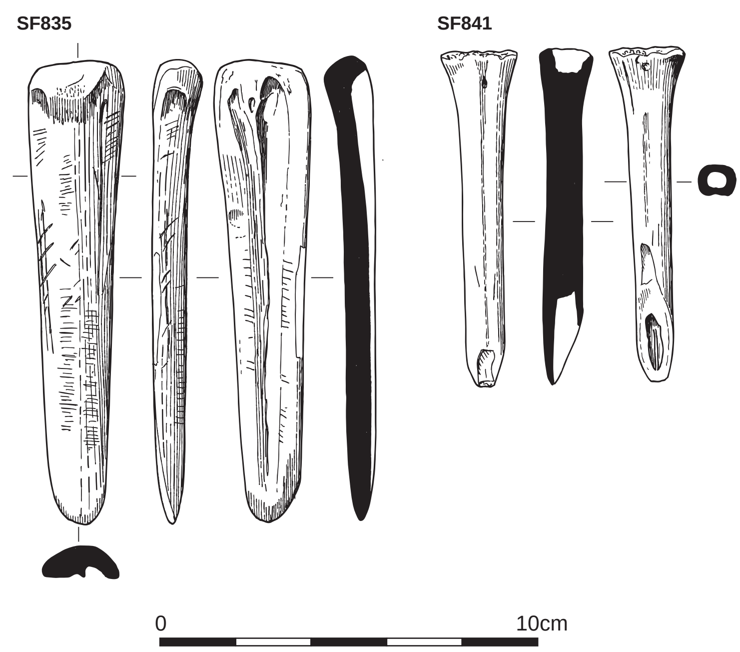

Illustration 5.12
Worked bone hide-rubbers

as netting needles (1931: 184), though, since they are only slightly polished and the perforations are natural nerve holes, a sewing function seems unlikely. Similar but unperforated items termed spatulae, dating to the Late Bronze Age, were excavated from Heathery Burn Cave, Co. Durham, where they were interpreted as weaving batons for beating down the weft threads on a loom (Britton and Longworth 1968: 10(9), 146–51). For Late Bronze Age bone spatulae found at Runnymede Bridge, Berkshire, a pottery burnishing function was favoured (Needham and Serjeantson 1996: 192, fig 101, B19–20). Similar bone 'spoons' were also recovered from the Iron Age settlement at Jarlshof, Shetland (Hamilton 1956: 52, fig 29, 11–12), suggesting that this artefact type is not restricted to the Bronze Age. The objects seem a little flimsy to have been burnishers and so a weaving tool seems most likely.

SF833 (illus 5.9, 5.13) Longitudinally split, finely shaped red deer metatarsal tapering gradually in thickness and width to a rounded tip. There is a natural conical oval perforation in the head. A shallow groove has been abraded into one side and the edges were abraded but are now rounded from use. There is some diagonal abrasion around the middle of the shaft. Length: 224mm; max. width: 27mm; thickness: 7mm; perforation: 6mm × 4mm; groove width: 7mm, depth: 1mm. Unphased, Context: Benton Layer 1, grid square D7.

SF834 (illus 5.9, 5.13) Tool with rounded tip formed from a longitudinally split red deer metatarsal. The articular end is present at the head, which is broken through the natural oval conical perforation. The tip is rounded with use-polish extending around two-thirds up the tool's length. There are longitudinal and lateral striations all over. End gnawed. Length: 137mm; width: 19mm; thickness: 6mm; perforation diameter: 6mm. Unphased, Context: Benton Layer 2, grid square C3.

Needle

The kite-shaped perforated tool SF815 is probably a needle and is a form with a wide distribution across Britain, including many broch and wheelhouse assemblages in north-western Scotland (Hallén 1994: 213).

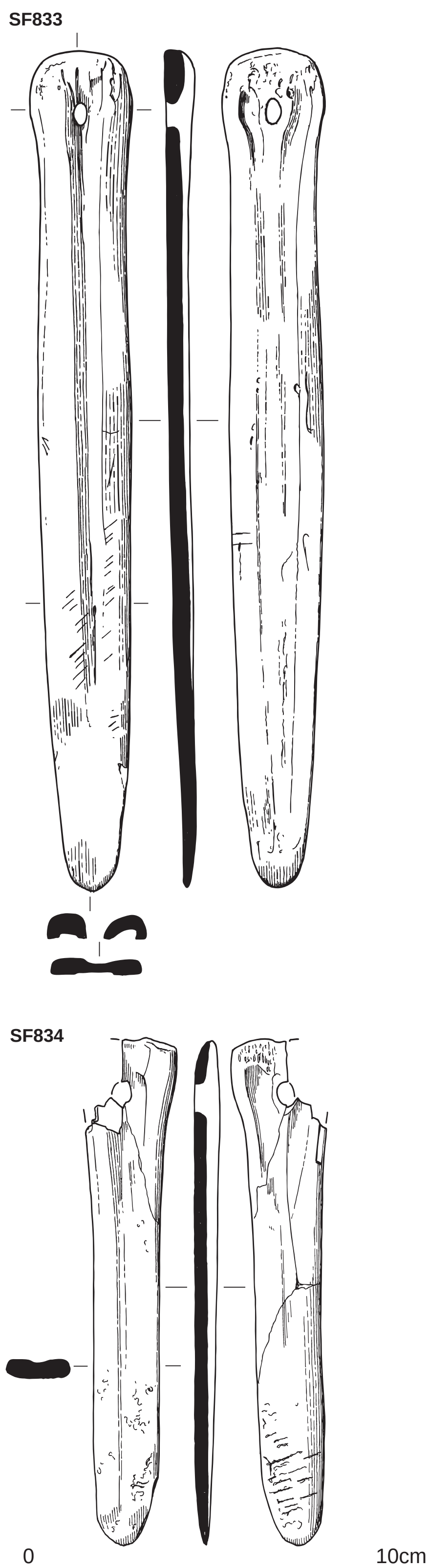

Illustration 5.13
Worked bone weaving batons

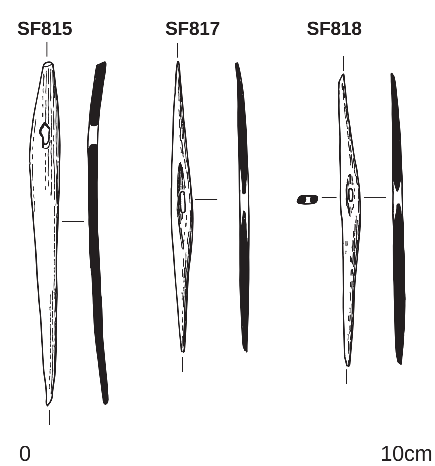

Illustration 5.14
Worked bone needles

SF815 (illus 5.14) Kite-shaped strip of bone, possibly a rib, with an irregular oval, pecked perforation at one end. It tapers from the perforation to an asymmetric polished tip at one end, which was slightly broken, then continued in use. The head also tapers and has a slight break on the end. There are faint facets down the edges and slight polish. A roughly made but highly polished/used item. Length: 89.5mm; width: 7mm × 3mm; perforation: 4mm × 2mm. Unphased, Context: Benton Layer 1, grid square C7.

Double-pointed needles

Two slender double-pointed needles with central perforations were excavated (SF817, SF818). Such tools have been interpreted as both fish gorges (eg Ballin Smith 1994: 171) and bodkins (eg Hedges 1987: 98, fig 2.24, 79–82) in the past. The double point would make them hard to use as bodkins. The fish gorge interpretation is based on anthropological parallels, but they could also be needles. Objects of this form are common across Scotland from at least the Neolithic period (Pollard 1994: 143–5). Both tools are highly polished all over, most likely through use, which supports a textile-related function rather than fishing.

SF817 (illus 5.9, 5.14) Fine, sharp, symmetrical double point, swelling in the middle around an elongated oval perforation set into an abraded biconical lentoid groove. The whole object is highly polished, apart from within the lentoid grooves. Length: 76mm; max. diameter: 5mm × 2mm; perforation: 6mm × 1mm. Unphased, Context: Benton Layer 2, grid square D3.

SF818 (illus 5.9, 5.14) Fine, sharp double point with one point shorter than the other and slightly curved, swelling in the middle around an oval perforation set into an abraded biconical lentoid groove. The whole tool is polished and discoloured (dark). Length: 76mm; max. diameter: 4.5mm × 2mm; perforation: 4mm × 2mm. Unphased, Context: Benton Layer 1, grid square C9.

Double-ended tool

SF229 is shaped to a sturdy point at one end and a spatula at the other. Points and spatulas can both have a wide range of functions. Double-ended bone tools are relatively rare, suggesting a specialist function, such as a clay modelling tool.

SF229 (not illustrated) Very worn, rounded long bone fragment, tapering to a sturdy point at one end and spatulate at the other, creating a double-ended tool. No shaping or use marks visible due to abrasion. Length: 105mm; width: 8mm; thickness: 4mm. Phase: 1, Block: 2.3, Context: IIb16.

Personal items

Pins

Seven finished pins in a range of forms were recovered along with three unfinished pins (discussed later). All are intact aside from minor fractures to tips, apart from SF806, which is only the tip of a pin. All are from Benton's excavations, leaving their age uncertain, though dated parallels from other sites can shed some light on more distinctive types (discussed below).

Pig fibula pins are represented by one finished example (SF814) and one unfinished (SF805) and are a typical long-lived pin type with examples known from sites across most of Scotland (Hunter et al 2013: 268). The unfinished spatula-headed pin (SF810) is similar in shape but has been modified by knife-trimming around the head. SF811 and SF812 are relatively simple forms but are finely finished and polished. SF811 has a slightly rounded head decorated with fine, incised lateral lines, while SF812 has a carefully formed club-shaped head with flat top. These types could all be Late Bronze Age or Iron Age.

In contrast, the barrel-, X- and ring-headed pins are heavily modified decorative items. The barrel-headed pin (SF808) is very finely shaped and polished. The form is similar, though with a larger head, to pins from Buiston Crannog, Ayrshire, which has Roman Iron Age and early medieval phases (Crone 2000: 145, fig 119, 209, 212) and from Norse occupation at Buckquoy, Orkney (Ritchie 1979: 193, fig 4, 21).

The most elaborately modified pin is the perforated X-headed form (SF807), which is also decorated down the front of the shank with a finely incised row of diamonds filled with dots. Broadly similar pins are known from Orkney, eg a perforated 'winged' pin from the middle Norse layers at Brough of Birsay (Curle 1982: 73, illus 48.101), an unperforated 'eared' pin from an unknown context at the Broch of Burrian (MacGregor 1974: 74, fig 7.74) and an unpublished stray find in NMS collections known only to come from Orkney (NMS X.GA 21).

It is likely that the ring-headed pin (SF809) had been modified, perhaps after breaking, due to the relatively crude knife-trimmed facets around the head and tip and its short length (60mm). A similarly short pin of this form was recovered at Pool, Sanday from phase 6.7 (fifth to ninth centuries AD) along with another longer example from the Iron Age/Norse transition phase (Smith 2007: 482, illus 8.8.11, plates 2388, 1967). The perforated head on this pin (SF809) and that on the unfinished perforated pin (SF816) were probably functional, to take a securing cord running from head to tip (eg Wilson 1983: 347 and fig 146). These decorated pins thus seem to represent deposits in the late first millennium AD.

SF806 (not illustrated) Circular-sectioned shank tapering to sharp tip, with longitudinal abrasion from shaping still visible under polish. Most polished at tip, which also displays slight circumferential abrasion. Old break on shaft. Length: 43mm; diameter: 3.5mm. Unphased, Context: Benton Layer 1, grid square A5.

SF807 (illus 5.15) X-headed pin, the head knife-trimmed with faceted edges and central biconical circular perforation. The shank curves outwards slightly, is oval at the top, turns in a circular fashion towards the sharp tip and is decorated down the front with a vertical line of linked Xs and irregularly distributed dots. The decoration was once probably continuous intercutting zigzags, creating a line of diamonds, but parts are now worn smooth. The whole pin is finely polished though knife-trimmed facets are still visible from shaping, particularly around the head. Length: 97.5mm; head height: 11mm, width: 13mm, thickness: 7mm; shank max. diameter: 5mm × 4mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square A6.

SF808 (illus 5.15) Barrel-headed pin. Fine oval-sectioned head with circular collared ends. The circular-sectioned shank swells slightly then tapers to a sharp point with slight, old fracture. The whole pin is very finely finished and polished, with only hints of

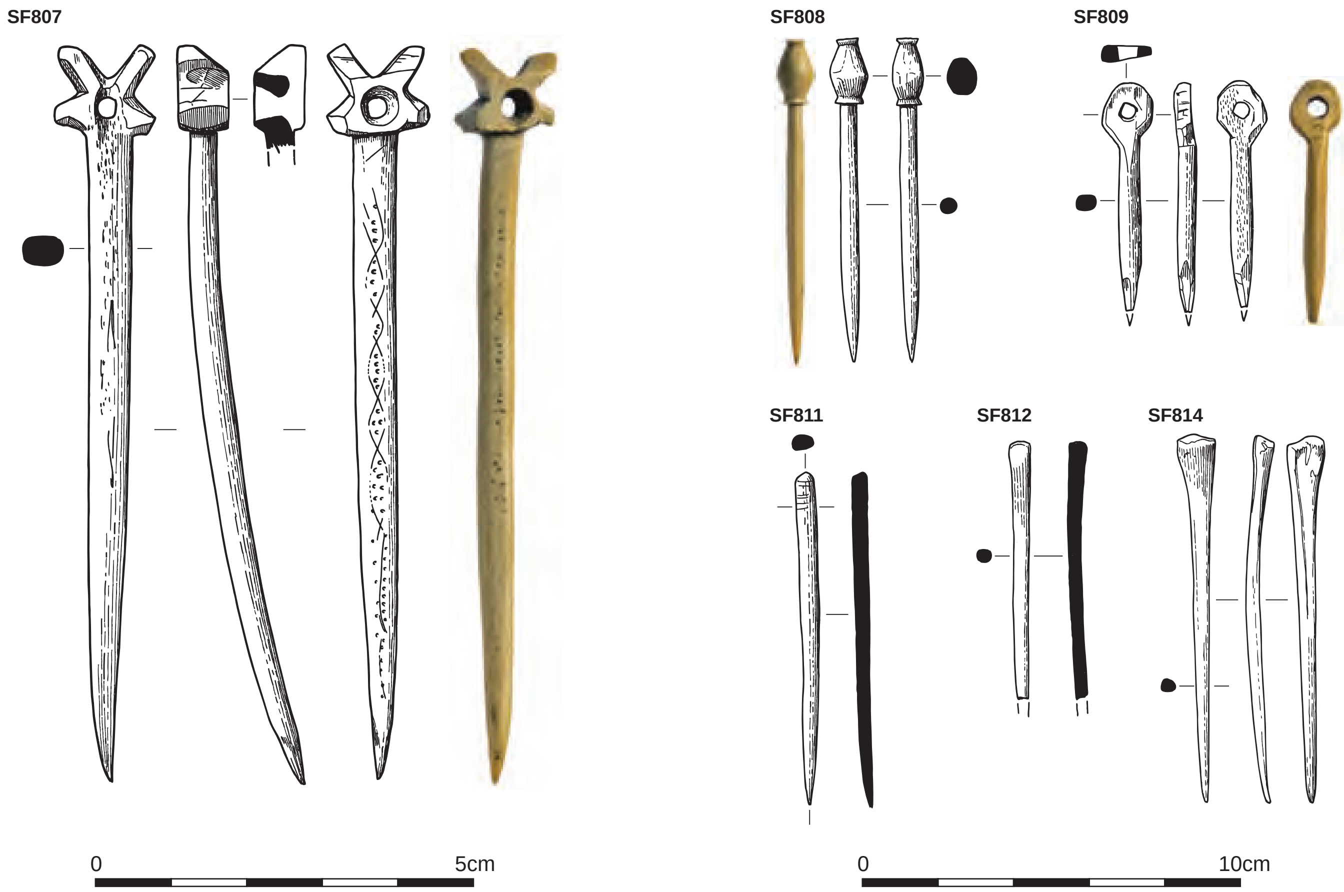

Illustration 5.15
Worked bone pins

knife-trimming remaining. Length: 86mm; head height: 17mm, max. diameter: 10mm × 8mm; shank max. diameter: 4.5mm. Unphased, Context: Benton Layer 1, grid square A6.

SF809 (illus 5.15) Ring-headed pin. Roughly knife-trimmed flat ring head with central circular slightly biconical perforation. The circular-sectioned shank tapers to the tip, which has an old fracture. The whole pin is polished but knife-trimmed facets from shaping the tip are clear, suggesting (along with the short length) that it was reshaped. The fairly rough shape of the head suggests it may also have been modified. Length: 60mm; head diameter: 13mm; thickness: 4mm; perforation diameter: 5mm; shank diameter: 5mm. Unphased, Context: Benton Layer 1, grid square C6.

SF811 (illus 5.15) Pin with decorated head, slightly curved, with rounded head, tapering to a sharp tip. Five fine incised lines around the head, less coherent on one side, are probably decorative. Traces of abrasion from shaping are visible beneath the polish, suggesting it was not used much. Length: 86mm; max. diameter: 4mm. Unphased, Context: Benton Layer 1, grid square B7.

SF812 (illus 5.15) Club-headed pin, finely finished, comprising a bone rod tapering from sub-square, flat-topped head to broken tip. Traces of fine striations are visible under the polish. Length: 68.5mm; max. diameter: 5mm. Unphased, Context: Benton Layer 2, grid square B3.

SF814 (illus 5.15) Pig fibula pin with sub-oval-sectioned shank, tapering to a fine point at one end and a flattened/splayed head at the other. The head utilises the articular end and is unshaped apart from a small abraded facet. Traces of abrasion from shaping can be seen through the polish around the shank. Length: 98mm; head: 10mm × 5mm. Unphased, Context: Benton Layer 2, grid square B4.

Beads

A finely finished barrel-shaped bead (SF821) is worn and smoothed through use, with polish on the ends from being strung alongside other beads. SF910 is a burnt fragment of an unusual decorated bead, but too little survives for further comment.

SF821 (illus 5.16) Barrel-shaped bead with cylindrical perforation and rounded ends. Manufacturing traces all polished away. External diameter: 15mm; perforation diameter: 8mm; height: 13mm. Unphased, Context: Benton Layer 1, grid square C5.

SF910 (illus 5.16) Decorated globular bead fragment; D-sectioned. Diameter: *c* 15mm; around a third survives. Cylindrical perforation (3–4mm in diameter). External U-shaped equatorial decorative groove. Charred black. Length: 11.5mm; height: 9mm; wall thickness: 4–4.5mm. Unphased, Unstratified.

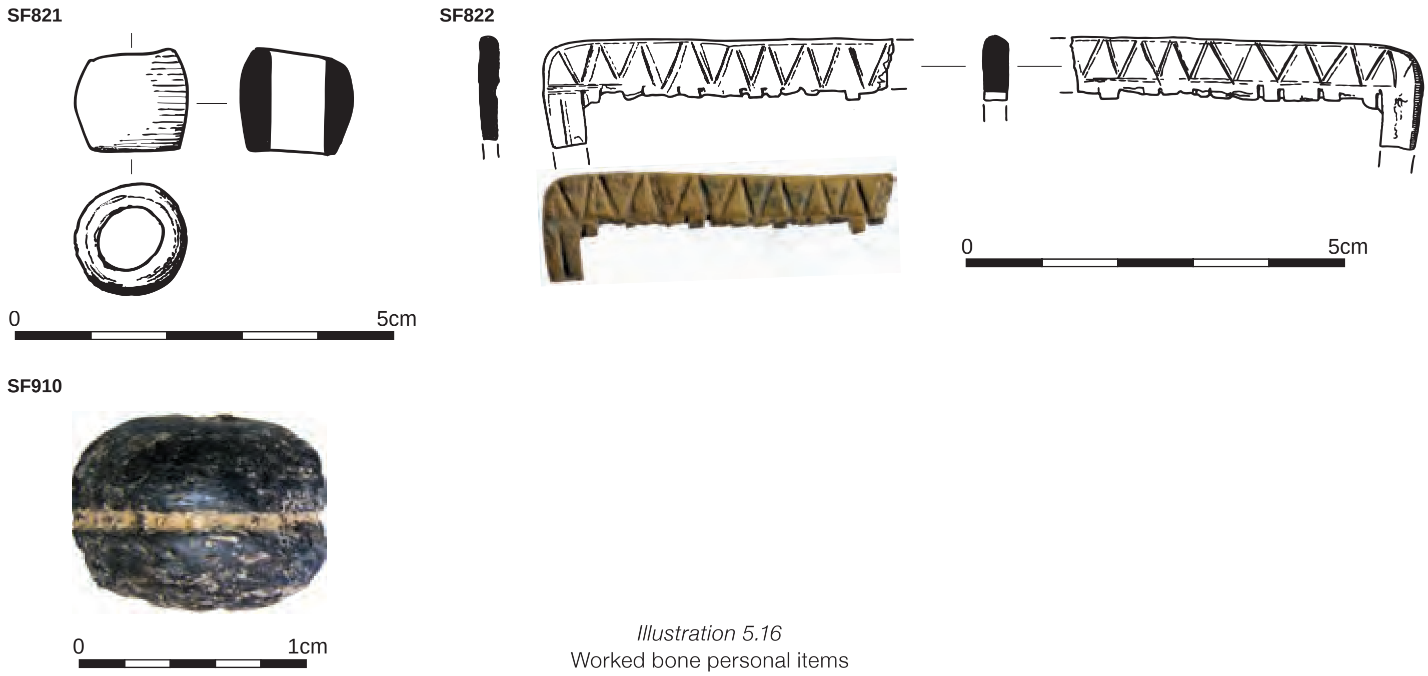

Illustration 5.16
Worked bone personal items

Comb

The comb fragment (SF822) is from a single-sided type with decoration created by fine saw marks on both sides. Single-sided combs are an Iron Age type with a cluster from broch sites in Caithness and the Northern Isles and a smaller group of humpbacked forms found on a variety of site types in southern Scotland, the Isle of Man and Ireland (Hunter et al 2013: 269–70). Securely dated examples from Broxmouth, East Lothian and Howe, Orkney date to the third to first centuries BC and first to fourth centuries AD respectively (ibid), indicating a lengthy period of use and earlier beginnings compared to later, composite/double-sided combs. Decoration is relatively rare within the worked bone and antler assemblage, marking this personal item out as special.

SF822 (illus 5.16) Single-sided comb back fragment decorated on both sides with a sawn zigzag along the back and vertical line down the end. The teeth, one end and part of the other end are all missing. The outer edge of the back is very polished, suggesting extensive use. Length: 46mm; thickness: 3.5mm; back height: 6mm; 4.5 teeth per 10mm. Unphased, Context: Benton Layer 1, grid square D4.

Pin case?

Aside from some handling polish, the pin case (SF823) shows no signs of having been modified, simply utilising a naturally hollow bird long bone. A copper alloy zoomorphic pin (SF741; see section 5.7.2) was apparently discovered within it (Benton 1931: 196). Bird bone needle cases are known from the Viking period, eg five from Jarlshof, Shetland (Hamilton 1956: 123, 146); three each from Brough of Birsay, Orkney and Pool, Sanday (Curle 1982: 61; Smith 2007: 502–3); and one with a female burial at Cnip, Lewis (Welander et al 1987: 170). However, these differ from the Sculptor's Cave example in that they often contain one or more small iron needles, have cut or shaped ends and usually have two opposed perforations in the middle, possibly for attaching to a belt. The Sculptor's Cave example is an altogether more expedient object and may have been selected solely for depositing the pin as, unlike needles, there seems little reason to carry a pin around in a case.

SF823 (not illustrated) A long, naturally hollow bird long bone with both ends broken. Unworked but showing slight handling polish. Length: 128mm; diameter: 10mm. Unphased, Context: Benton Layer 1, grid square C8.

Fitting

A finely shaped bone cylinder (SF241) shows no use-wear to aid understanding its function, but was probably some sort of fitting, such as a handle component or toggle.

SF241 (illus 5.17) Neatly shaped cylinder of hollowed bone, possibly a pig phalanx, with externally bevelled abraded facets to shape the ends. The bone is naturally narrower in the middle and there is no use-polish or differential wear. Length: 51mm; external diameter: 18mm; internal diameter: 12mm. Phase: 1, Block: 2.2, Context: IIc23.

Unfinished

There are five unfinished objects: a peg (SF70), three pins (SF805, SF810, SF816) and a pendant (SF820). All are at an advanced stage of shaping and lack only the final smoothing and polishing of rough tool marks. With so little manufacturing evidence here (there are no offcuts or less advanced roughouts), it is difficult to know whether they were made at the cave or brought there in this state.

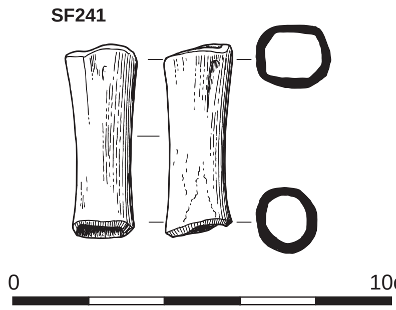

Illustration 5.17
Worked bone fitting

SF70 (illus 5.18) Unfinished canine tooth peg. A short fragment which tapers towards both ends with the thickest section around two-thirds of the way along. The entire shape is modified by long abraded facets. Length: 29mm; max. diameter: 5mm. Unphased, Unstratified (Area III).

SF805 (illus 5.18) Unfinished pig fibula pin. Long bone with articular end forming head, tapering to chipped point. Knife-trimmed facets down the edges from shaping and no polish, suggesting it is unfinished. Length: 91mm; head: 13mm × 5mm. Unphased, Context: Benton Layer 1, grid square C7.

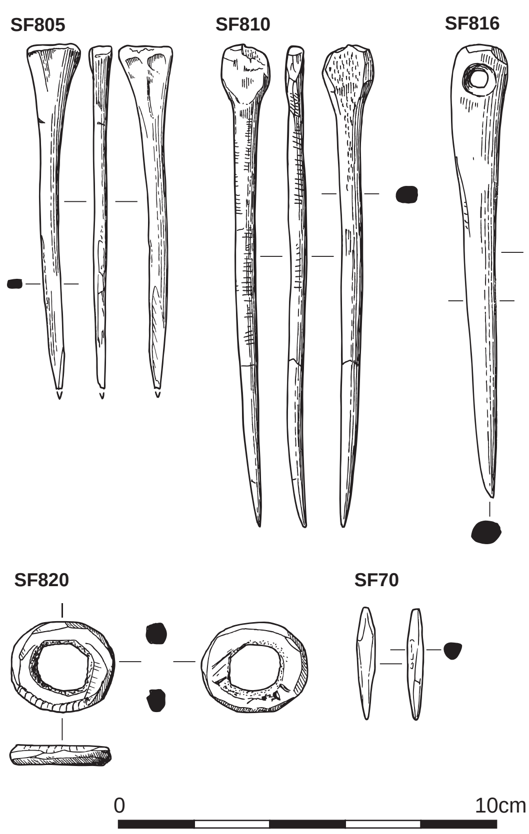

Illustration 5.18
Unfinished worked bone artefacts

SF810 (illus 5.18) Unfinished pig fibula spatula-headed bone pin in two refitting fragments with uneven knife-trimmed facets around the edge of the head, tapering to an oval-sectioned shank with round-sectioned sharp tip. The shank shows longitudinal abrasion from shaping, lateral abrasion and only slight polish around the tip. Length: 126mm; head length: 12mm, width: 13mm, thickness: 4mm; shank diameter: 5mm × 4mm. Unphased, Context: Benton Layer 1, grid square A5/B6.

SF816 (illus 5.9, 5.18) Perforated pin formed from long bone, tapering from rounded head to sharp-pointed tip. The perforation is biconical with circumferential striations around the edges. Abraded facets around the head and edges, suggesting it was not finished. An area up to two-thirds of the length from the tip is slightly polished, probably from handling while working. Length: 119mm; max. width: 14mm; thickness: 5mm; perforation diameter: 4.5mm. Unphased, Context: Benton Layer 2, grid square D2.

SF820 (illus 5.18) Unfinished pendant. An oval ring formed from a section of red deer antler. The edges were possibly sawn and the corners removed by knife-trimming. The visible tool marks suggest this is a roughout. External diameter: 27mm × 24mm; thickness: 5mm; perforation diameter: 14.5mm × 13mm. Unphased, Context: Benton Layer 1, grid square C6.

Miscellaneous

Several boar tusks were excavated but only one has been modified by an abraded groove around the wide end; possibly an attempt to create a pendant (SF849). Fragments of split and notched boar tusks from Early Bronze Age contexts at Tofts Ness, Sanday were interpreted as possible ornaments (Davies 2007: 337), as were two notched boar tusks from Bayanne, Shetland (Smith 2014: 185, fig 3.66 4 and 5).

The red deer antler (SF847) with a series of oval hollows worked into the side of the beam is an unusual artefact which is not readily paralleled. Benton recorded that this artefact was from very low down in the sequence of deposits, some two feet (*c* 0.6m) below the non-anthropogenic clay that started to form in the Middle Bronze Age (section 2.2.3), and highlighted certain similarities with Mousterian chopping blocks, though noted that they are quite different in form and material (1931: 188). The low stratigraphic position of this artefact is intriguing and it may relate to pre-Middle Bronze Age use of the cave, as evidenced by the lithics (see section 5.6). It may have functioned as some sort of tool rest.

The sub-rectangular perforated plate (SF824) could have had a variety of functions, including use as a weight or spacer, though fine striations around the perforation suggest it may have been used in conjunction with a point, perhaps during textile-working of some sort.

SF119 (not illustrated) Polished red deer ulna fragment, broken at both ends. There are no working traces, but it has handling polish on the shaft. Length: 111mm; width: 11mm; thickness: 7mm. Phase: 1, Block: 2.3, Context: IIb16 – northernmost end.

SF824 (illus 5.19) Perforated sub-rectangular plate with rounded corners, made from a scapula. The central perforation is biconical and has a faint incised outline, possibly from marking out its

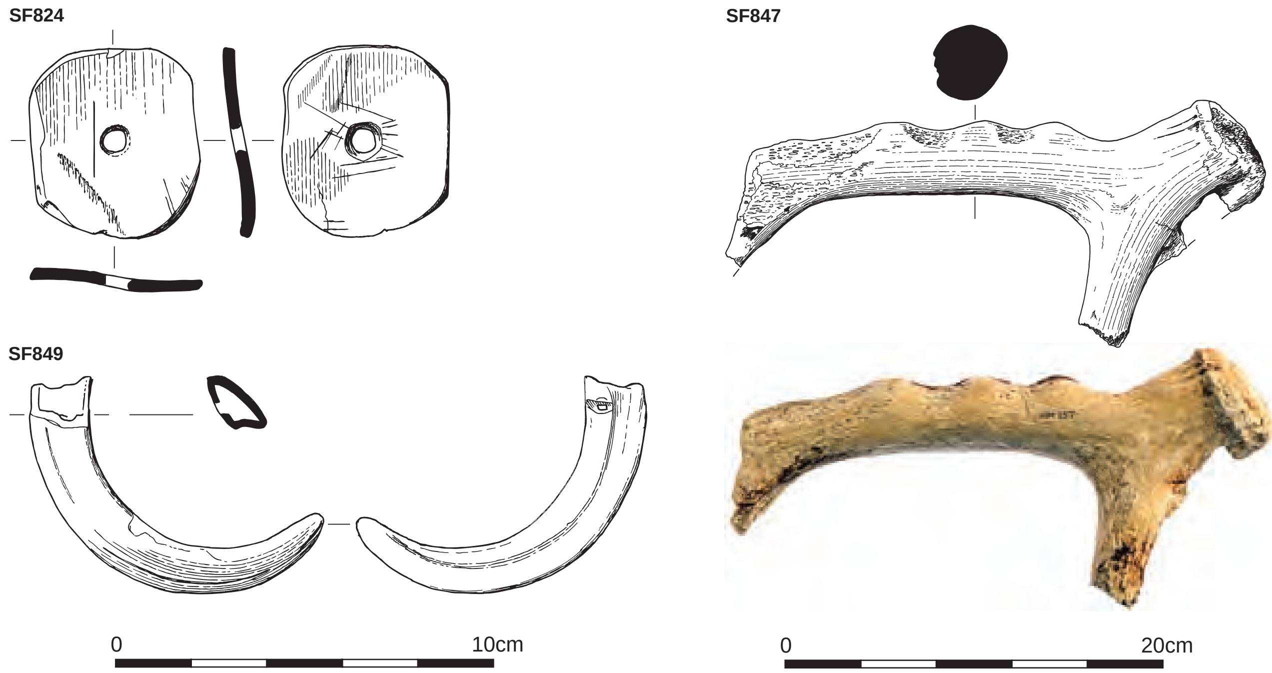

Illustration 5.19
Miscellaneous worked bone, tooth and antler artefacts

position prior to perforating. Striations radiating out from the perforation across the plate on both sides are probably from use along with a pointed implement. The edges were abraded to shape and there is slight polish around the perforation. Its function is unclear but could be related to weaving. Length: 50mm; width: 43mm; thickness: 3mm; perforation diameter: 6mm. Unphased, Context: Benton Layer 1, grid square D7.

SF847 (illus 5.19) Worked shed red deer antler with brow and bez tines broken off, and broken at the top of the beam before the junction. The edge of the beam has four evenly spaced oval indents. The surface is eroded, making it difficult to see how the indents were formed. The top and bottom indents are larger, possibly due to post-depositional degradation. Total length: 280mm; beam max. diameter: 40mm; indents (from burr to top): 41mm × 22mm, 21mm × 24mm, 26mm × 22mm, 27mm × 38mm. Unphased, Context: Benton natural deposits, 'two feet below' Layer 2, grid square A0.

SF849 (illus 5.19) Boar tusk with groove abraded into the wide end before breaking. Otherwise unworked. Length: 85mm; width: 18.5mm; thickness: 9mm; perforation diameter: at least 5mm. Unphased, Context: Benton Layer 1, grid square B5.

Shell discs

Eight worked shell discs (SF930–7) were discovered during Benton's excavation, six of which are so similar in size (15mm in diameter and *c* 3mm thick) it seems likely they were a set; there is also one larger and one smaller disc (19mm and 9.5mm in diameter respectively). Most are quite abraded but three still preserve flattened, abraded edges. The natural growth lines in the shell have created quite a decorative striped effect. Small stone discs are usually interpreted as gaming counters (eg Wilson 1998: 180) and a similar function is possible for these (also see four stone discs in sections 5.4.3 and 5.5). Worked shell is relatively rare, but this could be due to preservation and recognition issues as it would have been a readily available resource to any community near the coast and a fairly easy material to work.

SF930 (illus 5.20, 5.25) Small, thin and sub-oval. Diameter: 9.5mm × 11mm; thickness: 1mm. Unphased, Context: Benton Layer 1.

SF931 (illus 5.20, 5.25) Smooth, worn, slightly irregular. Diameter: 15mm; thickness: 3mm. Unphased, Context: Benton Layer 1.

SF932 (illus 5.20, 5.25) Finely shaped with flattened edge. Diameter: 15mm; thickness: 3.5mm. Unphased, Context: Benton Layer 1.

SF933 (illus 5.20, 5.25) Worn, irregular, rounded edges. Diameter: 15mm; thickness: 3.5mm. Unphased, Context: Benton Layer 1.

SF934 (illus 5.20, 5.25) Finely shaped and slightly abraded with flattened edge. Diameter: 15mm; thickness: 3.5mm. Unphased, Context: Benton Layer 1, grid square A3.

SF935 (illus 5.25) Very worn. Diameter: 15mm; thickness: 3mm. Unphased, Context: Benton Layer 1, grid square C8.

SF936 (illus 5.25) Very worn. Diameter: 15mm; thickness: 3mm. Unphased, Context: Benton Layer 1.

SF937 (illus 5.25) Very worn with flattened edge. Diameter: 19mm; thickness: 4.5mm. Unphased, Context: Benton Layer 1.

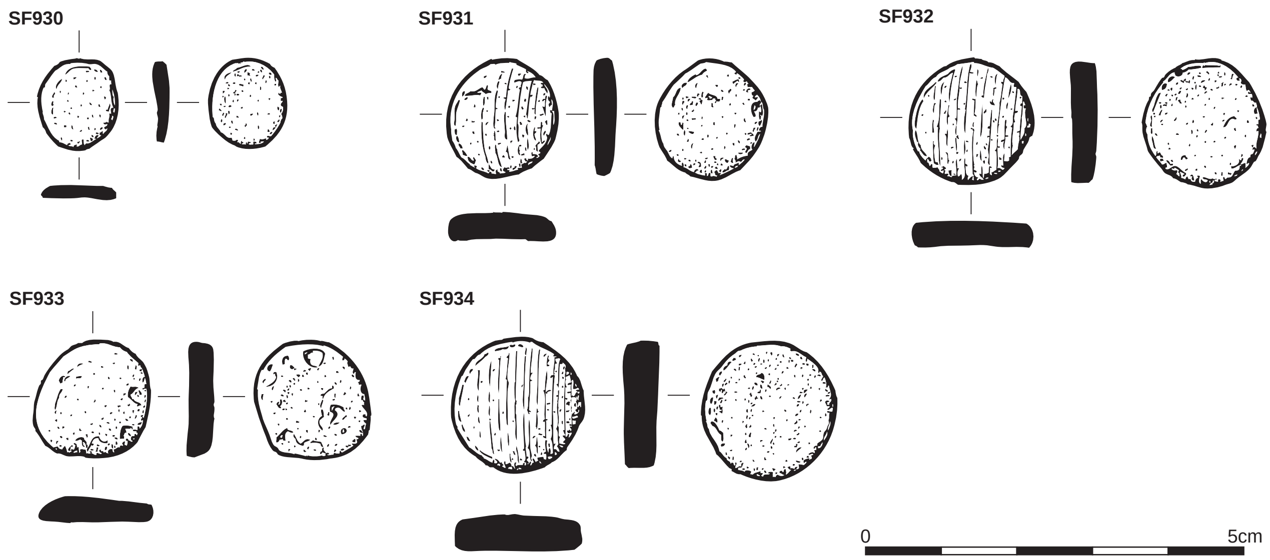

Illustration 5.20
Worked shell discs

5.4 Coarse stone

Gemma Cruickshanks

5.4.1 Summary

Fifteen coarse stone artefacts were recovered: nine by Benton and six by the Shepherds (summarised in table 5.10). A range of cobble tools with different types of wear is present, along with four finely shaped whetstones/burnishers for sharpening blades or sheet metalworking. Four discs may have been gaming counters. Few of the objects can be related to specific phases: a pounder/hammer, hammer and grinder were recovered from Phase 2 (Iron Age), while a grinder/hammer comes from Phase 1 (Late Bronze Age) deposits.

5.4.2 Discussion

The five cobble tools were all recovered by the Shepherds and are categorised according to the nature of their wear (as in Ballin Smith 1994: 196). The grinder (SF944) displays a bevelled ground facet on one end from use at around a 45° angle. Two multi-functional cobble tools also show grinding wear (SF941, SF942) as well as flake scars from use as hammerstones. A third multi-functional tool (SF940) was similarly used as a hammerstone but also has a band of peckmarks on one end from use as a pounder. SF943 is a single-function hammerstone with extensive bifacial flaking on one end. Grinders, pounders and hammers would have had a wide range of functions, from food preparation to dressing stone, and they are found throughout prehistory on most sites. All are made from locally available water-worn cobbles and have been modified only through use.

In contrast, the four stone tools related to metalworking are all heavily modified in shape, though all are still made from locally available stone types. Whetstones were used during the initial shaping and subsequent maintenance/sharpening of metal blades and provide a useful proxy here since no metal blades were recovered. SF945 has finely shaped convex edges

Table 5.10
Summary and phase distribution of coarse stone assemblage

Group	Type	Phase 1	Phase 2	Unphased	Total
Cobble tool	Grinder	–	1	–	**1**
	Hammer	–	1	–	**1**
	Grinder and hammer	1	–	1	**2**
	Pounder and hammer	–	1	–	**1**
Metalworking	Whetstone	–	–	2	**2**
	Burnisher	–	–	1	**1**
	Cushion stone	–	–	1	**1**
Miscellaneous	Disc (gaming counter?)	–	–	4	**4**
	Perforated stones	–	–	2	**2**
Total		**1**	**3**	**11**	**15**

and faces, suggesting it may have been a burnisher or touchstone rather than a whetstone, which usually has concave use-wear. However, it may also simply be a whetstone which saw little to no use. Cushion stones (SF10) are distinctively shaped sub-rectangular or trapezoidal tools with finely faceted edges and corners and were used as a work surface/anvil for fine metalworking, though they may also have had hammering, sharpening and polishing functions (Needham 2011: 114). Such stones tend to be associated with Early Bronze Age contexts, often graves, but similar tools are likely to have been used in the later prehistoric period too. A great deal of time and effort would have been expended in shaping these specialist tools and it seems unlikely they were casually discarded here. The presence of a cushion stone and possible burnisher is particularly interesting since there is no other evidence of metalworking from within the cave.

The four stone discs vary in stone type and dimensions but were all finely shaped and, in one case, also highly polished (SF952). Their edges were carefully abraded flat, though in two cases (SF949, SF951) one face is now spalled. Small discs are often interpreted as gaming counters (eg Batey 1989: 191; A Clarke 2007: 369; Wilson 1998: 180), though other interpretations are possible, such as counters for tallying (see also eight shell discs; sections 5.3, 5.5). Gaming counters are rare in Scotland until the Roman Iron Age (Hall and Forsyth 2011), which would place these objects in the later phase of the site's use, though all four were unstratified.

The perforated red sandstone fragment (SF948) has a smooth, slightly biconical perforation and a smooth concave notch on one face. Its outer edge has degraded, hindering further identification, though the smoothed notch suggests it may have been used to abrade a curved object. SF950 is a crude sandstone disc with a very irregular hole near one edge and may be entirely natural.

Spatial analysis of the nine artefacts with surviving contextual information shows that they were recovered throughout the cave. There are no clusters which would suggest activity areas or caches (see illus 5.68B).

Though the assemblage is small, it comprises an interesting but restricted range of artefacts. One might expect a higher number of cobble tools if this was a normal domestic site, though, since all were recovered by the Shepherds, it is possible they were not recognised by Benton and her team. Certain typical later prehistoric coarse stone artefacts are notable by their absence, especially querns, quern rubbers, spindle whorls and hide-rubbers (though the subtle staining on the latter may not have been recognised during excavation). Heavily modified/finely shaped stone artefacts are unusually abundant in this assemblage (9 of 15), reinforcing the idea that this is not a normal domestic site but one where specially selected objects were deliberately deposited.

5.4.3 Catalogue

Cobble tools

SF940 (not illustrated) Pounder and hammer. Oval, fine-grained siltstone cobble with one end extensively flaked from use as a hammer. The other end has a band of pecking extending down the edges from use as a pounder. Length: 62mm; width: 63mm; thickness: 45mm; pecked band width: 24mm. Phase: 2, Block: 1.3, Context: Ib15.

SF941 (illus 5.21) Grinder and hammer. Flat oval cobble with flake scars around one side of both ends from hammering. The edge of long ground facets can be seen on the edges of the flaking, indicating that it was used as a grinder before it was used for hammering. Length: 129mm; width: 97mm; thickness: 32mm. Phase: 1, Block: 1.1, Context: Ia27.

SF942 (illus 5.21) Grinder and hammer. A long, flat oval cobble with bifacial ground facet on the wider end and a single large flake scar on the other. The ground facet is quite smooth and has vertical striations, suggesting a back-and-forth grinding motion. Length: 134mm; width: 57mm; thickness: 21mm; facet length: 42mm, thickness: 6mm and 9mm. Unphased, Unstratified.

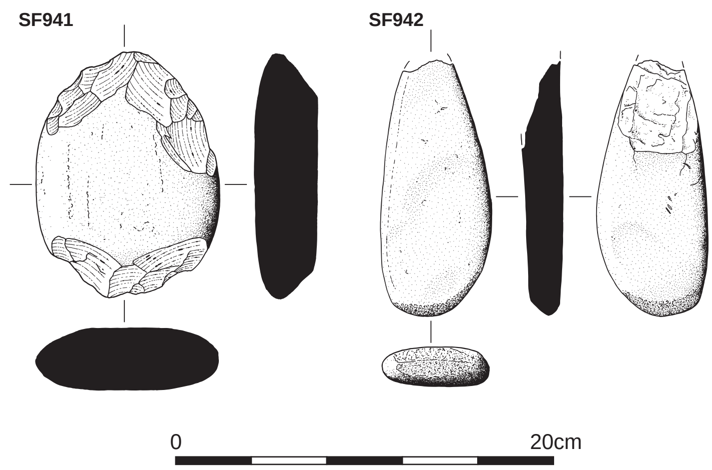

Illustration 5.21
Worked stone cobble tools

SF943 (not illustrated) Hammer. Large oval cobble with bifacial flaking at one end from hammering. Length: 160mm; width: 88mm; thickness: 67mm. Phase: 2, Block: 1.3, Context: Ib15f.

SF944 (not illustrated) Grinder. A flat, ovoid, water-worn quartz-rich cobble with a bevelled ground facet along the middle of the narrower end. The facet could be bifacial but is predominantly worked on one side. Length: 100mm; width: 75mm; thickness: 16.5mm. Phase: 2, Block: 2.6, Context: IIc11.

Whetstones/burnisher and cushion stone

SF10 (illus 5.22) Cushion stone or anvil. Entirely modified to an irregular sub-diamond shape. The edges are all highly polished and laterally convex apart from one edge which has a natural flaw. The longest edge is slightly concave longitudinally. The faces are also smoothed and convex but not as polished. One face has a group of V-sectioned cut marks and a cluster of fine peckmarks, suggesting use as an anvil/work surface. This tool is highly modified and used and was probably a non-ferrous metalworking tool. Length: 44mm; width: 37mm; thickness: 22mm. Unphased, Unstratified (Trench I).

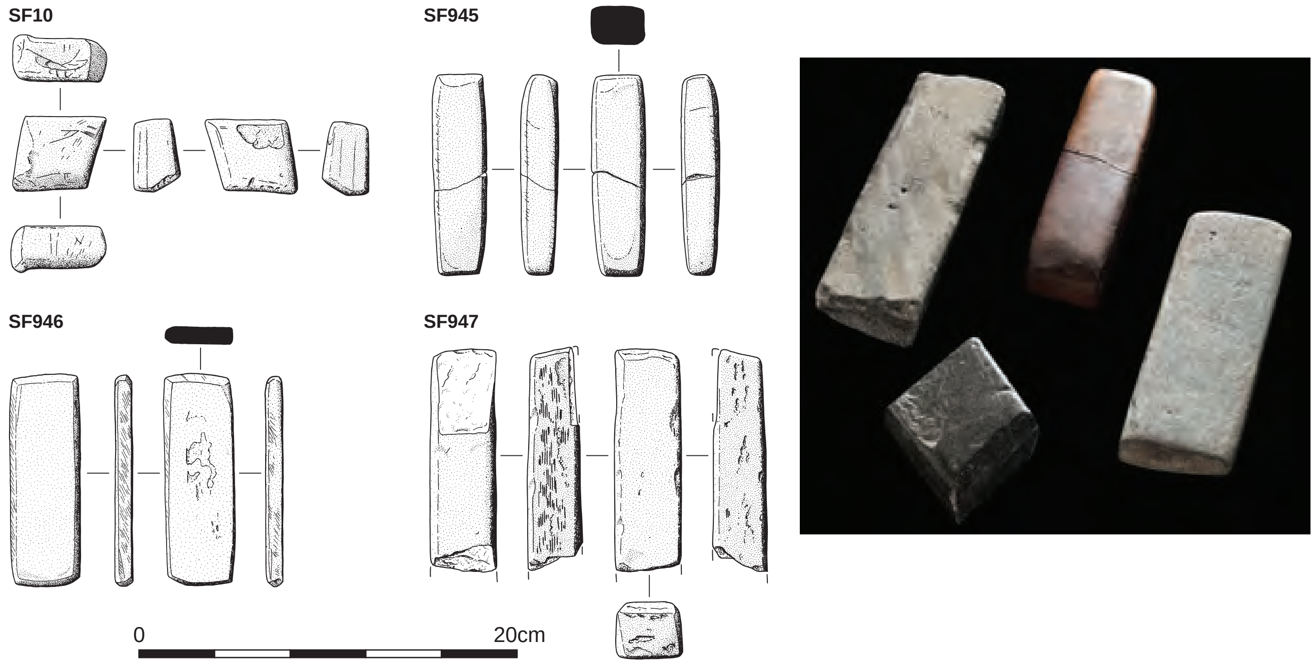

Illustration 5.22
Whetstones and cushion stone. Photograph clockwise from top left: SF947, SF945, SF946, SF10

SF945 (illus 5.22) Whetstone or burnisher. Finely shaped, long, rectangular, fine-grained siltstone bar. The faces, edges and ends are all convex and smoothed, suggesting it was either a burnisher or a whetstone which has not seen much use. In two refitting fragments, one of which is stained dark (found in separate grid squares). Length: 106mm; width: 28mm; thickness: 20mm. Unphased, Context: Benton Layer 1.

SF946 (illus 5.22) Whetstone (or palette). Finely shaped, flat, rectangular, fine-grained micaceous siltstone bar with slightly concave faces and convex edges and ends. Very thin for a whetstone and could also be a palette. There are fine striations around the edges from shaping but the faces are very smooth. Length: 101mm; width: 37mm; thickness: 9mm. Unphased, Context: Benton Layer 1, grid square D4.

SF947 (illus 5.22) Whetstone. Long, rectangular, fine-grained siltstone bar with smoothed faces and edges, one end convex and smoothed, the other end broken. Part of one face has spalled. The edges are slightly concave in places, suggesting use as a whetstone. The natural bar shape of the stone has been augmented by smoothing the end and edges, rather than being an entirely modified type. Length: 117mm; width: 35mm; thickness: 28mm. Unphased, Context: Benton Layer 1, grid square B4.

Discs

SF949 (illus 5.23, 5.25) Finely shaped mudstone disc with smooth edges. One face spalled. Diameter: 23mm; thickness: 5mm. Unphased, Unstratified.

SF951 (illus 5.23, 5.25) Slate disc with one face spalled. Striations around the edge from abrading to shape. The intact face is convex and looks unmodified. Diameter: 27mm; thickness: 5mm. Unphased, Unstratified.

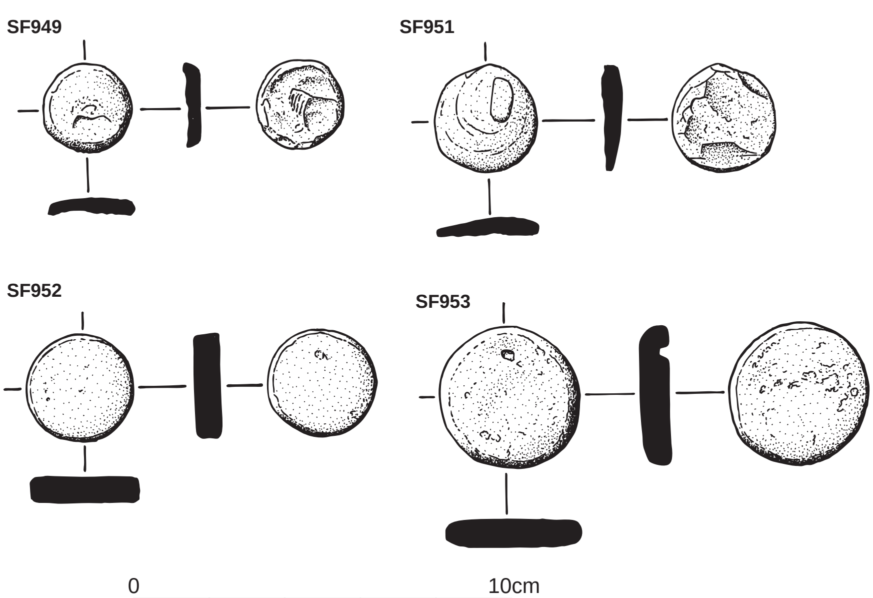

Illustration 5.23
Worked stone discs

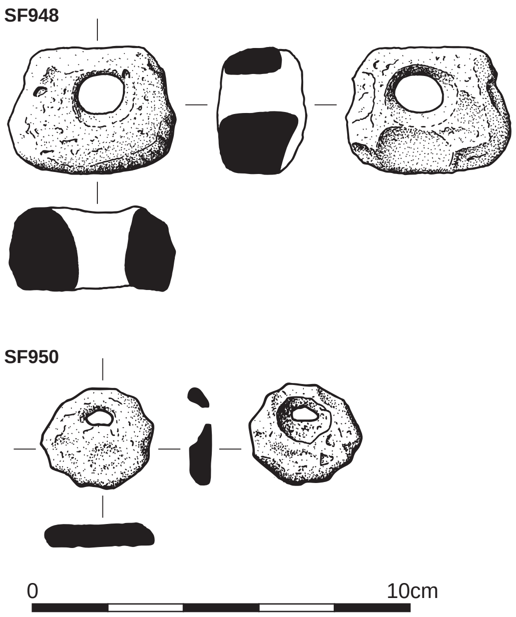

Illustration 5.24
Perforated stones

SF952 (illus 5.23, 5.25) A carefully shaped and smoothed stone disc with highly polished, flat faces and a slightly facetted edge. The polish and dark grey patina obscure the stone type. Diameter: 28mm; thickness: 7mm. Unphased, Unstratified.

SF953 (illus 5.23, 5.25) Pale brown sandstone disc with a slightly faceted edge and smooth faces, one of which is flat, the other slightly convex. Diameter: 37mm; thickness: 8mm. Unphased, Unstratified.

Perforated Stones

SF948 (illus 5.24) Sub-rectangular red sandstone nodule with cylindrical/slightly biconical perforation close to edge. There is a smoothed, concave depression beside the perforation on one side. Length: 44mm; width: 32mm; thickness: 22mm; perforation diameter: 10mm; depression: 13mm × 19mm. Unphased, Context: Benton Layer 2, grid square C3.

SF950 (illus 5.24, 5.25) Irregular sandstone disc with rough semi-circular perforation near edge. The shape is very uneven and could be natural. Diameter: 27mm; thickness: 6mm; perforation diameter: 4mm × 7mm. Unphased, Unstratified.

5.5 Comment on the gaming pieces

Mark A Hall

The identification of eight shell (SF930–7) and four stone (SF949, SF951–3) discs as gaming pieces at the Sculptor's Cave (see section 5.3, illus 5.20; and section 5.4, illus 5.23) is robust and the use of shell as a material should occasion no surprise since no material seems to have been off-limits for use as gaming pieces. Indeed, Benton (1931: 201) also mentions the presence of clay discs at the Sculptor's Cave, although these do not survive in the site archive (Gemma Cruickshanks has suggested the clay appellation may have been a misidentification of some of the shell pieces; pers comm). The two groups, in shell and stone (illus 5.25), strengthens their identification as gaming pieces, since contrasting materials form a suitable distinction for opposing pieces on a gaming board, although the distinction can be made through decoration and colour if the same material is used for both sets of pieces (Hall 2014; 2016a). With such simple pieces as those from the Sculptor's Cave and bearing in mind the circumstances of Benton's work, it is possible that further examples were missed during excavation. Their disc or counter forms suggest that they would have been most suitable for some variant of merels/morris/mill or ludus latrunculorum (adapted on the fringes of the Roman Empire into a series of tafl-type games; Hall and Forsyth 2011). Although unstratified, a likely Roman Iron Age date permits comparison with a broad range of counters most recently discussed in relation to the burial at Waulkmill, Tarland, Aberdeenshire (Hall 2016b).

Less certainly, there are two further stone discs and a bone piece that may be gaming related. Both stone discs (SF948, SF950; illus 5.24, 5.25) have perforations. Occasionally gaming pieces are pierced to serve as amulets but there is no sign of wear in the perforations and the catalogue entry for SF950 (section 5.4.3) notes the perforation may be natural. There is no obvious reason

Illustration 5.25
Gaming pieces

why a perforation, natural or otherwise, would prevent use as a gaming piece (and it would distinguish a piece from others if necessary), but it is unusual for such small and ephemeral pieces. SF848, a bone point with a fashioned head (illus 5.10), has an unclear function. Its crude anthropomorphism may suggest its use in magical practice or that it is unfinished. Its form could be compatible with a pegged gaming function.

The unstratified nature of the Sculptor's Cave gaming pieces makes it impossible to know under what conditions they were deposited. There is, however, no direct indication of any funerary association and no obvious association with any hearth, which could have implied a social and sociable passing of the time.

Essentially there are three main mechanisms by which the gaming pieces might have come to be deposited in the cave: as burial goods; votives; or as playthings of the living, discarded/abandoned or lost in the cave. A small number of geographically widespread Scottish caves with evidence for the presence of gaming pieces can potentially provide support for each of these possibilities.

Excavations at Borness Cave, Dumfries and Galloway, in the 1870s produced juvenile human remains (Clarke 1875: 307; 1878: 675) now known to be of Late Bronze Age date (Sheridan et al 2015: 197). A range of mainly Late Iron Age material culture was also reported, including a hemispherical gaming piece of bone (Corrie et al 1874: 497, no. 114 and plate XXII) typical of the second and third quarters of the first millennium AD and used in a tafl-type board game. Also reported was a group of small bone pegs (ibid: 493 and plate XVIII) which could have been readily used on a peg-hole gaming board. Contexts of deposition are hard to deduce from the excavation report but the material was presumably deposited as a consequence of folk playing games in the cave.

Further afield, finds from recent excavations at the Church Hole cave (part of the Palaeolithic cave complex of Creswell Crags in Derbyshire and Nottinghamshire, England) included objects that testified to reoccupation in the medieval period (particularly the twelfth and the fifteenth/sixteenth centuries), including a block of limestone incised with a double merels board (Hall and Pettitt 2008; for a wider discussion of bandit's lairs see Dowd 2015: 190–4). The indeterminate stratigraphy meant that the board could not be assigned with certainty to the earlier or later episodes: a later medieval context might suggest shepherds penning stock in the cave and playing board games, while the earlier context might suggest the cave as the abode of brigands who indulged in gambling and games-play (Hall and Pettitt 2008: 140).

The evidence from Irish caves confirms this general picture and also extends it with the addition of Viking Age activity. The caves of Barntick (Co. Clare) and Kilgreany (Co. Waterford) have a long history of use, with Neolithic and Bronze Age burials, and the deposition of a Bronze Age hoard at Kilgreany. Dowd (2015: 169–71) suggests that this votive and ritual background may have given the caves an ancestral sacrality, lending support to the interpretation that the single antler parallelepiped die from each cave may themselves represent votive deposits. The closest parallels for these dice, as Dowd observes, come from the double burial of two 30-year-old males at Knowth (which also included stone and bone gaming pieces; Eogan 1974: 73–80; 2012: 23–6; Johnson and Riddler 2012: 419–22; Hall and Forsyth 2011: 1328–30). Cloghermore Cave is of particular interest because of its gaming pieces (Connolly and Coyne 2000; Connolly et al 2005; Dowd 2015: 201–7). One of these, a pegged bone piece (no. 135), was part of a select group of grave goods associated with the burial of the incomplete remains of an adult and three children, deliberately sealed in a pit in the tenth century (Connolly et al 2005: 58). Viking burial rites valued the burial of gaming kit with the deceased, including in elaborate ship-burials (Hall 2016c). The Cloghermore gaming piece is a typical barrel-shaped, pegged variety for use with hnefatafl or the Irish variant fidcheall. A second example was also recovered from the cave, along with a hemispherical piece (with a peg socket), also commonly used for tafl games (Connolly et al 2005: 101–3) though scarcer in Ireland than in other parts of the Viking world (for the only Irish burial example, from Kilmainham, see Harrison and O'Floinn 2014: 201–2). Neither of these latter examples, nor the five stone discs recovered from across the cave (ibid: 123), which could also be gaming pieces, has any clear association with funerary rites.

Returning to the Sculptor's Cave, we see both votive deposition and mortuary activity in the Roman Iron Age. Parallels from other caves in Scotland, England and Ireland (the evidence from Continental Europe remains to be explored) supports both funerary and votive deposition and also short-term 'domestic' occupation in the context of gaming equipment. However, given the mortuary role of the Sculptor's Cave at this time, the strongest weight for these gaming pieces inclines towards deposition in a funerary/votive context, possibly attendant on the ritual use of board games during the Iron Age.

5.6 Lithics

Torben Bjarke Ballin

5.6.1 Introduction

The assemblage from the Sculptor's Cave comprises 33 pieces including flint (11 pieces), silcrete (7), flint or silcrete (5), quartz and rock crystal (9) and agate (1) (table 5.11). In contrast to many other lithic assemblages from Moray, these finds are generally not abraded by aeolian activity. The two most diagnostic objects are also the only two recovered (or at least retained) by Benton. One is a bifacial knife (SF880; illus 5.26) with invasive retouch, which is definitely post-Mesolithic in date (Butler 2005) but equally definitely pre-dates the Middle Bronze Age (Clark 1936: 47). A scale-flaked knife (SF881; illus 5.26) is dated to the same broad chronological framework (Butler 2005). The composition of the assemblage indicates that some primary production took place at the site and probably the use of manufactured implements. It is not possible, on the basis of the small number of lithics, to define any site activities in greater detail. A full catalogue of the lithic material and further discussion is contained in the site archive.

5.6.2 Catalogue

SF880 (illus 5.26) Tip fragment of bifacial knife; tertiary piece; fine-grained, small-dotted, orange flint. Too slender to be the fragment of a leaf-shaped point. Full bifacial retouch. One lateral side has steep blunting retouch, whereas the other side (the cutting edge) has more acute bifacial scale-flaking. Length: 35mm; width: 29mm; thickness: 5mm. Unphased, Context: Benton Layer 1.

SF881 (illus 5.26) Tertiary medial–distal fragment of scale-flaked knife on elongated flake or blade; fine-grained, yellow, mottled flint. The left lateral edge has relatively acute retouch (scale-flaking), whereas the retouch of the opposed lateral side is steep

Table 5.11
Lithics assemblage

	Flint	Silcrete	Flint/silcrete	Quartz/ rock crystal	Agate	Total
Chips	5	1	3	7	1	**17**
Hard percussion flakes	–	–	1	–	–	**1**
Indeterminate flakes	2	1	1	2	–	**6**
Indeterminate pieces	–	5	–	–	–	**5**
Bifacial knives	1	–	–	–	–	**1**
Scale-flaked knives	1	–	–	–	–	**1**
Notched pieces	1	–	–	–	–	**1**
Bipolar cores with lateral retouch	1	–	–	–	–	**1**
Total	**11**	**7**	**5**	**9**	**1**	**33**

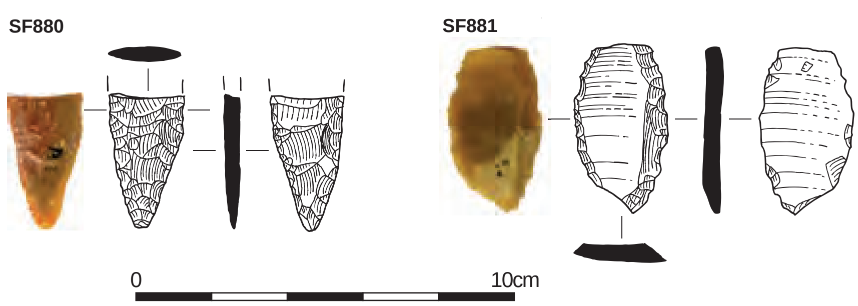

Illustration 5.26
Lithics

and blunt. The former edge (the cutting edge) has some use-wear, such as flat spin-offs on the ventral face and denticulation (damage) towards the distal end. Length: 43mm; width: 25mm; thickness: 5mm. Unphased, Context: Benton Layer 1, grid square C3.

5.7 Non-ferrous objects

5.7.1 Late Bronze Age objects

Katharina Becker, Trevor Cowie, Lore Troalen and Jim Tate

Introduction

From the time of Sylvia Benton's original excavation, the Late Bronze Age metalwork from the Sculptor's Cave has been recognised as a key assemblage of the Scottish Late Bronze Age. The range of objects recovered by Benton included penannular bronze bracelets and a number of small penannular rings of bronze with gold foil cover, which have been termed 'ring money' or 'hair rings'. The number and range of types expanded with the recovery of further material during the 1979 excavations.

The original group of bronzes, particularly the bracelets, was formerly seen as consisting of types directly inspired by continental forms, if not actually direct imports reflecting colonisation from the Continent (Benton 1931: 184, 203). Indeed, a range of metalwork from north-east Scotland – especially ornaments – appeared to impart a distinctive character to the region, justifying the identification of what Coles termed the 'Covesea Phase' as a separate facies of the Late Bronze Age in Scotland (Coles 1960: 39–41, 54–5). Among the artefact types which characterised this phase were penannular bracelets (especially those with outwardly projecting terminals) and exotic neck rings, as seen in the hoard from Braes of Gight, Aberdeenshire (Muirhead 1891). Few absolute dates were available to Benton and Coles for either the Scottish or southern British Late Bronze Age and rather distant continental comparanda provided both chronological and cultural context for the material they were working on. In the light of later research, the grounds for such direct connections with the Continent became less sustainable and the appearance of these types is now better understood as a regional manifestation of widespread fashions in personal ornament. Nevertheless, even if the connections are more diffuse than was once thought, they still show that communities in north-east Scotland were involved in a widespread network of contacts (O'Connor 1980; Cowie 2010).

The Sculptor's Cave assemblage consists of at least five (possibly six) penannular bronze bracelets (three of them complete, the remainder represented by fragments); fragments of two bronze pins; and, lastly, ten small penannular rings mostly of copper, some or all of which may originally have been covered in gold foil. This represents one of the few associated finds of these small penannular rings from Scotland – where they are in any case by no means common – or indeed within Britain and Ireland as a whole, and makes the assemblage of unusual interest.

A number of small corroded bronze fragments, recovered by the Shepherds, are too small to be identified to type. The marked absence of objects types, such as axe-heads and small tools, that would tend to characterise a settlement assemblage is nonetheless striking.

The few available radiocarbon determinations for Scottish metalwork indicate reasonably close alignment with the wider British sequence, and the need for radical revision of most aspects of Coles' original Late Bronze Age scheme has long been recognised (ScARF 2012: section 1.2.5 and table 2). Conventionally, the Sculptor's Cave assemblage (and the eponymous Covesea

Phase as defined by Coles) would equate with the Ewart Park Phase in England (cf Burgess 1968; Needham et al 1997; Rohl and Needham 1998). However, in the light of the Bayesian analysis of the radiocarbon dates now available from the site, which suggests a sequence of use beginning probably *1050–975 cal BC* (chapter 4), there is now scope for reassessment of the dating of the Late Bronze Age metalwork.

The penannular bracelets

Three complete penannular bracelets and a number of separate fragments of bracelets (representing at least three more) were found (illus 5.33, 5.62). Although elsewhere described as armlets (eg Coles 1960), the term bracelet better reflects their size, in keeping with the accepted definition of a bracelet as an ornament designed to be worn on the wrist or lower arm and reserving the term armlet for ornaments of sufficient size to be worn on the upper arm.

Morphology

Three complete bracelets (SF728, SF729, SF731/SF796) are of squat oval outline when viewed in plan and have a D-shaped cross-section (that is, with a flat inner surface against the skin as worn and a curved outside face) but distinctly flattened sides. Towards the terminals, the body reduces in thickness slightly before expanding to form irregularly expanded terminals, with the expansion restricted to the outside. Although Benton thought the expanded terminals of the bracelets had been hammered ('beaten up from the inside'), in our view the grooves on SF728 and SF729 certainly appear to have been cast, and there seems no reason why the terminals too should not have been cast. The degree of expansion is variable: pronounced in the case of SF728 and SF729, both with transverse ribbing on the outer part of the bracelet near the ends, and of SF731/SF796, but much less so in the case of the bracelets represented by SF730 and SF732, which are undecorated (illus 5.33). Bracelet SF730 differs from the rest in having no notable expansion or swelling of the terminals, no decoration and a D-shaped cross-section. The two fragments, SF795 and SF391, which may be part of the same object, represent bracelets that are thinner than the other examples and oval in cross-section.

Neither of these forms, distinguishable by their terminals, are datable by their association at the Sculptor's Cave, beyond a likely affiliation with the Late Bronze Age horizon beginning probably *1050–975 cal BC* (see chapter 4).

Discussion

At a time when dating was almost entirely dependent on comparative typology, Benton sought parallels among continental Late Bronze Age cultures, comparing the bracelets with more outward projecting terminals with continental bracelet forms, particularly those from the Swiss Lake settlements (1931: 182). The direct correlation of these bracelets with intrusive population groups has, however, been demonstrated to be problematic (eg O'Connor 1980: 212–13), and it can be argued that the Scottish bracelets may be better seen as local interpretations of international forms. This tends to be supported by the compositional profile of the copper alloys (Cowie et al 1998) and reflects similar changes in perception over the supposed continental origin of pottery forms from the cave (see section 5.2.1).

The presence of fragments of clay moulds for bracelets among the Late Bronze Age metallurgical debris found during excavations at Birnie, near Elgin, demonstrates that such ornaments were being manufactured in the environs of the Sculptor's Cave (Hunter 2006c; 2007c), and the broad sweep of territory from Fife to the inner Moray Firth is the core region for a distinctive series of hoards in which ornaments predominate or form a significant component. Associated finds, other than those from the Sculptor's Cave, include important hoards from Braes of Gight, Aberdeenshire; Balmashanner, Angus; Auchtertyre, Morayshire; Wester Ord, Ross-shire (for references to these see Coles 1960: 94–5, 98–9, 120–1); Glentanar, Aberdeenshire (Pearce 1971; 1977; an 1843 reference to the *Aberdeen Journal* cited in Canmore ID 33967 indicates about 30–40 bracelets were found here); Clockmaden, Perthshire (Cowie and Reid 1986) and St Andrews, Fife (Cowie et al 1991; 1998). These are broadly datable to the Ewart Park/St Andrews Phase and, in several cases, the associated finds indicate a date at least as early as Ewart Park 1 and thus late tenth/early ninth century BC (cf Burgess 2012). Radiocarbon dated finds remain at a premium, however, and a penannular bracelet with rather irregularly expanded terminals, found in association with an amber bead at Croig Cave, Mull (Cowie and O'Connor 2012: 80) is anchored within a radiocarbon-dated sequence giving a date between 1130–790 and 1030–840 cal BC (Mithen and Wicks 2012: 76).

Across this area, penannular bracelets show considerable variation in details of their shape and the form of their terminals, ranging from those with outwardly projecting terminals to those whose ends expand evenly all the way round. It is beyond the scope of this discussion to explore these differences here, which could reflect local or regional variations in manufacturing technique, patterns of distribution and circulation and potentially subtle chronological differences. 'Covesea type' bracelets with outwardly projecting terminals occur across north-east Scotland from Fife to Easter Ross; however, apart from the Sculptor's Cave itself, the only hoards containing examples of the distinctive bracelets with transverse ribbing remain Braes of Gight, Aberdeenshire (Muirhead 1891) and Auchtertyre, Moray (ibid: 120–1; see also Schmidt and Burgess 1981: plate 144, no. 9).

To the south and west of this region, bronze ornaments such as penannular bracelets form a much less significant part of the inventory of metalwork (Coles 1960; Cowie and O'Connor 2012), with a hoard from near Berwick-upon-Tweed in Northumberland representing an outlier of the Scottish ornament hoards (Needham et al 2007). Whatever the mechanisms, the north-east of Scotland seems to retain a special character in terms of its Late Bronze Age metalwork. North Sea contacts and a pivotal role in connections between Ireland and the Continent appear to lie at the heart of this, but these can no longer be viewed in such direct terms as colonisation.

Pins

Two pins are represented in the assemblage; unfortunately both are incomplete, leaving their original forms in doubt (illus 5.34, 5.62). The straight shank of a pin (SF230) was found in Block 2.2/2.3. It has a neck curving through a 90° angle, but the head is unfortunately missing. It may be part of a disc-headed pin but there are other possible interpretations. A second pin (SF754) is represented by two fragments of a straight stem with a circular section. Bronze pins are relatively common in Scottish Late Bronze Age contexts.

Small penannular rings (hair rings)

The Sculptor's Cave has produced ten small penannular rings of bronze and gold, of the type variously termed 'ring money' or 'hair rings' (illus 5.35, 5.36, 5.62); the largest assemblage of such pieces from Scotland. Hair rings, as defined here, are small penannular rings that can be made either of solid gold or a copper alloy core with gold sheet cover. Their ends either taper towards their terminals or retain consistent thickness. They can be differentiated from the thick penannular rings found, for example, in the Rathtinaun or Tooradoo hoards (Eogan 1983: nos 132, 104) by the fact that the latter are all-over decorated with impressed decoration, have greater thickness, frequently employ use of lead cores and, most importantly, have a flatter body, producing a thin oval cross-section with a flattish interior (the rings under discussion here have a near-round cross-section).

Eight hair rings were recovered by Benton and two by the Shepherds. Six of those recovered by Benton have a gold foil cover and at least some of the others were probably also covered in gold foil judging by the occurrence of a tiny fragment of gold foil that adheres to SF372 and a separate fragment of gold foil (SF797) recovered by Benton.

In the case of the two rings (SF726, SF727) with traces of organic material between the terminals, the insertion of the organic material clearly took place when the rings were not covered with gold foil (illus 5.36). This suggests either that plain base metal versions were in circulation or that these small penannular rings started their lives with a gold covering, but that the loss of the gold did not preclude their continued use. However, the fact that they were made of leaded bronze in contrast to the foil-covered examples (which were made of unalloyed copper) further supports the impression that they were not and had never been intended to be covered with foil. It could also be speculated that their yellowish colour was intended to copy the appearance of the foil-covered examples.

Most hair rings from the Sculptor's Cave consisted originally of copper cores with a thin gold sheet cover. For this, a copper alloy bar was cast and finished to shape. The creasing of the foil on the inside of the curvature of the ring (eg illus 5.29A) suggests that it was bent into shape after it had been applied to the ring as suggested elsewhere for hair rings in general (Armbruster 2008; Meeks et al 2008). At the terminals of the rings, where surviving, the folding of the ends of the gold sheet are visible (eg illus 5.29C), in contrast to the seam along the inside length of the body, where burnishing erased all traces of manufacture; this is characteristic for rings of this type and is noted elsewhere (Meeks et al 2008: 18). The objects are strongly distorted due to the expansion (through corrosion) of the copper core but some observation about their original shape can be made. The hair rings adhere broadly to a consistent morphology, with a decreasing thickness towards the terminals but consistent width, creating terminals of near-oval cross-section. The terminals are either pointed and round, as on SF724, or have flat ends, as in the cases of SF139, SF372, SF715 and SF723. These flat surfaces are not at a right angle to the main axis of the ring, but face each other perfectly.

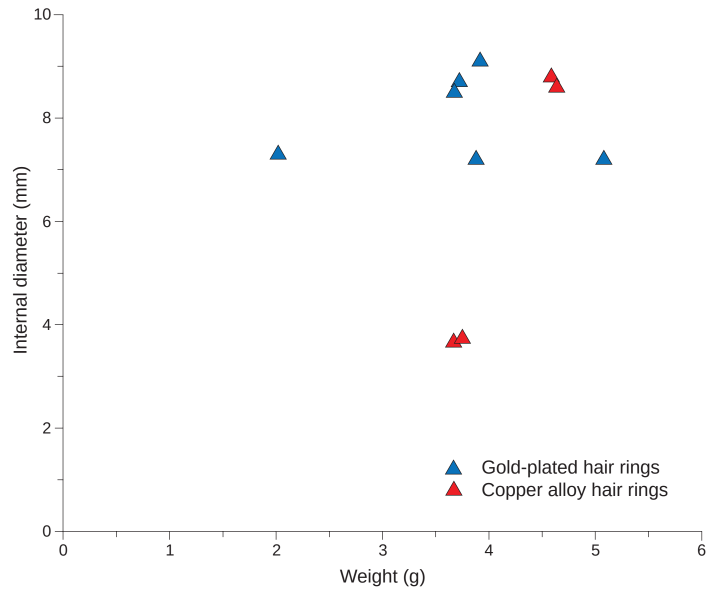

Illustration 5.27
Graph showing weight versus internal diameter of the Late Bronze Age gold-covered and copper alloy hair rings

The majority of the rings have weights around 4–5g; the outlier at 2g is the heavily corroded piece SF725. Curiously, the two rings from the Shepherds' excavation (SF139, SF372) are almost identical in size and weight, differing from the rest of the group (illus 5.27). While most (six) of Benton's rings were found in grid square C9 at the back of the cave (see illus 5.64A), SF724 and SF725 were found near the Shepherd examples, close to the entrance to the cave.

More directly than the bracelets, these hair rings tie the Sculptor's Cave into the wider, mainly Atlantic, north-west European Later Bronze Age. Hair rings ranging from those with a copper or bronze core with gold foil, such as the examples from the Sculptor's Cave, to those of solid gold, are found across Britain, Ireland, Belgium, north-western France and the Netherlands (eg O'Connor 1980: 215; Warmenbol 1999; 2017; Northover 2000; Becker 2006; Billand and Talon 2007). In recent years, based on their dating and the diverse range of contextual associations which have started to emerge, these rings appear to be quite distinct from other penannular ring ornaments of the Middle and Late Bronze Age. Hair rings had been compared in terms of their morphology to Egyptian and Palestinian wigs or earrings (eg Hawkes 1961: 453–4) but were identified as a distinct development in parts of Atlantic Europe (Eogan 1997: 310). While in Ireland and Britain they have been found mainly as single finds, on the Continent they are characteristically found in association with burials, though they also occur in caves.

Since the publication of lists by Coles (1960: 91, listed under 'ring money'), Taylor (1980: 132) and Eogan (1997: 137–42), some new finds have been added to the corpus of hair rings from Scotland (illus 5.28; table 5.12), although compared to England and Wales the numbers are small. It should be noted that Monzie, Perthshire should now be discounted as a Scottish findspot, as this forms part of a group of material likely to have been found

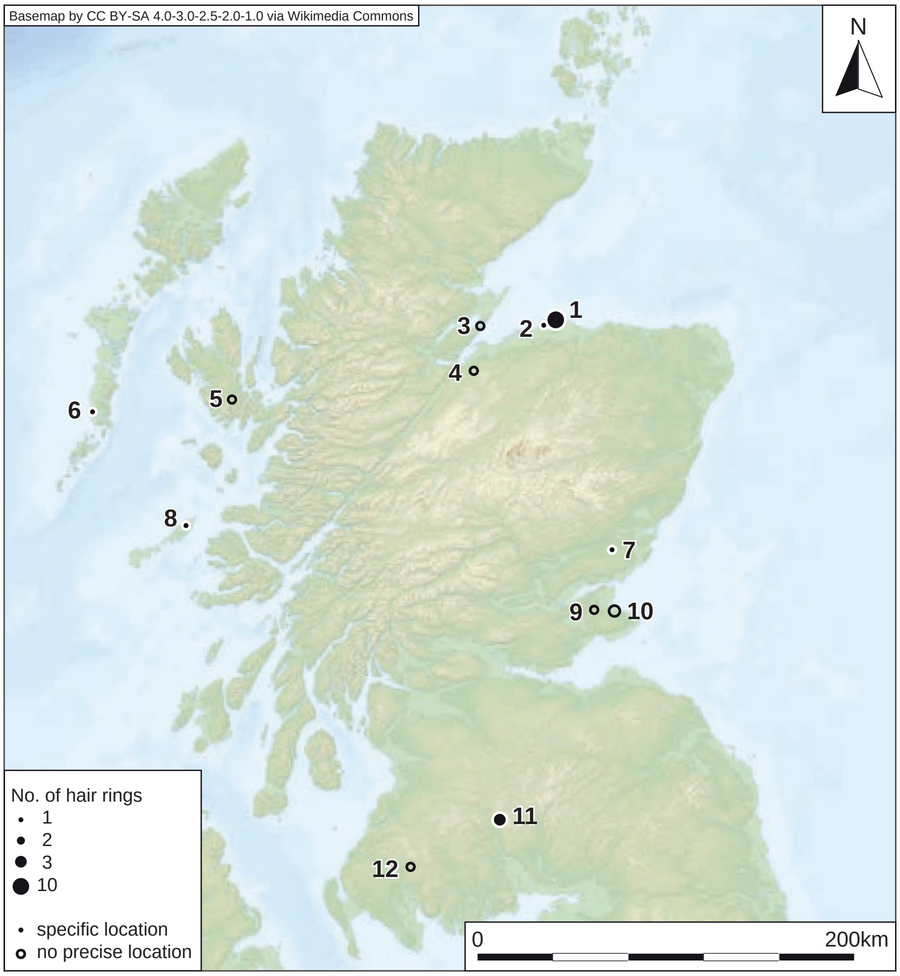

Illustration 5.28
Distribution of hair rings in Scotland (based on data compiled by Trevor Cowie and Brendan O'Connor): 1. The Sculptor's Cave; 2. Clarkly Hill, Moray; 3. 'Cromarty'; 4. Coire Na Fuaraig, Kirkmichael, Moray; 5. 'Isle of Skye'; 6. Cladh Hallan, South Uist; 7. Balmashanner, Forfar, Angus; 8. Torastan, Coll; 9. Dairsie, Fife; 10. St Andrews, Fife; 11. Ballaggan, Durisdeer, Dumfries and Galloway; 12. 'Galloway'

in Ireland and brought to Scotland in the modern era (see Wallace 1986; Ó Néill 2008). Apart from the Sculptor's Cave assemblage, the only associated find of small penannular rings of this type is the hoard from Balmashanner, Angus. Single examples have been found on settlement sites at Cladh Hallan, South Uist (Parker Pearson et al 2002) and at Clarkly Hill, near Burghead, Moray, but otherwise the corpus comprises mainly single finds lacking any information regarding circumstances of discovery (table 5.12). The Scottish examples are mostly comparable to the Sculptor's Cave examples, with base metal cores and gold sheet covering. In some cases, the gold foil is almost completely detached (Sculptor's Cave SF372) or entirely absent (Sculptor's Cave SF139, SF726, SF727), and three other base metal finds without surviving gold sheet have also been listed (St Andrews hoard, Fife, and Torostan, Coll). Only two solid gold examples have been found so far (Dairsie, Fife and Ballaggan, Dumfries and Galloway). On the second of these and on the sheet-covered example from Cladh Hallan, silver striping can be observed.

Discussion

The ring form under discussion here has been variably referred to as 'ring money' or 'hair ring' (eg Taylor 1980; Eogan 1997; cf Varndell 2001; Meek et al 2008: 13). The same terms have also been applied to other forms of penannular ornament, including thick penannular rings and lock rings. Although the term ring money has long fallen from favour as an explanation of their function, it is still used occasionally as a descriptor (eg O'Connor et al 2008).

While, morphologically, such plain small rings could have been used in a variety of ways, including as hair ornaments, their single occurrence in burial contexts suggests that they were worn singly, most likely inserted into the nose (cf Armbruster 2008) or as a septum piercing (Becker 2006). Particularly solid and heavy examples, however, may also have been worn on other parts of the body. The Sculptor's Cave assemblage is interesting in relation to the function of at least some of these rings: Benton noted that some, when found, had traces of string and specifies this for SF726. It is unclear what exactly she means by 'string', but SF726 has a bead-shaped object wedged/suspended between its terminals (illus 5.32, 5.36). SEM examination shows this to consist of textile fibre (illus 5.32B–D; see below).

The small penannular 'hair rings' were grouped with Late Bronze Age artefacts in Britain and Ireland (Eogan 1994; 1997; Taylor 1980), based mainly on the appearance of related forms of thick penannular rings from Dowris Phase hoards in Ireland and continental evidence of a Late Urnfield date (Raftery 2004: 85). Suspicions regarding this dating had been voiced in the past, with Eogan (1964: 285) pondering a Middle Bronze Age date. Subsequently, the case for revising their dating was advanced by Peter Northover, who proposed a *floruit* for insular examples of small, undecorated penannular rings in the Ewart Park/St Andrews Phase but thought their origin could be traced back possibly as early as the Penard Phase (2000: 302). In the light of the late Colin Burgess' (2012) revision of the Atlantic sequence, Penard spans the thirteenth to twelfth centuries BC. An increasing range of sites that have produced early dates for this artefact type suggest that hair rings, as defined here, pre-date the various forms of penannular ring ornament of the Ewart Park/St Andrews or equivalent Irish Dowris Phase (Becker 2006; 2013; Billand and Talon 2007; Warmenbol 2017). The hair ring from Rathgall pit burial 119 (Raftery 2004: 87), for example, can be dated by a radiocarbon date obtained on the black lining material, which is contemporary with the filling of the pit and yielded a date of

Table 5.12
Hair rings from Scotland

Find location	Region	No.	Composition	Current location	References/notes
The Sculptor's Cave	Moray	10	Base metal cores; 7 with gold sheet covering	National Museums Scotland/Elgin Museum	This volume; see also Coles 1960: 91; Taylor 1980: 92–3, M1–10, plate 33i; Eogan 1994: 141
Clarkly Hill, Duffus	Moray	1	Base metal core with gold sheet covering	Elgin Museum	Hunter 2009: 123; Treasure Trove 2010: 9 (61/08)
'Cromarty'	Highland	1	Base metal core with gold sheet covering	National Museums Scotland	Sheridan 2017; Treasure Trove 2017: 38 (199/16)
Coire Na Fuaraig, Kirkmichael	Moray	1	Base metal core with gold sheet covering	British Museum	Benton 1931: 181; Coles 1960: 91; Taylor 1980: Bf 6; Eogan 1994: 141; Murgia et al 2014
'Isle of Skye'	Highland	1	Base metal core with gold sheet covering	National Museums Scotland	Wilson 1863: 455–6; Coles 1960: 91; Taylor 1980: 92, In 4; Eogan 1994: 141
Cladh Hallan, South Uist	Western Isles	1	Base metal core with gold sheet covering (stripes on interior)	Not yet accessioned	Parker Pearson et al 2001: 104; 2002
Balmashanner hoard, Forfar	Angus	3	Base metal cores with gold sheet covering	National Museums Scotland	Anderson 1892; Coles 1960: 91, 98, nos 24–6; Taylor 1980: 89, An 1–3; Schmidt and Burgess 1981: 251–2, no. 1686, plate 152B, 37–9; Eogan 1994: 141, plate 14
Torastan, Coll	Argyll	1	Base metal core, no covering	National Museums Scotland	Anon 1922: 17; Coles 1960: 91. Perhaps found 'southwards [from Torostan] towards Galla-nach . . . Near this place have recently been found . . . a penannular bronze ring . . .' (Beveridge 1903: 38)
Dairsie	Fife	1	Solid gold	St Andrews Museum	Treasure Trove 2014: 26 (134/13)
St Andrews hoard	Fife	2	Base metal core, no covering	National Museums Scotland	Cowie et al 1991
Ballaggan, Durisdeer,	Dumfries and Galloway	1	Solid gold (with stripes)	Dumfries Museum	Cowie et al 2006: 49; O'Connor et al 2008
Galloway	Dumfries and Galloway	1	Base metal core with gold sheet covering	National Museums Scotland	Anon 1892: 213; Coles 1960: 91; Taylor 1980: 92, G6; Eogan 1994: 141
No provenance	n/a	1	Base metal core with gold sheet covering	National Museums Scotland	This may be the example listed by Coles 1960: 91, Eogan 1994: 142 and Taylor 1980: 95; NLS2 with the incorrect accession number X.FE 73, which applies to a ribbon torc from Cothill Farm, Belhelvie, Aberdeenshire

Table 5.13
The elemental composition obtained by surface X-ray fluorescence and energy dispersive X-ray analysis of the gold hair rings from the Sculptor's Cave. Data were normalised to 100 wt% and are presented as the mean value of three measurements with error depicting one standard deviation of the variation in measurements. *Hair rings SF722 and SF725 present highly damaged gold plating and although care was taken for XRF analysis, it is possible that the level of copper for these two items is over-estimated due to the surrounding copper alloy

Artefact	XRF Analysis (wt%)			EDS Analysis (wt%)		
	Au (L_α)	Ag (K_α)	Cu (K_α)	Au (L_α)	Ag (L_α)	Cu (K_α)
SF715	78.8 ± 0.2	14.1 ± 0.1	7.1 ± 0.1	*not analysed*		
SF716	77.7 ± 0.8	14.0 ± 0.5	8.3 ± 0.5	*not analysed*		
SF722	76.4 ± 0.5	13.6 ± 0.2	10.0 ± 0.4	83.4 ± 2.3	10.1 ± 1.8	6.5 ± 0.6
SF723	83.5 ± 0.9	12.8 ± 0.9	3.7 ± 0.1	85.4 ± 0.9	11.3 ± 0.8	3.3 ± 0.2
SF724	77.4 ± 0.2	13.7 ± 0.5	9.0 ± 0.6	77.7 ± 0.8	14.8 ± 1.2	7.5 ± 0.4
SF725	75.9 ± 0.7	12.8 ± 0.4	11.3 ± 0.7	80.6 ± 2.9	11.0 ± 2.7	8.4 ± 1.0
SF797	78.7 ± 0.4	13.8 ± 0.5	7.4 ± 0.1	82.4 ± 1.6	11.6 ± 0.9	6.0 ± 0.8

Table 5.14
Qualitative elemental compositions of Late Bronze Age copper alloys from the Sculptor's Cave obtained by surface X-ray fluorescence analysis. *In some cases Au and Ag were also detected in minor quantities, due to the adjacent gold foil coverings

Artefact	Description	Elements detected	Interpretation
SF139	Hair ring	Cu, traces Pb	Copper, not alloyed
SF372	Hair ring	Cu, Pb	Copper, not alloyed
SF715	Hair ring	Cu, Pb, Fe, traces Sb, Ni	Copper, not alloyed
SF716	Hair ring	Ca, Ti, Co, Ni, Br, Cu, Zn, traces Sb	Probably copper, modern green paint
SF722	Hair ring	Cu*	Copper, not alloyed
SF723	Hair ring	Cu, traces Pb*	Copper, not alloyed
SF724	Hair ring	Cu, traces Pb*	Copper, not alloyed
SF725	Hair ring	Cu, Pb, traces Sb*	Copper, not alloyed
SF726	Hair ring	Cu, Sn, Pb	Leaded bronze
SF727	Hair ring	Cu, Sn, Pb	Leaded bronze
SF729	Penannular bracelet	Cu, Sn, Pb	Leaded bronze
SF728	Penannular bracelet	Cu, Sn, Pb	Leaded bronze
SF730	Penannular bracelet	Cu, Sn, Pb	Leaded bronze
SF731a–c/SF796	Penannular bracelet	Cu, Sn, Pb	Leaded bronze
SF732	Penannular bracelet	Cu, Sn, Pb	Leaded bronze
SF795	Penannular bracelet	Cu, Sn, Pb	Leaded bronze

1290–1040 cal BC. Equally early is the date of 1373–1019 cal BC for the context of a hair ring from Ballypriorbeg, Co. Antrim (Suddaby 2003: 78–9, 83), while an example found in a burnt mound at Killeens, Co. Cork, was retrieved from a context radiocarbon dated to 1500–1290 cal BC (Brindley et al 1990: 26–7). In France, a burial containing a hair ring at Les Grot Grelow produced a calibrated date of 1220–976 cal BC (Billand and Talon 2007: 349; OxCal calibration by authors) and other related assemblages from France produced similarly early dates (Billand and Talon 2007: 347–9). Their earlier date and differing associative patterns appear to set them apart from the various forms of later penannular ring. While various forms of lock rings, thick penannular rings, bullae and other ring forms are found in hoards, the fact that hair rings are rarely found in these contexts is indicative of a possible earlier date or entirely different functional context (Becker 2006). A rare exception is the Balmashanner hoard, in which a number of hair rings were associated with lock rings, bracelets and an axe socket. This find, together with the modelled dates from the Sculptor's Cave, would suggest a continuation of the type into the later part of the Bronze Age.

Analytical results

Six of the gold-plated hair rings (SF715, SF716, SF722–6), a fragment of gold plating (SF797) and four copper alloy hair rings (SF139, SF372, SF726, SF727), together with three copper alloy bracelets (SF728–30) and various bracelet fragments (SF731a–c/SF796, SF732, SF795), all from the Sculptor's Cave (Benton 1931), were investigated by optical microscopy, surface X-ray fluorescence analysis and scanning electron microscopy (tables 5.13, 5.14). The composition of the gold plating and copper alloys was investigated by X-ray fluorescence (XRF) using an Oxford ED 2000 air path instrument, without any surface cleaning or surface preparation (Troalen and Tate 2016). The copper cores were analysed qualitatively due to their high level of corrosion, while quantitative analysis of the gold plating was undertaken. Additionally, measurements on the composition of the gold plating were undertaken in the scanning electron microscope (SEM) using the energy dispersive micro-analytical system (EDS).

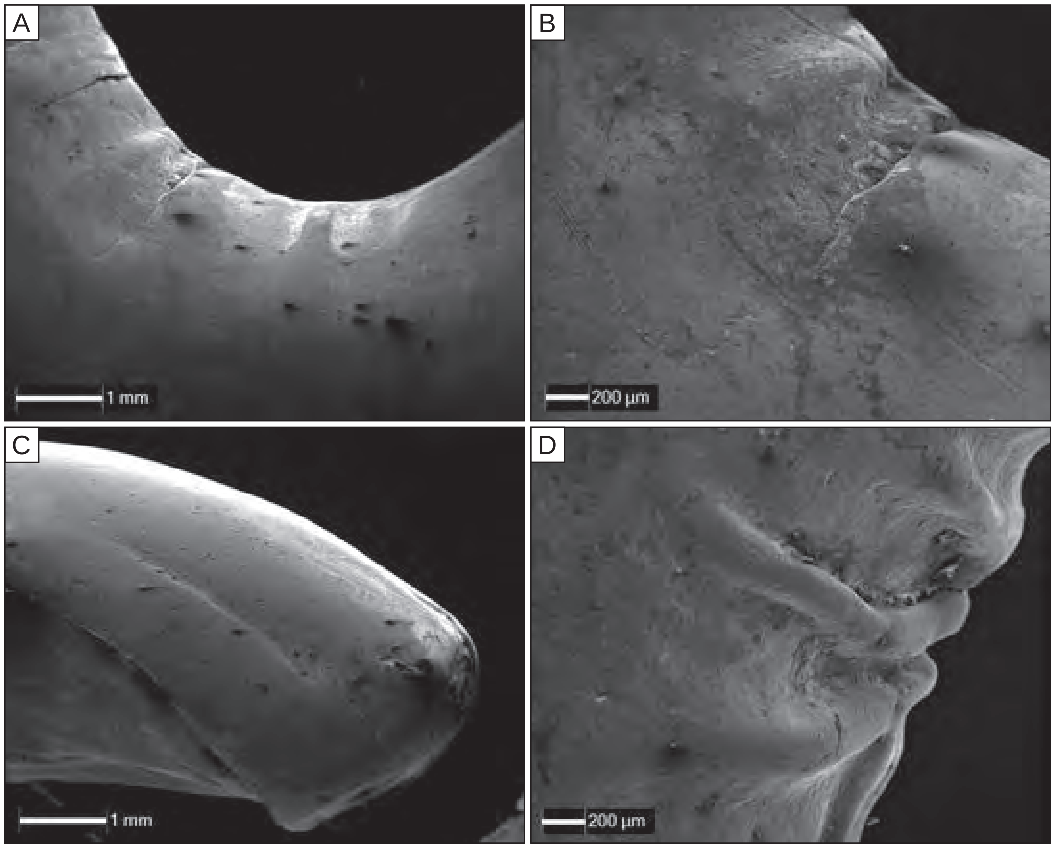

Illustration 5.29
(A, B) Scanning electron micrographs (SEM-SEI) of hair ring SF723; (C, D) scanning electron micrographs (SEM-SEI) of hair ring SF724. Both rings show joins in the gold sheet and the wrinkled folds of the gold on the inside of the ring

The main concern with regard to surface analysis of archaeological gold objects is the depletion or corrosion of the gold alloys that will affect the surface composition (Scott 1983; Rapson 1996). The information used for calculating the quantification comes from a layer whose thickness depends principally on the amount of gold (the element with the highest atomic number) in the alloy, the energy of the X-ray lines used for elemental quantification and the energy and type of the incident radiation (Troalen et al 2014). The effective depth analysed by XRF at the experimental conditions used is 13–14µm for Au(L_α), 28–32µm for Ag(K_α) and 8–9µm for Cu(K_α) for Au/Ag/Cu alloys that are close to the composition of the Sculptor's Cave hair rings (Troalen and Tate 2016). We were not able to make any polished cross-section; however, scanning electron microscopic observation of several edges of broken gold plating and the fragment of gold foil suggest that plating on the hair rings is less than 100µm. For these thicknesses, XRF analysis should therefore provide a composition very close to the bulk composition of the gold plate. It is however possible that there is some depletion of copper in the first 3µm, as observed in other studies (Hook and Needham 1989), as a result of the burial conditions. EDS analysis is more sensitive to surface changes as it analyses only the first 0.5µm, but had to be used to provide the best possible values for the more damaged items where little gold was left and the adjacent copper core exposed (SF722, SF725).

Construction of the plated hair rings

The gold hair rings are made of a copper alloy core plated with gold foil. In contrast to equivalent hair rings from Britain and Ireland, none of the rings examined here was of solid gold, nor did any have the silver and gold wasp-like stripes or incised or punched patterns (Hartmann 1970; Northover 2000; Meeks et al 2008).

It is clearly difficult to gold-plate a small-diameter ring, and the generally accepted method of fabrication is that the gold sheet was first wrapped round a cylinder of the core copper alloy, the overlapping seam bonded by hammering and burnishing, and the gilded cylinder then worked into a loop. No traces of welding or soldering were observed in the SEM on the edges of the gold sheet, suggesting that the plating was applied by burnishing only. In support of this argument, Meeks et al (2008) were able to show the overlap of a seam in a polished cross-section of a broken ring. It was not possible to make a section of any of the Sculptor's Cave rings, but in several it was possible to see traces of just such a longitudinal seam (illus 5.29B, C). Once the ring was formed, the ends of the gold foil were not fully fused or sealed but were rather roughly folded together, as can be seen in illus 5.29C. This finishing is much rougher than the remainder of the ring, but is presumably because, once closed, the ends of the ring are hard to get at to hammer the joint together. The morphology of the gold plate inside the best preserved rings seems to confirm that the rings were plated and then bent, as the gold is folded and creased on the inside of the ring (illus 5.29A, D), where it would have been compressed as the metal was bent. It is slightly odd as this is something which the maker might have been able to flatten since it is accessible inside the ring, but presumably it was not considered necessary. The outside of the rings is in comparison remarkably smooth and uniform, with no sign of marks from hammering or working, and no traces of radial tears in the gold where it would have been stretched on the outside as the ring was formed.

Several rings now exhibit considerable damage to the gold plating, with the gold foil being pushed open by the copper corrosion products exuding from the core. This damage tends to be around the edges of the ring, as if the gold has been pushed open where there had been seams. There is no information about the condition when found and it is likely that much of the copper corrosion has been removed from the gold surface; indeed, some of the powdery corrosion which is now visible may have occurred since excavation due to poor storage conditions. Traces of green copper corrosion products were observed on the surface of the gold foil fragment, suggesting that it was also in contact with a copper core.

Gold alloy

The elemental compositions of the gold-plated hair rings obtained by XRF and EDS analysis are presented in table 5.13. The methods show relatively good correlation, suggesting that surface change was not extensive, although for all the rings some surface depletion of copper can be deduced by comparison of the XRF and EDS analyses. No alternating silver/gold stripes could be seen visually on any of the Sculptor's Cave rings, nor could any analytical traces of varying surface composition be detected by the SEM analysis. Northover (2000) concluded that many of the rings he examined initially had gold/silver stripes and that on some these have been worn away and can no longer be seen. SEM imaging is very sensitive to differences in atomic number, and if any traces of silver and gold bands remained on the Sculptor's Cave hair rings these would be expected to have shown up both in the backscattered detector images and in EDS line scans. We conclude therefore that the rings were all of the simpler plain gold appearance.

The Sculptor's Cave hair rings all exhibit a very close Ag/Au ratio but with variable copper content (4–11 wt%), suggesting that they could have been made of gold from a similar gold source to which copper was added (illus 5.30). The silver levels observed in the hair rings and the fragment of gold correspond well to what would be expected for British and Irish alluvial gold sources (Chapman et al 2006) but the level of copper is significantly higher, suggesting that this was added to the alluvial gold source. It was not possible to quantify trace levels of tin due to the detection limits of the XRF system used, but traces of tin in the range of 0.01–0.3wt% have been found in the majority of the Early Bronze Age goldwork from Ireland (Hartmann 1970; 1979; Chapman et al 2006; Standish 2012). Low levels of tin were also found in early analysis of the Sculptor's Cave hair rings (Hartmann 1970: 104–5, table 9 and 110–11, table 12; see entries Au2330, Au2331, Au2332, Au2333 and Au2290). The silver and copper content characterised by XRF analysis correlates well with Hartmann's previous analysis, although our XRF analyses found small differences in the levels of copper (4–11wt%; table 5.13) than Hartmann (6–13wt% by emission spectroscopy). These different ranges are not unexpected given the two different techniques undertaken at different times.

The hair rings from the Sculptor's Cave exhibit lower silver levels than equivalent hair rings from England and Wales

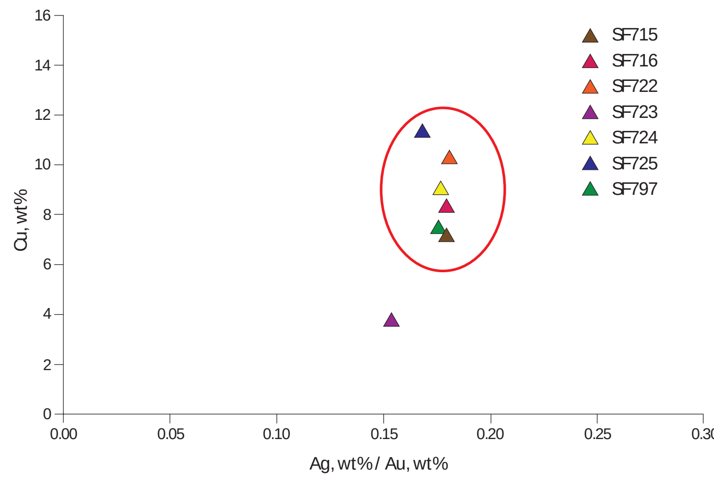

Illustration 5.30

Cu, wt% as a function of (Ag, wt%/Au, wt%) obtained by XRF analysis for the Sculptor's Cave gold hair rings. Each composition corresponds to the average of three measurements

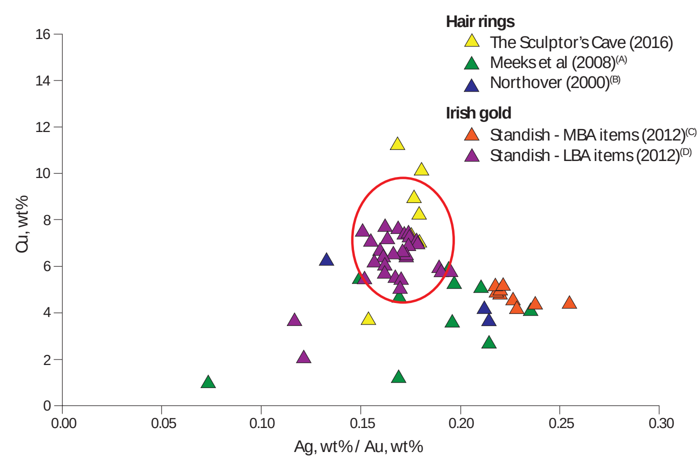

Illustration 5.31

Cu, wt% as a function of (Ag, wt%/Au, wt%) obtained by XRF analysis for the Sculptor's Cave gold hair rings, compared with compositional data of published gold hair rings: (A) Meeks et al 2008: EDS analysis on abraded surface, solid and plated hair rings without silvery stripe decoration (BM entries 1855: 11–22, 1; 1849: 3–1, 14; 1849: 3–1, 10; 1847: 11–26, 2; 1874: 3–3, 4; 1874: 3–3, 3; 1853: 12–16, 5; 1874: 3–3, 2), (B) Northover 2000: EDS analysis, gold portion, (C) Standish (2012: 360–1) EPMA analysis of Middle Bronze Age penannular earrings (MBA entries 1929.1302, 1935.879 and A210.1916), (D) Standish (2012: 361–2) EPMA analysis of Late Bronze Age penannular rings (all LBA entries)

(Northover 2000; Meeks et al 2008) and Irish penannular earrings from the Middle Bronze Age (Standish 2012: 360–1, appendix B2). Their composition however compares with Late Bronze Age gold objects from Ireland (Standish 2012: 361–2, appendix B2) (illus 5.31). The presumed addition of copper to an alluvial gold source is similarly observed in equivalent hair rings (Northover 2000; Meeks et al 2008) and other Bronze Age gold items (Standish 2012: 357–63). These analyses alone cannot determine whether the composition of the hair rings corresponds to a distinct source of gold, but the similar gold/silver ratios are consistent with the use of the same source.

Copper alloy

Qualitative analysis of the Late Bronze Age copper alloys (table 5.14) indicated that 50% were of leaded bronze. However, all the gold-plated hair rings from the Sculptor's Cave were made from an unalloyed copper core with minor levels of lead and in some cases antinomy. This is different from the rings investigated by Meeks et al (2008), which were made of bronze. In contrast, a hair ring from Port Eynon in Wales was also made from a pure copper core (Northover 2000), although the coating was a silver-gold alloy with additional silver stripes. Perhaps the softer copper made it easier to form the rings with the gold plating? Additionally, two hair rings lacking visible gold plating (SF139, SF372) were also found to be made of copper, suggesting that these could have been plated similarly.

Organic material

The two hair rings made of leaded bronze (SF726, SF727) have a different morphology and show some residue of mineralised fibres on their surface. These were found, under optical microscopic observation, to be transparent and seemingly undyed, and do not have the characteristics of human hair as suggested by Taylor (1980: 25). In the case of hair ring SF726, a plied yarn (illus 5.32A, B) had been wrapped around the joint of the ring. It is not possible without X-radiography to see whether these two items are open-ended or closed, but the green corrosion observed inside the plied yarn would suggest that there is a copper core inside, or possibly a mass of fibres which has become stained from the copper corrosion products. Scanning electron microscopic observations of the fibres of the plied yarn suggest it is made with liber fibres (hemp or linen) heavily covered with soil residues. Most of the fibres are isolated and not regrouped together, as is generally the case with liber fibres, with some flexion folds (Médard et al 2007; illus 5.32C, D). The diameter of the fibres is approximately 20μm. Further observation of a polished cross-section would be necessary to determine the type of liber fibres, as both linen and hemp have been identified in Bronze Age Scotland (Hedges 1972; Ryder 1999).

Discussion

The range of Late Bronze Age artefacts from the Sculptor's Cave exclusively comprises items of personal ornamentation and the

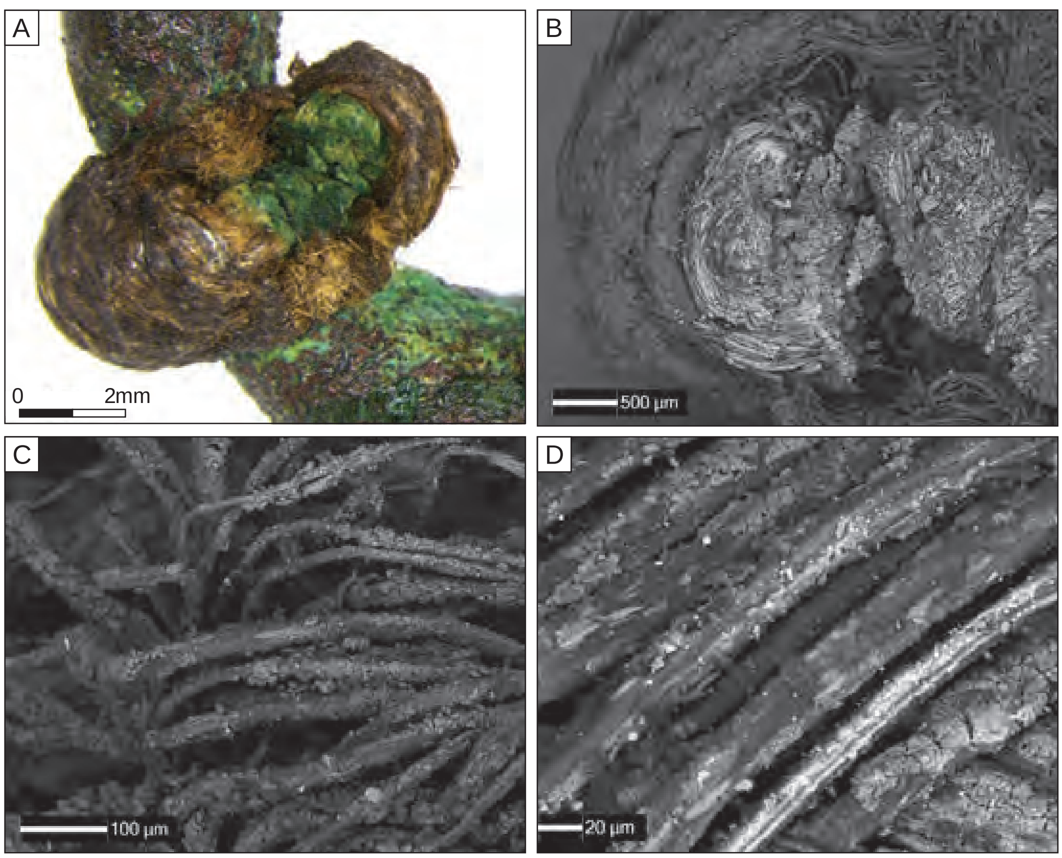

Illustration 5.32
(A) Stereo-microscopic observation of the plied yarn of SF726; (B, C, D) scanning electron micrographs (SEM-BSC) showing the morphology and diameters expected in liber (plant) fibres

hair rings would, if the current identification as septum rings is correct, represent ten individuals. While all of these personal ornament types occur elsewhere as single finds or within hoards, the particular interest of the Sculptor's Cave assemblage lies in the rare association of a range of exclusively personal ornaments with the contemporary deposition of human remains. It also constitutes one of the few associated finds of small penannular rings from Britain and Ireland. In other words, with its emphasis solely on small personal items, the metalwork is in keeping with the 'special' nature of the site and it is tempting to see the artefacts as having ended up in the cave with the people who wore them.

Two of the ten rings represent interesting variations on the theme of the hair ring. While morphologically not very different from the others, they appear never to have been covered with foil, as indicated by the fibre beads remaining in situ between their terminals as well as the fact that they, in contrast to the rest of the group, are made of bronze rather than copper. While not as yet perfectly understood, it would be possible to suggest that these beads were additional decorative elements that closed the opening of the penannular rings when worn.

While the extended date range for hair rings in general may indicate that they are earlier than the other items of metalwork from the cave, the Sculptor's Cave assemblage may simply add to the evidence for the longer use of this form in Scotland into the later part of the Late Bronze Age, as is also indicated by the Balmanshanner association.

The bracelets are still enigmatic in terms of their stylistic derivation and arguments for seeing them as direct copies of continental prototypes are weak. We would prefer to see the variations within the Scottish series as variations on a theme – ranging from undeveloped terminals to pronounced expansion – some outwardly expanded only, and others expanded all around the end. Some interaction with the design of gold types seems likely (for example, the embellishment of the hoops close to the terminals of some gold ornaments might provide a more local prototype for the transverse ribbing on 'Covesea-type' bracelets).

The Late Bronze Age metalwork from the Sculptor's Cave seems to have been essentially locally produced based on both typological and compositional arguments. Nonetheless, it clearly reflects broader cultural links with the wider contemporary Bronze Age beyond Scotland.

Catalogue

Penannular bracelets

SF728 (illus 5.33, 5.62) Complete bronze penannular bracelet; D-shaped cross-section with flattened sides; just before the terminals, the hoop constricts slightly and bears transverse ribbing on the outer part of the bracelet near the ends (in the form of two transverse grooves); the terminals themselves project outwards rather irregularly; the bracelet has been bent out of shape presumably as a result of use and the terminals are no longer in alignment. External diameter (width, height): 72.2mm × 54.3mm; internal diameter: max. 53.4mm; thickness: max. 7.3mm × 5.3mm, min. 5.7mm × 3.8mm. Unphased, Context: Benton Layer 1, grid square D4.

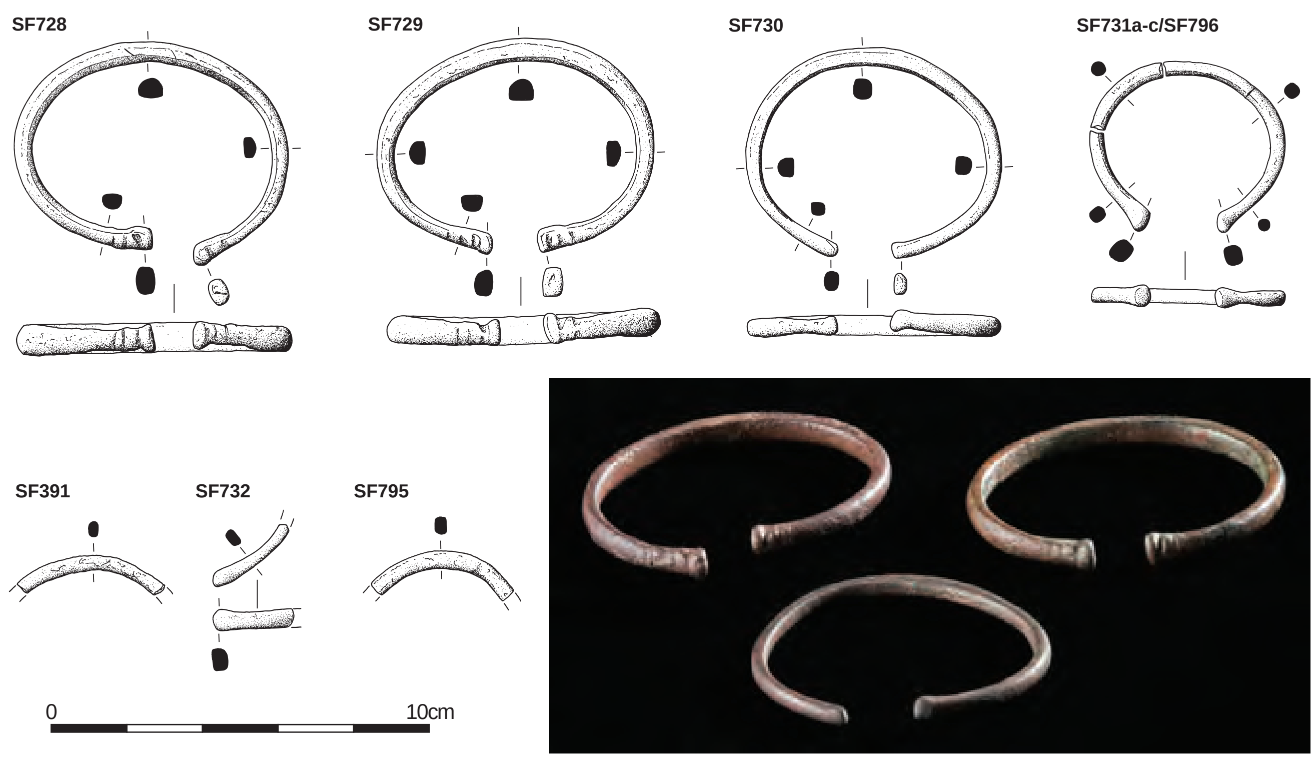

Illustration 5.33
Late Bronze Age penannular bracelets. Photograph clockwise from top left: SF728, SF729, SF730

SF729 (illus 5.33, 5.62) Complete bronze penannular bracelet; D-shaped cross-section with flattened sides; just before the terminals, the hoop constricts slightly and bears transverse ribbing on the outer part of the bracelet near the ends (in the form of two transverse grooves); the terminals themselves project outwards rather irregularly. External diameter (width, height): 72.9mm × 55.4mm; internal diameter: max. 63.5mm; thickness: max. 7.3mm × 5.7mm; thickness: min. 6.2mm × 4.2mm. Unphased, Context: Benton Layer 1, grid square D5.

SF730 (illus 5.33, 5.62) Complete penannular bracelet, D-shaped section; hoop reduces/tapers slightly in thickness towards terminals; terminals themselves show only a slight expansion. External diameter (width, height): 66.4mm × 54.2mm; internal diameter: max. 59.2 mm; thickness: max. 4.5mm × 4.8mm, min. 4.3mm × 3.2mm. Unphased, Context: Benton Layer 1, grid square D5.

SF731a–c/SF796 (illus 5.33) Fragmentary penannular bracelet (now in four pieces comprising two terminals and two hoop fragments); irregular cross-section; the terminals are expanded, with no transverse ribbing or grooves on the ends of the hoop. The extant fragments of hoop differ in appearance from those shown on the photograph published by Benton (1931: fig 6.3); however, one of the pieces in the photograph appears to have been cleaned subsequently while the other may have been physically altered in the course of metal analysis by Oliver Davies (ibid: 208). Although drawn as reconstructed by Benton, if parts of the hoop have been lost then the original outline could have been more oval and closer in shape to the other bracelets. Estimated diameter (width, height): 50mm × 45mm; thickness: max. 3.2mm × 3.8mm. Unphased, Context: Benton Layer 2, grid square C3 (SF731a–c) and A0 (SF796).

SF391 (illus 5.33) Fragment of plain bronze bracelet or ring; oval cross-section; apparently consistent in diameter; surface strongly corroded. Length: 38.2mm; thickness: max. 3.8mm × 2.9mm. Phase: 1, Block: 1.1/1.2, Context: Ia23/27.

SF732 (illus 5.33) Slightly expanded terminal of a penannular bronze bracelet. Length: 24mm; width: 6mm; thickness: 4mm. Unphased, Context: Benton Layer 2, grid square A0.

SF795 (illus 5.33) Fragment of hoop of penannular bracelet (or possibly an annular ring); oval cross-section; this piece matches the size and cross-section of SF391. Length: 36mm; width: 5mm; thickness: 3mm. Unphased, Context: Benton Layer 2, grid square A0.

Pins

SF230 (illus 5.34, 5.62) Fragment of the straight stem or shank of a bronze pin; owing to incompleteness, original form uncertain but possibly a sunflower pin, broken off before the potential transition to the head. Length: 79.6mm; thickness: max. 3.8mm. Phase: 1, Block: 2.2/2.3, Context: IIb16/17 interface (in section at 3.28m; illus 2.9).

SF754 (illus 5.34) Two fragments of the straight stem or shank of a bronze pin; owing to incompleteness, original form uncertain

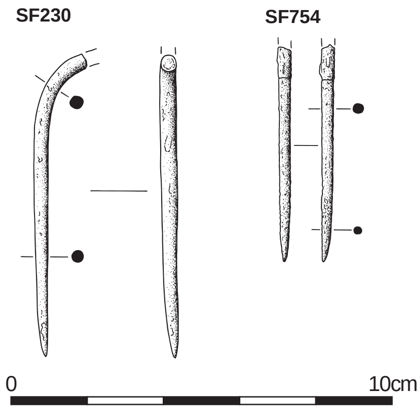

Illustration 5.34
Late Bronze Age pins

but tentatively allocated to Late Bronze Age metalwork assemblage on grounds of its relatively robust form and the absence of zinc in the metal composition. Length: 56.5mm; thickness: max. 3.5mm. Unphased, Unstratified.

Hair rings

SF139 (illus 5.35, 5.62) Small penannular copper alloy ring; slightly tapering ends with flat terminals facing each other with a small gap; strongly corroded on one side. Diameter (width, height): 15.1mm × 17.2mm; internal diameter: max. 3.8mm; thickness (saddle, height): 4.4mm × 3.4mm. Phase: 1, Block: 1.1, Context: Ib33. **Note SF139 and SF372: it is not certain which is which of these two as the numbers were for exhibition and the original find dockets from the excavation are missing.*

SF372 (illus 5.35, 5.62) Small penannular copper alloy ring with a small, partly detached and crumpled piece of surviving gold foil adhering to the inside of the curvature of the ring; rather strongly corroded with loss of substance in some areas; the terminals taper slightly but have flat surfaces. Diameter (width, height): 17.1mm × 15.2mm; internal diameter: max. 3.7mm; thickness (saddle, height): 4.3mm × 3.2mm. Phase: 1, Block: 1.1/1.2, Context: Ia23/27. *See note on SF139 above.*

SF715 (illus 5.35, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; strongly deformed as a result of corrosion and resulting expansion of the copper alloy core; slightly tapering terminals with a flat end surface; the inside of the curvature of the ring shows strong creasing towards the better preserved but incomplete terminal. External diameter (width, height extant): 18.4mm × 15mm; internal diameter: max. 7.2mm; thickness (saddle, height extant): max. 5.2mm × 4.7mm, min. 4.8mm × 3.8mm. Unphased, Context: Benton Layer 1, grid square C9.

SF716 (illus 5.35, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; strongly deformed as a result of corrosion and resulting expansion of the copper alloy core; gold foil heavily creased along the inside of the curvature of the ring and its extant terminal; the shape of the terminal appears

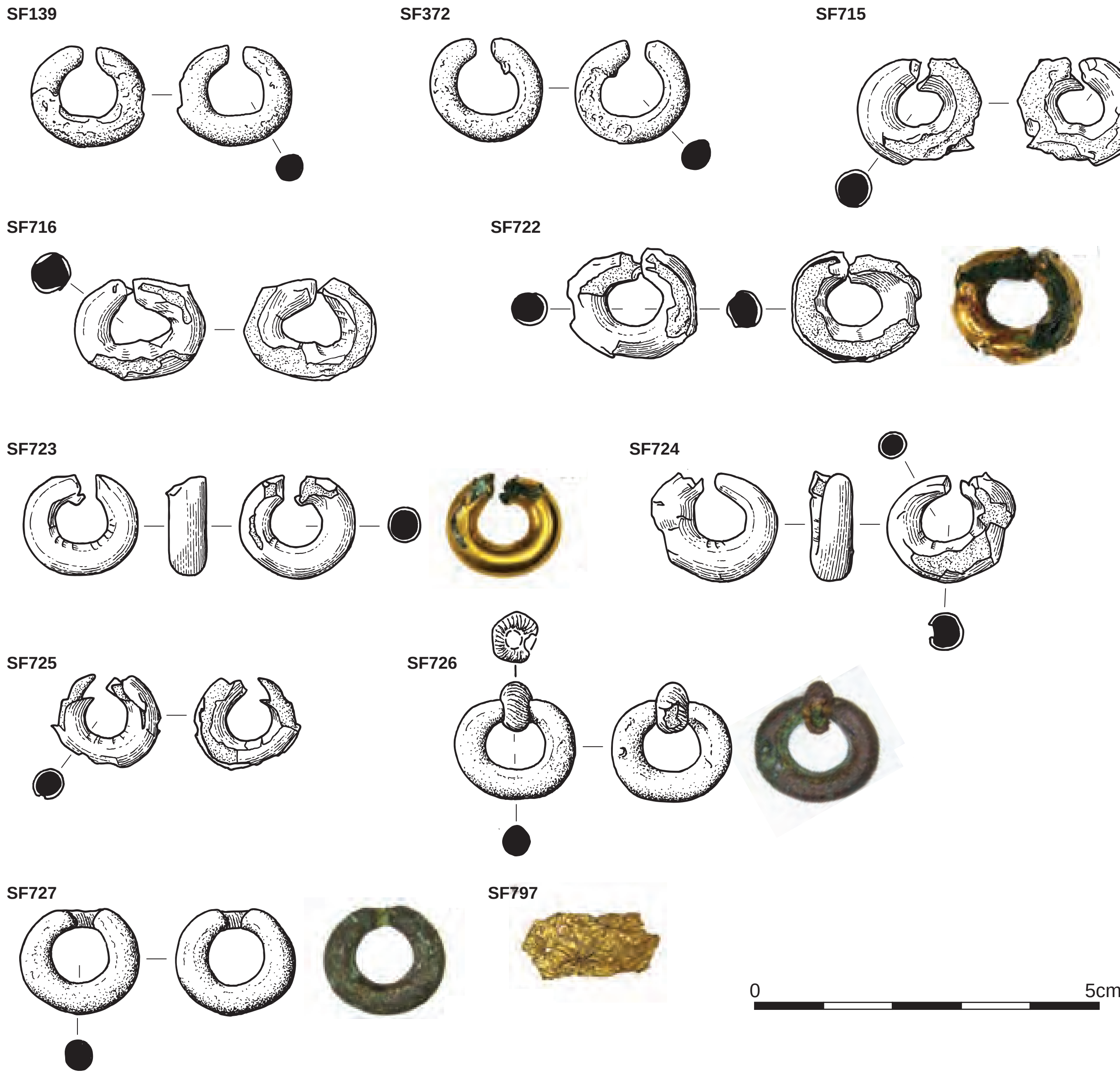

Illustration 5.35
Late Bronze Age hair rings and gold foil

to have been blunt but slightly tapered. External diameter: 19.1mm × 4.7mm; internal diameter: max. 8.7mm; thickness (saddle, height): max. 4.7mm, min. 3.9mm. Unphased, Context: Benton Layer 1, grid square C9.

SF722 (illus 5.35, 5.36, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; strongly deformed as a result of corrosion and resulting expansion of the copper alloy core; terminals appear to have been only slightly tapered; the terminals touch but are slightly offset, with one pushed in towards the interior of the ring; small amounts of fibre (hair?) adhere to some of the gold surfaces, which have pronounced red and brown corrosion product deposits. External diameter (width, height): 16.6mm × 18.6mm; internal diameter: max. 9.1mm; thickness: 4.2mm. Unphased, Context: Benton Layer 1, grid square C9.

SF723 (illus 5.35, 5.36, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; strongly deformed as a result of corrosion and the resulting expansion of the copper alloy core, with one terminal virtually destroyed; the highly polished gold covering survives intact in most places, including the cover of the one largely intact terminal which slightly tapers towards a flat end; creasing of the gold foil is present on the inside of the ring, but no seam is visible. External diameter (width, height): 16.6mm × 14.9mm; internal diameter: max. 7.2mm; thickness (saddle, height): 5.2mm × 4.7mm, min. 5.5mm × 3.8mm. Unphased, Context: Benton Layer 1, grid square C9.

SF724 (illus 5.35, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; one half severely damaged as a result of corrosion and the resulting expansion of the copper alloy core, but the other is largely intact, including the terminal;

Illustration 5.36
Stereo-microscopic images of the Late Bronze Age hair rings, showing gold coverings (top) and mineralised textile residues (bottom)

gold foil strongly creased on the inside of the ring and towards the terminal (on the inside of the ring and on its side); the folding of the gold foil is clearly visible; no seam is visible further towards the centre of the curvature; the surviving terminal appears to be pointed. Estimated external diameter (width, height): 18mm × 15.5mm; internal diameter: max. 8.5mm; estimated thickness (saddle, height): max. 5mm × 4.5mm, min. 4.3mm × 3.2mm. Unphased, Context: Benton Layer 2, grid square D2.

SF725 (illus 5.35, 5.62) Small penannular ring consisting of a bronze core covered with gold foil; strongly deformed as a result of corrosion and resulting expansion of the copper alloy core; this appears to have caused a great degree of change in the appearance of the object since Benton's photograph was taken: the terminals have almost completely disintegrated. Some creasing of the gold foil is visible on the inside. Extant external diameter (width, height): 15.9mm × 13.8mm; internal diameter: max. 7.3mm; extant thickness (saddle, height): max. 4.5mm × 4.3mm. Unphased, Context: Benton Layer 2, grid square B4.

SF726 (illus 5.33, 5.35, 5.36, 5.62) Small penannular copper alloy/bronze ring in very good condition; a bead of organic material (identified as textile fibres) is suspended between the rather substantial blunt terminals; the body of the ring shows distinct faceting along the interior of the curve, representing the hammering of the bar (?) or the shaping of the mould (?). The similarity to SF727 raises the possibility that they have both been cast in the same mould. The bead of organic material is damaged on one side, exposing a greenish interior, suggesting that the organic fibres have been wrapped around a copper or a copper alloy core (now strongly oxidised) or else that the bundle of fibres has become strongly affected by the corrosion products. The damaged area also reveals the bead itself in section to be composed of dense compacted organic fibres. External diameter (width, height): 18.2mm × 14.5mm; internal diameter: max. 8.8mm; thickness (saddle, height): max. 4.3mm × 4.3mm, min. 3.7mm × 3.7mm. Unphased, Context: Benton Layer 1, grid square C9.

SF727 (illus 5.35, 5.36, 5.62) Small penannular copper alloy/bronze ring, in good condition, covered by a thin green patina; traces of mineralised organic material connecting the terminals suggest that a bead of organic material was formerly suspended between them, as in the case of SF726; the terminals taper slightly; the body of the ring shows some faint facets around the interior of the curve. External diameter (width, height): 18mm × 15.9mm; internal diameter: max. 8.6mm; thickness (saddle, height): max. 4.4mm × 4.4mm, min. 4.1mm × 3.6mm. Unphased, Context: Benton Layer 1, grid square C9.

SF797 (illus 5.35) Small sub-rectangular fragment of gold foil with jagged irregular edges; strongly crinkled, possibly the result of having been found crinkled up and unfolded post-recovery; soil residues on either side possibly suggest that it had been detached from its former core before deposition; minute deposit of copper oxide on one side and general form suggest that this was formerly part of the foil cover of a penannular hair ring (though not necessarily one of the above). Dimensions: 19mm × 8mm. Unphased, Context: Benton Layer 2, grid square B3.

5.7.2 Iron Age and Roman silver, copper alloy and lead objects

Fraser Hunter

The 72 post-Bronze Age non-ferrous finds from the Sculptor's Cave present an intriguing variety of material. Some are well known, such as the series of projecting-headed pins, but many have remained enigmatic or understudied, and their significance has been greatly underappreciated. To understand the assemblage, they need to be categorised by a combination of function, cultural affiliations and alloy.

Functionally, the assemblage is overwhelmingly dominated by ornamental and personal objects, mostly jewellery and toilet instruments, as well as a range of fittings which are likely to come from clothing, belts and so forth. Most of the large number of fasteners were once components of these ornamental or personal items, including penannular links or rings which once formed suspension rings for tweezers or perforated coins. However, these can no longer be linked to specific items. There is only a small amount of other domestic material, including a Roman spoon fragment; the few tools are all related to textile-working (two whorls and two needles), and there is a single weapon component: a simple hilt guard.

The cultural classification is the most debatable in detail (table 5.15). Four categories are used here: indigenous, Roman, Roman-inspired and a catch-all of 'uncertain'. A group of distinctively Roman material, mostly of ornamental or personal objects, can be clearly separated out: three typical Late Roman bracelets, a finger ring, necklace and belt components, a spoon and some toilet instruments (a nail cleaner and objects interpreted as nail picks and a file). To this should be added the type D1 proto-zoomorphic penannular brooch (SF742), a Romano-British type very rare beyond the frontier. There is also a group of material which represents either Roman imports or Roman-inspired objects which became popular in societies beyond the frontier: tweezers and components of a padlock. The most distinctive indigenous material comprises various forms of projecting ring-headed pins, but there is also a spiral finger ring. Both these categories are types with a pre-Roman pedigree which continued and developed during and beyond the Roman period. The other jewellery is less clear-cut. The zoomorphic pin

Table 5.15
Non-ferrous metalwork divided by function and cultural connection

<table>
<tr><th>Category</th><th>Indigenous</th><th>Roman</th><th>Roman-inspired</th><th>Undiagnostic/ uncertain</th></tr>
<tr><td rowspan="2">Domestic (3)</td><td rowspan="2">–</td><td rowspan="2">Spoon</td><td>Padlock</td><td rowspan="2">–</td></tr>
<tr><td>Key</td></tr>
<tr><td rowspan="4">Fastener (15)</td><td rowspan="4">–</td><td rowspan="4">Looped hook</td><td rowspan="4">–</td><td>Hook</td></tr>
<tr><td>Links × 10 (from tweezers, pins etc)</td></tr>
<tr><td>Penannular ring × 2</td></tr>
<tr><td>Chain of 3 linked rings</td></tr>
<tr><td rowspan="5">Ornament (31)</td><td rowspan="5">Projecting-headed pins × 10
Pin shanks × 2
Spiral finger ring</td><td>Bracelet × 3</td><td rowspan="5">–</td><td rowspan="5">Finger ring
Zoomorphic pin
Other pin</td></tr>
<tr><td>Belt fittings
(2 studs, 1 rivet cover)</td></tr>
<tr><td>Necklace components
(3 pendants, 3 wire beads, 1 fastener)</td></tr>
<tr><td>Finger ring</td></tr>
<tr><td>Penannular brooch</td></tr>
<tr><td>Personal (11)</td><td>–</td><td>Nail cleaner
Nail file
Picks × 2</td><td>Tweezers × 7
(1 unfinished)</td><td>–</td></tr>
<tr><td rowspan="2">Tool (4)</td><td rowspan="2">–</td><td rowspan="2">–</td><td rowspan="2">–</td><td>Whorl × 2</td></tr>
<tr><td>Needle × 2</td></tr>
<tr><td>Weapon (1)</td><td>–</td><td>–</td><td>–</td><td>Hilt guard</td></tr>
<tr><td>Uncertain (6)</td><td>–</td><td>–</td><td>–</td><td>Fragments × 6</td></tr>
</table>

is a distinctively British type, shared across and beyond the province, and became a key element of dress culture in the immediately post-Roman period, while the final pin is hard to parallel, as discussed below.

Characterisation of the objects was assisted by analysis of their alloys. This was carried out using surface X-ray fluorescence analysis by Gemma Cruickshanks, with the results interpreted by the writer. Surface analysis is always problematic because of differential corrosion and uneven surfaces, so the results are qualitative and indicative, but they give a characterisation of alloys. In this case, they proved most useful indeed. One would expect copper alloys in Roman Iron Age Scotland to be rather mixed owing to the recycling of Roman metal, with gunmetals and leaded gunmetals being typical (Dungworth 1997). This is to a degree true of the Sculptor's Cave assemblage: leaded bronze and leaded gunmetal are the most common alloys (table 5.16) but, when categorised by both major and minor elements, quaternary alloys (copper, zinc, lead and tin) are by far the dominant type (table 5.17). However, there are further patterns. The small number of impure brasses are likely to be Roman imports as there is no evidence of production of brass in Scotland in the Roman Iron Age: thus, the zoomorphic pin is unlikely to be a local product. There is a group of 11 items with no trace of zinc in them. One of these, a bracelet, is typologically Roman, but it is plausible that the remainder have been made using indigenous alloys uncontaminated with Roman material. Some may be residual Bronze Age items which are not typologically distinctive (eg pin shank SF754), but it is interesting that one pair of tweezers, one projecting-headed pin and the penannular brooch are all zinc-free alloys. Of course, 'clean' alloys were still being produced in the Roman world at this time, but these may be a hint of traditional indigenous alloys persisting in use, even in the later Roman Iron Age.

The other striking feature is the presence of silver. Two items (a pair of tweezers and a projecting-headed pin) are silver with minor amounts of copper and other elements; in a further 13 items, silver is a significant component in a mixed alloy, always with copper, and then with varying amounts of zinc, tin and lead. It is possible that in some cases the silver was a coating, but no sign of this was noted visually; corrosion obscured many surfaces, but the few pieces which were X-rayed give no hint of silver coating. Thus, it is more likely these reflect debased silver alloys. Without quantitative analysis one cannot be more specific, but it is likely that two different processes are represented: the manufacture of items in a reasonably high-quality silver and the use of a debased silver. The former items seem to be local prestige goods (a pin and

Table 5.16
Non-ferrous metalwork divided by broad alloy type and cultural connection. Not all fragments were analysed

Alloy	Indigenous	Roman	Roman-inspired	Undiagnostic/uncertain
Silver (2)	Projecting-headed pin	–	Tweezers	–
Silver-copper alloys (13)	Pin	Belt fitting 7 necklace elements (pendants, beads, fastener) Spoon	2 picks	Link
Bronze (3)	Spiral finger ring	–	Tweezers	Sheet fragment
Brass (6)	Zoomorphic pin	Nail cleaner	–	Hook Chain 2 rings
Gunmetal (2)	–	–	Tweezers	Link
Leaded bronze (12)	4 projecting pins or shanks	Bracelet Nail file	2 tweezers Key	Finger ring Hilt guard Penannular brooch
Leaded brass (3)	–	Finger ring Rivet cover	–	Link
Leaded gunmetal (17)	6 projecting pins or shanks	2 bracelets Hook fastener	Padlock barb Tweezers	2 needles 3 links Ring
Leaded copper (3)	–	–	–	3 fragments

Table 5.17
The Sculptor's Cave alloys categorised by both major and minor elements

Alloy	No. of artefacts
Cu/Zn	0
Cu/Pb	4
Cu/Sn	1
Cu/Zn/Pb	4
Cu/Sn/Pb	8
Cu/Zn/Sn	1
Cu/Zn/Sn/Pb	31
Ag-containing	15

a pair of tweezers). The latter comprise both Roman material (necklace and belt fittings, a spoon and some pin-like toilet instruments) and an unusual pin which is likely to be non-Roman. The silver content of these items is not visually obvious in their current condition, which raises the question of whether similar debased silver items lurk unnoticed in other collections.

Further consideration of this requires a brief assessment of chronology. The diagnostically datable finds from the Sculptor's Cave are overwhelmingly Late Bronze Age or Roman Iron Age, and the latter are consistently fourth century where they can be dated. The only securely earlier Roman finds – the samian – had been extensively reused and may well have been deposited in the fourth century (see section 5.2.3). While radiocarbon dates indicate the use of the cave was extended, artefactual evidence suggests more restricted phases of intense deposition, perhaps even single events (see below). Use of silver at this date fits a broader pattern. The fourth and fifth centuries AD were the time when silver came into use for indigenous material, notably certain types of projecting-headed pins but also other pin forms and, more rarely, brooches (Youngs 2005; 2013). The raw material source was re-melted Roman silver, which indicates access to this on the Moray Firth coast (assuming the pin was a local product, as seems likely; see below). The issue of such Roman contacts is discussed later. The Sculptor's Cave corrugated-type pin is exceptional: otherwise only proto-handpins and handpins were made in silver (Youngs 2005). The tweezers are likewise exceptional and are best seen as Iron Age prestige goods; they too are discussed further below.

Jewellery and personal items

Roman jewellery

Many of the small individual items (illus 5.40, 5.61) derive from Late Roman composite necklaces, which typically contain tens of individual elements. They are more likely to represent one or more necklaces (given their scattered distribution; illus 5.69) than to have been deposited as individual elements. The objects comprise the Late Roman glass beads (section 5.13), wire beads SF783–5 and probably pendants SF787–9, while S-hook SF764 may have been a fastener or one of a pair which held a central pendant. Not all these can be directly paralleled, but all find analogies in Late Roman material. S-hook fasteners can be seen, for instance, at Krefeld-Gellep/D (Pirling and Siepen 2000: graves 4566, 4608), though the closest parallels come from pairs used to hold pendants (eg Bregenz/A; Bliesbrück/F; Martin-Kilcher et al 2008: abb 3.15.1 and 5). An omega-shaped fastener from Traprain Law, a site which has also produced rich Late Roman finds, seems to be related (Cree 1924: fig 20.5). Wire-wound beads, in this case with loops for pendants, are known from a Late Roman burial at Nijmegen/NL (Steures nd: 110–12, 334, 651–2, B465), and a slightly curved cylindrical example in silver wire is known from an early–mid fourth century context at Caerleon (Lloyd-Morgan 2000: 342, fig 80, no. 65). They could be skeuomorphs, or at least related to segmented or wound beads in jet and glass (cf Keller 1971: fig 27, and Taf 15: 17, 19). No precise parallels have yet been found for the iron rod-pendants with H-shaped (or hilt-shaped) copper alloy fittings, but amuletic pendants are well known on necklaces (eg Krefeld-Gellep/D grave 4452; Nijmegen/NL graves B154.1 and B238; Pirling and Grodde 1997: taf 118, grave 4452, no. 17; Steures nd: 68, 637, B154.1, B238). Their form suggests they may have been miniature sword amulets: there are examples of both model swords and shields perforated for suspension, for use as amulets or, as Kiernan (2009: 84–6) suggested, as a decorative component in toilet sets.

Were the perforated coins part of a necklace rather than elements of the coin hoard (see illus 5.53, 5.61)? Their cylindrical perforations were made by punching, and one has suspension rings still in situ. One shows a failed perforation (which indicates it was not part of this necklace) and one shows three attempts at perforation. The phenomenon is discussed further by Moorhead (section 5.7.3), who notes a significance to the location of some perforations in relation to the coin's imagery. The pierced coins had been transformed into jewellery but it is not certain that they were worn on the composite necklace identified here. Both original coins and copies had been pierced but, numismatically, there is nothing to differentiate between these coins and others in the hoard (Sam Moorhead pers comm). While some of the coins could come from the necklace, the connection cannot be demonstrated; besides, the distribution of the pierced coins correlates with that of the bulk of the hoard (see illus 5.65).

Necklaces are a consistently female type in Late Roman cemeteries and so too are bracelets, which are represented by two, probably three, examples here (illus 5.39): SF763, a classic three-cable type; SF774–6, with transverse grooves; and probably SF757, with notched decoration. Multiple bracelets were often worn by one woman (Booth et al 2010: 297). SF763 is a distorted and broken three-strand bracelet with over-wrapping at one surviving end to secure the fastening hook (cf examples from Colchester (Crummy 1983: 38–9, no. 1628) and South Shields (Allason-Jones and Miket 1984: no. 3.267)). Hilary Cool (in Booth et al 2010: 297) classed this as her Group 1, the most common type in Roman Britain, with three strands being the commonest number. They are recorded from the early second century, but their floruit is the fourth century. The decoration on

SF774–6 is obscured by corrosion, but an X-ray revealed transverse grooves decorating the surface and dividing it into rectangular blocks. It seems to fall into Cool's group 19 (ibid) and has a hook and eye fastening. SF757 is not certainly a bangle, but this nonetheless seems the best explanation. The edge-notching is a common feature of Late Roman bangles in Britain (Swift's type a1; 2000: fig 156, fig 168), but this is a poorly-made example as it lacks notching on both edges.

Many of the other smaller items are also likely to be Late Roman personal gear. SF790 and SF799 (illus 5.38) are related to a well known type of Late Roman military belt fitting (eg Linz/A, 'Yugoslavia', Bonn/D; Ruprechtsberger 1999: abb 13, 78.9–10, 101.8; Nagy 2005: abb 28.3; Gottschalk 2014), but are not themselves from a military belt; these have a characteristic, stereotypical form where the boss supports a loop to hold a ring in the same plane, whereas here the small suspension ring (much weaker than those on military belts) is perpendicular to the boss. However, the analogy is close enough to indicate Late Roman origins. So too is decorative domed boss SF791 (illus 5.38), which finds close parallels in decorative rivet covers from Late Roman belts in silver and copper alloy, which would have been clamped or soldered to the plainer (probably iron) rivet (eg Ruprechtsberger 1999: a. 67.8 (Linz/A; but perforated); Sommer 1984: taf 35.16 (Champdolent/F), taf 57.10–12 (Basel/CH), taf 62.6 (Furfooz/B; better image in Böhme 1974: taf 88.6); Pirling 1966: taf 67, grave 764.24–6 (Krefeld-Gellep/D); Bullinger 1969: taf XLVIII–IL (Maxglan/A)).

Other items are most likely Roman, either from good Roman parallels or from the lack of local evidence. One must be cautious with the latter argument, as there are very few Scottish assemblages spanning the fourth century AD; Traprain Law (East Lothian), which is heavily Roman-influenced, is the main source (Burley 1956), while some of the better-excavated, long-lived Atlantic sites, such as Howe and Skaill (Orkney) offer useful comparative assemblages (Ballin Smith 1994; Buteux 1997). The finger ring (SF759; see illus 5.45) with slipknot fastening is a long-lived type but one well attested in the Roman period (eg Riha 1990: 42, taf 12.217–21), yet lacking in the local Iron Age on current evidence. The finger ring with notched decoration at the terminals (SF761; illus 5.45) is rather too simple a form on which to place much typological weight, but again lacks local parallels (though note a plain penannular finger ring from Fairy Knowe, Stirling; Hunter 1998a: illus 18, no. 136), while it does find Roman ones (see an example from Catterick; Lentowicz 2002: fig 246, no. 75). So too does the hook (SF773; illus 5.52) of twisted wire; this is almost certainly a clothes fastener, stitched into the clothing, with Roman parallels in plain wire, for instance from Beadlam (East Yorkshire) and Baldock (Herts) (Neal 1996: fig 31.7; Stead 1986: fig 58, no. 357).

Projecting ring-headed pins

The Sculptor's Cave produced ten intact projecting-headed pins (illus 5.41–3) which have long been central to discussions of this much debated series. There is a classic evolutionary view of the development of such pins (Smith 1925: 97–8, figs 103–12; Stevenson 1955), which are characterised by having a ring head

Table 5.18
A revised classification of projecting-headed pins

Type	Sub-type	Detail
A: Plain	1: Wire	1.1: Iron
		1.2: Copper alloy
	2: Cast	2.1: Plain
		2.2: Plain with boss (with decorative boss at shank division)
		2.3: Keeling on margins
B: One repeated motif	1: Beads, pellets or ribs	1.1: Large beads (= rosette; 6 beads)
		1.2: Small beads (= beaded)
	2: Four elements	2.1: Ring and boss (the four bosses equally spaced)
		2.2: Wheel
		2.3: Rays
	3: Three elements	–
	4: Disc	–
C: Bipartite decoration	1: Large beads (conjoined or with fillets between them)	1.1: Ribbed upper (= beaded and corrugated)
		1.2: Plain upper
	2: Large beads, spaced (= ibex-headed)	2.1: Ribbed upper
		2.2: Plain upper
	3: Plate and pellets (= proto-handpin)	3.1: Decorated plate
		3.2: Plain plate
	4: Plate, plain upper	–
	5: Plate and fingers (= handpin)	–
	6: Openwork	–
D: Variants	–	–

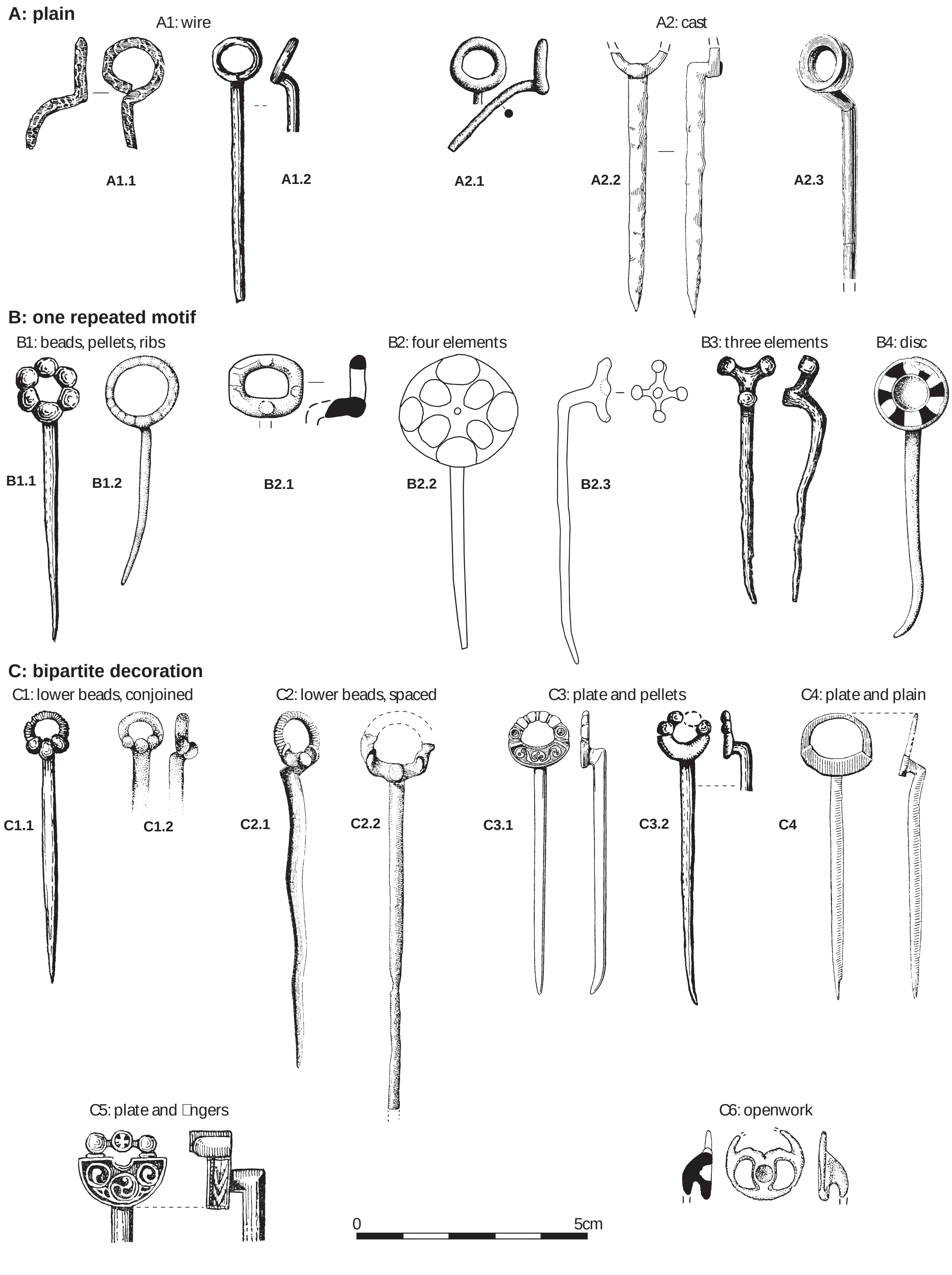

Illustration 5.37
Revised classification of projecting-headed pins

Table 5.19
Projecting ring-headed pins by type (see table 5.18) and area; tallies in the columns of each pin type are number of findspots, not number of finds. Handpins (C5) and Irish-style disc-headed pins (Gavin 2013) are excluded

Area	No. of sites	No. of findspots with each pin type														Range of pins	No. of finds
		A	B1.1	B1.2	B2	B3	B4	C1.1	C1.2	C2	C3	C4	C6	D	?		
		Plain	Rosette	Beaded	4 elements	3 elements	Disc	Beaded and corrugated	Beaded and plain	Ibex	Proto-handpin	Plate and plain	Openwork	Variants	Unclassifiable		
Atlantic Scotland	47	39	1	4	–	2	2	2	3	–	3	–	1	–	5	9	84
North-east Scotland	16	11	1	2	4	1	1	1	1	1	1	–	1	1	–	12	41
Tyne-Forth	8	7	1	1	–	–	–	1	–	–	1	–	–	–	1	5	36
Solway-Clyde	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0	0
North-east England	10	2	–	2	–	–	1	–	–	2	1	1	–	1	–	7	12
North-west England	2	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	2
South-east England	7	–	–	–	–	–	–	–	–	5	2	–	–	1	–	3	8
South-west England	13	4	1	–	–	–	–	3	–	2	4	2	–	–	1	6	17
Wales	3	1	–	–	–	–	–	–	–	1	–	–	–	–	1	2	3
Ireland/Man	9	–	–	–	–	–	–	2	–	4	4	–	–	–	1	3	15
Unknown	0	2	–	–	1	–	–	–	–	–	1	–	–	–	1	3	5
Total	**115**	**66**	**4**	**9**	**5**	**3**	**4**	**9**	**4**	**15**	**18**	**3**	**2**	**3**	**11**	**–**	**223**

Illustration 5.37
Image sources: A1.1 South Shields, Tyne and Wear (Croom 2001: illus 41.2; © Royal Archaeological Institute, reprinted by permission of Taylor and Francis Ltd), A1.2 Traprain Law, East Lothian (Stevenson 1955: fig B2; © Prehistoric Society, reprinted by permission of Cambridge University Press), A2.1 Inveresk, East Lothian (Bishop 2004: fig 100.8; © Scottish Trust for Archaeological Research, reprinted by permission of AOC Archaeology Group), A2.2 Ilchester, Somerset (Leach 1982: fig 122, no. 126; © Western Archaeological Trust), A2.3 Dunadd, Argyll (Christison 1905: fig 49), B1.1 The Sculptor's Cave, Covesea (Stevenson 1955: fig B4; © Prehistoric Society, reprinted by permission of Cambridge University Press), B1.2 Howe, Orkney (Ballin Smith 1994: illus 133, no. 7097, drawn by Frank Moran; © Beverley Ballin Smith, reprinted with permission), B2.1 Urquhart, Moray (drawn by Alan Braby), B2.2 Moray (Elgin Museum; sketch by author), B2.3 West of Scotland (Glasgow Museums; sketch by author), B3 Bruthach a'Tuath, Benbecula (Stevenson 1955: fig B13; © Prehistoric Society, reprinted by permission of Cambridge University Press), B4 Strageath, Perthshire (Hunter 2006b: illus 2.1; © Marion O'Neil, reprinted by permission of the illustrator), C1.1 The Sculptor's Cave, Covesea (Stevenson 1955: fig B6; © Prehistoric Society, reprinted by permission of Cambridge University Press), C1.2 Gurness, Orkney (Hedges 1987: fig 2.84, no. 816; reproduced with permission of BAR Publishing, www.barpublishing. com), C2.1 Woodperry, Oxfordshire (Anon 1846: fig 10); C2.2 Leicester (Kenyon 1948: fig 89.15; reprinted by kind permission of the Society of Antiquaries of London), C3.1 Oldcroft, Gloucs (Youngs 2005: fig 1; drawing: James Farrant; © The Trustees of the British Museum. Shared under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) licence.), C3.2 The Sculptor's Cave, Covesea (Stevenson 1955: fig B5; © Prehistoric Society, reprinted by permission of Cambridge University Press), C4 Lydney, Gloucs (Johns 1974: fig 7; reprinted by kind permission of the Society of Antiquaries of London), C5 Norrie's Law (Stevenson 1955: fig B14; © Prehistoric Society, reprinted by permission of Cambridge University Press), C6 North Uist (Close-Brooks and Maxwell 1974: fig 2, no. 985)

projecting from the line of the shank and set at right angles to it. The normal typology sees them developing from earlier Iron Age ring-headed pins (where the head lies in line with the shank or bent forward from it), and then proceeding from plain forms in iron or copper alloy (the latter forged or cast) to a range of more decorative types exemplified by the Sculptor's Cave material. One of these, the 'proto-handpin' with curved plate below and curved beaded arc above, was ancestral to the handpin (where the beads become a line of projecting 'fingers') which became characteristic of the early medieval period.

Both ends of this sequence have seen recent synthesis, with Becker (2008) considering aspects of ring-headed pins and several authors considering handpins and proto-handpins (eg Heald 2001; Youngs 2005). However, the intermediate phases have seen no sustained study since David Clarke's (1971) paper for the plain types and Robert Stevenson's (1955: 288–92) work on the later ones. The present author has been collating data on this for some time; what is presented here makes no pretence at completeness, but it draws on a greater dataset than previous work, with recent finds showing that the existing typology is insufficient. Terminology can be bewildering for non-specialist and specialist alike, with rosette, beaded, beaded and corrugated, and ibex-headed pins, and it is internally inconsistent: the term 'beads' is used both for large beads found on rosette-headed pins and small beads on beaded pins, the latter very similar to the corrugations found on beaded and corrugated pins. The details of what follows will be laid out elsewhere, but table 5.18 and illus 5.37 offer a revised classification, and table 5.19 a summary of the evidence by region and type (with handpins excluded).

This is an interim statement on a complex topic, but it provides a broad picture which shows some intriguing patterns. The plain projecting-headed pins (Group A) are essentially a Scottish type, most common north of the Forth; the abundance in the Atlantic zone is a little misleading, as this includes sites with pot sherds decorated with ring-stamps, which are not found elsewhere. The earliest datable examples are now known to be of the fourth to early second century BC (Croom 2001: 141–3). They were in use in the first to second centuries AD, but the few plain examples from later contexts (such as Scalloway, Shetland; Sharples 1998: 185–6) are likely to be residual as they are at marked variance with other dating.

The decorative types (Groups B and C) probably developed from the plain forms during the Roman Iron Age. Two unusual recent finds are strays from near Roman forts (Hunter 2006b: 81, illus 2.1; Hall and Hunter 2007: 151–2), suggesting but not proving that the later first to second centuries AD were a time of innovation, as was the case more generally with northern decorative metalwork (Hunter 2007a). They have a very wide distribution across Britain and Ireland which has occasioned regular comment and puzzlement (Laing and Laing 1986; Heald 2001; Hunter 2010a), but table 5.19 allows us to break this down a little. Numbers of sites are a better measure than absolute numbers, since rich sites (such as the Sculptor's Cave or Traprain Law) would bias the patterns. The three areas with the largest number and greatest variety of pins are Atlantic Scotland, north-east Scotland and south-west England. There are small numbers but a diverse range from northern England, mostly from military sites, which probably reflects the cosmopolitan nature of the military community; this may be a critical area in our story, as we shall see. They are rare in southern Scotland, being unknown in the south-west, while in the Tyne-Forth region only Traprain and North Berwick show anything other than simple types.

Between these broad geographical clusters there are interesting differences by type; numbers are small in particular sub-groups, but there are consistent patterns of certain types being widely shared and others being regionally specific. Rosette (B1.1), beaded and corrugated (C1.1), and proto-handpins (C3) have a wide distribution, the latter two also occurring in Ireland. Some types are essentially northern: beaded (B1.2), those with three or four elements or disc heads (B2–4), beaded and plain (C1.2) and openwork (C6). Others are predominantly southern: C4, a rare variant found in south-west England, and ibex-headed pins (C2) which are widespread in southern Britain but rare in Scotland (one from the Sculptor's Cave, SF739, is a variant of the type). The original inspiration is likely to have been from north to south, given the type's origins, but it was clearly taken up in some areas of southern Britain and Ireland in the Late Roman period. The possible mechanisms behind this complicated picture are a topic requiring further work, but it is worth noting the military zone as a key area of diversity. Finds from the frontier are few but varied: seven are known from six sites, representing five different types, both northern (eg plain projecting, beaded) and southern (plate and plain). In this diversity and mixing of types and people lies a possible mechanism for ideas, objects and styles to move around the country.

If, as seems likely, the Sculptor's Cave pins can be treated as deposits made over a relatively short period of time (a point discussed further below), then they illustrate the contemporary variety within the tradition. They are made from a similar series of alloys and can be seen as variations on a theme, which warns against too tight a typological noose being placed over them. There are subtle variations, for instance in the pin tips curving forward or not, in the presence or absence of fillets between beads, and in whether shanks are cylindrical or centrally swollen, but this is best seen as inherent variation in an inventive series, and one should be hesitant in seeking evolutionary change as earlier scholarship attempted.

In north-east Scotland, the projecting-headed pin series provides one of the few strands of continuity between the earlier and later Roman Iron Age, a period which is otherwise characterised by massive changes in settlement patterns and material culture (Hunter 2007b). There are similar hints in other rare finds, such as a vessel handle from Culbin Sands which bridges the tankard handles of the earlier Roman Iron Age and the zoomorphic styles of later periods (Hunter 2014b: 335–6). Thus, while the Sculptor's Cave pins went into the cave as offerings, for us they serve to cast fresh light on the development of distinctive styles of material culture in the opaque period of the third and fourth centuries AD.

Other pins

SF741 (illus 5.44) is a proto-zoomorphic pin, a type studied most recently by Youngs (2010), who pointed out the problems with the terminology, as the 'proto' pins are not necessarily older than the more clearly zoomorphic ones. This one is typical of the former category, with its rounded head and moulding forming a beak. The distribution is broad, from southern England through Ireland to Orkney (Fowler 1963: 121–2; Youngs 2010); dating is also broad, from second to sixth century AD, though Youngs (ibid) doubted the earlier end and suggested a bracket focused on AD 400 is where the bulk of evidence sits. This is consistent with the fourth-century evidence from other finds at the Sculptor's Cave. The material of this example, a clean brass with a trace of lead, is unusual for local metalwork, suggesting that it was an import.

SF750 (illus 5.44) is not a standard Roman hair pin type (Cool 1990), and has defied close parallel so far, but it may be related to the zoomorphic series as it has a double-moulding which hints at two simple Janus-like heads; it has an attachment ring for use in a set or to assist with fastening. It is a mixed silver-copper alloy. The absence of good Roman parallels and indication of links to Scottish and Irish traditions suggests it should be seen as a local type, reflecting the use of silver for prestige jewellery.

Other jewellery

The spiral finger ring SF765 (illus 5.45) is a well known and long-lived Iron Age type across Scotland and beyond (Clarke 1971). This one is crushed, making it difficult to decipher details. The penannular brooch (SF742; illus 5.45) falls into Fowler's Type D1, with the terminals turned back and slight notches to create a hint of eyes and nostrils (Fowler 1960: 176). A recent survey of such brooches emphasised these were a Romano-British type particularly common in south-west England, and are notably rare beyond the frontier (Booth 2014: 147–59, especially fig 4.21). This heavily worn example is thus best seen as a Roman import.

Toilet instruments

Metal instruments for personal grooming, such as razors, tweezers and nail cleaners (illus 5.46, 5.47), are recorded at various points throughout European prehistory from the Bronze Age onwards. In Britain such items are rare after the Bronze Age until they reappear in numbers in the later Iron Age, when the increasing adoption of toilet instruments suggests changing perceptions of the human body and its social role (Hill 1997), with much more attention paid to the creation of particular self-images. This started before the Roman period, but was much more common in Roman Britain as a result of Roman views on personal appearance (Eckardt and Crummy 2008). In Scotland there are indications of pre-Roman developments, but the phenomenon is largely linked to Roman contact.

Nail cleaner SF748 is a Roman form, with its twisted shaft and baluster moulding (the twisted shaft is rare; compare Eckardt and Crummy 2008: 132). These are rare finds in Scotland outwith Roman forts (Coleman and Hunter 2002: table 3; Eckardt and Crummy 2008: fig 23). While in Ireland they saw local development in the early medieval period (Bateson 1973: 80–2), there is less evidence of this in Scotland (one from Whithorn is seen as potentially Late Roman rather than local; Nicholson 1997: 377). The likely nail file (SF755) is also a Roman implement, rare in Britain but more common on the Continent (Eckardt and Crummy 2008: 161–2).

Such nail files are often found with single-pointed picks, and two items from the site seem to fall into this category (SF749, SF751). Both were originally considered as simple pins with perforated disc heads but proved surprisingly hard to parallel. An example from Piercebridge, Co. Durham, was clearly considered an anomaly by the specialist (Allason-Jones 2008: 11–23, no. 152; fig D11.16, no. 163). There is an example from Clickhimin, Shetland, of a very plain cylindrical pin with a perforated disc head (Hamilton 1968: fig 40.5), though there are otherwise few parallels among Scottish Iron Age pin types. An example may also be noted from Ireland, from Carraig Aille II, Lough Gur, Co. Limerick (Ó Ríordáin 1950: fig 9, no. 270), with the slightly expanded rounded head perforated with a suspension ring. However, just as good if not better parallels come from a category of toilet instrument which Eckardt and Crummy (2008: 161) classify as single picks: their fig 104, no. 1284 is particularly close. They are notably rare in Britain. Both the Sculptor's Cave examples are made from a debased silver; Eckardt and Crummy (ibid) had no parallels for silver toilet instruments, but (as noted earlier) these examples are not visually distinctive in their current state, and other examples could have been overlooked.

Tweezers were widespread in the Roman period but also had some Late Iron Age currency and continued into the early medieval period (for instance at Whithorn, Dumfries and Galloway; Nicholson 1997: 377; more widely, see Eckardt and Crummy 2008). Scottish finds from Iron Age contexts have been reviewed elsewhere (Coleman and Hunter 2002: 93–4), with further finds from Culduthel (Inverness), High Pasture Cave (Skye), Dun Ardtreck (Skye) and Broxmouth (East Lothian; Hunter forthcoming a; b; MacKie 2000: illus 24.43; Armit and McKenzie 2013: 373, illus 10.55, SF533). In the case of the Sculptor's Cave, unfinished pair SF778 clearly shows local manufacture, while the use of silver for SF745 is unparalleled in Roman Britain and suggests manufacture beyond the frontier in a new prestigious material. Stylistically the group shows some variety: some are plain with straight arms, some with flaring arms, a number have subtle decoration on the spring loop in the form of grooving, and one has a decorative saltire, a feature found widely on Romano-British tweezers (Eckardt and Crummy 2008: 152–3) which suggests that this pair at least is an import. The loop of the silver pair echoes the barrel-formed heads of some type F penannular brooches (eg Fowler 1963: fig 3).

Domestic items and tools

Some of the other material can be confidently seen as Roman. The inscribed item, SF781 (illus 5.50), has long defied identification but is in fact part of a spoon: the junction between bowl and offset handle, with a hint of zoomorphic form (eg Riha and Stern 1982: taf 30, nos 273–5 for types where the upper end of the junction protrudes; compare the openwork junction (though this is circular) on an example from Lankhills, Winchester (Clarke 1979: fig 103, no. 629), the projecting offset on spoons from Wroxeter (Mould 2000: fig 4.22, no. 230; Bushe-Fox 1916: plate XVII, no. 19) and Cirencester (Viner 1986: fig 79.29–32) and a close parallel from Catterick, North Yorkshire (Lentowicz 2002: fig 249, no. 128)). From parallels with other inscribed spoons, and given its casual rather than display quality, text in this location is likely to be the owner's name or a good luck inscription (cf Collingwood and Wright 1991a: 2420.7, .27, .32, .38, .50), although it cannot be reconstructed (see Collingwood and Wright 1991b: 2433.17, and further discussion in catalogue entry).

The bolt from barb-spring padlock SF780 and accompanying key SF779 (illus 5.50) are likely to be Roman, but are not certainly so. Manning (1985: 95–7, fig 25.10–12) discussed the type, whose origins lie in the Iron Age. Such padlocks were common in the Roman world, though bronze keys appear to be rare. A similar bronze key is known from early medieval levels at Howe (Orkney; Ballin Smith 1994: 225, illus 136, no. 603), while a barb-spring bolt from Traprain Law (East Lothian) is likely to be a Roman import (Cree 1923: 221–2, fig 28). Could the Sculptor's Cave finds be local versions of a Roman lock? Analogies come from Ireland, where rare Roman Iron Age padlocks and keys are generally interpreted as imports (Raftery 1994: 212–13; Donaghy 2008), but the type then saw local development, with early medieval examples including bronze keys like this one (eg Collins 1955: 59, fig 9.24; summary in Ballin Smith 1994: 225). Thus the Sculptor's Cave finds could either be Roman imports or precocious local copies, but the former seems more likely at this date, given the quantity of other Roman material in the cave and the evidence of repair on the bolt, which suggests a craft-worker with some familiarity with the technology. The presence of both lock and key, both unusual finds, strongly suggests that they came to the site together, perhaps for locking valuables which were then deposited in the cave.

Copper alloy needles (illus 5.48) are a widespread and non-distinctive habit, with a number of Scottish parallels (eg Howe, Gurness, Clickhimin, Broxmouth and Traprain Law; Ballin Smith 1994: 225, fig 136, no. 4414; Hedges 1987: fig 2.39, no. 233; Hamilton 1968: fig 50.5; Armit and McKenzie 2013: 374–7, illus 10.55, nos 516, 519; Burley 1956: no. 259). Along with these we may group the two lead whorls (SF782, SF792; illus 5.49) as associated with textile manufacture. Lead is rare in the Iron Age, and is primarily a phenomenon of Roman contact (Hunter 1998b: 355–6). It is much more common in later periods, but there is no specific reason to discount these as later intrusions. Lead isotope analysis (by Valerie Olive of SUERC) produced results consistent with a Scottish source, although more remote sources cannot be excluded (the weighted mean of two replicate analyses for SF792 and SF782 respectively was: $^{207}Pb/^{206}Pb$ 0.8437, 0.8387; $^{208}Pb/^{206}Pb$ 2.0872, 2.0866; $^{208}Pb/^{207}Pb$ 2.4798, 2.4912; a report on the lead isotopes is included in the site archive).

Weapons

Only one weapon component was found. The simple form of hilt guard SF777 (illus 5.51) can be paralleled at Traprain Law (Cree and Curle 1922: fig 13, no. 1). It seems narrow for a Roman hilt (Mike Bishop pers comm), suggesting it is a local weapon; narrow blades are a notable feature of swords in northern Britain (Stead 2006: fig 2), and this find indicates that the habit persisted through the Roman Iron Age.

Miscellaneous

The fasteners are dominated by small penannular links, typically 8–12mm in diameter (illus 5.52). Exactly such links are found in situ on one perforated coin, as suspension rings on the nail cleaners, picks and tweezers, and as attachment points for chains on one pin. These small links have become detached from such items. The links with butting terminals are most likely to be suspension rings from tweezers which have fallen off; the two 'sprung' links, SF760 and SF798, are more likely suspension rings for perforated coins which have been forced loose, as most of the coins lack rings. We may speculate that the larger rings such as SF758 or SF762 may once have been suspension rings for toilet sets, with several instruments on the one loop. Other links may have formed chains, as with the three conjoined links (SF767).

Deposition habits

The Sculptor's Cave material represents three distinctively different depositional practices. One is a habit of depositing multiple intact examples of single items, with 12 pins (10 local projecting-headed variants, the others perhaps exotic) and 11 toilet instruments. Their distribution shows both clusters and singletons, suggesting both individual items and either group deposits or recurring deposits in the same spot. Such clusters of pin deposits are unusual in Scotland, but there are good parallels from ritual sites in southern Britain for the deposition of multiple toilet instruments and personal items such as brooches (Eckardt and Crummy 2008: 102–3). Some of the Sculptor's Cave toilet instruments may once have made up sets.

A significant component of the material has the character of a Roman ornament set: the necklace(s) (in multiple components), the three Late Roman bracelets, the belt fittings and finger ring(s). Necklaces and bangles have clear female associations in the Roman world, and this could all represent one individual's costume. With this material one could group the Roman coins, as exotic and potentially personal material, and perhaps the padlock elements as linked to the protection of personal wealth.

Most of the material was deposited intact, with any damage apparently sustained later, probably upon excavation. This makes the exceptions noteworthy; these make up the third depositional habit. Pick SF749 was bent through 90° and two pin shank fragments show ancient breaks, though most pins were deposited intact; indeed, the zoomorphic pin was protected inside a bone cylinder. The needles may have been broken deliberately across their heads to render them useless and one of the tweezers (SF747) may have been deliberately broken (the other tweezers appear to have been damaged during excavation). The spiral finger ring had been squashed and a number of the penannular links had sprung open, probably from dismantling sets of toilet instruments or removing mounted coins from the necklace. Violence was also meted out to the Roman material. The spoon was broken into pieces (with apparently only one piece deposited), the handle of the key was distorted, two of the bracelets were broken open and the necklace strands were scattered.

The female character of the Roman necklace and bangles opens the question of whether these were gender-specific deposits in terms of participants or material deemed appropriate for deposition. The danger here lies in resorting to modern gender stereotypes. There is only one element of weaponry and a noticeable number of textile-working tools. Does this – need this – represent gendered deposits? We know too little of gender roles in this period and place to be sure and have few similar finds in the local area for comparison. The tweezers and other toilet instruments cannot safely be gendered, as analogy to other times and places finds both males and females using such items; indeed, in Roman Britain they are found in both male and female burials (Eckardt and Crummy 2008: 90, table 6). Likewise, the associations of the dress pins are not clear. Plain examples are known from five burials: three male, one ?female, one uncertain (Hunter 2015b); decorated examples are known from only two burials, both southern English finds (so arguably of little relevance) and in neither case with clear sex data (silver handpins from Long Sutton, Somerset and St Albans, Hertfordshire; Youngs 2016). The question can be posed but not yet answered, though we can say with confidence that the Roman Iron Age phase within the Sculptor's Cave represents a distinctive depositional practice linked especially to personal appearance. There are parallels for different practices at different ritual sites, probably connected to different social groups (compare the natural arch of the Heidentor, Baden-Württemberg, with an assemblage of Late Hallstatt and Early La Tène brooches, pins, rings and beads; Wieland 2012: 279).

In terms of use-lives, there is a mixture of material showing no sign of wear (notably the projecting-headed pins) and a few items with evidence of extensive use, notably the penannular brooch with very worn decoration, the chain (SF767) with wear on the links and the repaired padlock. There is also one unfinished item: the tweezers. Thus, while the Roman Iron Age material shows a focus on the personal, there are different histories, processes and stages of use-life represented. Some implications of the assemblage will be considered in the wider discussion section.

Catalogue

Alloy coding (from surface X-ray fluorescence analysis); Ae: bronze, B: brass, G: gunmetal, Pb: lead or leaded, Ag: silver, Sn: tin, Zn: zinc, Cu: copper. As corrosion deposits adhere to the surfaces of many objects, details may be obscured.

Ornaments

Roman belt fittings

SF790 (illus 5.38) Cast bossed stud with attachment ring. Domed boss, hollowed underneath, with a central depression which is probably a perforation for attachment (though it is obscured by corrosion). Rounded, slightly angled flange and integral pelta loop perforated to take a penannular suspension ring with butted terminals. Alloy: Ag-Sn. Length: 13mm (excluding ring); boss diameter: 10.5mm; height: 3mm; ring diameter: 5.5mm; wire diameter: 1mm; weight: 0.57g. Unphased, Context: Benton Layer 1, grid square A4.

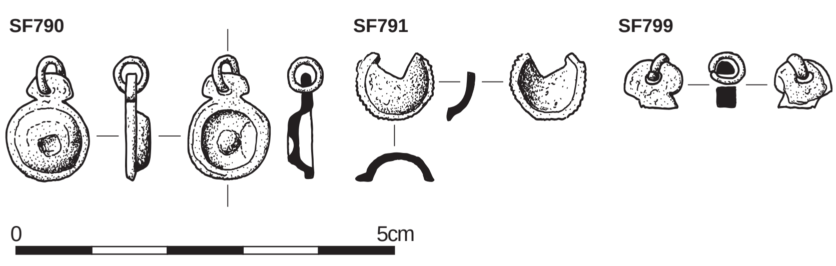

Illustration 5.38
Roman non-ferrous belt fittings

SF791 (illus 5.38) Decorative rivet cover. Domed boss (around a quarter lost) with serrated flange. Hollow underneath; unclear how it was attached. Alloy: PbB. Diameter: 10mm; height: 3.5mm; weight: 0.13g. Unphased, Context: Benton Layer 1, grid square C5.

SF799 (illus 5.38) Peltate attachment loop broken from an item similar to SF790, with suspension ring attached. Dimensions: 8mm × 6mm × 2.5mm; ring diameter: 4mm; wire diameter: 1mm; weight: 0.26g. Unphased, Context: Benton Layer 1, grid square C5.

Roman bracelets

SF757 (illus 5.39) Decorated rectangular-sectioned strip, broken square at one end, the other tapered and rounded. One edge (only) is decorated with alternating V-notches spaced *c* 6mm apart. The uneven longitudinal profile and stress cracks in places indicate it has been distorted; the restriction of decoration to one edge is unusual but parallels discussed above suggest it is a Late Roman bracelet. Alloy: PbG. Dimensions: 47.5mm × 2.5mm × 1mm. Unphased, Unstratified.

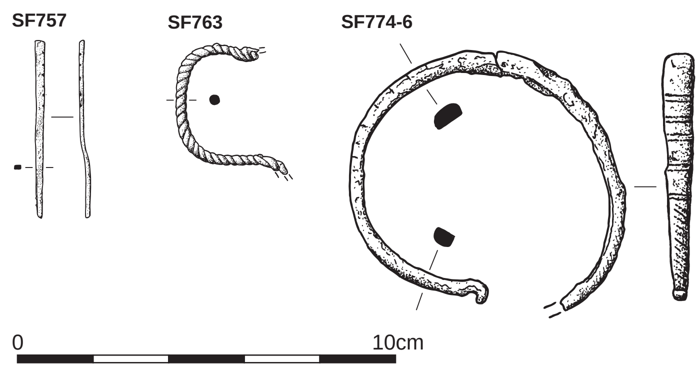

Illustration 5.39
Roman copper alloy bracelets

SF763 (illus 5.39) Late Roman cable bracelet fragment made of three circular-sectioned rods twisted together in a Z-twist. Distortion at both ends suggests it was deliberately broken; one end preserves part of the overlap where an end was wound to hold a fastening hook. Alloy: PbAe. Dimensions: 24.5mm × 31mm; hoop diameter: 2.5mm; individual rod diameters: 1mm; weight: 2.23g. Unphased, Context: Benton Layer 1, grid square B3.

SF774–6 (illus 5.39) Three joining fragments (recently broken) from a D-sectioned solid-cast Late Roman bangle with a hook and eye fastening. The bangle tapers to the ends; the eye is broken. Corrosion on the surface obscures decoration but an X-radiograph revealed pairs of transverse grooves defining rectangular fields. The bangle is slightly distorted as it survives. Alloy: PbG. Dimensions: 73mm × 58mm; section dimensions: 8mm × 4mm; weight: 10.9g. Unphased, Context: Benton Layer 1, grid square D2.

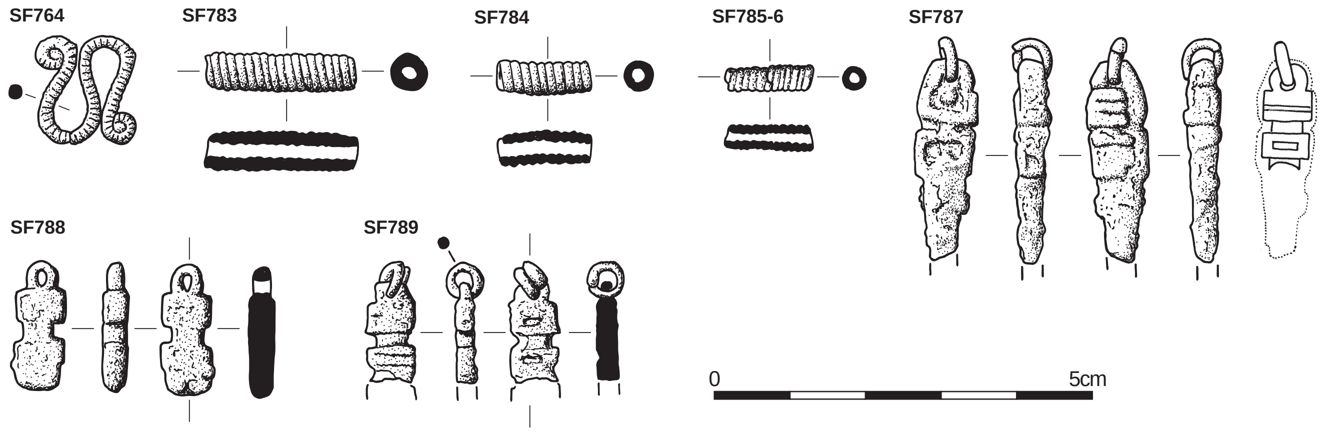

Illustration 5.40
Roman non-ferrous necklace components

Roman necklace components

SF764 (illus 5.40, 5.61) Fine circular-sectioned wire bent into an S-shaped fitting with spiral ends. Probably a fine fastener. Now broken in two. Alloy: Ag-Cu. Dimensions: 14.5mm × 14mm; rod diameter: 1.5–2mm; weight: 0.59g. Unphased, Context: Benton Layer 1, grid square B5.

SF783 (illus 5.40, 5.61) Cylindrical bead formed from Z-twist wound wire; 17 turns. Alloy: Cu-Ag-Sn. Length: 21mm; external diameter: 5.5mm; internal diameter: 2.5mm; wire diameter: 1mm; weight: 1.55g. Unphased, Context: Benton Layer 1, grid square D3.

SF784 (illus 5.40, 5.61) Cylindrical bead formed from Z-twist wound wire; 10 turns. Alloy: Cu-Ag-Sn. Length: 12.5mm; external diameter: 4.6mm; internal diameter: 2mm; wire diameter: 1mm; weight: 0.85g. Unphased, Context: Benton Layer 1, grid square D3.

SF785–6 (illus 5.40, 5.61) Cylindrical bead formed from Z-twist wound wire; 12 turns. Two joining fragments. Alloy: Cu-Ag-Sn. Length: 12mm; external diameter: 4mm; internal diameter: 2mm; wire diameter: 1mm; weight: 0.53g. Unphased, Context: Benton Layer 1, grid square D3.

SF787 (illus 5.40, 5.61) Pendant. Oval-sectioned iron object, tapering to a rounded tip, in a copper alloy setting. An X-radiograph reveals this is a hollow casting resembling a sword hilt, with two projecting bars at top and bottom, decorated with a transverse groove and a D-shaped perforated hoop on top with a slightly irregular penannular suspension ring through this. Alloy: Cu-Ag-Sn. Length: 27mm (excluding ring); width: 8mm; thickness: 5mm; visible iron length: 15mm; ring dimensions: 7mm × 5.5mm, diameter: 1mm; weight: 2.14g. Unphased, Context: Benton Layer 1, grid square D4.

SF788 (illus 5.40, 5.61) Pendant fitting. One-piece casting with a loop on top of two squares joined by a narrow waist. The lower end is broken below a transverse recessed channel. Raised border between loop and upper square; corrosion obscures any other decoration. Alloy: Cu-Ag-Sn. Dimensions: 18mm × 7.5mm × 4mm; loop width: 5mm; perforation diameter: 2.5mm; weight: 1.51g. Unphased, Context: Benton Layer 1, grid square D2.

SF789 (illus 5.40, 5.61) Pendant fitting (identical to SF788) with a ring through the loop squeezed tight such that the ends overlap (1.25 turns). The lower end of the fitting is broken but the better preserved surfaces show hints of three transverse bar mouldings on both square elements. Alloy: Cu-Ag-Sn. Dimensions: 13mm × 6mm × 3mm (without ring); ring diameter: 5mm; rod diameter: 1mm; weight: 0.91g. Unphased, Context: Benton Layer 1, grid square A4.

Pins

SF713 (illus 5.41, 5.42) Beaded and corrugated pin, the three beads separated by fillets. Rear of head plain. Angular elbow into shaft; head tilted slightly back, tip curves slightly forward. Swollen shaft. Alloy: PbG. Length: 59mm; head height: 10mm, width: 10.5mm, thickness: 2.5mm; shank length: 50.5mm, diameter: 2.4–2.8mm; weight: 2.59g. Unphased, Context: Benton Layer 1, grid square C8.

SF714 (illus 5.41, 5.42) Beaded and corrugated pin, the three beads separated by fillets. Rear of head plain. Angular elbow into shaft; head parallel to shaft, tip curves very slightly forward. Slightly swollen shaft. Alloy: PbG. Length: 51.5mm; head height: 8.5mm, width: 8.7mm, thickness: 2.5mm; shank length: 45mm, diameter: 2.5–3mm; weight: 2.19g. Unphased, Context: Benton Layer 1, grid square C4.

SF733 (illus 5.42, 5.43) Rosette-headed pin with six beads, bossed on the front and flat on the rear, where grooves define them. Tip curves slightly forward, head leans slightly back. Alloy: PbG. Length: 61.5mm; thickness: 9mm; head dimensions: 15mm × 15mm; shank length: 48.5mm, diameter: 3mm; weight: 5.26g. Unphased, Context: Benton Layer 1, grid square D5.

SF734 (illus 5.42, 5.43) Proto-handpin with plain crescentic plate below and four beads above (one now lost). Projection 'elbow' rounded rather than the sharp angle common at the site. Slightly swollen shank; head and tip project slightly forward with respect to the shank. Alloy: PbG. Length: 63mm; thickness: 7.5mm; head dimensions: 11mm × 12mm; shank length: 55.5mm, diameter: 2.5–3.2mm; weight: 2.7g. Unphased, Context: Benton Layer 1, grid square A5.

Illustration 5.41
Silver (SF735) and copper alloy beaded and corrugated pins

Illustration 5.42
Photograph of the non-ferrous projecting-headed pins.
Top row, top left–bottom right: SF733, SF734, SF735, SF736, SF737;
bottom row, top left–bottom right: SF738, SF739, SF740, SF713, SF714

SF735 (illus 5.41, 5.42) Silver corrugated pin with a flat boss at the junction which has incised corrugation lines on the top. Rear plain. Head leans slightly back; swollen shaft, rather worn, with a series of V-grooves which may simply represent later cleaning. Angled elbow. Alloy: Ag. The unusual material was noted by Stevenson (1955: 289, fig B caption) but seems to have escaped wider notice. Length: 57mm; thickness: 5.5mm; head dimensions: 9.5mm × 9.5mm; shank length: 50.5mm, diameter: 2.5–3.1mm; weight: 3.21g. Unphased, Context: Benton Layer 1, grid square C7.

SF736 (illus 5.41, 5.42) Beaded and corrugated pin with three beads; rear is plain. Shank slightly swollen in centre. Head parallel to shank, tip bent slightly forward. Alloy: PbAe. Length: 58mm; thickness: 7.5mm; head dimensions: 10.5mm × 10mm; shank length: 51mm, diameter: 2.5–3.2mm; weight: 3.4g. Unphased, Context: Benton Layer 1, grid square C8.

SF737 (illus 5.41, 5.42) Beaded and corrugated pin, the three beads with fillets between them; rear is plain and flat. Shank slightly swollen in centre. Head parallel to shank, tip straight. Alloy: PbAe. Length: 53mm; thickness: 6.5mm; head dimensions: 8.5mm × 9mm; shank length: 47mm, diameter: 2.5–2.8mm; weight: 2.32g. Unphased, Unstratified.

SF738 (illus 5.41, 5.42) Beaded and plain pin; the lower half of the ring is slightly raised with post-casting incisions to define four beads. Head parallel to shank but barely projects; the rear is aligned to the front of the shank. Slight asymmetry to tip, perhaps from wear. Shank not swollen. Alloy: PbAe. Length: 51.5mm; thickness: 5mm; head dimensions: 8.3mm × 9.3mm; shank length: 45mm, diameter: 3mm; weight: 2.41g. Unphased, Context: Benton Layer 1, grid square C6.

SF739 (illus 5.41, 5.42) Beaded and corrugated pin, the three beads widely spaced to give the impression of an ibex-headed variant; rear

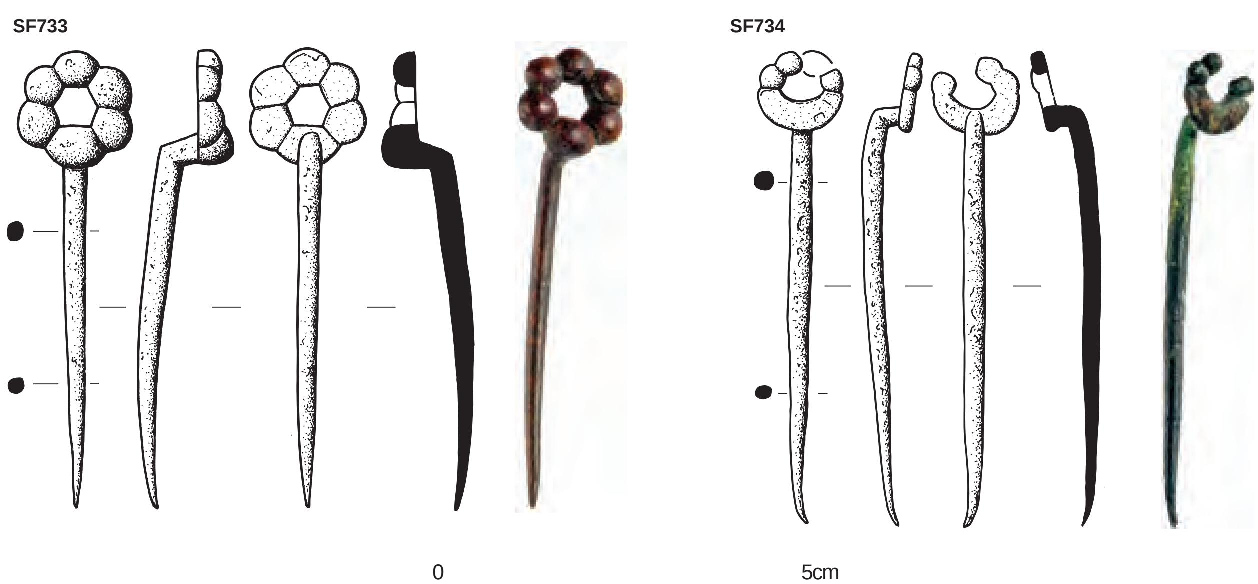

Illustration 5.43
Copper alloy rosette-headed pin and proto-handpin

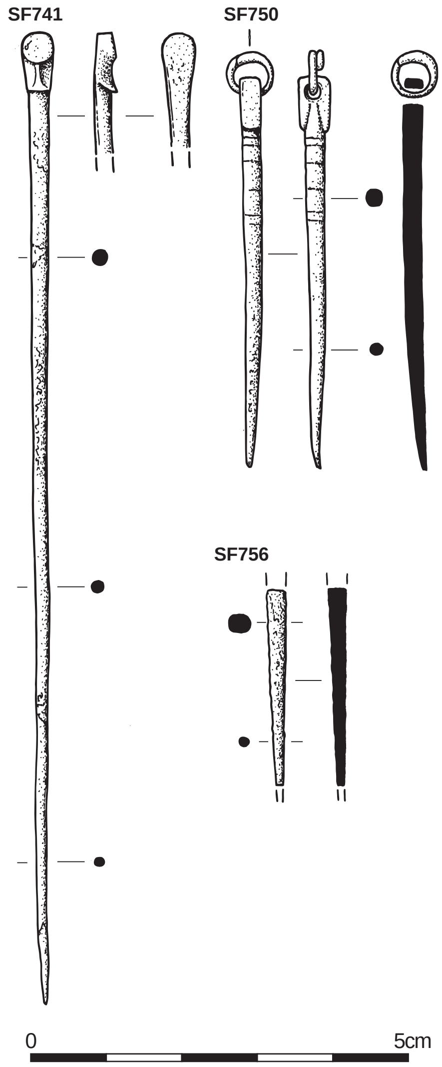

Illustration 5.44
Other non-ferrous pins

is plain. Cylindrical shank, slightly bent forward at about a third of its length from the tip. Alloy: PbAe (trace Zn). Length: 46.5mm; thickness: 6.5mm; head dimensions: 7mm × 7mm; shank length: 41.5mm, diameter: 2.5mm; weight: 1.67g. Unphased, Unstratified.

SF740 (illus 5.41, 5.42) Beaded and corrugated pin with three beads; rear is a plain bar with a couple of apparently random incisions behind the beaded portion but not correlated with it. Shank slightly swollen in centre. Head parallel to shank. Alloy: PbG. Length: 49mm; thickness: 6mm; head dimensions: 7.5mm × 8mm; shank length: 44.5mm, diameter: 2.5–3mm; weight: 2.35g. Unphased, Context: Benton Layer 1, grid square C8.

SF741 (illus 5.44) Intact pin with simple proto-zoomorphic head: a flat circular boss with 'duck-bill' moulding. The rear of the head is flat. It was deposited inside a bone cylinder (SF823; see section 5.3.7). Alloy: B. Length: 129mm; head length: 8mm, width: 4.5mm, thickness: 3.5mm; shank diameter: 3mm; weight: 3.96g. Unphased, Context: Benton Layer 1, grid square C7/8.

SF750 (illus 5.44) Pin with a rectangular head perforated to take a spiral ring of 1.25 turns. Grooving on the top and sides of the head (from shank to perforation) creates a zoomorphic appearance like two duck bills. The top of the shaft is ribbed with alternate broad and narrow bands over the first 12.5mm; there are six broad bands. The tip is slightly bent from use. Alloy: Cu-Ag-Sn. Length: 52mm; head dimensions: 7mm × 4mm × 2.2mm; shank diameter: 2.5mm; ring diameter: 6mm; rod diameter: 1mm; weight: 1.89g. Unphased, Context: Benton Layer 1, grid square D4.

SF756 (illus 5.44) Pin shank, cleanly broken in antiquity; extreme tip lacking. Alloy: PbG. Length: 26mm; diameter: 2mm; weight: 0.41g. Unphased, Unstratified.

SF114 (not illustrated) Tapered cylindrical pin shank, ends corroded. Length: 32.5mm; diameter: 3mm; weight: 1.03g. Phase: 2/3, Block: 2.7, Context: IIb5.

Other personal ornaments

SF742 (illus 5.45) Intact zoomorphic penannular brooch, lacking only the extreme pin tip. Type D1, with the rectangular terminals folded back, flattened and decorated to create beast heads by punching lateral V-notches to evoke eyes and nostrils. The hoop is a flat rectangle in section with rounded edges. Both faces were decorated, though these are much worn by heavy use. The front side has a regular series of V-notches on the inner and outer edges; it is possible they were once joined by transverse grooves to create a ribbed effect, but these have been lost to wear if it was the case. The rear shows a regular series of angled indents. The brooch was not attached when deposited as the hoop sits over the pin. The latter is a circular-sectioned wire, bowed in the centre, with the tip recently broken and the other end flattened and coiled to create a head. Alloy: PbAe (hoop and pin). Hoop dimensions: 29mm × 32mm; section dimensions: 2.5mm × 1mm; pin length: 30mm, diameter: 2mm; weight: 3.21g. Unphased, Context: Benton Layer 1, grid square B6.

SF759 (illus 5.45) Fine broken finger ring with slipknot fixing, the ends coiled (in two turns) around the fine circular rod to secure the sliding fixing. Alloy: PbB. External diameter: 20mm (distorted); rod diameter: 1mm; weight: 0.49g. Unphased, Context: Benton Layer 1, grid square B3.

SF761 (illus 5.45) Decorated finger ring. Oval-sectioned penannular hoop with tapered squared-off terminals decorated on the outer surface with two and four incised transverse grooves. Alloy: PbAe. External diameter: 21.5mm × 18mm; internal diameter: 19mm × 15.5mm; section dimensions: 2.2mm × 1mm; weight: 0.81g. Unphased, Unstratified.

SF765 (illus 5.45) Spiral finger ring made of D-sectioned rod; both ends lost in recent damage. It is rather squashed and corroded, rendering details unclear, but it appears to be a single ring with five or six turns. Alloy: Ae. External diameter: 16mm × 17mm; height: 6mm; rod height: 1.2mm, width: 0.5–1mm; weight: 1.55g. Unphased, Context: Benton Layer 1, grid square B3.

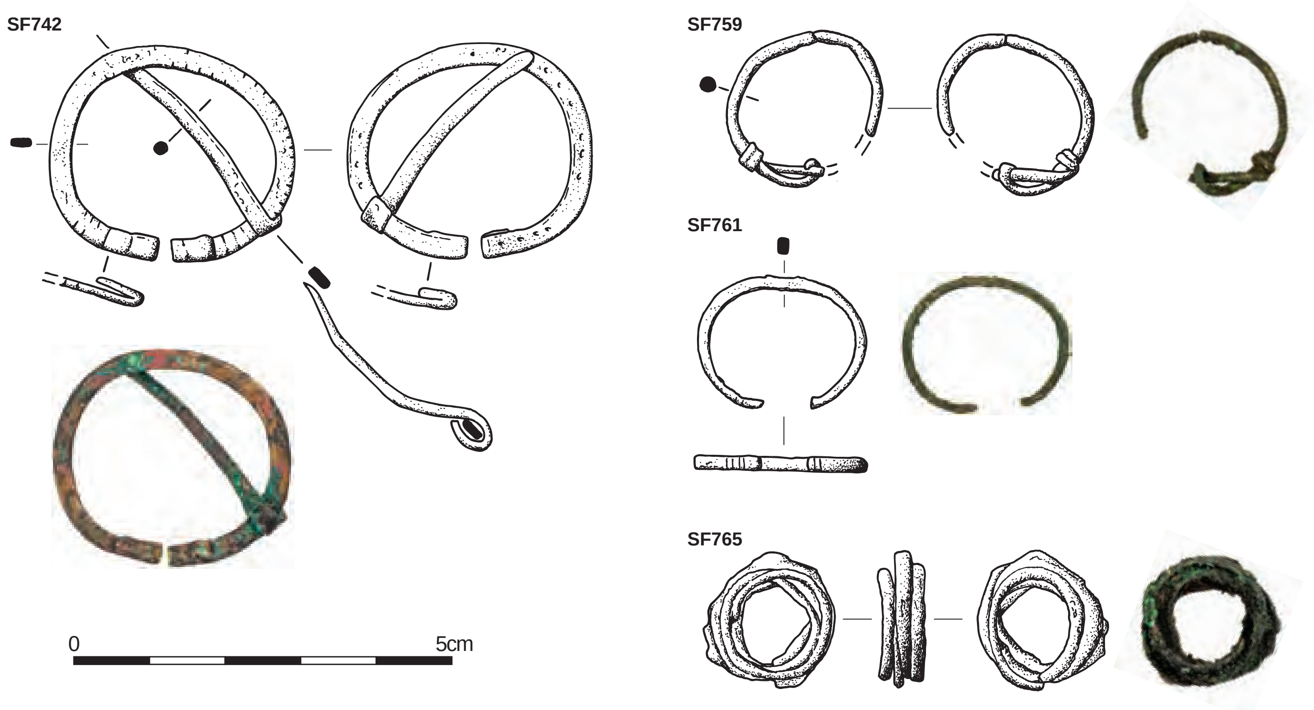

Illustration 5.45
Copper alloy personal ornaments

Toilet instruments

SF717 (illus 5.46, 5.47) Simple tweezers, the rectangular-sectioned arms expanding smoothly into the plain head and to the tips, one of which is near-straight, the other curved out and then in, creating an unusual asymmetry. Alloy: PbB. Length: 40mm; tip width: 5mm; arm section: 2.5mm × 1.5mm; head width: 4mm; weight: 2.3g. Unphased, Context: Benton Layer 1, grid square C5.

SF743 (illus 5.46, 5.47) Pair of tweezers with teardrop head slightly ribbed on exterior; otherwise plain. Arms narrow slightly from the head and swell slightly to the incurved tip. Alloy: Ae. Length: 30mm; width: 8.5mm; head width: 6.5mm, thickness: 5.5mm; strip thickness: 1mm; weight: 2.27g. Unphased, Context: Benton Layer 1, grid square C5.

SF744 (illus 5.46, 5.47) Very well-made pair of tweezers. Teardrop head made from a flat strip which narrows into rounded arms with very neatly faceted section, then expands to incurved tips with a flat section. Tiny fragment of fibrous organic material (unidentified) on inside of head. Alloy: PbAe. Length: 36mm; width: 9mm; tip width: 3mm; arm thickness: 2mm; weight: 1.81g. Unphased, Context: Benton Layer 1, grid square C5.

SF745 (illus 5.46, 5.47) Pair of silver tweezers with suspension ring; part of one arm lost in modern break. The narrow rectangular-sectioned arm broadens and splays to the inturned tip. The head is clearly differentiated by being broader and decorated with a triple rib. Spiral attachment ring (part lost). Alloy: Ag. Shank length: 42.5mm; arm section: 1.5mm × 1mm; tip width: 3mm; ring diameter: 6mm, height: 3mm; wire diameter: 1mm; weight: 1.41g. Unphased, Context: Benton Layer 1, grid square B3.

SF746 (illus 5.46, 5.47) Pair of tweezers with suspension ring; one arm lost in modern break. Plain strip with central channel over head; slightly expands and bends to incurved tip. Butted penannular suspension ring with squared terminals. Alloy: PbG. Length: 29.5mm; width: 2.5–4mm; ring diameter: 11mm; rod diameter: 2mm; weight: 1.32g. Unphased, Context: Benton Layer 1, grid square D1.

SF747 (illus 5.46, 5.47) Arm from a pair of tweezers, neatly broken below the head, perhaps deliberately. Expands gradually to inturned end, the tip chamfered. Decorated with roughly incised transverse groove below the head and a more neatly incised saltire bounded by transverse grooves in a sunken panel near the tip. Alloy: G (low Zn). Length: 35mm; width: 2.5–4mm; thickness: 1.5mm; weight: 0.88g. Unphased, Context: Benton Layer 1, grid square B1.

SF748 (illus 5.46, 5.47) Nail cleaner. Square-sectioned S-twist shank ending in a forked tip, slightly rounded. At the top of the shaft a pair of concave-sided mouldings lead into a rounded flat terminal perforated for a suspension ring, itself with a further penannular ring attached. The concave mouldings give a hint of zoomorphism. Over the top 10mm, the edges of the shaft are decoratively serrated. Alloy: B (trace Pb, Sn). Length: 44mm; head dimensions: 10mm × 4.5mm × 3mm; shank width: 2.7mm; ring diameters: 6mm; wire diameter: 1mm; weight: 1.87g. Unphased, Context: Benton Layer 1, grid square B3.

SF749 (illus 5.46) Nail pick? Pin-like object with ringed head containing a penannular circular-sectioned attachment ring with butted ends. It has been bent through almost 90° at about three-fifths of its length. The angle implies this was deliberate destruction, not a retaining bend. Cylindrical shank, tapering to the tip. The

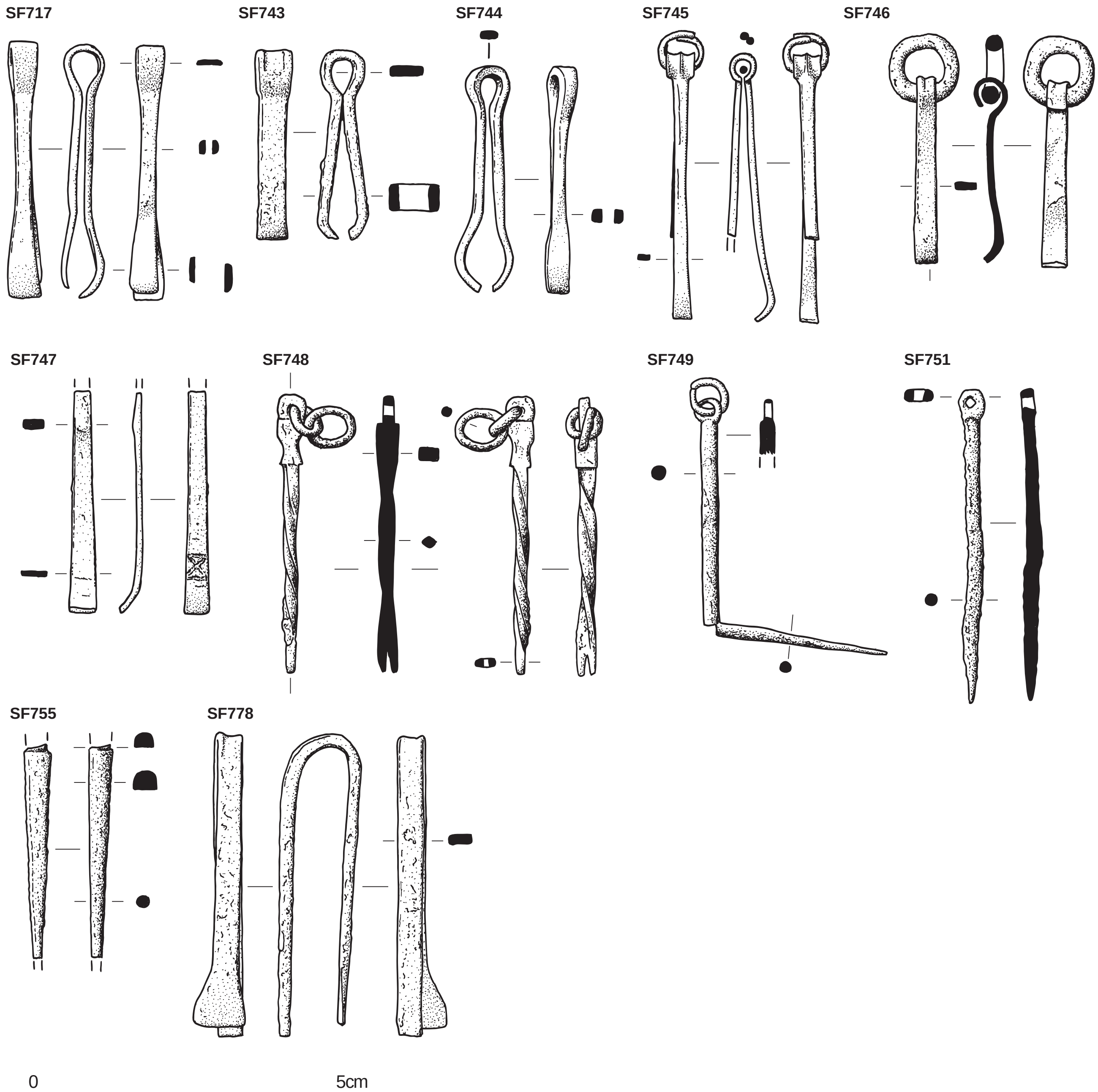

Illustration 5.46
Roman silver (SF745) and copper alloy toilet instruments

form has proved difficult to parallel among pins and the object seems more likely to be a toilet instrument. Alloy: Cu-Ag-Zn-Sn. Unbent length: 59mm; shank diameter: 2.5mm; head diameter: 4.5mm; ring diameter: 6.5mm; wire diameter: 1mm; weight: 1.97g. Unphased, Context: Benton Layer 1, grid square D4.

SF751 (illus 5.46) Nail pick with circular-sectioned shank; bar moulding at junction with pierced discoidal head. Very slight longitudinal curve. Alloy: Cu-Ag-Zn-Sn. Length: 50mm; shank diameter: 2mm; head/bar length: 5mm, diameter: 4mm; weight: 1.16g. Unphased, Context: Benton Layer 1, grid square D3.

SF755 (illus 5.46) Nail file? Square-sectioned bar with slightly rounded corners, tapering to a fine point at one end. The other end is broken (modern) at the point where the square section is stepped into a circular section. Corrosion obscures details, but one cleaned surface has transverse ribbing, suggesting identification as a fine nail file, broken at the suspension loop. Alloy: PbAe. Dimensions: 33mm × 4mm × 3mm; circular section diameter: 3mm; weight: 1.27g. Unphased, Unstratified.

SF778 (illus 5.46) Bar bent into a slightly asymmetrical U-shape with one end splayed, suggesting these represent an unfinished

Illustration 5.47
Photograph of selected Roman non-ferrous toilet instruments. Top row, bottom left–top right: SF717, SF744, SF743; bottom row, bottom left–top right: SF746, SF747, SF748, SF745

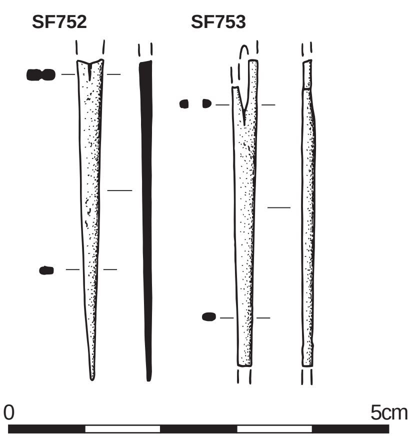

Illustration 5.48
Copper alloy needles

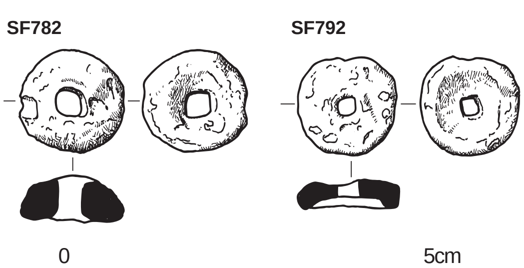

Illustration 5.49
Lead artefacts

pair of tweezers. Alloy: PbAe/PbG. Length: 48mm; width: 13mm; bar dimensions: 4.5mm × 2mm; splayed tip width: 7mm; weight: 5.1g. Unphased, Context: Benton Layer 1, grid square C6.

Tools

SF752 (illus 5.48) Needle, broken across the elongated eye, perhaps deliberately. Oval-sectioned head leading into circular-sectioned shank which has slight longitudinal bend. Alloy: PbG. Length: 43mm; head dimensions: 3mm × 1.5mm; shank diameter: 2mm; weight: 0.7g. Unphased, Context: Benton Layer 1, grid square D5.

SF753 (illus 5.48) Needle, with part of the head and tip lost in old breaks. Oval-sectioned shank, slightly expanding into elongated eye. Alloy: PbG. Length: 40.5mm; head dimensions: 3.5mm × 1mm; shank dimensions: 2mm × 1.5mm; weight: 0.67g. Unphased, Context: Benton Layer 1, grid square C5.

SF782 (illus 5.49) Plano-convex lead spindle whorl, the surface very corroded but with a slight lip around the perforation on the upper surface and slight hollow on the lower. Edges damaged. Alloy: Pb. External diameter: 27mm; height: 12mm; perforation diameter: 7mm; weight: 36.3g. Unphased, Unstratified.

SF792 (illus 5.49) Discoidal lead whorl, in form a flat cone with the underside markedly sunken apart from a raised lip. Central perforation. An unusual form. Alloy: Pb. External diameter: 26.5mm; thickness: 8mm; perforation diameter: 5mm; weight: 20.2g. Unphased, Unstratified.

Domestic

SF779 (illus 5.50) Padlock key formed from a strip, broken and distorted at narrower end, which expands along its length and steps out into a square head bent through 90°. This has a square central perforation (width: 4.5mm) which would slip over the padlock barbs to squeeze them flat and allow it to be released. The perforation is consistent with the padlock bolt (SF780). Alloy: PbAe/PbG. Length: 51mm; handle width: 4–5.5mm, thickness: 1.5mm; head dimensions: 9mm × 7mm; weight: 2.22g. Unphased, Context: Benton Layer 1, grid square D4.

SF780 (illus 5.50) Padlock leaf spring. L-shaped square-sectioned bar with a perforated loop at one end (loop diameter: 9mm; perforation diameter: 4mm), which would allow the spring to slide into the lock. The other end has two barbs fixed to it, one with a broken terminal. Their uneven outline indicates extended use, and one is a replacement with a fresh strip of copper alloy laid over the old barb and round the tip to retain it. A rectangular washer with rounded corners sits at the corner of the bar to strengthen the gap through which the barb was withdrawn. The space between barb and washer is only 3mm. Alloy: PbG. Arm dimensions: 27.5mm × 37mm × 4.5mm square; washer dimensions: 15mm × 12mm; weight: 8.37g. Unphased, Context: Benton Layer 1, grid square A5.

SF781 (illus 5.50) Offset junction from a Roman spoon. Square-sectioned bar, twisted and broken at one end, forked at the other with both arms twisted and broken. One arm preserves an elbow junction before the break, with hints of a zoomorphic design. The upper surface bears a worn impressed inscription, its reading

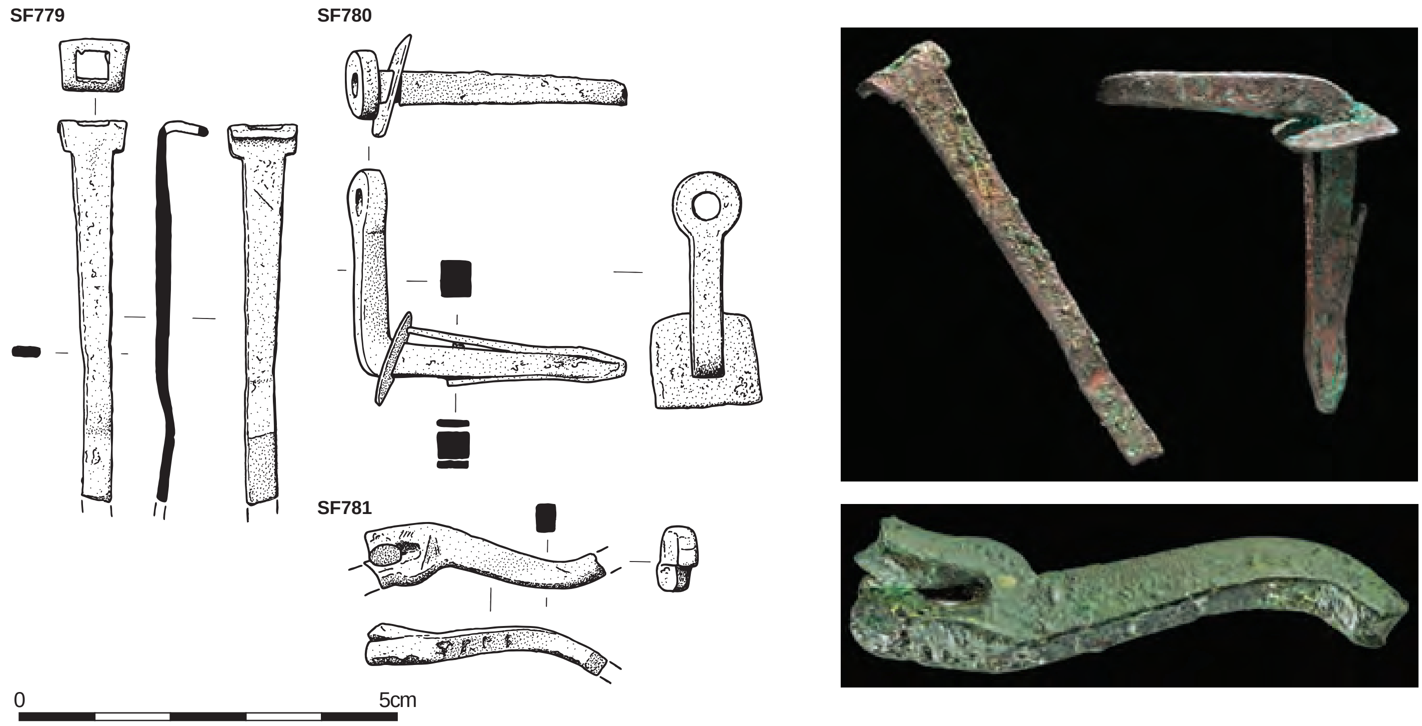

Illustration 5.50
Copper alloy domestic items

extremely uncertain. Benton (1931: 193) gave 'TRES' with hesitation, although Collingwood and Wright (1991b: 2433.17) preferred '[. . .]SPILV[. . .]' or '[. . .]VLIPS[. . .]'. Re-examination suggests that Benton's reading was closer; the Collingwood and Wright reading requires two letters to be retrograde, but a more convincing reading comes from turning it through 180º. Collingwood and Wright's V is probably an A, the L is clearly a T, the I remains an I, the retrograde P is actually an E (its lower bar on the edge of the spoon) and the S (hard to see) remains the same. This gives '[. . .]ATIES[. . .]', the first and last uncertain with corrosion, with hints of further letters lost to corrosion at the start. The meaning is no clearer and the reading is far from

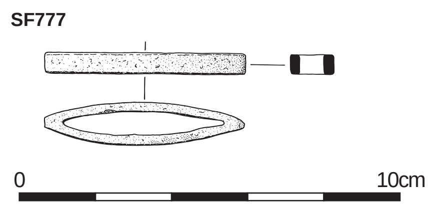

Illustration 5.51
Copper alloy sword hilt guard

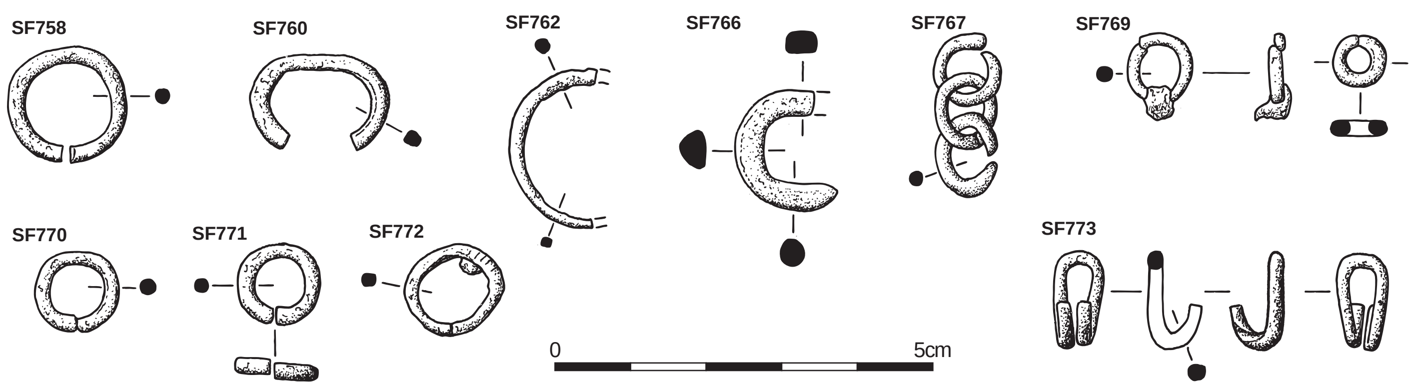

Illustration 5.52
Copper alloy fasteners

certain, but it seems likely to be a personal name. Other spoons have good luck inscriptions, VTERE FELIX in several variants, but this is harder to reconstruct from the worn and battered letters surviving here. (I am grateful to Roger Tomlin for discussion of this item.) Alloy: Cu-Ag-Sn. Length: 31.5mm; max. height: 8.5mm; bar dimensions: 4mm × 3mm; weight: 3.88g. Unphased, Context: Benton Layer 1, grid square A1.

Weapon

SF777 (illus 5.51) Plain cast hilt guard, pointed oval in plan, rectangular section. Alloy: PbAe. Length: 53mm; width: 11.5mm; height: 5.5mm; inferred blade width: 44mm; thickness: 6mm. Unphased, Context: Benton Layer 1, grid square A0.

Fasteners

SF718 (not illustrated) Small penannular ring, the ends almost butting. Catalogued and drawn in Elgin by McIntyre (1977: 76, no. 181) but currently missing. Dimensions: 11mm × 12mm × 2mm. Unphased, Context: Unknown.

SF719 (not illustrated) Small penannular ring, the ends almost butting. Catalogued and drawn in Elgin by McIntyre (1977: 76, no. 182) but currently missing. Dimensions: 11mm × 12mm × 2mm. Unphased, Context: Unknown.

SF720 (not illustrated) Small penannular ring; damaged. Catalogued and drawn in Elgin by McIntyre (1977: 76, no. 183) but currently missing. Dimensions: 9mm × 10mm × 2mm. Unphased, Context: Unknown.

SF758 (illus 5.52) Penannular ring, circular-sectioned, the squared ends almost butting; some hammermarks from forging. Alloy: PbG. Diameter: 31mm × 30mm; rod diameter: 4mm; weight: 7.62g. Unphased, Context: Benton Layer 1, grid square B7.

SF760 (illus 5.52) Circular-sectioned penannular ring with squared terminals, now slightly oval and distorted from being forced open. Alloy: B. Diameter: 19mm × 13mm; rod diameter: 2mm; weight: 0.75g. Unphased, Unstratified.

SF762 (illus 5.52) Half of a fine wire ring; recent breaks at both ends. Alloy: B. External diameter: 21.5mm; internal diameter: 18.5mm; wire diameter: 1–1.5mm; weight: 0.27g. Unphased, Unstratified.

SF766 (illus 5.52) D-sectioned bar bent into a tight curve and tapering to a point, suggesting it was a hook fitting; the other end is broken and corroded. Alloy: B. Width: 16.5mm; height: 13mm; rod dimensions: 5mm × 3mm; weight: 2.24g. Unphased, Unstratified.

SF767 (illus 5.52) Three penannular rings with rounded butting terminals (the others from the site are squared) linked in a length of chain. Their irregular form and wear facets on the interior edges indicate they saw extended use. Alloy: B. Ring diameters: 10mm × 8mm; 9mm × 9mm; 10mm × 8mm; wire diameter: 1.5–2mm; weight: 1.39g. Unphased, Context: Benton Layer 1, grid square C0.

SF768 (not illustrated) Small penannular ring, circular section, squared ends butted together. Alloy: Cu-Ag-Zn-Sn. Diameter: 7mm; rod diameter: 1.5mm; weight: 0.24g. Unphased, Unstratified.

SF769 (illus 5.52) Slightly distorted small penannular ring, circular section, squared ends butted; iron traces opposite the junction preserve a fine loop through which the ring fitted. Alloy: PbG. Diameter: 9mm × 10mm; rod diameter: 1.5mm; iron width: 3mm; weight: 0.44g. Unphased, Unstratified.

SF770 (illus 5.52) Small penannular ring, circular section, squared ends butted together. Alloy: G. Diameter: 11mm; rod diameter: 2mm; weight: 0.7g. Unphased, Unstratified.

SF771 (illus 5.52) Small penannular ring, circular section, squared ends butted together. Alloy: PbG. Diameter: 11mm × 11.5mm; rod diameter: 2mm; weight: 0.67g. Unphased, Unstratified.

SF772 (illus 5.52) Small penannular ring, slightly oval, circular section, squared ends butted together. Alloy: PbG. Diameter: 11.5mm × 12.5mm; rod diameter: 1.5mm; weight: 0.34g. Unphased, Unstratified.

SF773 (illus 5.52) Looped hook fastener. Made from an S-twisted bar bent into a loop, with the terminals bent forward to form a hook. Probably stitched to textile or leather as a fastener. Alloy: PbG. Height: 12mm; width: 6.5mm; thickness: 8mm; bar width: 1.5mm; weight: 0.56g. Unphased, Context: Benton Layer 1, grid square C8.

SF798 (not illustrated) Small penannular ring, circular in section, the ends slightly damaged and sprung apart. Alloy: PbB. Diameter: 8mm; rod diameter: 1.2mm; weight: 0.19g. Unphased, Unstratified.

Uncertain

SF25 (not illustrated) Sheet fragment, possibly with rounded corner; highly corroded. Alloy: PbCu. Dimensions: 7mm × 5mm × 0.5mm; weight: 0.09g. Unphased, Unstratified (Area III).

SF26 (not illustrated) Rounded corner from a sheet object, unidentifiable. Alloy: PbCu. Dimensions: 9.5mm × 5.5mm × 1mm; weight: 0.16g. Unphased, Unstratified (Area III).

SF29 (not illustrated) Two unidentifiable sheet fragments. Dimensions: 3mm × 1.5mm; 4mm × 2mm. Unphased, Unstratified (Area III).

SF32 (not illustrated) Unidentified fragment of a larger object, preserving an angled corner. Alloy: PbCu. Dimensions: 7.5mm × 4mm × 1.5mm; weight: 0.14g. Unphased, Unstratified (Area III).

SF100 (not illustrated) Highly fragmentary sheet object in three main fragments, no original edges, slightly curved. Alloy: Ae. Max. dimensions: 13mm × 8.5mm × 0.5mm. Phase: 3, Block: 2.8, Context: IIb3.

SF101 (not illustrated) Two tiny sheet fragments; undiagnostic. Dimensions: 2mm × 1.5mm; 2.5mm × 1.5mm; thickness: 0.5mm. Phase: 3, Block: 2.8, Context: IIb3.

SF721 (not illustrated) U-shaped piece of fine wire. Catalogued and drawn in Elgin by McIntyre (1977: 76, no. 184) but currently missing. Length: *c* 33mm; diameter: <1mm. Unphased, Context: Unknown.

5.7.3 Roman coins

Sam Moorhead (based on catalogue by Nick Holmes)

The material

Sylvia Benton recovered around 230 coins from the Sculptor's Cave, of which 9 were regular Roman issues and around 220 contemporary copies (sometimes called 'barbarous' or 'irregular') (Benton 1931: 209–16). The present discussion is based on Nicholas Holmes' (nd) catalogue of 134 of these coins (those which survive in NMS collections and are identifiable) and a further 14 from the Shepherds' excavation (Sekulla nd), making a total of 148 pieces (table 5.20). Percentages quoted here are thus based on the 148 coins listed in table 5.20, which are assumed to be broadly representative of the original assemblage.

The coins are all copper alloy *nummi*, of which 137 (92.6%) are contemporary copies. All, bar one possible coin of *c* AD 320–41 (no. 16), fall between AD 330 and 364 (table 5.21). The 15 coins of AD 330–48 comprise common GLORIA EXERCITVS, VRBS ROMA, VICTORIAE DD AVGGQ NN and Divus Constantinus issues which are found in large numbers across Roman sites in England (C1–15). The AD 348–53 pieces are common FELICITAS REI PVBLICE, GLORIA ROMANORVM and VICTORIAE DD AVG ET CAE(S) types struck for Magnentius (AD 350–3), some of which are copies which probably post-date AD 353 (C17–23). Finally, the bulk of the coins are the 64 copies of Constantius II's FEL TEMP REPARATIO 'falling horseman' issues, which can be dated between AD 353 and 364; there is only one regular piece of this issue (C24). The regular piece is 17mm in diameter and weighs 2.32g; the copies, as is normal, are much smaller and lighter, ranging from 6.5–13mm in diameter (average 11.3mm) and 0.4–1.7g in weight (average 1.02g). The residue of 60 coins are all copies dating from the broad date range AD 330–64, most of them probably being further FEL TEMP REPARATIO pieces. The prototypes for the FEL TEMP REPARATIO 'falling horseman' types were struck until AD 361, but because there was a major lacuna in base metal coin supply in Britain between AD 361 and 364, when the House of Valentinianic *nummi* started to flood the province, we can assume copying continued up to AD 364 (Moorhead 2015). The absence of the otherwise ubiquitous Valentinianic *nummi* strongly suggests that this group of coins was removed from circulation in the early to mid-360s.

Hoard, votive deposit or single finds?

In applied numismatics, coin finds are usually recognised to belong to one of three types of deposit. First, there are hoards, which are normally coins collected and deposited in a single act. Second, there are votive deposits, which are collections of coins and often other artefacts, deposited singly or in groups over time: the best examples of these from Britain for the Roman period are Bath, Coventina's Well (on Hadrian's Wall) and the River Tees at Piercebridge (Allason-Jones and McKay 1985; Walker 1988; Walton 2008; 2012: 152–66; forthcoming). Finally, there are single finds, which include individual coins discovered on excavation, through field walking and by metal detecting. Although these appear simple divisions, there can be considerable overlap. Some hoards do appear to be votive deposits, for example the Frome hoard, where excavation shows that the coins were tipped into the main container from a series of other containers in one event, the latest coins being in the middle (Moorhead et al 2010). Also, votive offerings can be single coins or a number of coins deposited as a group, the Sacred Spring at Bath almost certainly having examples of both types of practice (eg Walker 1988: 280). Finally, hoards and votive deposits can be dispersed and give the superficial appearance of single finds (eg Guest et al 1997; Moorhead 2017).

Hoards

The coins from the Sculptor's Cave fall into a very tight chronological period of AD 330–64. Coins from this period are common in Roman Britain; indeed, the period AD 330–48 (Reece 1995: Period 17) sees the highest coin loss (*c* 25% of all site finds) for any period in the province's history (Walton 2012: 233), while the period AD 348–64 also shows high coin loss (around 8.5% of all site finds). However, were these single finds from a domestic site, they would represent a very unusual profile. One would expect several earlier coins of the second or third centuries, a number of radiates of the later third century, probably a few coins of the later House of Valentinian (AD 364–78), and possibly even one or two coins of the House of Theodosius (AD 378–402); in Scotland, the best example of this broader spread comes from Traprain Law (Sekulla 1982; see also table 5.22). The coins from the Sculptor's Cave are thus most likely to represent a single coherent group or hoard.

We can test this hypothesis by comparing the assemblage with other hoards that share a similar *terminus post quem*. Table 5.23 shows 35 hoards whose latest coins are FEL TEMP REPARATIO 'falling horseman' types, dating to *c* AD 353–64. Although the quality of the records for these hoards varies enormously, their composition is remarkably consistent, with three main groups emerging (A, B and C, as noted in the final column of table 5.23):

- Group A consists of hoards which are largely made up only of FEL TEMP REPARATIO 'falling horseman' types, with few earlier pieces.
- Group B hoards have a large number of FEL TEMP REPARATIO but also tend to have a significant number of earlier coins: a few have the odd second-century coin; several have a few radiates from the period AD 260–96 and/or *nummi* of AD 296–330; most have a considerable number of coins from the period AD 330–53, including a significant number of copies.
- Group C hoards only have a small tail of FEL TEMP REPARATIO 'falling horseman' types, the vast majority of the coins being earlier issues.

The Sculptor's Cave fits neatly into Group B, having a large number of FEL TEMP REPARATIO 'falling horseman' pieces but also a significant number of earlier (AD 330–53) coins. Although Group B hoards have been found across Britain, three of the most northerly of the FEL TEMP REPARATIO hoards do belong to Group B: Wroxeter (Shropshire), Besthorpe (Nottinghamshire) and Tickhill II (South Yorkshire). However, these are still a considerable distance south of the military zone represented by the Hadrianic frontier. Tickhill II is the only one north of the River Trent. Although an outlier (by over 500km), the putative hoard from the Sculptor's Cave at least shares a composition with the most northerly hoards that share its *terminus post quem* in England.

Table 5.20
Catalogue of the Sculptor's Cave coin assemblage. RIC: Roman Imperial Coinage.

Coin	Status	Date range (AD)	Reverse	Ruler/obverse	Notes	Grid square (where known)
C1	?Copy	*c* 330–48	GLORIA EXERCITVS; two soldiers and two standards	House of Constantine; bust right	–	–
C2	Regular	*c* 330–40	Wolf and twins	VRBS ROMA; helmeted bust left	Pierced	B4
C3	?Copy	*c* 330–48	Wolf and twins	VRBS ROMA; helmeted bust left	Pierced	–
C4	Copy	*c* 330–48	Wolf and twins	VRBS ROMA; helmeted bust left	Pierced with two loops of wire	B4
C5	Copy	*c* 330–48	Wolf and twins	VRBS ROMA; diademed bust left	–	–
C6	Regular	*c* 335–41	GLORIA EXERCITVS; two soldiers and one standard	Delmatius	–	A5
C7	Regular	*c* 335–41	GLORIA EXERCITVS; two soldiers and one standard	House of Constantine; bust right	–	C3
C8–9	?Copy	*c* 335–48	GLORIA EXERCITVS; two soldiers and one standard	House of Constantine; bust right	–	C8=C5
C10–12	Copy	*c* 335–48	GLORIA EXERCITVS; two soldiers and one standard	House of Constantine; bust right	–	C10=C5
C13	Regular	337–40	Emperor in quadriga right; SMKE (Cyzicus)	Divus Constantinus	RIC VIII Cyzicus 4	D5
C14	Regular	347–8	VICTORIAE DD AVGGQ NN; two Victories; D//TRP (Trier)	House of Constantine	RIC VIII Trier 194/196	–
C15	Regular	347–8	VICTORIAE DD AVGGQ NN; two Victories; [ ]//(SARL) (Arles)	Constans	Pierced	C7
C16	Regular	*c* 320–41?	Unclear	House of Constantine?; diademed bust right	Pierced	–
C17	Regular	350–1	FELICITAS REI PVBLICE; Emperor holding Victory and standard; - A?//TRP (Trier)	Magnentius	RIC VIII Trier cf 264	B0
C18	Copy	*c* 350–64	[GLORIA ROMANORVM?]; horseman right	Probably inspired by Magnentius	For possible prototype see RIC VIII Trier 269	–
C19	Regular	351–3	VICTORIAE DD NN AVG ET CAE; two Victories holding wreath; -//AMB* (Amiens)	Magnentius	RIC VIII Amiens 14	A6
C20	Regular	351–3	VICTORIAE DD NN AVG ET CAE(S); two Victories holding wreath	Magnentius	–	–
C21–22	Copy	351–64	VICTORIAE DD NN AVG ET CAE(S); two Victories holding wreath	Magnentius and probably Magnentius	–	C21=B4
C23	Copy	351–64	VICTORIAE DD NN AVG ET CAE(S); two Victories holding wreath	Magnentius/Decentius	–	–
C24	Regular	353–60	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman; GSL[G] Lyons	Constantius II	RIC VIII Lyon 189 (given as Constantius Gallus in Benton 1931, Robertson 2000 and NMS database, but pearl-diadem only used for Constantius II). Attempt to pierce coin aborted.	C8

Table 5.20 (continued)
Catalogue of the Sculptor's Cave coin assemblage. RIC: Roman Imperial Coinage.

Coin	Status	Date range (AD)	Reverse	Ruler/obverse	Notes	Grid square (where known)
C25	Copy?	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman; ?//CSIS	Constantius II	Only 14mm, so probably contemporary copy. The mintmark probably was ESIS. For possible prototypes, see RIC VIII Siscia 210 passim	–
C26	Copy	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman; -//(GPLG?) Lyons	Constantius II	For possible prototype, RIC VIII Lyon 189; coin has jagged hole in centre	–
C27	Copy	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman; (PLG) Lyons	Unclear	For possibly prototypes, RIC VIII Lyon 186ff	B4
C28–40	Copy	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman – type often incomplete and blundered	Constantius II with parts of obverse legends visible	C36 pierced	C28=A5; C29=A6; C30=A6; C31=B5; C32=B3; C34=A6; C35=C3; C36=B5; C37=B3
C41–80	Probably all copies	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman – type often incomplete and blundered	Probably all Constantius II; no legends visible; busts/heads right	C57 and C64 pierced	C41=B3; C42=B4; C43=B4; C44=B4; C45=C3; C46=A4; C47=B4; C48=A3; C49=A3; C50=A4; C51=B3; C52=C5; C53=B4; C54=B3
C81–87	Copy	353–64	FEL TEMP REPARATIO; soldier advancing left spearing fallen horseman – type often incomplete and blundered	Obverse unclear	–	–
C88	?Copy	348–64	Unclear	Diademed bust right	Pierced	–
C89	Copy	*c* 330–64	Standing figure left?	Unclear	–	–
C90	Copy	*c* 330–64	Criss-cross pattern	Two parallel bars	–	–
C91–95	Probably all copies	*c* 330–64	Unclear	Some obverse legend and busts right	–	–
C96–119	Probably all copies	*c* 330–64	Unclear	Busts/heads right	–	–
C120–148	Probably all copies	*c* 330–64	Unclear	Unclear	–	–

Table 5.21
Chronological breakdown of the identifiable coins from the Sculptor's Cave

Date range (AD)	Regular	Copies/probable copies	Coin	Total
320–48	1	0	C16	**1**
330–48	6	9	C1–15	**15**
348–53	3	4	C17–23	**7**
353–63	1	64	C24–88	**65**
330–64	0	60	C89–148	**60**
Total	**11**	**137**	–	**148**

The only other coin hoard from Scotland with a generally comparable *terminus post quem* is the Balgreggan hoard of *c* 125 coins terminating with Decentius (AD 351–3) found near Stoneykirk in Wigtownshire in 1913 (Robertson 2000: 325, no. 1345). Other possible Scottish hoards of this general period listed by Robertson (ibid: nos 1260, 1283, 1450, 1454) are unlikely to be genuine, while three very late silver *siliquae* hoards, each with a *terminus post quem* of AD 402, from Traprain Law, East Lothian (Robertson 2000: no. 1617; Sekulla 1982: 291, nos 60–3), Norrie's Law, Fife (Bland et al 2013: 132) and Gaulcross, Aberdeenshire

Table 5.22
Major assemblages of Late Roman coins from Scotland

Site	County	No. of coins	Date range	Composition	Discovery circumstances	Notes	Reference
Dunragit	Wigtownshire	1000+	1st–4th centuries AD	Some early *aes* and one *denarius* of Severus Alexander (AD 226), but mostly official and barbarous coins of the later 3rd and 4th centuries AD	Metal detector finds along the sands of the Piltanton Burn's north bank (1998–2000)	70% of coins illegible. In Stranraer Museum.	Bateson and Holmes 2013: 248
Botel Motte, Buittle	Dumfriesshire	9 and 4	32/31 BC–AD 117 and *c* AD 337–61	9 coins from 32/31 BC–AD 117; 3 *nummi*, *c* AD 337–61; one unclear *as*	9 coins found by metal detector; 4 coins found on excavation.	Coins in Dumfries Museum	Bateson and Holmes 2003: 248
Springwood Park (Kelso)	Roxburghshire	*c* 284	32/31 BC–*c* AD 383/402	20 coins 32/31 BC–*c* AD 193; 53 coins AD 260–96; 198 coins AD 296–383/402; 13 illegible, mostly 3rd/4th centuries AD	Metal detector finds (1995–7); cf Sprouston finds (below).	Coins in the National Museum of Scotland; these coins present a very plausible group for British site finds.	Bateson and Holmes 1997: 534; 2003: 248; N Holmes, unpublished listing; Hunter 2010a: 97–8; Moorhead and Stuttard 2012: 216
Sprouston (Kelso)	Roxburghshire	17	32/31 BC–AD 375	1 Mark Antony *denarius*, 32/31 BC; 1 Nero *denarius*, AD 64/65; 4 radiates, AD 268–85; 11 *nummi*, AD 330–75	Said to have been found in fields to west of the village, between the school and the River Tweed (*c* 1970); cf Springwood finds (above).	Coins returned to owner; this group provides a very plausible group for British site finds and complements the Springwood Park finds.	Bateson and Holmes 2006: 165
Lilliesleaf	Roxburghshire	4	*c* AD 71–fourth century	2 coins, *c* AD 71–81; 1 *radiate*, *c* AD 260–70; one unclear fourth century	Found in a rectilinear native enclosure	–	Bateson and Holmes 1997: 531
Traprain Law	East Lothian	59	45 BC–*c* AD 402	24 coins, 45 BC–AD 260; 14 radiates, AD 260–96; 20 *nummi* and one *siliqua*, AD 296–402	Summary of all excavated coins	Silver hoard including 4 *siliquae*, AD 364–402; also metal-detected finds from Haddington (Bateson and Holmes 2006: 165): a *sestertius* and Constantine I *nummus* London, AD 313–7	Sekulla 1982; Robertson 2000: 402–3, no. 1617

Table 5.22 (continued)
Major assemblages of Late Roman coins from Scotland

Site	County	No. of coins	Date range	Composition	Discovery circumstances	Notes	Reference
Cramond	Midlothian	38	32/31 BC–AD 348	35 coins, 32/31 BC–early third century AD; 2 radiates, AD 260–74; one *nummus*, AD 347–8	1982, 1975–8 and 1976–7 excavations	For considering general distributions of coins in Scotland, these three groups can be combined	Robertson 1983: 407–8
Dreghorn	Ayrshire	36	AD 269–378	13 radiates, AD 269–*c* 285; 13 *nummi* AD 306–78; 10 uncertain fourth century AD	This is recorded as a potential hoard by Robertson, but Fraser Hunter has suggested the coins might be site finds	Other Roman finds are stored with the coins in the Grosvenor Museum, Chester	Robertson 2000: 354, no. 1454
Burghead	Moray	9	*c* AD 260–375	7 radiates, *c* AD 260–96; 2 *nummi*, *c* AD 351–75	Found with metal detector on the slopes of Granary Street on known Pictish fort (1968)	I assume that one of the *nummi* is a FEL TEMP REPARATIO falling horseman type	Bateson and Holmes 2013: 229
Covesea	Moray	*c* 244 (148 identifiable)	AD 330–64	1 *nummus*, *c* AD 320–48; 15 *nummi*, AD 330–48; 132 *nummi*, AD 348–64	Found in excavations in 1928–30 and 1979	–	Macdonald 1934: 29; unpublished lists by N Holmes, at NMS
Girnigoe	Caithness	33	*c* 260–378	5 radiates, *c* AD 260–85; 28 *nummi*, AD 310–78	Metal detector finds, but doubt has been cast on discovery	–	Hunter 2010a: 97; unpublished list by N Holmes at NMS
Outer Hebrides	North Uist	8	*c* 269–395	1 radiate, AD 269–71; 7 *nummi*, *c* AD 330–95	One coin from excavation; 5 chance finds; 2 metal detector finds on Baile Sear Beach are of eastern mint coins. Group should be used with caution.	–	Macdonald 1918: 249; 1924: 327; 1934: 32; Bateson and Holmes 2013: 229

(Goldberg et al 2015) are too late to be directly comparable. This further highlights the unusual nature of the Sculptor's Cave coins.

Late Roman site finds from northern England and Scotland

The general distribution of Late Roman coins in northern England and Scotland provides further context for the Sculptor's Cave material. For northern England, the large corpus of data recorded with the Portable Antiquities Scheme (PAS; finds.org.uk) enables a quick overview of the nature of Roman coinage in different parts of the province (table 5.24). Data for Scotland are problematic but have been periodically recorded in general surveys (Macdonald 1918; 1924; 1934; 1939; Robertson 1950; 1961; 1971; 1983; Bateson 1989; Bateson and Holmes 1997; 2003; 2006; 2013), covering both hoards and site finds.

Although the provenance of some hoards can be questioned (Reece 1991), finds from excavations and casual finds near to major Roman sites can generally be accepted as reliable. However, there are many stray finds from across the country which have little reliable provenance details and/or are almost certainly more recent losses. For example, in the Late Roman period, AD 260–402, coins from Scotland show a very strong bias towards mints in the eastern Mediterranean, which is strongly at odds with data from sites to the south in England; these exotic coins almost certainly came back to Scotland with servicemen returning from the two World Wars (Casey 1986: 108–11). As Hunter suggests (2010a: 96–8), however, it is possible to judiciously edit out most of the obvious modern intruders in the dataset, while metal detector finds from the last two decades do appear to present a more coherent pattern of coin finds which might be more reliable. Table 5.22 lists the larger assemblages which are most

Table 5.23

Hoards from England and Wales, terminating in FEL TEMP REPARATIO 'falling horseman' (FTR FH*) copies (*c* AD 353–64). Note that where totals exceed coins listed uncertain coins are not recorded; some of the AD 348–64 coins from Freckenham (Suffolk) are imitations; many of the coins from Great Casterton (Rutland) are not described, but it is assumed that they are from the period AD 330–64 (one *sestertius* and a copy of a *solidus* of Valentinian I are apparently associated with the hoard). The table draws on a full dataset of Iron Age and Roman coin hoards from Britain prepared by Eleanor Ghey as part of an AHRC-funded research project at the University of Leicester and the British Museum.

Name	County	No. of coins	Pre-AD 296	296–330	330–48	348–64 regular	348–53 irregular	353–64 FTR FH* irregular	Hoard grouping
Scotland									
The Sculptor's Cave	Morayshire	88	–	1?	15	3	4	65	B
South-west England/South Wales									
Whitesands Bay	Pembrokeshire	112	3	–	103	2	–	4?	C
Shipham	Somerset	860	–	6	–	593	74	187	B
Chesters Villa	Gloucestershire	6	3 radiates	–	–	1	1?	1?	(C)
Lydney (1928)	Gloucestershire	116	1 × 2nd cent AD *sest.*; 2 radiates	–	*c* 54	10	6	43	B
Lydney (1929)	Gloucestershire	1646	–	–	–	–	16?	1630	A
Oldcroft	Gloucestershire	3260	3	8	197	1430	*c* 404	1218	B
North Leigh	Oxfordshire	164	–	–	–	–	–	164	A
Cunetio (1960)	Wiltshire	28	–	–	21	–	1	6	B
South-east England									
Winchester, Victoria Road	Hampshire	52	–	–	6	1	2	43	A
Winchester (1963–4)	Hampshire	20	–	–	3	3?	1	13	B
Silchester (?Church)	Hampshire	7	1	?	3?	2	–	1	C
Silchester (Insula 1)	Hampshire	18	–	1	14	2	–	1	C
Cobham (Surrey)	Surrey	4	1 Greek	1	–	1	–	1	C
Hillingdon (London)	Middlesex	7	–	–	–	–	–	7	A
Colchester House (London)	Middlesex	107	2 radiates	–	60	7	–	38	B
Canterbury, Augustine House	Kent	80	1 radiate	3	50	11	1	14	B
East Farleigh	Kent	153	–	–	1	–	–	152	A
Chalk	Kent	119	6 radiates	–	1	4	–	108	A
Richborough (Hoard V)	Kent	246 legible of 1221	15 radiates	–	*c* 93	1	–	137	B
Colchester, Butt Road	Essex	6	–	–	–	–	3	3	A
West Bergholt or Great Horkesley	Essex	21	–	–	–	–	–	21	A

Table 5.23 (continued)

Name	County	No. of coins	Pre-AD 296	296–330	330–48	348–64 regular	348–53 irregular	353–64 FTR FH* irregular	Hoard grouping
East Anglia									
Freckenham	Suffolk	542	–	3	6	365	–	168	B
'Norfolk'	Norfolk	10	–	–	–	–	–	10	A
Hockwold II	Norfolk	815	2	1	587	1	–	224	B
Cambridge	Cambridgeshire	17	–	–	1	1	–	15	A
Great Stourton villa	Cambridgeshire	*c* 200	–	–	–	–	–	many	(A)
Midlands									
Bancroft	Milton Keynes	16	–	1	11	2	–	2?	C
Duston	Northamptonshire	12	7 radiates	–	–	–	–	5	A
Higham Ferrers	Northamptonshire	90 legible of 129	1 × 2nd cent AD *sest*; 8 radiates	–	77	*c* 3	–	1+	C
Great Casterton	Rutland	327	–	–	4	1	–	Up to 322	A
Coleshill	Warwickshire	3180	–	1	1910	1113	152	4	C
Wroxeter	Shropshire	58	–	–	14	23	4	17	B
Besthorpe	Nottinghamshire	1347	–	6	404	576	115	246	B
Wellingore	Lincolnshire	20	–	–	–	–	–	20	A
Tickhill II	South Yorkshire	45	2 × 2nd cent AD *sest.*; 1 radiate	–	3	25	1	13	B

Table 5.24
Roman coins from northern England (PAS data for coins with Reece (1995) Period recorded; extracted 14.1.2016) and southern Scotland (see table 5.22 for Scottish site finds)

Site/region	Total Roman coins	No. of coins AD 260–402	AD 330–48 (Reece Period 17)	AD 348–64 (Reece Period 18)	Period 18: FEL TEMP REPARATIO 'falling horseman'	No. of coins AD 364–402
Yorkshire and Humberside	11612	9592	2564	1065	536	2000
North-west England	1382	517	84	40	23	70
North-east England	1590	513	96	62	25	66
Springwood Park, Kelso	284	144	52 (estimate)	16	15	61
Traprain Law	63	35	1	3	–	10
Cramond	38	3	1	–	–	–

likely to be reliable, effectively ignoring the myriad of stray finds which cannot be verified (although the detailed provenance and circumstances of discovery for some of the groups in table 5.23 can still be questioned).

Table 5.22 shows that the majority of Late Roman coins are found in southern Scotland, a region where there would have been most contact with the northern frontier of the Roman province. The major assemblages are from Dunragit (Wigtownshire), Buittle (Kirkcudbrightshire) and Springwood Park and Sprouston (Kelso, Roxburghshire). There is also a potential group of site finds from Dreghorn (Ayrshire) which comprises 36 Late Roman pieces, although the exact status of these coins remains uncertain. Further north there are a significant number of Late Roman coins from the excavations at Traprain Law (East Lothian), but even at Cramond (Midlothian) the proportion of Late Roman coins plummets. Table 5.24 shows a breakdown of coins by region from northern England, alongside some major assemblages from southern Scotland. This further confirms the decline in the numbers of Late Roman coins moving northwards from Yorkshire through to southern Scotland, but does show that a significant number of coins from the period AD 330–64, which make up the Sculptor's Cave find, had reached as far north as Springwood Park in Roxburghshire. Another concentration appears to have been present at Dunragit (Wigtownshire), where the majority of >1000 coins were official and barbarous late third- and fourth-century pieces, but the short report by Bateson and Holmes (2013: 248) does not enable any quantification. These few assemblages can hardly be used to argue for any widespread form of functioning monetary economy in southern Scotland.

North of the Forth, table 5.22 shows very few coin finds. Nine coins were reported to have been found in 1968 on the site of the Pictish fort at Burghead (Moray), of which one might be a FEL TEMP REPARATIO 'falling horseman' type, similar to those found at the Sculptor's Cave (Bateson and Holmes 2013: 229). There is also a group of 33 coins, ranging from AD 260–378, reputed to have been found by a metal detectorist at Girnigoe in Caithness, although there are doubts about the authenticity of this find. Finally, one should note several coins from North Uist (Outer Hebrides), of which some appear to be ancient losses (Macdonald 1918: 249; 1924: 327; 1934: 32; Bateson and Holmes 2013: 229). These examples do show that some coins were moving north from the Roman province even deeper into Scottish territory.

This evidence suggests that it is highly unlikely that the Sculptor's Cave, Burghead or Girnigoe coins were drawn from a source north of southern Scotland. Indeed, given the small numbers of Late Roman coins north of Yorkshire, one can assume that the coins probably originated from the eastern side of Yorkshire or further south on the east coast of England, while the coastal nature of the north-east Scottish finds suggests that they arrived by sea. Whether their agents were from Scotland or the Roman province is unknown, but the dedication by the Caledonian, Lossio Veda, at Colchester reminds us that either is possible (Collingwood and Wright 1991a: no. 191). It is probably too speculative to suggest that the Sculptor's Cave coins might in some way be connected with the 'Great Barbarian Conspiracy' of AD 367, during which, Ammianus Marcellinus (26.4.5) informs us, Picts, Scots and Saxons all colluded to invade the Roman diocese. There does appear to be more to this event than meets the eye, however, with a Roman exile, Valentinus, fomenting insurrection in Britain (Moorhead and Stuttard 2012: 213–15; Hunter 2014a: 209). It is also interesting that coastal finds are not unusual in peripheral zones of Roman Britain (eg Reece 1991).

Illustration 5.53
Pierced coins. Top row, left–right: C15, C2, C3; middle row, left–right: C36, C4, C88; bottom row, left–right: C57, C64, C16

Pierced coins

Nine coins had been pierced, perhaps for use in personal adornment (illus 5.53, 5.61; table 5.25), while another has an attempted piercing (C24). One of the pieces (C4) has two loops of wire attached; one loop is inserted in the piercing, the second through the primary loop, probably to enable suspension, perhaps as a pendant: indeed, one might assume that this was the intended use of all the pierced coins. It is even possible that some or all of the coins might have hung on a necklace together (see section 5.14.3; illus 5.61).

Pierced Roman coins are commonplace across England and Wales. Some were probably pierced as part of a ritual practice, most notably at a Late Roman shrine in west Wiltshire, where over 20 pierced coins with metal nails/rivets inserted have been found within a large assemblage of votive offerings (Richard Henry and Philippa Walton pers comm). Coins deposited for ritual purposes could also be bent, cut or mutilated, as in the assemblage from the River Tees at Piercebridge (Walton 2012: 152–66; forthcoming). Pierced coins are regularly found in Saxon burials (King 1988; White 1988; Moorhead 2006), where they might have had some talismanic or even religious properties.

Two of the pierced coins, and the coin with an attempted piercing, are FEL TEMP REPARATIO 'fallen horseman' coins (C36, C46, C24), while three other pierced coins are of the VRBS ROMA type, showing the wolf and twins: one of the most potent symbols of *romanitas*. It seems highly likely that these coins were specially chosen to be pierced, suggesting that the user(s) was especially interested in their inscription and/or design. Were these coins pierced further south in the Roman diocese, or were they pierced by the agents who brought them north? Is it

Table 5.25
Details of pierced coins from the Sculptor's Cave

Coin	Piercing location (in relation to obverse)	Coin/date (summary)	Motif (obverse; reverse)	Piercing diameter (mm)	Notes
C2	12 o'clock	Follis 330–41	Helmeted bust left; wolf and twins	2.8	–
C3	3 o'clock	?Copy 330–41	Helmeted bust left; wolf and twins	2	–
C4	6 o'clock	Follis 330–41	Helmeted bust left; wolf and twins	2	Links still attached. Large penannular link, the ends overlapped through the piercing (dimensions: 11.5mm × 10.2mm; section: 1.2mm); smaller D-sectioned link attached to the larger one, the ends slightly overlapped (dimensions: 6.6mm × 5.2mm; section: 1.6mm × 0.5mm)
C15	2 o'clock	Follis 347–8	Constans; two Victories	2	–
C16	9 o'clock	Follis 320–41	House of Constantine? (diademed bust right); unclear	2	–
C36	9 o'clock	Copy 353–64	Constantius I; soldier advancing left spearing fallen horseman	1	Also two attempts at piercing, one at 12 o'clock, another at 9 o'clock; very small perforation
C57	10 o'clock	Copy 353–64	Probably Constantius II; soldier advancing left spearing fallen horseman	3	–
C64	2 o'clock	Copy 353–64	Probably Constantius II; soldier advancing left spearing fallen horseman	1	–
C88	5 o'clock	?Copy 348–64	Diademed bust right; unclear	2.5	–

possible that they were worn by visitors to or invaders of the Roman province? The presence of the coins in a cave which has a deep history of deposition might suggest a potential religious motivation.

The deposition of coins at the Sculptor's Cave

There are examples of Roman coins in caves from Somerset, through Wales to the Pennines (see table 5.26), although post-depositional processes often lead to the original contexts being heavily disturbed. Why the Roman coins were deposited in the Sculptor's Cave might not be so much of a mystery. Given that the coins were not used as currency in the area, it seems unlikely that they were merely secluded for safekeeping. Given the nature of other material in the cave, it is certainly possible that they were deposited in some form of ritual, as was apparently the case with the two earlier hoards of Roman silver coins at Birnie (Moray) (Holmes 2006).

Conclusion

The coins found in the Sculptor's Cave are not in themselves unusual, but their provenance so far north of the Roman frontier is exceptional. It is clear from other finds of Late Roman coins in Scotland that these do not represent currency that was in everyday circulation. Only two other groups of Late Roman coins are known from north-east Scotland and neither has a secure provenance. In the first instance, the Sculptor's Cave coins constitute a quite plausible hoard within the general context of Roman Britain, there being 35 hoards which share the same

Table 5.26
Roman coins from cave sites in England and Wales

Name	County	No. of coins	Date from (AD)	Date to (AD)
White Woman's Hole	Somerset	200	260	395
Hyena Den Cave, Wookey Hole	Somerset	Unspecified	?*c* 355	383
Wookey Hole (Holy Hole)	Somerset	14	260	274
Gough's Cave	Somerset	10	260	375
Cheddar	Somerset	25	337	348
Pride Evans' Hole	Somerset	47	260	285
'Isle of Wight'	Isle of Wight	8 *sest.*	98	189
Llansadurnen/Cyngadel	Carmarthen	14	275	296
Llandeilo Castle	Carmarthen	2	306	361
Cefn-Pwll-Du	Caerphilly	2 + 2 unspecified	268	275
Ogof-Yr-Esgyrn, Dan-Yr-Ogof Caves (Brecknock)	Powys	6	69	138
Ogof-Yr-Esgyrn, Dan-Yr-Ogof Caves (Brecknock)	Powys	4	330	341
Llanymynech	Powys	33	32 BC	161
Nether Haddon	Derbyshire	4	284	341
Reynard's Cave	Derbyshire	First find unspecified; later find: 26 Iron Age and 1 Republican	118 BC	*c* 30/50
Monyash	Derbyshire	6	141	340
Ashover	Derbyshire	42	1 Iron Age	193–244
Pudsey	West Yorkshire	8	260	375
Victoria Cave	North Yorkshire	Numerous	260	320s/350s

terminus post quem from England and Wales. The Sculptor's Cave material fits within a sub-group of this corpus which contains eight finds, three of them among the most northerly in England. Given the context of human activity at the Sculptor's Cave, the hoard seems likely to have been deposited for ritual reasons. The piercing of the coins, notably the VRBS ROMA/wolf and twins type, shows that the owner(s) of the coins took more than a cursory interest in the pieces and the coins apparently at some stage performed a decorative function.

Although these coins might have been drawn from southern Scotland, just to the north of the Hadrianic frontier, it is more likely that they came from further south, possibly from East Yorkshire or a neighbouring region. Who took the coins north will always remain a mystery, but it is possible that increased raiding of the Roman diocese by the Picts in the Late Roman period was responsible.

5.8 Iron

Gemma Cruickshanks

5.8.1 Introduction

Twenty-one iron artefacts were recovered from the Sculptor's Cave, mostly during the Shepherd excavations (full catalogue in archive). Many of these are modern and not catalogued here. A rod fragment (SF108) was stratified in Phase 2, suggesting it could be Iron Age. Unfortunately, it is missing both ends, leaving its identification obscure. The pin/fine tool tip (SF876) and fine wire (SF877) are undiagnostic and could either be intrusive or potentially Early Iron Age. SF876 was recovered within Phase 1, where it is presumably intrusive.

The only iron artefact from Benton's excavations was described as a 'Viking rivet' (SF878; illus 5.54) and was recovered from upper mixed Layer 1 (Benton 1931: 180). It is a clench bolt, similar to an example found by the Shepherds (SF60), but such fittings have a lengthy history and are not chronologically distinct.

The lack of distinctly Iron Age or Roman ironwork is at odds with the otherwise rich assemblage and could reflect poor preservation conditions. However, other gaps in the assemblage (eg querns, spindle whorls) suggest that certain types of object were simply not deposited here, reflecting deliberate selection.

5.8.2 Catalogue

SF60 (not illustrated) A flat, sub-square head with a circular-sectioned, slightly bent shank. The other end expands before break suggesting that there was a rove/plate rather than a tip. Probably fairly recent due to lack of corrosion. Length: 40mm; head dimensions: 24mm × 24mm × 6mm; shank thickness: 8.5mm; weight: 22g. Unphased, Unstratified (Area III).

SF108 (not illustrated) Tapering, circular-sectioned rod with both ends broken. Could be from a nail, pin or tool. Length: 23mm; diameter: 5mm; weight: 1.5g. Phase: 2, Block: 2.6, Context: IIb4.

SF876 (not illustrated) The pointed tip of a circular-sectioned rod. Possibly a pin or tool tip, or the end of a piece of wire, but too small to be diagnostic. Length: 5mm; diameter: 1mm; weight: 0.06g. Phase: 1, Block: 1.2, Context: Ia20.

SF877 (not illustrated) Very fine bent iron wire fragment. Both ends are broken. Length: 6mm; diameter: 0.5mm; weight: 0.01g. Phase: 2, Block: 2.5, Context: IIb14.

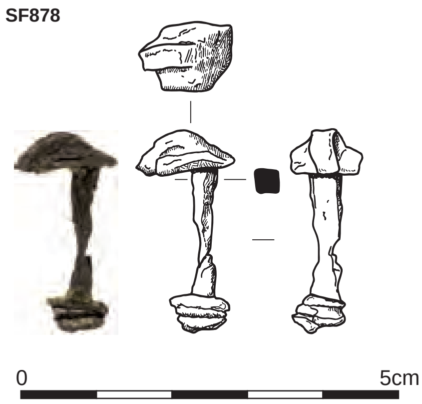

Illustration 5.54
Iron rivet

SF878 (illus 5.54) Clench bolt with square-sectioned shank. Fragmentary flat, sub-rectangular head at one end and part of flat head at the other, with all edges missing. Length: 52mm; shank thickness: 6mm; surviving head dimensions: 24mm × 16mm. Unphased, Context: Benton Layer 1, grid square A6.

5.9 Amber

Fraser Hunter

5.9.1 Introduction

Eight amber beads recovered from Benton's excavations (Beck and Shennan 1991: 186; illus 5.55) show considerable variation in form but are united by two factors: all show a considerable degree of wear and all bar one are intact. The distribution indicates that they are not from a single necklace, but they do form two clusters which represent discrete deposits: three beads (SF920–2) at the rear of the cave and four (SF923, SF925–7) at the inner end of the East Passage.

Amber is well known in Late Bronze Age contexts, notably from hoards (eg Adabrock, Lewis; Balmashanner, Angus; St Andrews, Fife; Anderson 1892: 186–7; 1911; Trevor Cowie pers comm), but current knowledge does not allow their separation from Iron Age examples. None of the Sculptor's Cave finds come from secure Late Bronze Age levels, and it is notable that no amber came from the Shepherds' excavations, while some finds come from the rear of the cave, where Bronze Age material was scarce. It thus seems most likely that they are Iron Age in date.

The occurrence of Iron Age amber has been reviewed elsewhere (Hunter 1998c; Hunter et al 2009: 139). Synthesis of this data (table 5.27) indicates that amber is notably rare in north-east Scotland; the only other known example comes from the later Iron Age settlement at Birnie (Hunter in prep). This rarity is rather surprising given that amber was presumably being washed ashore on the east coast or exchanged up and down the coast by communities who had access to it. It does suggest that, in a local context, these would have been particularly valued items; a value reflected by their extensive wear.

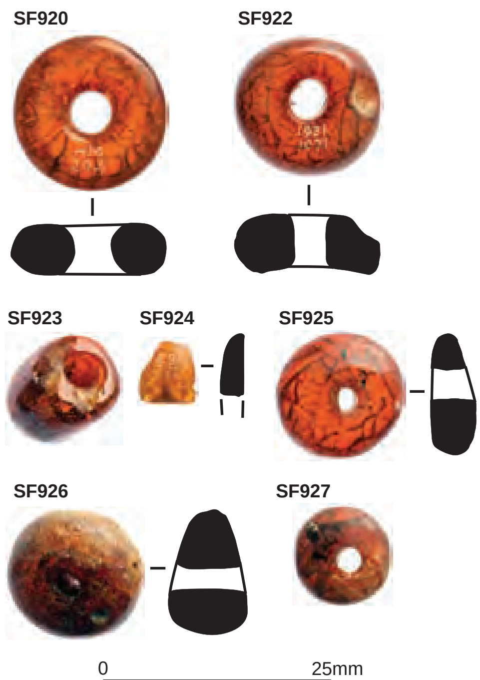

Illustration 5.55
Amber beads

Table 5.27
Regional occurrence of amber in Iron Age Scotland (from data in Hunter 1998c and Hunter et al 2009: 139, with additions)

Area	No. of sites
South-east	6
North-east	2
Atlantic North	4
Atlantic West	7
South-west	2

5.9.2 Catalogue

SF920 (illus 5.55) Annular amber bead; near-circular section, slightly flattened on one side, with biconical perforation. Dulled through extensive wear on faces and edge. External diameter: 17mm; height: 5.3mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square C7.

SF921 (not illustrated) Annular amber bead. External diameter: 16mm; perforation diameter: 6mm. Unphased, Context: Benton Layer 1, grid square C7.

SF922 (illus 5.55) Annular amber bead, plano-convex in overall section, with one flat face and the edges and top slightly rounded. Cylindrical perforation made oval from wear; faces and edge dulled from wear. Small hollow (damage?) in one area. External diameter: 15.5mm × 16.5mm; height: 7mm; perforation diameter: 4mm. Unphased, Context: Benton Layer 1, grid square B6.

SF923 (illus 5.55) Barrel-shaped amber bead; slightly squashed oval section, the ends broken and misshapen from use, with surviving original portions of the ends dulled with wear. Length: 11.2mm; external diameter: 11.5mm × 9.7mm; perforation diameter: 3.2mm. Unphased, Context: Benton Layer 1, grid square D3.

SF924 (illus 5.55) Fragment (around a quarter) of a small barrel-shaped amber bead, slightly tapered to one end, with flattened faces dulled with wear. Cylindrical perforation. Less orange-red than the others. Estimated diameter: 8mm; height: 7mm. Unphased, Unstratified.

SF925 (illus 5.55) Irregular discoidal bead with plano-convex section and rounded edges, slightly tapered, with slightly off-centre drilled perforation. All-over wear. External diameter: 11mm; thickness: 4.5mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square D3.

SF926 (illus 5.55) Globular amber bead with notably tapered section, flat faces and rounded edges with faint traces of facets from manufacture. Central drilled perforation, slightly oval at one end and slightly angled, indicating it was drilled from both sides. Surfaces dulled from wear. External diameter: 14.5–15mm; thickness: 5–10mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square D3.

SF927 (illus 5.55) Irregular discoidal bead, very similar to SF925; wear around perforation including flake on the flat side, polished from continued use. Notable flattened facet around the perforation from use; edges unworn. External diameter: 14.5mm; height: 6mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square D4.

5.10 Oil shale

Fraser Hunter

5.10.1 Introduction

The excavations produced a combined tally of two beads and two bangles (illus 5.56). Their nature indicates that they are oil shale, the most local source being the Brora deposits across the Moray Firth to the north. This would make them locally exotic: oil shale and related materials are uncommon locally in later prehistory (Hunter 2015a: illus 13.4a). This also explains the degree of attention paid to extending their lives, with both the bangles showing extended use: one has been repaired and then extensively used, the other converted into blanks for beads. Of the two beads, one is well-used, the other unfinished, but it is rather large to be the product of reusing a bangle and suggests some import of raw material as well as finished products. This is rare in the area, but is attested by one bead blank from Birnie.

5.10.2 Catalogue

SF911 (illus 5.56) Broken bangle, reshaped to make beads. Oval-sectioned, the narrower end of the oval towards the interior. Well finished, but with slight tooling facets and abrasion scars on the interior and an unexplained series of regular fine dots on the inner circumference, presumably tool marks. Use-wear scratches on surface. One end was broken relatively recently; the other has two crudely cut collars creating irregular rings 5–7mm in width. The end is broken, suggesting such a ring has already been removed, most likely to form blanks for bead manufacture. The granular fracture surface suggests it is an oil shale. Length: 59.5mm; width: 13.5–14.5mm; height: 13mm; internal diameter: 80–85mm (20% survives). Phase: 1, Block: 1.2, Context: Ia23c.

SF912 (illus 5.56) Annular bead, D-sectioned with flattened faces. Biconical perforation, well polished from use. Laminar cracking and granular fracture indicate this is an oil shale. External diameter: 15mm; height: 6.5mm; perforation diameter: min. 3.2mm, max. 4.5mm. Unphased, Context: Benton Layer 1, grid square D4.

SF913 (illus 5.56) Unfinished annular bead; thick disc with flat faces and near-vertical edges with bevelled corners. Abrasion scars all over; relict facets visible on the edge. Cylindrical perforation with slightly countersunk ends. Laminar cracking and granular fracture identify it as oil shale. External diameter: 15mm; height: 6.5mm; perforation diameter: 3mm. Unphased, Context: Benton Layer 1, grid square D4.

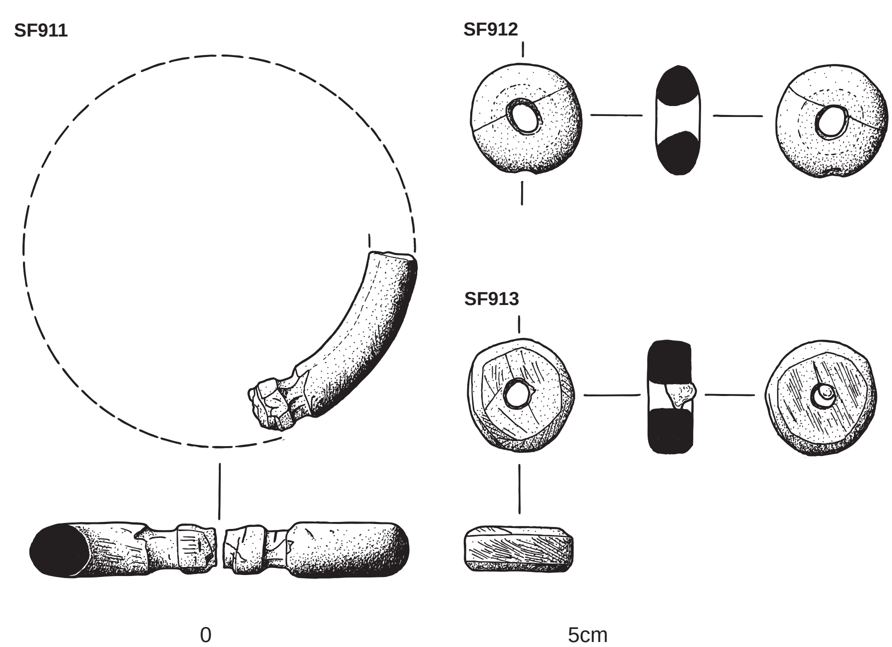

Illustration 5.56
Oil shale artefacts

SF914 (not illustrated) Fragment from a repaired bangle with a relatively narrow D-section as it survives; slightly rounded facet along the top; less than half the section is preserved. One end is very neatly squared off, with a transverse cylindrical perforation (countersunk at one end) to repair it; this has seen extended use, as it has worn into a curve towards the fracture. Broken across the repair; probably accidental damage. Very smooth, well finished surfaces; probably oil shale. Length: 19mm; width: 5mm; (incomplete) height: 6mm; internal diameter: 75–80mm (8% survives). Unphased, Context: Benton Layer 1, grid square D7.

5.11 Fossil plant stem

Fraser Hunter

A small *crinoidea* fossil fragment (SF955) is present among Benton's assemblage but is not mentioned in her publication, leaving its find location unknown. Dr Andrew Ross (Curator of Palaeo-biology at NMS) noted that such fossils have a wide distribution, making it difficult to determine whether it was found locally or further afield, although, given the nature of the site, it seems likely to have been deliberately brought there and deposited.

Although the use of fossils is better known in the Early Bronze Age (eg Oakley 1965a; 1965b) and Anglo-Saxon periods (eg Meaney 1981), a few examples are known from Iron Age sites. A cache of charmstones deposited in an older burial mound at Monquhitter, Aberdeenshire, included fossil sea urchins alongside a variety of striking natural stones, a flint tool and various unusual Iron Age items (Stevenson 1967), while a flattened cylindrical whetstone made from a badly worn plant fossil was found at Braehead enclosure, Glasgow (McLaren and Hunter 2007: 222, and unpublished archive report).

Outwith Scotland, a few examples were noted from the Meare West Lake Village, including a Pleisosaurus vertebra and an ammonite reused as a spindle whorl (Bulleid and Gray 1948: 101, table x; Gray 1966: 410), while Lidbury Camp, Wiltshire, produced a fossil sea urchin in a pit (Cunnington 1917: 23). The evidence is scattered and unsynthesised but shows an interest in unusual found objects, both natural and ancient, as the flint at Monquhitter indicates. The Covesea fossil and the Monquhitter cache are both likely to represent deposition of valued or unusual objects in special places.

SF955 Fossil plant stem. Length: 16mm; width: 9mm; thickness: 8mm. Unphased, Unstratified.

5.12 Orpiment

Gemma Cruickshanks

A small yellow mineral fragment (SF954; illus 5.57) recovered during Benton's excavations has been confirmed as orpiment through X-ray diffraction (XRD) analysis by Peter Davidson at National Museums Scotland. A second fragment found by Benton in grid square B4 (1931: 201) does not survive. Orpiment was employed as a yellow pigment and is traditionally associated with illuminating early medieval manuscripts but may have been used as a colourant for various purposes. A single fragment was found at Dunadd, Argyll (Lane and Campbell 2000: 212), but it is otherwise a very rare find and was certainly imported, most likely from the Mediterranean area. How this exotic mineral arrived at the Sculptor's Cave is unknown, but it provides further evidence of exotic contacts. Its use as a pigment may be related to the samian sherds with abraded edges, which were probably ground to produce red pigment (see section 5.2.3), though there are no worked surfaces on the orpiment to confirm this.

SF954 (illus 5.57) Small yellow fragment of orpiment. Length: 14mm; width: 10mm; thickness: 3mm. Unphased, Context: Benton Layer 1, grid square B6.

Illustration 5.57
Fragment of orpiment

5.13 Glass

5.13.1 Glass objects

Fraser Hunter and Mary Davis

Introduction

The glass assemblage from the Sculptor's Cave comprises eight beads (illus 5.58, 5.61), one small block of red glass (illus 5.58) and a piece of Roman vessel glass which is reported separately (section 5.13.2; illus 5.59). All are from Benton's excavations (apart from one bead (SF860) recovered from her spoil heap in 2014) and are thus effectively unstratified. They usefully demonstrate the problems of bead identification and the need to correlate typology and scientific analysis of composition. All had been studied by Margaret Guido in her classic work on glass beads (1978) and categorised as either Iron Age (based on find circumstances) or, in two cases, Roman imports (table 5.28). Yet only four are typologically distinctive – a yellow annular bead (SF860), a blue bead with a wave trail (SF864) and two strongly coloured green Roman beads (SF867, SF868) – while a further bead (SF870) is a reused Roman glass sherd. The remainder are typologically nondescript. Scientific analysis (by energy-dispersive X-ray fluorescence in a scanning

Table 5.28
Summary of the glass beads from the Sculptor's Cave

Date	Artefact	Type (Guido 1978)
Late Bronze Age	SF866	Opaque turquoise (Group 7 iv)
Iron Age/Roman Iron Age	SF864	Blue with white wave trail (Group 5 a)
	SF860	Yellow (Class 8)
Roman	SF867	Green cuboidal
	SF868	Green pentagonal
	SF870	Reused Roman vessel base
Early medieval	SF865	Translucent blue annular (Group 6 iv a)
High medieval	SF869	Translucent pale green annular (Group 6 ii b/iii b)

electron microscope, following the sampling methodology of Bronk and Freestone 2001) indicates that one of the beads (SF866) is Late Bronze Age, one early medieval (SF865) and one high medieval (SF869) (tables 5.29, 5.30; detailed methods are contained in the site archive, with summaries of the analytical findings incorporated into the catalogue entries below). The combination of typological study and scientific analysis is thus essential to make sense of any assemblage (Blackwell and Kirk 2015).

Late Bronze Age glass beads are rare finds in Scotland, with the only other known example coming from the Adabrock hoard on Lewis (Anderson 1911:

Table 5.29
SEM EDS analysis of the glass beads from the Sculptor's Cave (nd: not detected; tr: trace)

Bead	Colour	Element																	
		Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO_2	Cl	K_2O	CaO	TiO_2	MnO	FeO	CoO	CuO	ZnO	SnO_2	Sb_2O_3	PbO
SF860	Yellow	18.23	0.46	2.05	63.08	tr	nd	0.97	0.45	4.52	tr	tr	0.40	tr	tr	tr	tr	0.18	9.08
SF864	Blue	17.70	0.38	2.19	70.22	tr	0.15	1.03	0.63	5.33	tr	0.77	0.76	0.20	tr	tr	nd	nd	tr
SF864	White	17.05	0.42	2.41	69.13	0.17	0.23	0.90	0.71	6.45	tr	0.34	0.35	nd	tr	tr	nd	0.78	0.62
SF865	Blue	14.94	4.90	1.79	64.56	0.29	0.31	0.53	3.15	6.18	0.13	1.22	0.94	0.10	tr	0.24	nd	nd	0.35
SF866	Light blue	16.28	0.18	0.87	68.38	tr	0.23	0.86	3.34	5.13	tr	tr	0.23	nd	4.29	tr	nd	nd	tr
SF867	Light blue	21.85	0.41	1.71	66.20	nd	0.35	1.46	0.33	5.34	tr	tr	0.40	nd	1.44	tr	nd	nd	0.36
SF868	Green	19.65	0.83	2.30	66.18	0.13	0.36	1.20	0.34	4.08	0.19	0.44	1.13	tr	1.65	tr	nd	nd	1.43
SF869	Pale green	2.48	4.73	2.87	60.82	2.89	0.11	0.31	8.86	14.10	0.48	0.95	0.79	tr	tr	tr	nd	nd	tr

Table 5.30
SEM EDS analysis of the 'base' glass composition of the beads from the Sculptor's Cave normalised to 100% (tr: trace)

Bead	Colour	Element										
		Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO_2	Cl	K_2O	CaO	TiO_2	MnO
SF860	Yellow	20.28	0.51	2.28	70.16	tr	0.00	1.08	0.50	5.03	tr	tr
SF864	Blue	17.96	0.39	2.22	71.24	0.08	0.15	1.05	0.64	5.41	tr	0.78
SF864	White	17.42	0.43	2.47	70.64	0.17	0.24	0.92	0.72	6.59	tr	0.34
SF865	Blue	15.24	5.00	1.83	65.88	0.29	0.32	0.54	3.21	6.30	0.13	1.25
SF866	Light blue	17.08	0.18	0.91	71.73	tr	0.24	0.90	3.51	5.38	tr	tr
SF867	Light blue	22.37	0.42	1.75	67.76	tr	0.36	1.49	0.34	5.47	tr	tr
SF868	Green	20.53	0.87	2.41	69.15	0.14	0.37	1.25	0.36	4.26	0.20	0.46
SF869	Pale green	2.51	4.80	2.91	61.70	2.93	0.11	0.31	8.98	14.30	0.48	0.96

34). They are more common in Ireland and southern Britain (Henderson 1988; 1989), and their virtual absence in Scotland probably relates to the small number of excavated settlements of this period.

The yellow annular bead (Guido's Class 8) is a typical local Iron Age product, but the blue wave-trail bead is altogether rarer in north-east Scotland, where only three other examples have been recorded (one from Alford and two provenanced only to Aberdeenshire; Guido 1978: 132; Foulds 2014: nos 17616, 17618 = Aberdeen University Museums 15532, 15533). The type is a long-lived one, from the Iron Age to the early medieval period, but compositional analysis indicates that this example is Romano-British and probably best seen as a Roman import (they are regular finds on Roman sites in Britain). Certain Roman imports are the two strongly coloured green beads and the tubular base sherd from a glass vessel reused as a bead. Interestingly, all three clearly Roman finds show heavy wear, with damage worn smooth by extended use; while all beads from the site show evidence of use, none are so pronounced as these visibly exotic Roman ones.

The Late Bronze Age and Iron Age/Roman beads fit the main periods of artefact deposition in the cave, while the early and high medieval examples suggest continued intermittent visitors.

There is also an intriguing small block of opaque red glass (SF871) from Benton's excavations, with flaking of the edges suggesting pieces have been removed. Its shape and composition indicate that it is a Roman tessera. Such small glass blocks were used within the empire to make up designs in floor mosaics (although rarely in Britain; Neal and Cosh 2002: 20) or other architectural decoration, such as designs on interior walls; examples are known from the frontier zone, for instance from Castlecary on the Antonine Wall (Christison et al 1903: 338). They occur on a few Scottish early medieval sites, where it is usually argued that they were imported as raw material in glass-working (summarised in Lane and Campbell 2000: 173; Campbell 2006: 102). In a Roman Iron Age context (as is likely here), it is a most unusual find. Its colour is striking and a number of other aspects of the site assemblage suggest an interest in colour, notably the orpiment and the reused samian, although, unlike these, the glass could not readily be ground up for pigment. Its likely use would be as an inlay in glass jewellery or enamel on metalwork, and it was presumably brought to the cave as a token either of the craft process or for its colour symbolism. Evidence for glass-working and enamelling is rare in Iron Age Scotland (Hunter 2015a: 235), although surviving products show that the technique was widely used. Red glass is particularly rare: there is some very limited evidence for its use

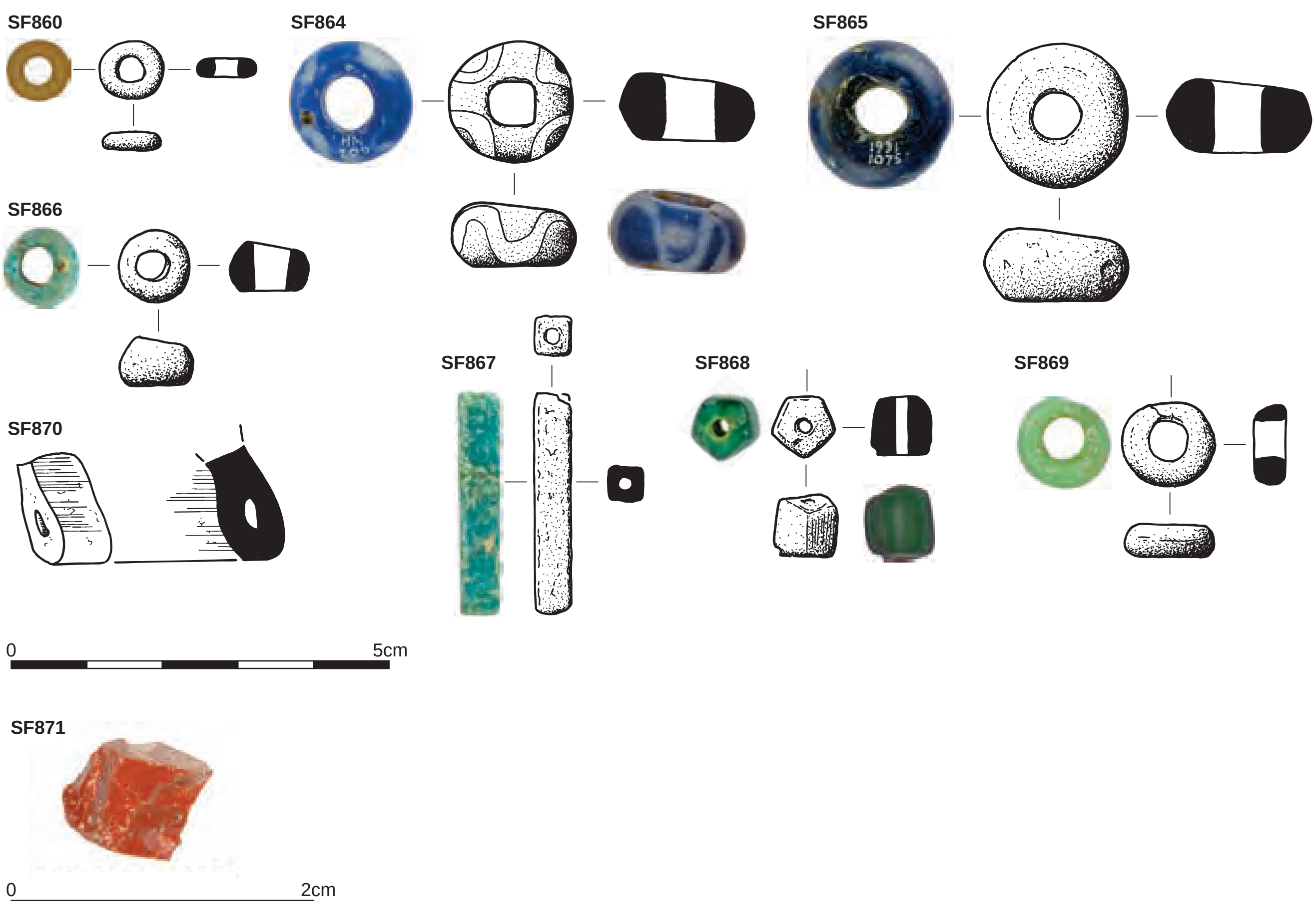

Illustration 5.58
Glass beads and tessera

in jewellery, but its more common role was for glass inlays or enamels on copper alloy. The Moray Firth coast had a strong Iron Age glass-working tradition, and excavations at Culduthel, near Inverness, recovered red glass-working debris (Hunter forthcoming c).

Catalogue

SF860 (illus 5.58) Iron Age annular opaque yellow bead with near-circular section, flattened internally at perforation; faces slightly worn from use (Guido 1978: 73–6, Class 8). The composition is particularly close to similar beads from Birnie, which probably date from the first to second centuries AD (Davis in prep). The Sculptor's Cave bead is coloured using lead antimonate, the most common yellow colourant for this period. External diameter: 8mm; height: 2.8mm; perforation diameter: 2.8mm. Unphased, Context: Benton's spoil heap.

SF864 (illus 5.58) Annular trail-decorated bead with tapered D-section; translucent mid-blue with sinuous white opaque trail. Wear on surfaces and around perforation edges, where there is also extensive use-polish. Typologically distinctive but a long-lived type, from Iron Age to early medieval (Guido 1978: 132, Group 5a). The elemental composition of both the blue and pale glass is similar to many Romano-British glass vessels dating from the first to third centuries AD. The blue colour is due to the addition of cobalt. The white decoration contains antimony and has slightly elevated calcium and lead oxide levels, indicating that this colour is produced by the inclusion of calcium antimonite (Shortland 2002). The addition of lead may have eased the decorating process by lowering the melting point of the white glass as it was applied. External diameter: 16.3mm; height: 7.6–9.3mm; perforation diameter: 6.9mm. Unphased, Context: Benton Layer 1, grid square D6.

SF865 (illus 5.58) Annular translucent mid-blue bead, D-sectioned with flattened faces. Surfaces worn, with polish and chipping from use around the perforation. Typologically long-lived (Guido 1978: 155, Group 6 iva; Guido gives the wrong number). The bead is predominantly a soda-lime silica (natron) glass but has elevated levels of magnesia, potash and phosphorus oxide, all indicative of the addition of plant ash, suggestive of a date in the sixth century AD or later (Freestone et al 2008: 40). However, if the oxides associated with plant ash glass (magnesia, potash and phosphorus oxides) are replaced with values normally associated with Romano-British soda-lime-silica glass, the values of other elements such as soda, silica and lime within the base glass match those of the other dark blue glass beads from the site. This suggests that, at some point after the mid-sixth century AD, a first- to third-century cobalt blue glass was augmented with plant ash before being formed into a bead. External diameter: 18.3–19.3mm; height: 8.5–9.2mm; perforation diameter: 6.4mm. Unphased, Context: Benton Layer 1, grid square C7.

SF866 (illus 5.58) Opaque turquoise, slightly irregular barrel-shaped bead; surface decayed but clearly well-used as the perforation is oval at one end from wear. Slightly tapered section. Typologically undiagnostic (Guido 1978: 172, Group 7 iv). The composition of this bead is distinct from the others and can be interpreted as a 'low magnesium high potassium' (LMHK) glass characteristic of the later Bronze Age in Britain (Paynter 2014) and Europe (Henderson 1988; Brill 1992). It may be locally produced, perhaps at Culbin Sands. External diameter: 9.2–9.6mm; height: 5.7–6.8mm; perforation diameter: 4.6mm. Unphased, Context: Benton Layer 1, grid square A5.

SF867 (illus 5.58, 5.61) Elongated cuboidal translucent turquoise bead; Roman in both form and analysis (Guido 1978: 214). Heavily worn, with chipping at both ends and along edges. Although similar in colour to bead SF866, its composition and shape are different. It is similar in its base glass elements to other Romano-British glass beads from the Sculptor's Cave, which form a group of soda-lime-silica glasses similar to imported British vessel glass from the first to third centuries AD. The colourant is copper, but in much smaller quantities than SF866. Dimensions: 28.4mm × 5.1mm × 4.8mm; perforation diameter: 2mm. Unphased, Context: Benton Layer 1, grid square C7.

SF868 (illus 5.58, 5.61) Pentagonal-sectioned translucent Roman jade-green bead with longitudinal surface striations and slight collar at ends from manufacture. Heavily used, with a flake at one end worn smooth by subsequent wear. Classed as Roman by both form and composition (Guido 1978: 217). Length: 8.6mm; external diameter: 8.3mm; perforation diameter: 2.6mm. Unphased, Context: Benton Layer 1, grid square D3.

SF869 (illus 5.58) Translucent pale green annular bead, slightly tapered D-sectioned with flattened faces showing abrasion from wear. Slightly irregular and off-centre perforation. Typologically undiagnostic, as is demonstrated by the fact that Guido (1978: 145, 152) mistakenly catalogues this bead twice, as Group 6 iib and Group 6 iiib. The low soda levels, plus the elevated magnesia, potash, lime and phosphorus oxide levels clearly mark this as a 'forest' glass, which typically used wood ash for the alkali and is of a composition used throughout the medieval period in northern Europe (Meek 2011). The colour is probably due to traces of iron oxide introduced as an impurity. External diameter: 11–11.8mm; height: 4–4.8mm; perforation diameter: 5mm. Unphased, Context: Benton Layer 1, grid square C6.

SF870 (illus 5.58, 5.61) Sherd from the tubular base ring of a Roman glass vessel (see section 5.13.2) reused as an irregular elongated clear glass bead (Ingemark 2014: 159, fig 3.25.1.1). Fracture surface at the bottom deliberately abraded smooth. The edges show fine flaking from fracture which has been smoothed from use. One side has flaked again in use, with subsequent wear smoothing this fracture. Dimensions: 15mm × 7.5mm; thickness: 8mm. Unphased, Context: Benton Layer 1, grid square C6.

SF871 (illus 5.58) Approximately triangular opaque red glass tessera, the parallel faces slightly matt from production, the others glossier where broken from initial shaping and subsequent removal of fragments for secondary use (notably a facet from one corner). Two sides form an original corner; it probably started life as an irregular square, broken diagonally into the desired shape. Form and analysis confirm this is a Roman tessera. Dimensions: 9mm × 6.2mm × 6.8mm. Unphased, Unstratified.

5.13.2 Roman vessel glass

Dominic Ingemark and Fraser Hunter

Two sherds of Roman glass were recovered from the Sculptor's Cave (Ingemark 2014: 47, fig 3.4.4.1; 159, fig 3.25.1.1; 249). Both derive from what were most likely drinking vessels. A reused Roman tessera is described in section 5.13.1.

A small fragment of clear snake-thread glass with an opaque blue trail (SF872; illus 5.59) belongs to a cup, beaker or flask, manufactured in the late second or early third century AD. Although there is no way of judging how long it circulated before deposition, the freshness of the fracture surfaces suggests that the transformation from vessel to sherd took place not long before deposition. The absence of other sherds, however, indicates that the vessel was not smashed in the cave, and the single sherd was presumably brought there as a token. Although snake-thread glass is rare in Roman Britain, a similar sherd has been found at Culbin Sands (Ingemark 2014).

The other fragment (SF870; worked into a bead) derives from a small tubular-rimmed deep bowl of Isings Form 44a, dating to around AD 70–160/70. A fragment of a similar vessel, also worked into a bead, was recovered from a burial at Dalmeny Park, Midlothian (Brown 1915; Ingemark 2014: 159, 258).

Catalogue

SF870 (illus 5.58, 5.61) Base ring fragment of pale green tubular-rimmed bowl, reused as a bead (see section 5.13.1 for full catalogue entry). Unphased, Context: Benton Layer 1, grid square C6.

SF872 (illus 5.59) Small body fragment of clear snake-thread glass with an opaque blue trail, from a cup, beaker or flask. Applied trail with horizontal slashes. Dimensions: 26mm × 7mm × 5.3mm. Unphased, Unstratified.

Illustration 5.59
Roman vessel glass fragment

5.14 Discussion

Gemma Cruickshanks, Fraser Hunter, Ian Armit and Lindsey Büster

5.14.1 Introduction

A rich assemblage of nearly 1100 artefacts was deposited in the Sculptor's Cave between the Late Bronze Age and Late Roman Iron Age (table 5.31). The assemblage is dominated by decorative personal items in copper alloy, bone, amber, shale and glass, and a large number of Roman coins. Prosaic, everyday artefacts, such as

Table 5.31
Summary of artefact assemblage from each excavation campaign at the Sculptor's Cave. Lithics have been excluded, as they are probably residual.

Artefact group	Benton	Shepherds	Büster/Armit	Total	Notes
Copper alloy: Late Bronze Age	16	4	–	**20**	–
Copper alloy: Iron Age/Roman Iron Age	65	7	–	**72**	Includes multiple items probably from one necklace
Iron	1	3	–	**4**	Modern material excluded
Lead	2	–	–	**2**	–
Amber	8	–	–	**8**	–
Glass	8	–	1	**9**	–
Coarse pottery	317	309	2	**628**	Min. 20 vessels
Samian	5	–	–	**5**	–
Worked bone/antler/teeth/shell	50	15	–	**65**	–
Coarse stone	9	6	–	**15**	–
Roman coins	230	14	–	**244**	148 now identifiable
Shale	3	1	–	**4**	–
Total	**714**	**359**	**3**	**1076**	–

coarse stone tools and simple bone points, make up a notably small component of the assemblage. The large number of pottery sherds represents a minimum of 20 vessels. This unusual assemblage composition raises questions regarding the nature of its deposition and the function of the site, reflecting a largely ceremonial role where artefacts were brought for ritualised deposition rather than everyday use.

Excluding coins, modern items and lithics, and counting the minimum number of vessels rather than sherds, 41% of the assemblage comprises personal ornaments, with tools forming 27% (illus 5.60). Items relating to food and drink (pottery, glass vessel sherds, a spoon), toilet/grooming objects (eg tweezers and a comb), possible gaming counters and fasteners all make up much smaller proportions, and several of the fasteners were in fact probably associated with personal ornaments. Only a single item relating to weaponry was recovered: a copper alloy hilt plate, which is notably at odds with the violence evident on some of the Roman Iron Age human remains.

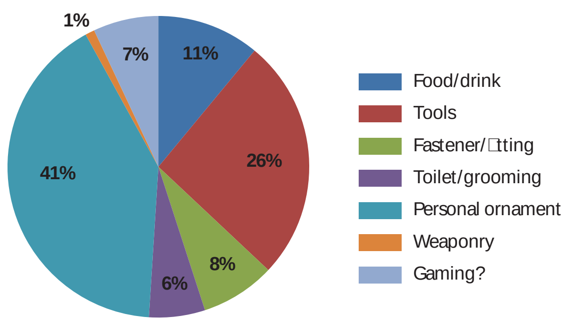

Illustration 5.60
Functional composition of the Sculptor's Cave artefact assemblage. Coins, iron (mostly modern), lithics (mostly unworked fragments) and items of unknown or obscure function omitted. Number of vessels rather than sherds represented

5.14.2 Manufacturing, repair and repurpose

The presence of tools and unfinished objects would normally be used as an indication of on-site manufacturing. Although there are a few unfinished artefacts (four bone, one antler and one copper alloy), it is notable that there is no debitage to confirm in situ production such as bone- or antler-working debris, copper alloy droplets/offcuts, slag or hammerscale. This is confirmed not only by the Shepherd excavations, but also by more recent excavation of Benton's spoil heap (box section 2). Given the ritual nature of this site, it is plausible that all the items were brought for deposition rather than indicating activities which took place at the cave. The craft-related items may therefore represent symbols of particular crafts or activities which were selected for deposition.

The cushion stone and finely shaped whetstone/burnishers attest to the shaping and sharpening of sheet metal and metal blades, while hide preparation is represented by three bone hide-rubbers. A selection of bone and copper alloy needles, possible bone weaving batons and lead whorls represent textile manufacturing. This is relatively well represented among the tools (11 items), suggesting textile crafts were particularly highly valued. While hide-working and textile manufacturing were probably undertaken on most sites, metalworking required more specialised skills and was likely to have been more restricted (Hunter 2015a: 228). The other tools are all multi-functional, such as bone points or cobble tools which may have been utilised for a range of tasks.

A few objects show evidence of repair and reuse, such as a bone shaft point (SF843) and a kite-shaped needle (SF815), which continued in use after their points were broken. Evidence of repurposing is also present: a shale bangle was portioned up into bead roughouts; two samian sherds (SF915, SF917) had their edges ground, possibly for pigment; and a Roman glass vessel rim

Illustration 5.61
A selection of possible Roman necklace components

was refashioned into a bead (SF870). Nine of the Roman coins had been pierced, one of which still retains a double link for suspension, suggesting they had been reused as personal ornaments; some may have been part of an imported Roman necklace (illus 5.61).

5.14.3 Chronological summary

The artefacts from Sculptor's Cave are dated by a combination of typological comparison, stratigraphic position, compositional analysis and radiocarbon dated contexts. Certain objects, especially Late Bronze Age and Roman metalwork, are distinct, and their production can be dated with confidence. Other, plainer artefacts, such as the flat-rimmed pottery, stone tools and simple bone tools, are long-lived types that have to be dated from their context, which is often lacking in this case.

Early prehistory

The only diagnostically early prehistoric objects at the Sculptor's Cave are two flint artefacts recovered by Benton. Both are broadly dated to between the Early Neolithic and Middle Bronze

Table 5.32
Summary of artefacts (excluding pottery) which can be assigned to the Late Bronze Age by stratigraphy, typology or composition

Material	Type	Stratigraphy	Typology	Composition
Non-ferrous metalwork	Hair ring	2	y	y
	Gold leaf fragment	–	y?	y
	Penannular bracelet	1	y	y
	Pin	1	y	y
Glass	Bead	–	–	y
Coarse stone	Cobble tool	1		n/a
Flint	Bipolar core with retouch	1	y	n/a
Iron	Fragment	1		n/a
Shale	Bangle fragment	1	–	n/a
Worked bone	Point	9	–	n/a
	Hide-rubber	1	–	n/a
	Fitting	1	–	n/a
	Other	1	–	n/a

Illustration 5.62
Late Bronze Age metalwork

Table 5.33
Summary of artefacts (excluding pottery) which can be assigned to the Iron Age phase by stratigraphy (typology and composition not diagnostic)

Material	Type	Stratigraphy
Iron	Rod	1
	Wire	1
Stone	Cobble tool	3

Age (section 5.6), making them the earliest definite evidence for human activity in the cave. Ballin points out that, contrary to lithic assemblages from terrestrial sites in Moray, the Sculptor's Cave objects are not sand-blasted, suggesting that they were deposited in the cave soon after their use in the early prehistoric period rather than having been collected elsewhere and brought to the site in later prehistory. The worked red deer antler (SF847) found two feet (*c* 0.6m) below the non-anthropogenic clay (section 2.2.3) is not typologically distinct, but can be dated stratigraphically to the Middle Bronze Age or earlier.

Late Bronze Age (Phase 1)

A range of Late Bronze Age artefacts (illus 5.62) suggest that this was the beginning of regular human activity, or at least artefact deposition, within the cave. Table 5.32 shows the finds which can be attributed to this phase by various means. Interestingly, the bead (SF866) is unlikely to have been recognised as Late Bronze Age without compositional analysis, as it was from a mixed layer and is a rare type. Beads can easily intrude earlier contexts due to their small size.

Table 5.34
Summary of artefacts (excluding coarse pottery) which can be assigned to the Roman Iron Age by stratigraphy, typology or composition. I: indigenous, R: Roman, RI: Roman-inspired, U: undiagnostic but post-Late Bronze Age. *The amber beads could potentially be Late Bronze Age

Material	Type	Stratigraphy	Typology				Composition
			I	R	RI	U	
Non-ferrous metalwork	Spoon	–	–	y	–	–	y
	Padlock and key	–	–	–	y	–	y
	Fasteners	–	–	y	–	y	y
	Pins	–	y	–	–	–	y
	Finger rings	–	y	y	–	y	y
	Penannular brooch	–	–	–	–	y	y
	Bracelet	–	–	y	–	–	y
	Necklace components	–	–	y	–	–	y
	Belt fittings	–	–	y	–	–	y
	Personal grooming	–	–	y	y	–	y
	Needle	–	–	–	–	y	y
	Lead whorl	–	–	–	–	y	y
	Hilt guard	–	–	–	–	y	y
	Uncertain	–	–	–	–	–	y
	Fragment	2	–	–	–	–	y
Glass	Beads	–	y?	y	y?	–	y
Coins	–	–	–	y	–	–	n/a
Amber*	Beads	–	y?	–	–	–	n/a
Pottery	Samian	–	–	y	–	–	n/a
Stone	Gaming counters	–	–	–	y?	–	n/a
Worked bone	Pins	–	y?	–	y?	–	n/a
	Comb	–	y?	–	y?	–	n/a

Iron Age (Phase 2)
Though radiocarbon dating has shown there to be considerable (perhaps continuous) activity in the cave between the Late Bronze Age and Roman Iron Age, the only stratified material, apart from pottery (Fabrics A, C, D and F), are three coarse stone objects and two iron objects (table 5.33). A copper alloy pin (SF114) from Phase 2/3 is not shown on the accompanying tables.

Roman Iron Age (Phase 3)
Although very few artefacts were recovered from the surviving Phase 3 deposits (which were in any case highly disturbed), finds from this period are markedly more typologically or compositionally distinct than for the Pre-Roman Iron Age, and many of the copper alloy items can be split into indigenous, Roman or Roman-inspired forms (table 5.34).

The distinctive Roman material comprises a large number of coins, samian and glass sherds, beads, jewellery and a spoon fragment. Seven of the copper alloy objects, along with the Roman beads and perhaps some perforated coins, are interpreted as deriving from a single necklace (illus 5.61), while the coins were most likely deposited as a group. As discussed in section 5.7, most of the Roman material is consistent with a fourth-century deposit. The earlier samian had been reused and may well have survived until the fourth century (section 5.2.3); only the unworn fragment of snake-thread glass, dating to the late second/early third century (section 5.13.2), provides a suggestion of earlier material.

Artefacts which are typologically indigenous are almost all jewellery items: projecting-headed pins, a spiral finger ring, glass beads, bone pins and a miniature bone comb.

Early medieval

The X-headed (SF807) and barrel-headed (SF808) pins have early medieval parallels, as does the example with a perforated circular head (SF809), while scientific analysis of the composition of one of the beads (SF865) showed that it is probably of this date (section 5.13.1). The rarity of finds reflects the apparent absence of archaeological deposits dating to this period.

Medieval and later

A pale green annular bead (SF869) has a composition consistent with medieval glass beads and may have been dropped or left by a later visitor to the site (section 5.13.1).

5.14.4 Spatial patterning and structured deposition

Although it is not possible to identify the exact findspots of the Benton material, most of her finds were identified to the ten-foot grid square. Though the lack of detailed contextual information limits in-depth analysis of deposition (eg we do not know if items within the same grid square were found together or placed in a pit), we can, therefore, still look at broad patterns and gain a sense of changing depositional trends over time. It is also possible to combine the Benton and Shepherd finds assemblages within a series of 'heat maps' based on the Benton grid to examine some issues related to the spatial patterning of the material.

Visual inspection of the overall finds distribution does not immediately reveal any clear patterning (illus 5.63; see illus 2.2 for grid square concordance). Nonetheless, clear differences are visible between the spatial patterning of the Late Bronze Age and Iron Age/Roman Iron Age metalwork. The earlier material is concentrated in the two entrance passages and, most especially, in the front half of the cave interior (illus 5.64A, B). The sole exception is the group of six of the ten Late Bronze Age hair rings, which were recovered from C9 in the middle of the back wall of the cave (Benton 1931: 181), most likely deposited as a hoard. One of the other hair rings was found 'hidden in the Bronze Age clay, beneath a shelf of the rocks' in grid square D2, against the eastern wall of the east entrance passage (ibid: 182). Given the likely intrinsic value of the metal, is it interesting that such a large proportion of the hair rings appear to have been deliberately hidden.

By contrast, Roman Iron Age/Roman material was deposited much more evenly across the cave interior (illus 5.64C). This suggests that the locus of deposition changed significantly between the two periods. This pattern would be even more marked if the Roman coins were added (illus 5.65). Although the coins have been suggested as a possible hoard (section 5.7.3), analysis of the heat maps reveals some complexities. Plotting those coins which can be attributed to grid square (illus 5.65A) reveals a dense concentration around B4 with scatter elsewhere. If, however, the genuine Roman examples and the copies are plotted separately (illus 5.65B, C), significant differences can be discerned. First, the more numerous copies form an even more distinct cluster around B4, suggestive of a single depositional event, with coins dispersed to a moderate extent through later disturbance (illus 5.65C). Genuine Roman coins show a broader distribution, only partly overlapping with the copies, and have no particular spatial concentration (illus 5.65B). It is hard to see these two groups as relating to the same depositional event. The most likely explanation is that a hoard of a few originals and a large number of copies formed a distinct coin deposit originally placed within grid square B4, while a few other genuine coins of the same broad date were scattered in separate events around the cave. Plotting the pierced coins suggests that most could relate to the putative hoard (illus 5.65D).

Worked bone, though almost certainly conflating material from different periods, is generally evenly spread across the cave interior, but with a noticeable concentration in the East Passage (illus 5.66). The shale, glass and amber show a slight bias towards the east side of the cave interior (illus 5.67), with complete avoidance of the entrance passages. The few coarse stone and iron objects show little obvious patterning (illus 5.68).

Components of the putative Roman necklace (section 5.7.2) are dispersed throughout the central area of the cave. This may indicate more than one necklace, or more likely multiple strands deposited separately; the extremely unusual nature of many of the components in a Scottish context makes it unlikely that they were individual deposits (illus 5.69A). Indeed, limiting the plot to the non-ferrous metal components suggests that parts of a single necklace may well be distributed against the east wall of the cave interior in grid squares D2–D4 (illus 5.69A).

The high number of intact items which were still usable at the time of their deposition suggests that they were not merely casually discarded. The high sherd to vessel ratio also suggests that some pots were whole when deposited, while a 'mutton bone' apparently found within one of the Late Bronze Age pots in the East Passage (Benton 1931: 190) suggests that some of the vessels may have contained offerings.

5.14.5 Wider context

Parallels for the Late Bronze Age assemblage come from Croig Cave, Mull, where recent excavations uncovered a Late Bronze Age bracelet and amber bead of similar types to those found at the Sculptor's Cave (Mithen and Wicks 2012). The Heathery Burn Cave in Co. Durham has also produced a similar Late Bronze Age assemblage, though with far more metalwork, including weapons and pins (Britton and Longworth 1968), and there are extensive parallels further afield (such as the Belgian cave sites of Trou de Han and Trou del Leuve; Warmenbol 2015: 56–7, 71–2).

For the Roman Iron Age, the closest Scottish parallel, in terms of its artefactual assemblage, is Borness Cave in Kirkcudbrightshire, south-west Scotland (Corrie et al 1874; Clarke 1875; 1878). The site was dug in the late nineteenth century and contextual information is lacking (not least due to the use of 'MacKie's patent cotton gunpowder' to dislodge the cave deposits (Clarke 1875: 306)), but the assemblage comprises a range of worked bone, pins and small decorative items similar to those from the Sculptor's Cave. Diagnostic artefacts point towards a Roman Iron Age date, but recent radiocarbon dating of one of the infant skulls from the site, by National Museums Scotland, produced a date of 1006–844 cal BC at 95.4% probability

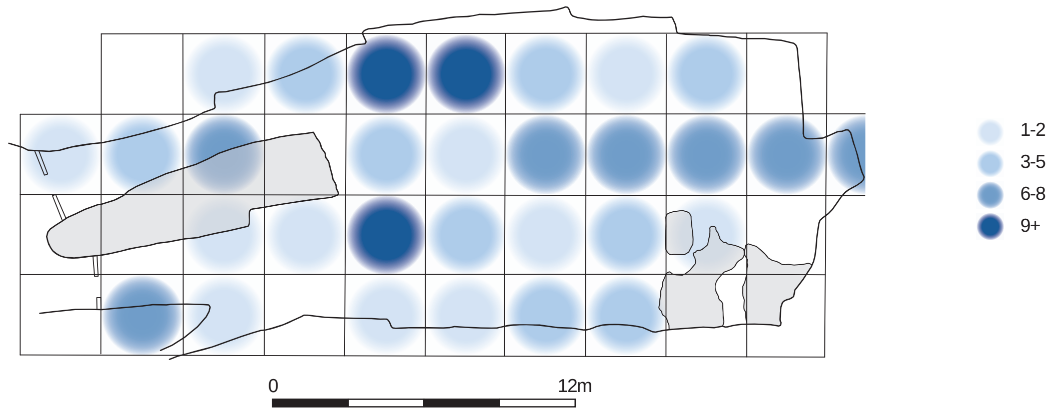

Illustration 5.63
Distribution of all artefacts (excluding pottery and coins) for which spatial information is available

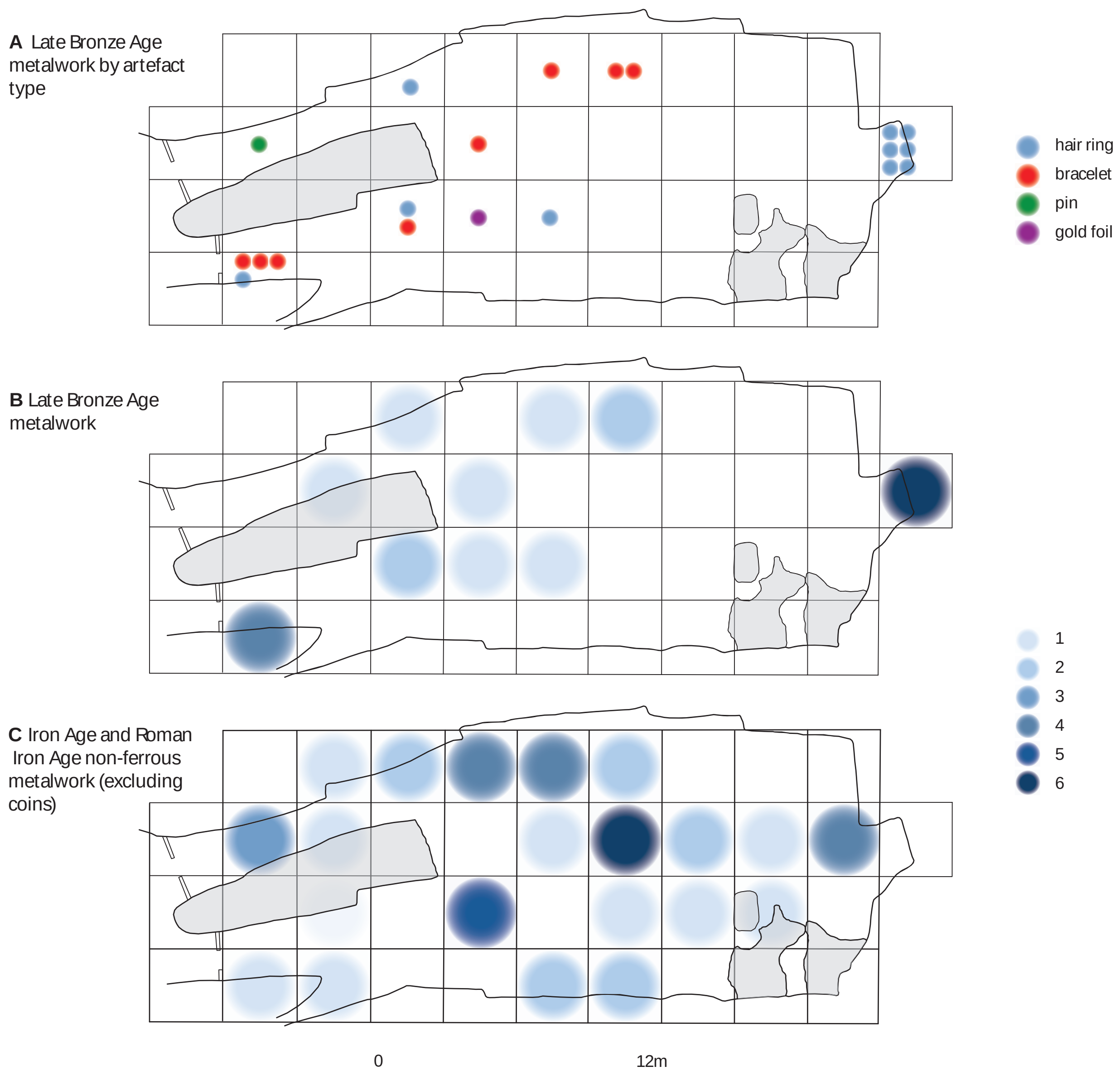

Illustration 5.64
Distribution of (A) Late Bronze Age metalwork by artefact type, (B) all Late Bronze Age metalwork, and (C) Iron Age/Roman Iron Age non-ferrous metalwork, for which spatial information is available

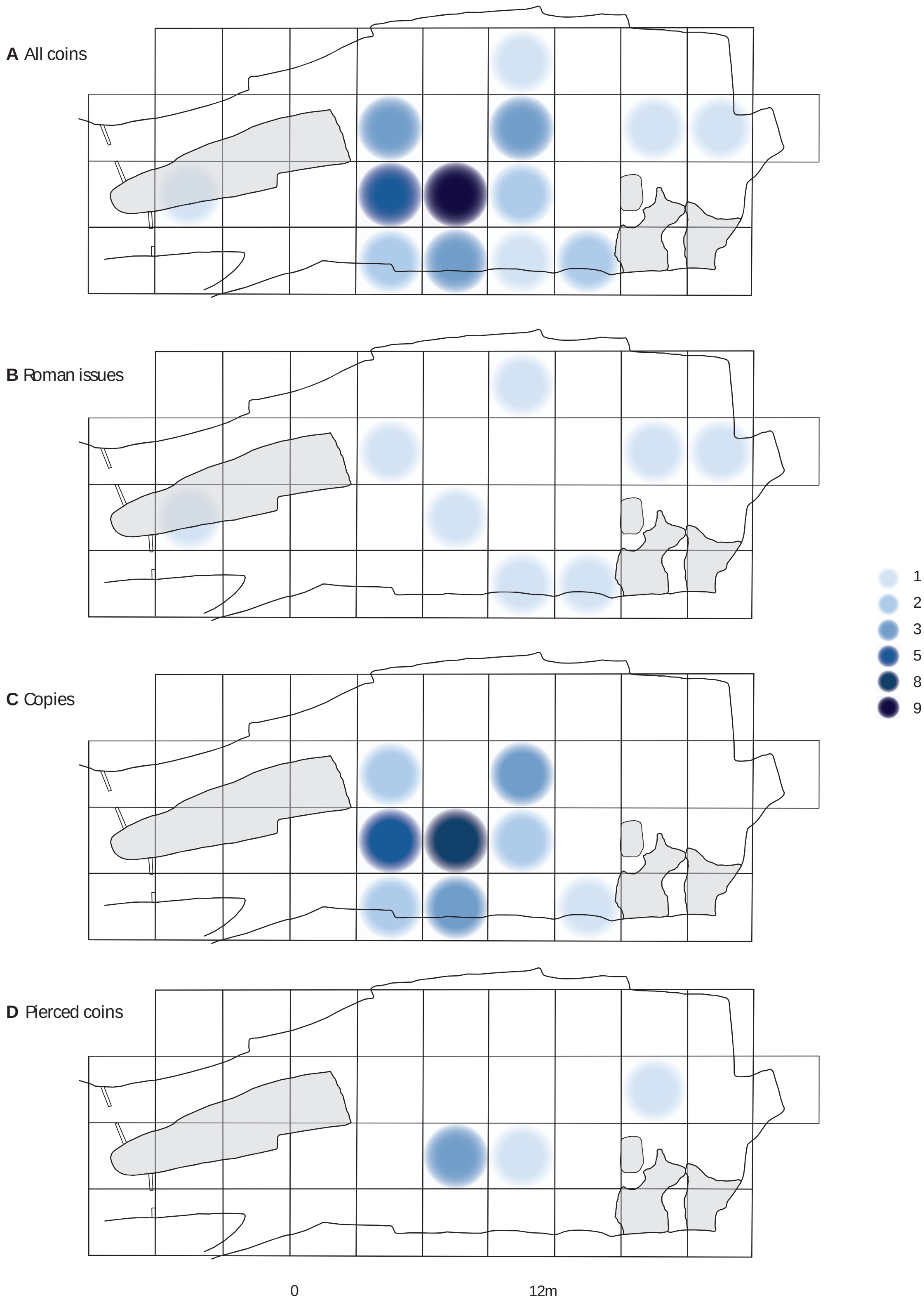

Illustration 5.65
Distribution of (A) all coins, (B) Roman issues, (C) copies and (D) pierced coins, for which spatial information is available

(SUERC-61320; Sheridan et al 2015). The combination of Late Bronze Age infant skulls and Roman Iron Age artefacts is strikingly similar to the Sculptor's Cave. Clarke pointed out that Borness is one of several caves on the same stretch of coastline in which substantial animal bone deposits are easily discovered (1878: 675), suggesting that Borness, like the Sculptor's Cave, could be part of a wider local tradition.

Elsewhere in Scotland there are hints of similar sites, though many were early excavations and details are often lacking. The series of coastal caves at Wemyss in Fife have produced Roman Iron Age artefacts (mainly pottery) and Pictish carvings; also in Fife, Constantine's Cave and Kinkell Cave have wall carvings and an unusual spectrum of Roman finds and craft activities (eg Wace and Jehu 1915; Hunter 1996: 119). A pair of caves at Archerfield, East Lothian, produced human remains along with pottery and glass bangle fragments of Roman Iron Age date (Cree 1909), while the Rhodes Links Cave, North Berwick, revealed juvenile human remains and a Roman Iron Age bronze ibex-headed pin very similar to those found at the Sculptor's Cave (Richardson 1907).

High Pasture Cave on Skye (Birch et al forthcoming) has similar evidence of structured deposition but the activity there is concentrated between the Early Iron Age and Late Pre-Roman Iron Age. The character of the assemblage is very different and comprises many more 'everyday' items, such as several hundred cobble tools, some of which were deposited in caches, along with rarer and decorative items, including iron pins and a wooden musical instrument bridge. Without more sites for comparison, it is difficult to say whether the different character of the assemblages is due to differing chronology or local ritual traditions.

5.14.6 The context of the Late Roman Iron Age material

The Late Roman material at the Sculptor's Cave is exceptional in a Scottish context. Not only is Late Roman material generally rare, but it is particularly scarce in north-east Scotland (Hunter 2014a). Hunter has argued for a major shift in relations between peoples in north-east Scotland and the Roman world between the first/second century and the later third/fourth century, with an initial period of regular small-scale contact in the late first and mid-second centuries, a phase of intensive diplomatically and politically driven contact in the later second and early third century, and then deliberate severing of relations in the later third and fourth century, either to undermine groups built up by Rome or in reaction to the emergence of the anti-Roman Picts (2007b; 2014a).

Reconsideration of the finds from the Sculptor's Cave along with recent discoveries allows a more nuanced picture to be proposed. While the overall pattern remains coherent, subtleties are becoming apparent. In 'southern Pictland', south of the Mounth, the absence of Late Roman material is striking. To the north, a glance at a distribution map shows a curl of findspots around the Moray firthlands, suggesting that the whole zone saw some Late Roman contact, while a gold crossbow brooch, a badge of official status 'from the shores of the Moray Firth', offers a tantalising hint of diplomatic or official connections (Hunter 2014a: fig 2b; Curle 1932: 392, fig 36, no. 4). Yet the distribution is notably thin on the southern shore of the Firth. From Moray, only three finds are known: the Sculptor's Cave material, a small group of Late Roman coins from Burghead which are not securely provenanced and a single Late Roman coin from Clarkly Hill, some 2km to its south-east (Bateson and Holmes 2013: 229; Nick Holmes pers comm). These are weak grounds for proposing significant Late Roman links, especially in contrast to the quantity of earlier finds from the area.

However, the presence of the silver pin and tweezers from the Sculptor's Cave suggests more material was in circulation than we are seeing, as they must be made from recycled Roman silver. The hacked silver elements of the Gaulcross hoard, some 35km along the coast, indicate connections to the circulation systems of Late Roman silver (Goldberg et al 2015; Noble et al 2016), probably in the fifth century; the Sculptor's Cave dating suggests some silver was already available in the fourth century. Rare finds of fourth-century gold and silver coins from Aberdeenshire (two *solidi* and a *siliqua*; Macdonald 1918: 247; Bland and Loriot 2010: 294–5, nos 704, 706) are further evidence of some precious metal reaching the area, though these could have had a lengthy circulation before arrival. The mechanisms behind the movement of silver beyond the frontiers in the Late Roman period are extensively debated, though a good case can be made for much being connected to

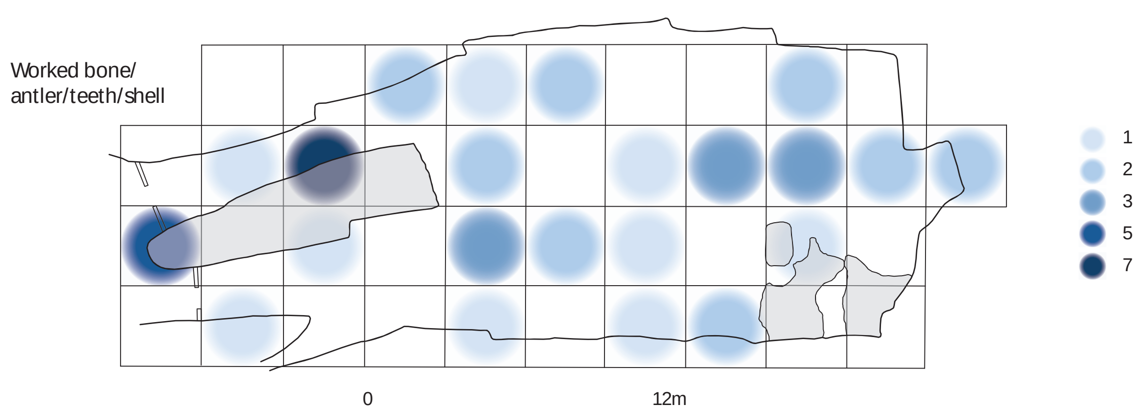

Illustration 5.66
Distribution of worked bone/antler/teeth/shell artefacts, for which spatial information is available

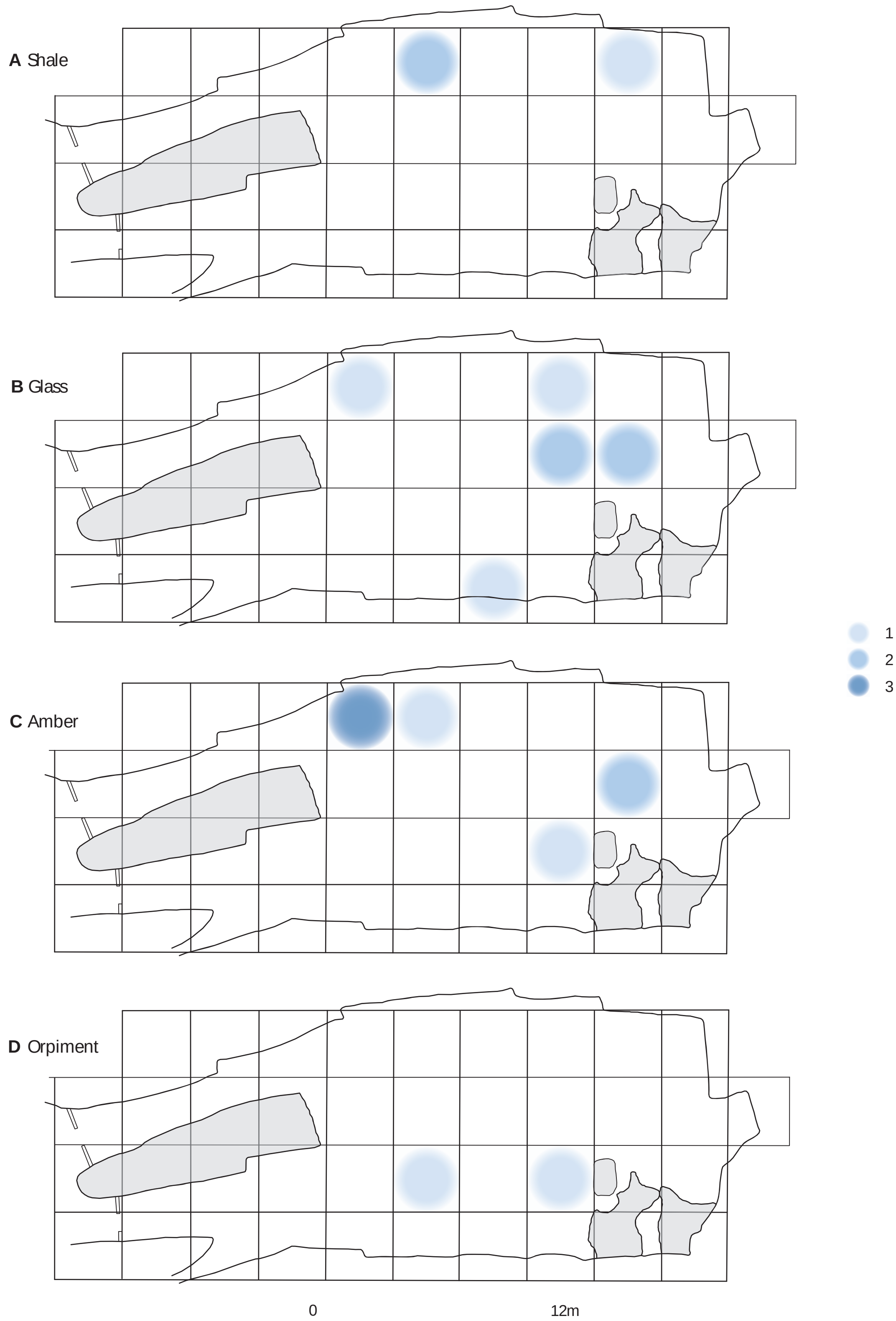

Illustration 5.67
Distribution of decorative materials: (A) shale, (B) glass, (C) amber and (D) orpiment, for which spatial information is available

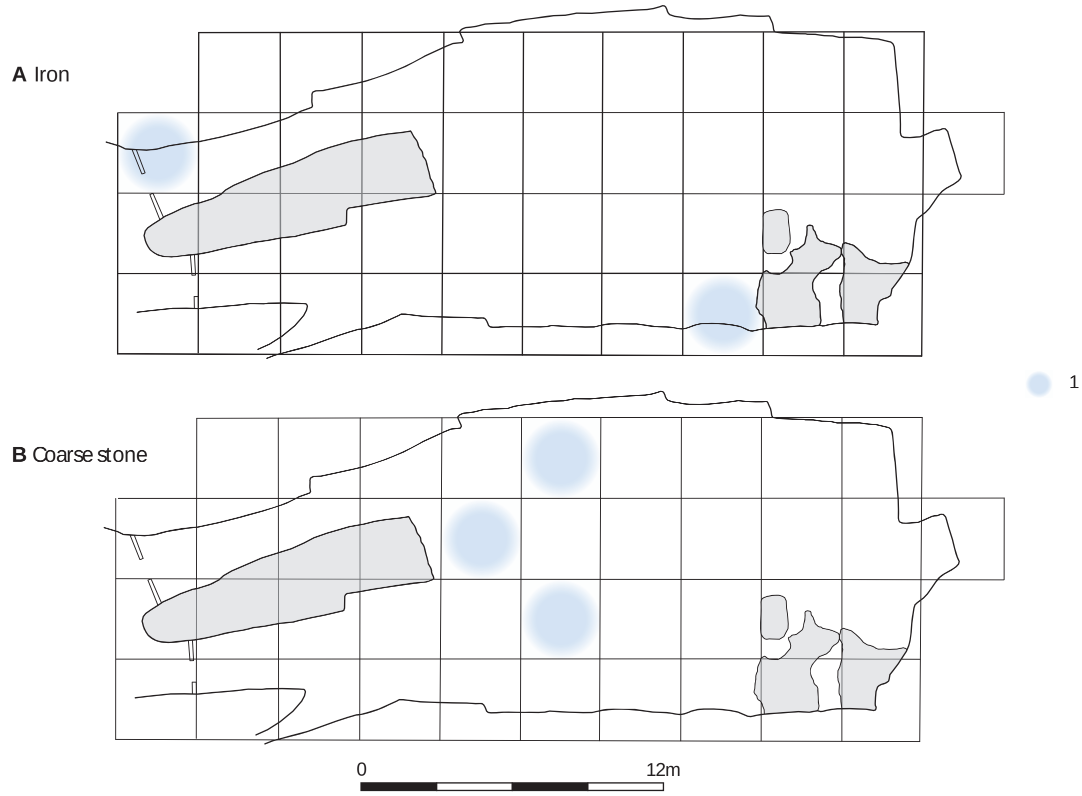

Illustration 5.68
Distribution of (A) iron and (B) coarse stone tools, for which spatial information is available

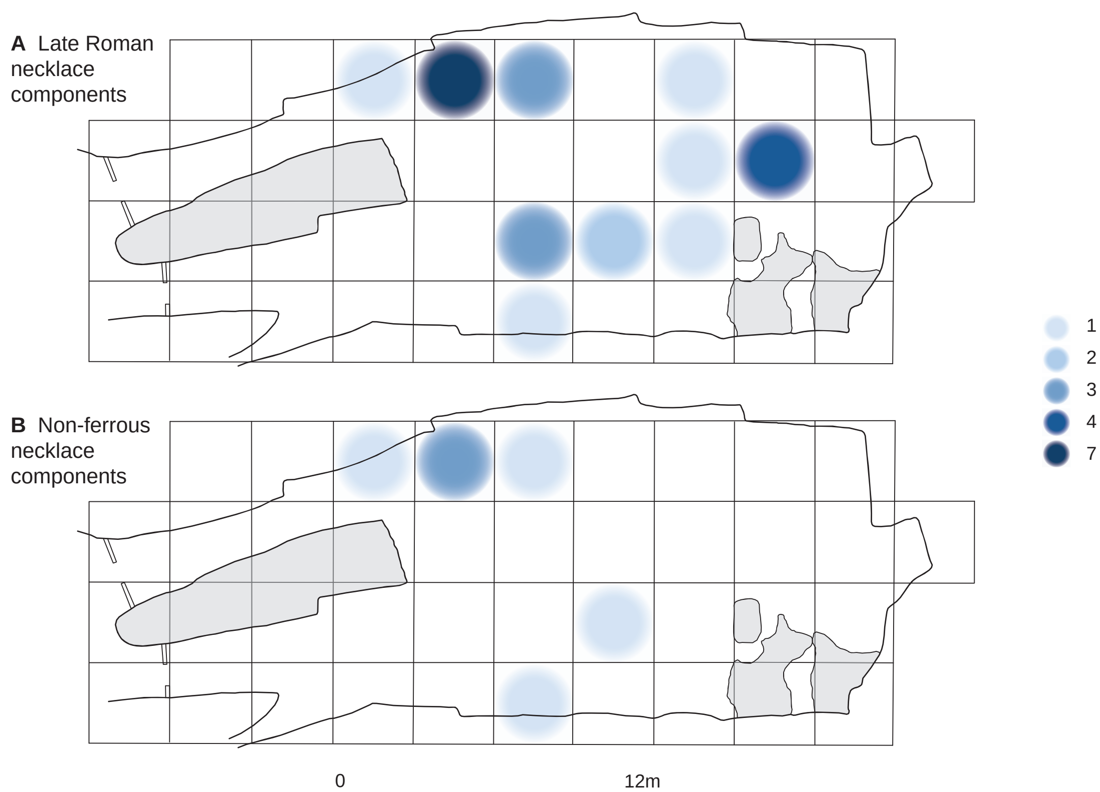

Illustration 5.69
Distribution of (A) all possible and (B) non-ferrous Late Roman necklace components, for which spatial information is available

diplomacy or the payment of war bands rather than loot (Painter 2013).

Thus the picture becomes more complex, but the general absence of Late Roman material from north-east Scotland remains striking. In this empty map, the nature and range of the Sculptor's Cave material are exceptional, and it is tempting to link it to exceptional events. Loot and plunder are often lazily invoked to explain Roman material in *barbaricum*. Such views fail to explain the very selective nature of Roman material which came north; the bulk of evidence looks much more like policies of selective adoption in the light of diplomatic and political connections with the Roman world (Hunter 2001). The Sculptor's Cave stands out as an exception to this picture in its date and unique or near-unique material. Here perhaps one *can* raise the question of loot and plunder. The 'barbarian conspiracy' of AD 367 provides a historical hook for Pictish raids far to the south, but this is better seen as an exemplar of a wider process than a one-off event (Laing and Laing 1986; Hunter 2010a: 103–4). But against this we must balance the evidence of the silver finds, suggesting wider access to Roman prestige material. These two angles – plunder and diplomacy – are not unconnected, and we may suspect that both were at play on the Moray Firth in the fourth century.

5.14.7 Conclusions

The unusual composition and spatial patterning of the Sculptor's Cave assemblage suggest that the artefacts were deposited in a structured manner relating to ritualised activity within the cave over a long period. The prevalence of personal ornaments suggests that individual identity was an important theme, perhaps related to the deposition of human remains. Though deposition appears to peak in the Late Bronze Age and Roman Iron Age, the artefacts also hint at more ephemeral earlier and later activity, revealing many millennia of visitors to this cave.

Chapter 6

HUMAN REMAINS

6.1 Introduction

Human remains were recovered from all three recorded excavation programmes at the Sculptor's Cave: Benton's work in 1928–30, the Shepherds' excavations in 1979 and the spoil heap investigations in 2014. Together, these represent a minimum count of 1748 bones and bone fragments (tables 6.1, 6.2). Unquantified human bones were also found during antiquarian excavations in the 1860s (Anon 1868a) and further human remains from the Sculptor's Cave are probably contained among unpublished and poorly provenanced material from 'the Covesea Caves', collected by Mr Leslie Darge during the 1960s.

Table 6.1
The Sculptor's Cave human bone assemblage by excavation season

Excavator	Year	No.
Benton	1928	294
	1929	1252
	1930	52
Shepherds	1979	46
Büster/Armit	2014	104
Total		**1748**

Despite being by far the most substantial assemblage, the material recovered by Sylvia Benton is especially problematic since the majority survives only as 'bone lists' hand-written by the anatomists who assessed it. With the exception of seven vertebrae, the rest of the collection appears to have been discarded or lost after only a fairly cursory examination (see box section 4). Furthermore, human bone from the 1930 season was retrieved only selectively, the majority being discarded on site; some, but not all, of this material was recovered in 2014 (box section 2). Meanwhile, the 1979 assemblage represents only a small amount of material, mostly deriving from stratified deposits left by Benton in the two entrance passages, though it is possible that additional material remains in the lowest unexcavated deposits of the West Passage and the unexcavated portion of the spoil heap (see section 2.3.4; box section 2).

The assemblages can thus be split into two broad groups: a 'core' assemblage, comprising the 1928–9 and 1979 material, which represents *all* of the material recovered in those seasons; and the 1930 and 2014 assemblages, which likely represent only *part* of the excavated material.

The next few sections describe the overall characteristics of the assemblage as reconstructed from the bone lists and other sources. It then presents an osteoarchaeological analysis of the surviving material before considering the implications of bone element representation for the sorts of mortuary treatments that might have been carried out at the Sculptor's Cave in the Late Bronze Age and Roman Iron Age.

6.2 Terminology

The vast majority of the Benton human bone assemblage is unavailable for osteoarchaeological analysis and we must bear in mind the many uncertainties in the surviving bone lists. Nevertheless, broad discussion of the nature of the total human bone assemblage permits general trends to be observed.

The terminology used by the anatomists examining the bone assemblage from the 1928–30 excavations is rather different to that which we would use today, both in terms of the names given to certain bone elements and the age categories employed. In relation to bone elements, the terms used here (and in the associated tables and illustrations) are taken directly from the bone lists. Where different terms have been used for the same element, for example, os calcis and calcaneus, these element totals have been grouped. In other instances, however, where different levels of specificity are recorded (for example, 'pelvis' or 'hip bone' rather than ilium, ischium or pubis, or 'tarsal' rather than any further specification of the particular tarsal bone present), this has not been possible, and we are left with a number of overlapping categories. In addition, different methods of cataloguing bone elements have meant that further amalgamation of categories has been necessary for the purposes of element index comparisons (see section 6.10).

In terms of age attribution, Professor Thomas Hastie Bryce, University of Glasgow, who examined the 1928 bones, divided them into 'immature' and 'adult' categories, based on whether or not epiphyseal plates were fused (Bryce nd). Within this 'immature' category he uses terms such as 'infant', 'child' and 'young', not always giving specific age ranges; he also refers to the scapula and mandible of a 'foetus' or 'newborn'. Professor Alexander Low, University of Aberdeen, who examined the 1929 and 1930 assemblages, uses terms including 'child', 'adolescent' and 'adult',

Table 6.2
The Sculptor's Cave human bone assemblage by age group and element. Age group ranges have been reconstructed from those most commonly used in the 'bone lists' (see table 6.3). Due to differential recording of vertebrae in the various assemblages, all have been grouped under a general vertebra category, including unfused sacral vertebrae. For the 'young' age category, it is possible that two bones classed as 'sacrum' are in fact unfused sacral vertebrae

Bone element	**Age group**						**Total**
	Adult	**Sub-adult (undifferentiated)**	**'Young' (15–25 years)**	**'Child' (3–14 years)**	**'Infant' (<3 years)**	**Unknown**	
Cranium	25	1	9	6	9	2	**52**
Mandible	3	0	6	7	4	0	**20**
Tooth	5	3	0	1	0	10	**19**
Vertebra	209	4	311	52	17	2	**595**
Sacrum	3	0	5	0	0	0	**8**
Pelvis element (undifferentiated)	2	0	0	2	1	0	**5**
Ilium	0	0	4	14	0	0	**18**
Ischium	0	0	0	15	2	0	**17**
Sternum	7	1	7	1	2	0	**18**
Clavicle	12	2	20	10	1	0	**45**
Scapula	6	0	6	13	4	0	**29**
Rib	156	4	229	66	6	7	**468**
Humerus	6	0	12	7	0	1	**26**
Radius	9	0	13	5	0	0	**27**
Ulna	16	0	13	10	1	0	**40**
Femur	7	0	9	5	0	1	**22**
Patella	5	0	2	6	0	0	**13**
Tibia	8	0	6	5	0	0	**19**
Fibula	12	0	5	0	0	0	**17**
Long bone	0	0	0	0	0	1	**1**
Talus	4	0	0	0	0	0	**4**
Calcaneus	10	2	4	1	0	0	**17**
Scaphoid	1	0	1	0	0	0	**2**
Cuneiform	2	0	0	1	0	0	**3**
Carpal (undifferentiated)	3	0	2	0	0	0	**5**
Metacarpal	43	0	16	9	1	2	**71**
Cuboid	8	0	1	0	0	0	**9**
Tarsal (undifferentiated)	21	0	4	1	0	0	**26**
Metatarsal	94	1	15	4	1	0	**115**
Hand phalanx	9	2	3	4	1	1	**20**
Foot phalanx	7	0	0	0	0	2	**9**
Phalanx (undifferentiated)	2	0	3	0	0	0	**5**
Not identified	0	0	0	0	0	3	**3**
Total	**695**	**20**	**706**	**245**	**50**	**32**	**1748**

Table 6.3
Age categories and their respective age ranges reconstructed from the Bryce and Low 'bone lists'. Note that these do not correspond with modern osteological uses of the terms

Age group	Broad age range
Infant	<3 years
Child	3–14 years
Young	15–25 years
Adult	25+ years

likewise not always specifying age ranges (Low nd; 1930a; 1930b). Virtually all bones examined by Bryce and Low can be assigned to one or other of these categories and, by charting the use of the terms where they are quoted in association with specific age ranges, it has been possible to retrospectively reconstruct the age brackets they represent (table 6.3). It should be stressed, however, that the two anatomists are not always consistent with each other, and this schema can be no more than a 'best fit'. It is also important to note that modern osteoarchaeologists would undoubtedly be more cautious in assigning specific ages to bones within the sub-adult category.

In order to carry out analyses on the total human bone assemblage, it is necessary to 'retrofit' age ranges assigned by modern osteoarchaeologists who have examined the smaller 1979 and 2014 assemblages to those age groupings used by Bryce and Low (table 6.3) despite the differences in terminology. The 'young' category is, for example, especially problematic, since the age range of 15–25 years spans what we would now conventionally regard as the division between 'adults' and 'sub-adults'. Where modern osteological assessment attributed bones only to 'sub-adults', with no age or age range assigned, these have been listed separately under an undifferentiated 'sub-adult' category.

6.3 Minimum number of individuals (MNI)

The Benton assemblages originally contained around 1600 separate bones (table 6.1). The exact figures are irrecoverable due to the unspecific way in which many of the fragments were recorded, and those given here are probably rather minimal. Using a combination of vertebrae and lateralised elements, and retaining the age divisions represented in the bone lists, the MNI for the combined Sculptor's Cave bone assemblage is thirty-three (nine adults, thirteen 'young' individuals, nine 'children' and two 'infants'; table 6.4); undifferentiated sub-adults have not been included. The nature and context of the assemblage, however, suggests that the true number of individuals present in the cave is likely to exceed this conservative estimate. As with other analyses of the 'lost' human bone assemblage, the MNI should be regarded as essentially heuristic rather than definitive.

At birth, the body contains 270 separate bones, decreasing to 206 in adulthood due to the fusing of elements such as vertebrae and long bone epiphyses. These bones fuse at different times and so it is difficult to be specific about how many bones each individual at the Sculptor's Cave might originally have comprised.

Table 6.4
Estimated minimum number of individuals (MNI) based on age breakdown as outlined in tables 6.2 and 6.3. MNI for adults and 'young' are based on the total number of surviving vertebrae. Infants are equally represented by left ischia and right scapulae. Sub-adults not included

Age group	Element	MNI
Infant (<3 years)	Ischium/scapula (left/right)	2
Child (3–14 years)	Ilium (right)	9
Young (15–25 years)	Vertebra (n/a)	13
Adult	Vertebra (n/a)	9
Total		**33**

We must also bear in mind the partial nature of the 1930 and 2014 assemblages and the loss of other elements from the assemblage through taphonomic and post-depositional processes (natural or anthropogenic) or the fragmentation of bones into multiple pieces. If we take an arbitrary average of 238 bones per individual, our assemblage of 1748 bones represents 22% of the bones we would expect to be represented by an MNI of 33 individuals.

6.4 Age representation

When the core assemblage (ie the 1592 bones excavated in 1928, 1929 and 1979) is broken down by the major age categories, 'young' (15–25 years) represent the majority (42.5%), followed by 'adults' (39%), children (3–14 years; 14%) and infants (<3 years; 3%) (illus 6.1). Combining the infant and child categories and amalgamating 'young' with the adult bones (to compare categories that we might expect to approximate to social categories of adult and non-adult) produces a pronounced split between adults/young (83%) and juveniles (17%) (illus 6.2), although we must bear in mind the possibility of recovery bias affecting small bones of the latter age group.

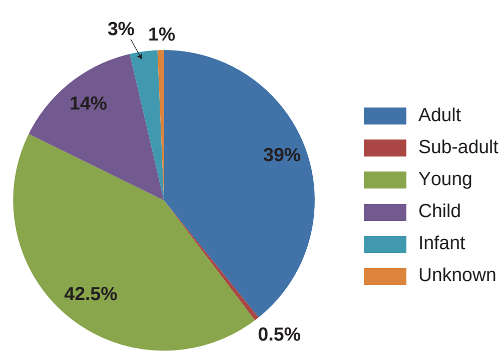

Illustration 6.1
Age breakdown of core bone assemblage (1928–9 and 1979); see table 6.3 for age ranges

Box section 4

THE BENTON BONES

When Sylvia Benton first visited the Sculptor's Cave in 1928, she found 'the floor . . . strewn with human bones' (1931: 177). Yet her report contains remarkably little information on the human remains recovered during the excavations, beyond a mention that 'there are a prodigious number of human bones to be explained and . . . nine of them show beheadings' (ibid: 206). The sections of her report dealing with 'Human Bones' is, however, sufficiently short to be quotable in full:

> Professor Bryce kindly examined some of the human bones in 1928. He made the same observation which was subsequently made independently by Professor Low that there was a preponderance of children's bone. There were human bones in both layers, but many more in the mixed layer than in the bronze layer (Benton 1931: 206)

An appendix by Professor Alexander Low adds:

> In this collection the human bones are so fragmentary and mixed that it is not possible to observe any characteristics of racial significance or differences between the bones of the respective layers. The large proportion of bones of young individuals is noteworthy (Benton 1931: 207)

A further extract from Low's 'detailed report' lists six cervical vertebrae with cut-marks characteristic of decapitation and a footnote mentions that a 'Dr Dodgson discovered three more vertebrae similarly cut' (Benton 1931: 207).

Elsewhere, there is mention of 'at least one crushed skull' in Layer 2, just inside the cave between the two passages (Benton 1931: 181), a further 'crushed skull' found next to a pot containing a 'mutton bone' in grid square '–B1/2nd', and a further pot containing 'big bits of skull' (ibid: 190).

The relatively minor role played by the human remains in Benton's published report hides the real scale and rather problematic history of the assemblage. As Sylvia Benton's unpublished papers, held in Marischal College, University of Aberdeen, make clear, the published descriptions represent only a fraction of what was originally found. From these papers it is possible to reconstruct something of the tangled history of the human bone assemblage.

From Benton's letters, it appears that the human bones from the first season of excavation (1928) were sent initially to a Dr Ritchie. According to a letter from Benton dated September 1929, however, no report had been produced by that time. At some unspecified time, some part of this assemblage also passed to a certain Dr Dodgson, whose discovery of three cut-marked vertebrae is mentioned in Benton's report (1931: 207). No other mention of Dodgson appears in the surviving papers. Ultimately, this assemblage seems to have passed to Professor Thomas Hastie Bryce at the University of Glasgow. His undated manuscript, now held by Marischal College, catalogues the human bone from the 1928 season and provides comments that give rather more detail than the published report:

> The several deposits are taken as they happened to be examined as no relation between them is signified. I separated the animal bone from the human and sent them to Dr Ritchie. The absence of certain items in the numbered parcels is probably explained by this. I have arranged the bones in two classes – 1. those in which ossification is complete ie adult bones and 2nd, those in which one is sure the epiphyses have not joined ie immature bones.
>
> No attempt has, in most instances, been made to give the exact age for the immature bones. This could have been done at the cost of a great deal of work, but it did not seem necessary in the circumstances – nor calculated to throw light on the circumstances under which the bones were deposited into the cave. It seems sufficient to provide the evidence that the bones belong to all ages from newborn to adult life. Although the result could only be a very rough one, and subject to objectives, I have counted all the separate items in the two columns to find that the immature bones considerably exceed the adult bones in number.
>
> In spite of fallacies (?) it may be stated that the young bones predominate and if this be confirmed by the investigations of the second season's collections, it would constitute a factor in the problem of the nature of this cave ossuary.
>
> In the underground dwelling at Rennibister in Orkney, the bones which I examined included many young bones giving occasion to the same speculations as in the case of your cave.
>
> There is nothing to indicate any arrangement of bones of single individuals in what you have sent to me, but of course one knows nothing about the relative positions of your lettered and numbered areas.
>
> As they have been submitted to me the whole appears a chaotic mixture of bones of persons of all ages. There is a remarkable absence of skulls and skull bones, unless you have reserved these from my inspection – this is a factor of possible significance.
>
> (Bryce nd: 8–10)

The human bone from the second (1929) excavation season travelled a different path. During 1928, Benton seems to have been introduced to Professor Alexander Low, Regius Chair of Anatomy at the University of Aberdeen. After some prodding, he was persuaded to catalogue that season's assemblage of human remains, and a hand-written list of bones, ordered by grid square, survives among the Marischal College papers (Low nd). Unfortunately, however, Low appears to have persuaded Benton to be much more selective in her recovery of human remains during the final (1930) season. In a letter to Low dated 14 July 1930, Benton writes:

> I am keeping all skulls & leg-bones & I am carefully noting all bones in the 2nd layer. You will be glad to hear that the rest goes into the dump

Benton appears to have been true to her word and, unsurprisingly, Low's subsequent catalogue of the 1930 human bone assemblage (1930a) is much shorter than its predecessor, containing only 52 bones compared to 1252 in the previous year.

Throughout her correspondence with Professor Low, Benton remained extremely curious about the human bones and raised a number of questions which Low does not appear to have addressed. She asked, for instance, why the 'human bones in Layer 1 have a 'reddish tinge' while animal ones have not' suggesting, conceivably, the use of ochre, or at least the differential treatment of human and animal bones. More curiously still, she asks 'what have they done to skulls to make them turn blue, white and black like a new kind of pottery?' (perhaps suggesting exposure to flame). Low's side of the correspondence unfortunately does not survive.

Benton's letters also hint at omissions in Low's catalogue. For example she questions the apparent omission of a skull from the 1929 catalogue, saying 'perhaps it crumbled to pieces before you saw it. I remember thinking as I dug it out that it had been decapitated but I think I destroyed the evidence as I extracted it' (14 July 1930).

Despite their obvious shortcomings, however, these documents together catalogue around 1600 human bones (the exact number is impossible to determine), entirely transforming the scale of deposition suggested by the published excavation report. Of these, the only bones known to survive are four cervical vertebrae held by National Museums Scotland and a further three in Elgin Museum. Despite extensive searches, the whereabouts of the three additional cut-marked vertebrae mentioned in the published report is unknown, as is the fate of the remaining 1928 material catalogued by Bryce. As for the bones recovered in 1929, Benton wrote to Professor Low requesting that 'unless any anatomist would like them, perhaps you would be kind enough to throw them away for us' (letter dated 16 January 1931). Most likely this instruction was carried out.

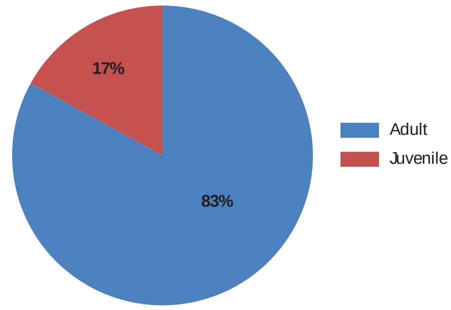

Illustration 6.2
Core assemblage broken down by adult and juvenile age categories; 'young' (15–25 years) included in 'adult' category; undifferentiated sub-adults omitted

6.5 Chronology

AMS dating has revealed that the human bone assemblage represents at least two distinct periods of mortuary activity within the Sculptor's Cave: one dating to the Late Bronze Age and one to the Roman Iron Age (see chapter 4; table 4.1; Armit et al 2011). Without dating every bone, it is impossible to disentangle the bone assemblages representing each of the two chronological periods. All of the stratified human bone from the Shepherd excavations, however, with the exception of mandible fragment SF1121, either returned a Late Bronze Age AMS date (SF225, SF235) or was otherwise associated with deposits which are stratigraphically Late Bronze Age in date (tables 4.1, 6.5). Meanwhile, five of the seven cut-marked vertebrae from the Benton assemblage (CV2–6) returned Roman Iron Age dates, as did an adult tibia fragment (SF1100) retrieved from Benton's spoil heap in 2006, a left temporal fragment recovered as part of the spoil heap excavations in 2014 (SF1130) and an unstratified thoracic vertebra from the Shepherds' excavations (SF1101; table 6.6). Since Bayesian modelling of the dated cut-marked vertebrae suggest that they may represent a single decapitation event (see section 6.8.3; chapter 4; illus 4.5), the undated examples have also been included in table 6.6, as has SF1121, which was recovered from a Phase 2/3 deposit during the Shepherds' excavations.

Comparison of the age profiles between the Benton and Shepherd material making up the core assemblage (1928–9 and stratified 1979 material) demonstrates the very different demographic profile of the two (illus 6.3), with juveniles predominating in the Late Bronze Age (Shepherd) assemblage and adults/young in the chronologically mixed (Benton) assemblage. Though illus 6.3 omits undifferentiated sub-adult bones, their inclusion (five bones; 22% of the Shepherd assemblage) would accentuate this pattern still further. Furthermore, 90% of the human bone known to date to the Roman Iron Age belongs to the adult/young categories (table 6.6).

While not conclusive, this raises a strong suspicion that the Late Bronze Age assemblage from the cave comprised predominantly juveniles (ie 'child' and 'infant' categories), while the Roman Iron Age assemblage comprised predominantly older individuals (ie 'adult' and 'young' categories). This possibility will be explored further in section 6.10.

Table 6.5
The stratified Shepherd Late Bronze Age human bone assemblage, excluding teeth (SF111, SF116a, SF116b, SF226, SF1123, SF1129) and bones too small for identification (SF1111–15). *SF232 and SF233 are ascribed to IIb17/18 (Block 2.2) in the original archive but IIb16/17 (Block 2.3) in Bruce's 1981 report and in the NMS archive; the latter context attribution has been adopted here

No.	Block	Context	Element	Detail	Age	Side	Pathology/ trauma	AMS date (95% confidence)	Notes
SF312	1.2	Ia22	Mandible (complete)	Central 2 incisors, both canines, 1st right premolar and molar, left 1st and 2nd molar present; right lateral incisor present (but damaged)	14–16 years	–	–	Failed	Radiographs show that third molars are partly formed but enamel is not completely developed; root formation of lower 2nd molar not complete. The missing teeth have probably been lost post-mortem. Teeth are caries-free and show only early attrition (Bruce 1981)
SF342	1.2	Ib23	Cranial fragment	Occipital (squamosal portion)	11–12 years	–	–	–	*Pars lateralis* of occipital still unfused. New bone formation on internal surface of cruciform area. Much less thickening of the trochlear region than SF233
SF1120	1.2	Ib23c	Metatarsal	2nd	Adult	L	–	–	–
SF225	2.2	IIb17	Mandible (complete)	With deciduous molars	4–6 years	–	–	1120–910 cal BC	Right condylar and coronoid process broken off. Teeth are caries-free and possess early signs of attrition of enamel
SF231	2.2	IIb18	Cranial fragment	Frontal	*c* 2 years	–	Multiple striations/ possible peri-mortem fracture	Failed	Metopic suture completely fused. Unusual brown colouration suggests damp environment.
SF234(a-b)	2.2	IIb17	Cranial fragments (×2)	Occipital	Sub-adult	L lateral	–	–	Sutures are open
SF243	2.2	IIc23	Cranial fragment	Temporal (with greater wing of sphenoid and 3 ossicles in middle ear cavity)	Sub-adult (<5–6 years)	L	–	–	Mastoid process is poorly developed and there is a patent foramen of Huschke which usually closes by the fifth or sixth year. Well-marked groove (of Lucas) on the medial aspect of the spine of the sphenoid (Bruce 1981). Same individual as SF244 and SF245?
SF244	2.2	IIc23	Cranial fragment	Occipital	Sub-adult (<5–6 years)?	–	–	–	Same individual as SF243 and SF245?
SF245	2.2	IIc23	Cranial fragment	Temporal (squamous and tympanic portion)	Sub-adult (<5–6 years)?	R	–	–	Patent foramen of Huschke. Irregular external surface. Stained patches on external surface similar to that previously observed in spoil heap assemblage. Same individual as SF243 and SF244?

Table 6.5 (continued)
The stratified Shepherd Late Bronze Age human bone assemblage, excluding teeth (SF111, SF116a, SF116b, SF226, SF1123, SF1129) and bones too small for identification (SF1111–15). *SF232 and SF233 are ascribed to IIb17/18 (Block 2.2) in the original archive but IIb16/17 (Block 2.3) in Bruce's 1981 report and in the NMS archive; the latter context attribution has been adopted here

No.	Block	Context	Element	Detail	Age	Side	Pathology/ trauma	AMS date (95% confidence)	Notes
SF227	2.3	IIb16	Mandible (fragment)	With surviving molar (M1) and premolar (PM2)/2nd deciduous molar	*c* 7 years	R	Some porosity	–	3rd molar not erupted
SF232(a-c)	2.3	IIb16/17	Cranial fragments (x3)	Parietal	2 years	R?	–	–	Parts of fronto-parietal and occipito-parietal sutures present
SF233	2.3	IIb16/17	Cranial fragment	Occiptal (cruciform area)	3–3.5 years	L	–	–	Very thickly buttressed internally
SF235	2.3	IIb16/17	Mandible (complete)	All lower deciduous teeth present except for right canine (lost post-mor-tem?). Permanent first molar crown visible on both sides	2–4 years	–	Bilateral damage to gonial region; probably recent	1120–910 cal BC	–
SF1103	2.3	IIb16/17	Humerus	Complete but missing epiphyses	6–7 years	–	–	–	–
SF1104	2.3	IIb16/17	Ulna	Complete but missing epiphyses	*c* 1 year	R	–	–	–
SF1105	2.3	IIb16/17	Ulna	Diaphysis only; upper and lower ends missing	*c* 12 years	R	–	–	–
SF1106	2.3	IIb16/17	Radius	Distal 1/3 and epiphyses missing	*c* 12 years	L	–	–	–
SF1107	2.3	IIb16/17	Ulna	Central part of diaphysis only	2–3 years	R	–	–	–
SF1108	2.3	IIb16/17	Rib	12th? (head only)	–	L?	–	–	–
SF1109	2.3	IIb16/17	Rib	One of the central ribs (part of diaphysis)	–	–	–	–	–
SF1110	2.3	IIb16/17	Rib	One of the central ribs (part of diaphysis)	–	L	–	–	Post-mortem damage
SF1116	2.3	IIb16	Clavicle	Complete except for lateral end	Sub-adult	R	–	–	–
SF1117	2.3	IIb16	Humerus	Distal half without epiphyses	–	L	–	–	–

Table 6.6
Human bone from the Sculptor's Cave assemblage dated to the Roman Iron Age directly, stratigraphically or by association

No.	Museum reference	Excavator	Element	Block/context/ grid square	Age	Pathology	Trauma	Date (95% confidence)
CV1	Elgin C7 1929 1931.14	Benton	Atlas vertebra	C7	Adult	None	Single cut mark	–
CV2	Elgin 1 1931.14	Benton	Axis vertebra	Unknown	Adult	None	Single cut mark	cal AD 120–340
CV3	Elgin 2 1931.14	Benton	Axis vertebra	Unknown	Sub-adult (<16–17 years)	None	Single cut mark	cal AD 220–400
CV4	HM 159	Benton	Axis vertebra	D4	Adult	Yes	Single cut mark	cal AD 230–400
CV5	HM 160	Benton	Axis vertebra	D7	Adult	None	11 cut marks	cal AD 80–320
CV6	HM 161	Benton	Axis vertebra	B4	Sub-adult (<16–17 years)	None	Single cut mark	cal AD 220–400
CV7	HM 162	Benton	Axis vertebra	Unknown	Adult	Yes	Fracture?	–
SF1100	–	Schulting 2006	Tibia fragment	Unstratified (Benton spoil heap)	Adult	None	Spiral fracture	cal AD 130–350
SF1101	–	Shepherd	Thoracic vertebra	Unknown	Sub-adult (<15–16 years)	None	None	cal AD 130–380
SF1121	–	Shepherd	Maxilla with deciduous molars (M1, M2)	2.7 (IIa5)	<10.5 years	None	None	–
SF1130	–	Büster/Armit	Left temporal	Unstratified (Benton spoil heap)	Unknown (aDNA: male)	None	None	cal AD 255–411

6.6 Element representation

A wide range of skeletal elements is represented across the various assemblages from the Sculptor's Cave, including the recovery by Benton of several 'wisps' and 'plaits' of human hair from grid squares A6 and C7 (Benton 1931: 197, 207), the latter found in association with two bone pins (SF807, SF808; illus 5.15). In terms of bone elements within the core assemblage, vertebrae are the most commonly represented (37%), followed by ribs (29%; illus 6.4; table 6.2). Isolated teeth, assuming that they were found, appear not to have been catalogued in the Benton assemblage, and teeth from the Shepherd assemblage have therefore been omitted from the comparative analyses.

The presence of significant numbers of small bones, like metacarpals (4%) and metatarsals (7%), suggests that at least some whole, articulated bodies were originally present in the cave. Nevertheless, Benton does not mention the recovery of articulated skeletons or body parts. One caveat to this is Low's reference to two 'individuals' in his assessment of the 1929 material: an 'adolescent under 18' and a 'child about 5 years', both apparently recovered from grid square C6. Furthermore, two unstratified hand phalanges (SF1125, SF1126) and a fourth right metacarpal (SF1127) recovered from 'rear gravel' during the Shepherd excavations (and extracted from the marine mollusc assemblage during the recent post-excavation programme) could belong to the same individual, aged around 4 years.

Breaking down element representation by age reveals further patterns (illus 6.5), with crania and pelvic bones better represented among the juveniles (ie 'child' and 'infant'

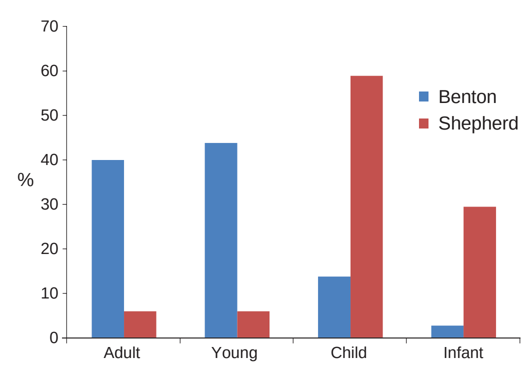

Illustration 6.3
Comparison of age groups represented in the Benton (1928–9; n=1546) and stratified Late Bronze Age Shepherd (1979; n=17) human bone assemblages; teeth not included. Bones from the Shepherd assemblage assigned to 'unknown' or 'undifferentiated sub-adult' categories omitted for the purposes of comparison

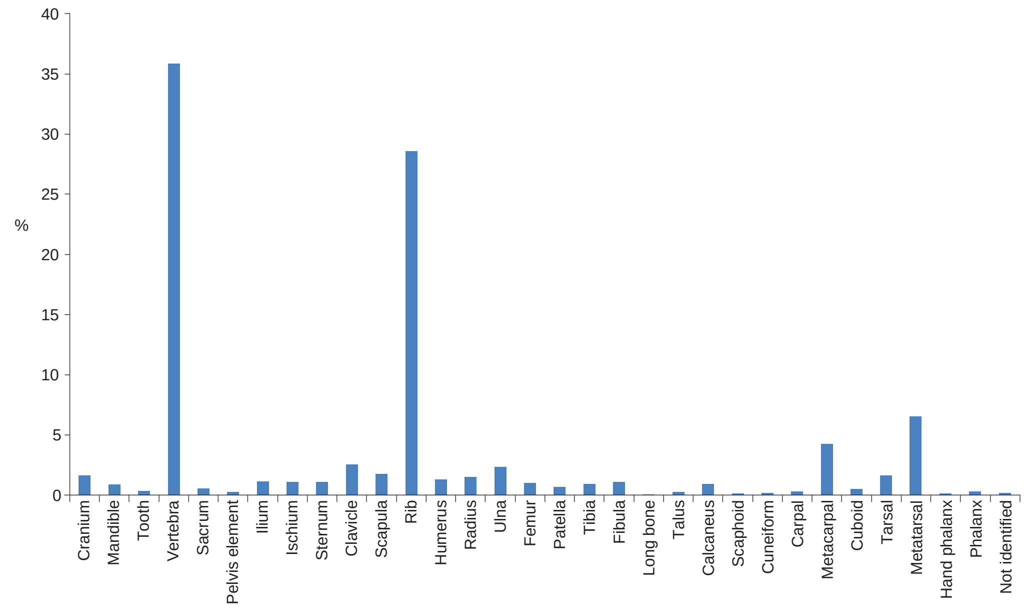

Illustration 6.4
Elements represented as a percentage of the total core assemblage. Pelvis includes 'hip bone'; calcaneus includes os calcis

Table 6.7
Table showing elements included within generalised 'body zones'; teeth and non-identifiable bones omitted. Cranium includes maxilla.

Body zone	**Bone elements included**
Head	Cranium, mandible
Torso	Vertebrae, sacrum, pelvis element (undifferentiated), ilium, ischium, sternum, clavicle, scapula, rib
Limbs	Humerus, radius, ulna, femur, patella, tibia, fibula
Extremities	Talus, calcaneus, scaphoid, cuneiform, carpal (undifferentiated), metacarpal, cuboid, tarsal (undifferentiated), metatarsal, phalanx (undifferentiated)

categories) and certain post-cranial elements, particularly metacarpals and metatarsals, better represented among the adult assemblage, a pattern which is further enhanced if we group elements by 'body zone' (ie head, torso, limbs, extremities; table 6.7; illus 6.6). Taking the pattern of body part representation between adults and infants, for example, crania are much better represented (26%) within the infant assemblage, in comparison to 1% representation in the adult assemblage. The higher proportion of cranial elements in the stratified Shepherd assemblage (illus 6.7) indicates that many of these are likely to be Late Bronze Age in date. Conversely, extremities (29%) are better represented within the adult assemblage, compared with only 2% representation in the infant assemblage. As a caveat, we should remember that infant crania are unfused, so more fragments need not represent more crania; it is also possible that small elements (such as sub-adult hand and foot bones) were overlooked during excavation.

Bearing in mind the chronological distinction between a predominantly juvenile Late Bronze Age population and a predominantly adult Roman Iron Age population (section 6.5), these age-based differences in element representation may reflect chronological differences in treatment of the dead. This possibility will be explored further in section 6.10.

All age categories in the core assemblage, with the exception of infants (represented by a small overall sample size of 47 bones), show larger percentages of right-sided elements than left (illus 6.8), particularly in the 'young' (64%:36%) age group; in large part this is a result of the preponderance of right clavicles (see table 6.8). While this difference cannot be demonstrated to be statistically significant, it might suggest a bias towards the removal of certain left-sided elements from the cave or, conversely, selective deposition biased towards right-sided elements (or the preferential survival of bones if bodies were consistently placed in the same position, for example, on their left or right sides).

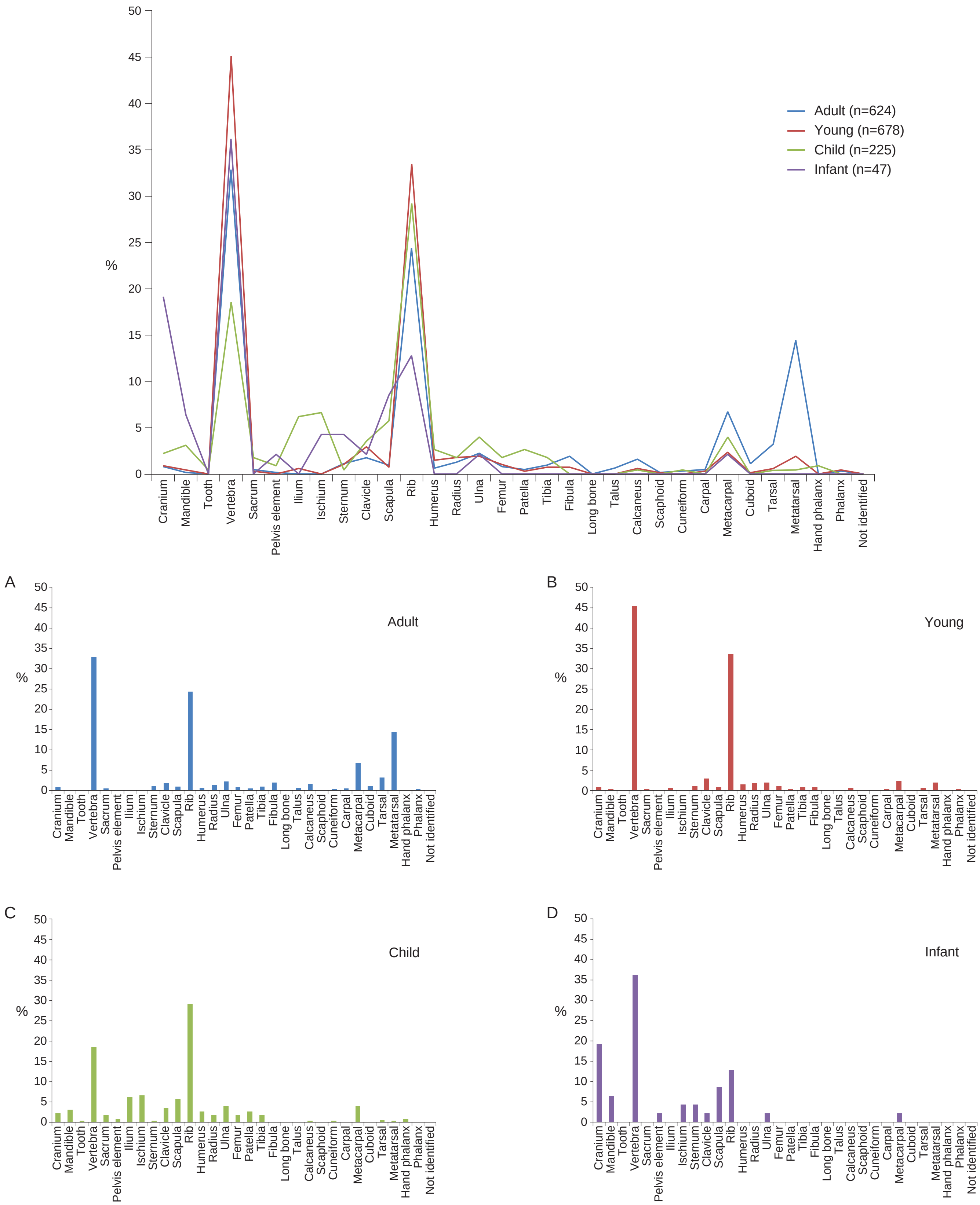

Illustration 6.5

Element representation of core assemblage as a percentage of each age category; 'unknown' age category omitted

6.7 Spatial distribution

The spatial distribution of the bones from Benton's excavations was not recorded systematically, but we can reconstruct it partially from the 1929 bone list (Low nd; the 1928 bone list (Bryce nd) is impossible to relate to Benton's site grid). This represents 72% of the total assemblage and can be combined with 11 stratified bones from the 1979 Shepherd excavations for which a location was plotted. Although each of Benton's grid squares is 10 feet (*c* 3m^2), broad patterns can be observed.

Bone was found in most of the excavated grid squares and has a generally wide spatial distribution (illus 6.9; see illus 2.2 for grid square concordance). It does appear, however, to have been more densely distributed in the centre of the cave, through rows B and C, with notable concentrations in grid squares C3 and D4. Plotting the distribution of the largest (femur, humerus) and most frequently encountered (clavicle) elements in the bone assemblage (illus 6.10) suggests no clear patterning as we might have expected had there been any sorting or ordering of bones into concentrated secondary contexts; instead, the concentration of femora and clavicles in grid squares C3 and D4 mirrors the overall distribution of human bone within the cave (illus 6.9).

Breaking the plots down by age, however, reveals some subtle patterns (illus 6.11). Adults and 'young' individuals have a fairly even distribution across the cave interior, with relatively few bones in the entrance passages and a notable concentration in grid square D4. Children's bones have a much more central distribution, avoiding the periphery of the cave interior, though also with a concentration in grid square D4; they are also present in the outer entrance passages and entrance canopy. Most striking of all, however, are the infant bones, which cluster in rows A and B, in the west half of the cave interior, with a particular concentration in grid square A3. Like the children's bones, they also have a subsidiary concentration in the entrance passages.

Breaking down the distribution of bones by body zone enhances the picture (illus 6.12). Heads (cranial and mandibular fragments), unsurprisingly, mirror the distribution of younger individuals (ie children and infants) – the age group in which this part of the body is best represented (see illus 6.5, 6.6) – being absent from the east part of the cave interior but densely concentrated in the East Passage. Meanwhile, bones of the limbs, torso and, to some extent, extremities cluster in the same grid squares as the adult remains, suggesting the deposition of at least

Table 6.8

Percentage representation of lateralised (left- and right-sided) elements in the core assemblage. The sided elements represent 17% of the total assemblage for those elements (n=148). Undifferentiated sub-adults and bones which could not be assigned an age category are not included

Element	Adult		Young		Child		Infant	
	L	R	L	R	L	R	L	R
Ilium	0	0	2	1	0	9	0	0
Ischium	0	0	0	0	7	7	2	0
Clavicle	2	8	3	7	3	3	1	0
Scapula	3	1	0	2	5	3	1	2
Humerus	1	1	1	3	2	2	0	0
Radius	0	5	2	4	2	0	0	0
Ulna	4	5	2	4	3	4	0	1
Femur	3	1	1	1	1	3	0	0
Tibia	2	1	1	1	1	1	0	0
Fibula	0	0	0	1	0	0	0	0
Rib	0	0	0	0	0	0	0	0
Talus	5	1	2	1	1	0	0	0
Metacarpal	0	0	0	0	0	1	0	0
Metatarsal	1	0	0	0	0	0	0	0
Total per age group	21 (48%)	23 (52%)	14 (36%)	25 (64%)	25 (43%)	33 (57%)	4 (57%)	3 (43%)

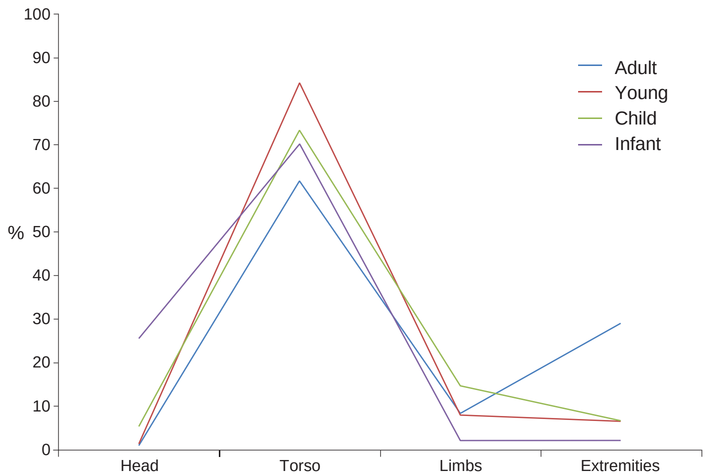

Illustration 6.6
Percentages of different 'body zones' within different age groups. Note that undifferentiated sub-adults have been omitted due to the low number of bones (minus teeth, n=5) represented

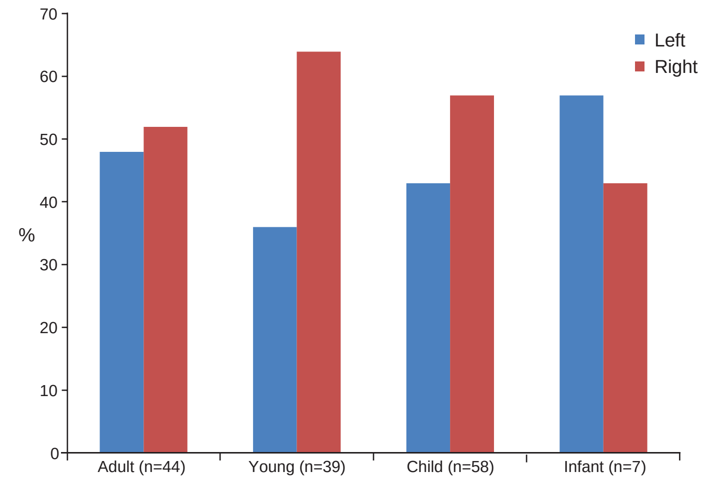

Illustration 6.8
Percentage of lateralised (left- and right-sided) elements within each age category. Sub-adults omitted due to low sample number (n=2); bones assigned to the 'unknown' age category also omitted

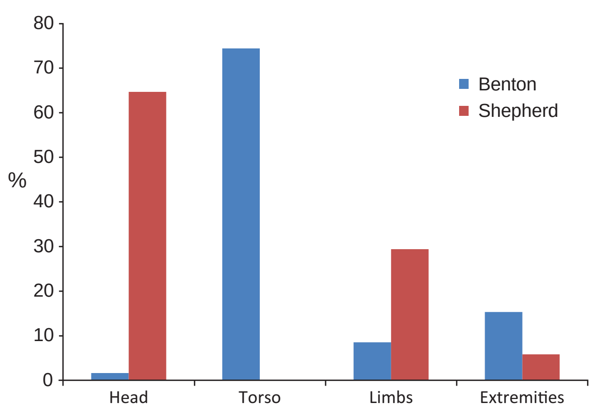

Illustration 6.7
Comparison of body part representation in the Benton (1928–9; n=1546) and stratified Shepherd Late Bronze Age (1979; n=17) human bone assemblages (minus teeth). Bones from the Shepherd assemblage assigned to 'unknown' or 'undifferentiated sub-adult' categories omitted for the purposes of comparison

some articulated bodies of adult individuals, which became disarticulated over time. Again, the generally wide distribution of most body zones provides further evidence against the sorting of disarticulated bones by element.

Interestingly, the marked concentration of extremities in grid square C6 (illus 6.12) correlates with Low's 1929 report, which refers to two 'individuals' in this location (see section 6.6). The concentrations of extremities here may thus reflect the former presence of complete bodies. Interestingly, however, this grid square does not contain any cranial or mandible fragments, suggesting that, if these were complete bodies, the heads were (at some point) removed.

6.8 Osteological analysis

Rick Schulting, Christopher Knüsel and Ian Armit

6.8.1 Introduction

Modern osteological analysis of the human remains from the Sculptor's Cave is obviously limited in scope, given that the vast majority of the bones from the site are now lost or discarded. Nonetheless, some indications of the character of the assemblage can be drawn from the following groups:

- An assemblage of 35 stratified human bones and teeth recovered from the Shepherd excavations, all but one of which can be attributed to the Late Bronze Age through a combination of direct and stratigraphic dating (chapters 2 and 4). Identifiable elements, excluding teeth, are shown in table 6.5. A small amount of unstratified human bone (12 elements) was also recovered.
- Seven cervical vertebrae from the Benton excavations, now known to date to the Roman Iron Age (tables 4.1, 6.6).
- One hundred and four human bones retrieved from Sylvia Benton's spoil heap during excavations in 2014 (box section 1) and an additional bone from surface collection in 2006 (SF1100). These are likely to represent a mix of Late Bronze Age and Roman Iron Age individuals.
- A lumbar vertebra (SF1102) donated to Elgin Museum in 1994 and provenanced to the Sculptor's Cave (reported to have been recovered from the area around grid square B5). This is of unknown date.

6.8.2 Late Bronze Age

Of the 34 Late Bronze Age human bones from the Shepherd excavations (table 6.5), 29 were recovered from the East Passage and 5 from the West Passage. As discussed in chapter 2, however, this imbalance between the passages may be partly due to recovery

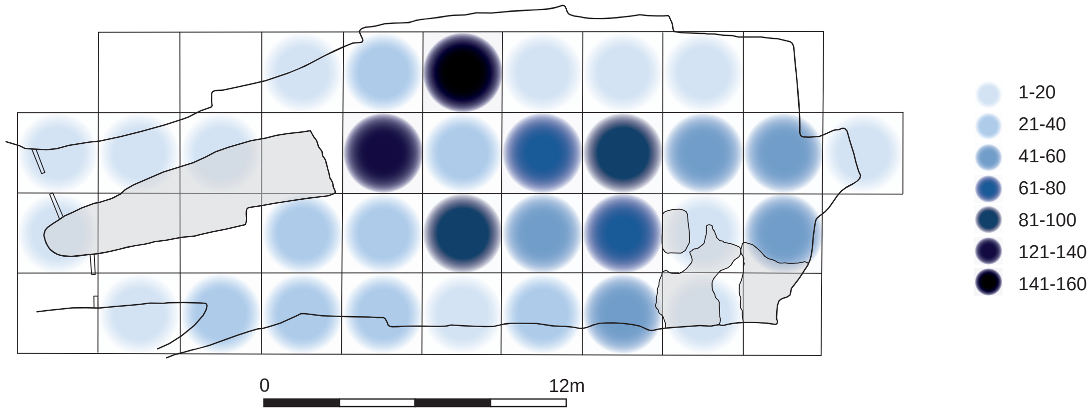

Illustration 6.9
Spatial distribution of Benton's 1929 human bone assemblage, based on Low's 'bone list' (see illus 2.2 for grid square concordance). Stratigraphic information regarding the 'layers' from which the bone was recovered has been omitted due to its chronological unreliability

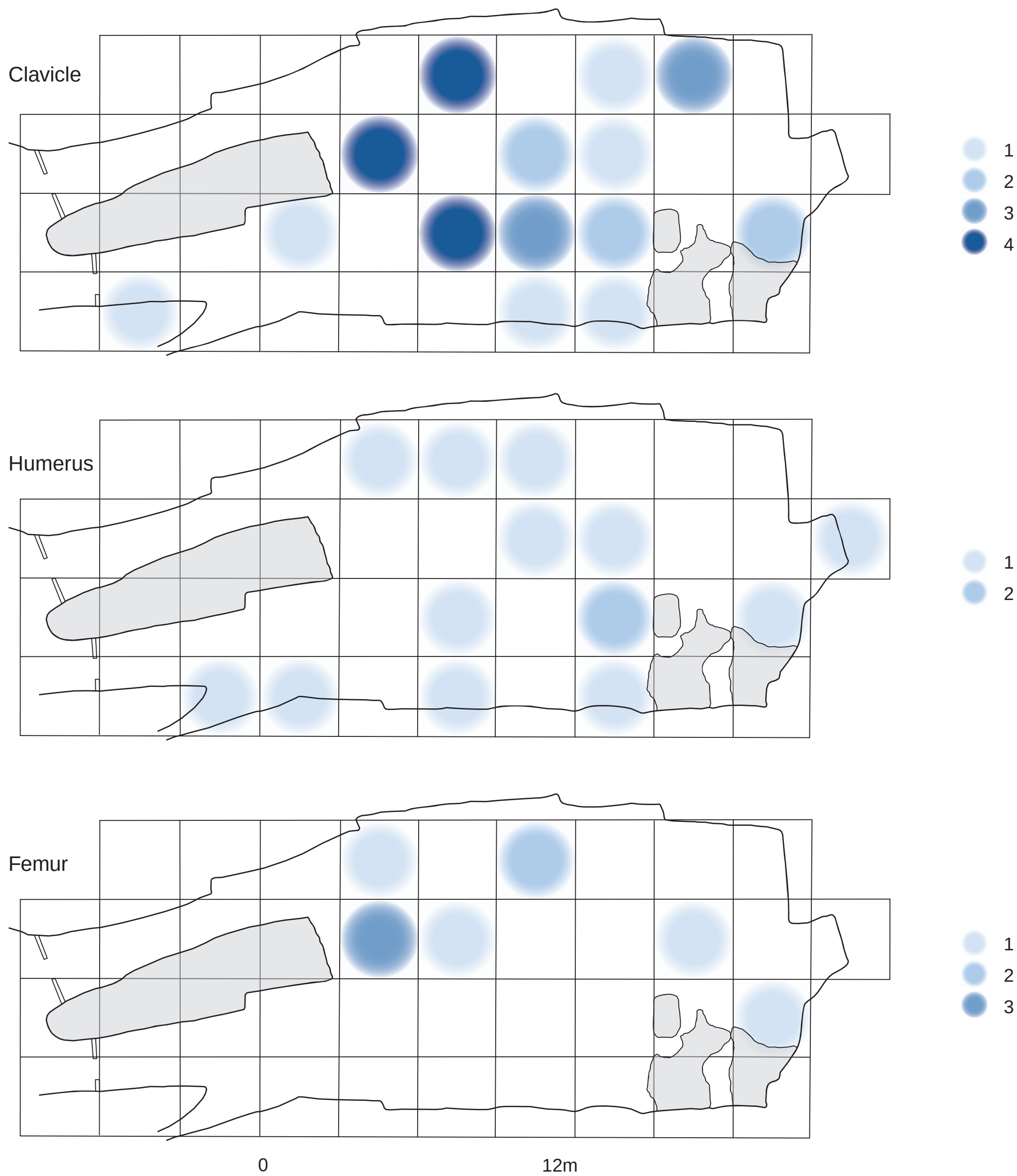

Illustration 6.10
Spatial distribution of right clavicles, humeri and femora in Benton's 1929 human bone assemblage, indicating a lack of sorting of bone by element

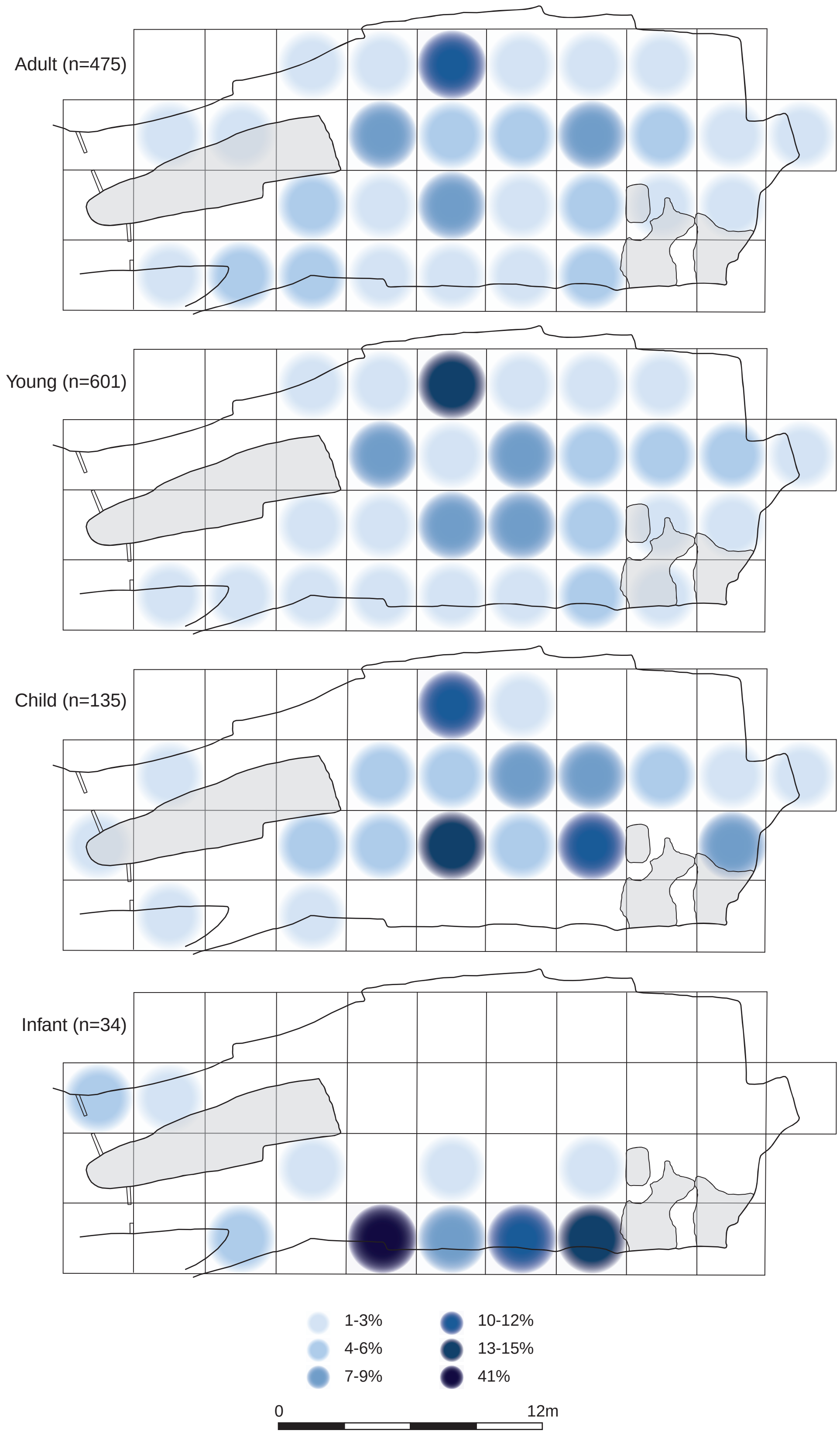

Illustration 6.11
Spatial distribution of Benton's 1929 and Shepherd 1979 human bone assemblages broken down by age category (see table 6.3); values represented as percentages of each age category. Undifferentiated sub-adults from Shepherd assemblage (SF234) omitted for the purposes of comparison. Some 99% of the total 1929 Benton bone assemblage and 29% of the Shepherd bone assemblage (minus teeth) could be located to grid square

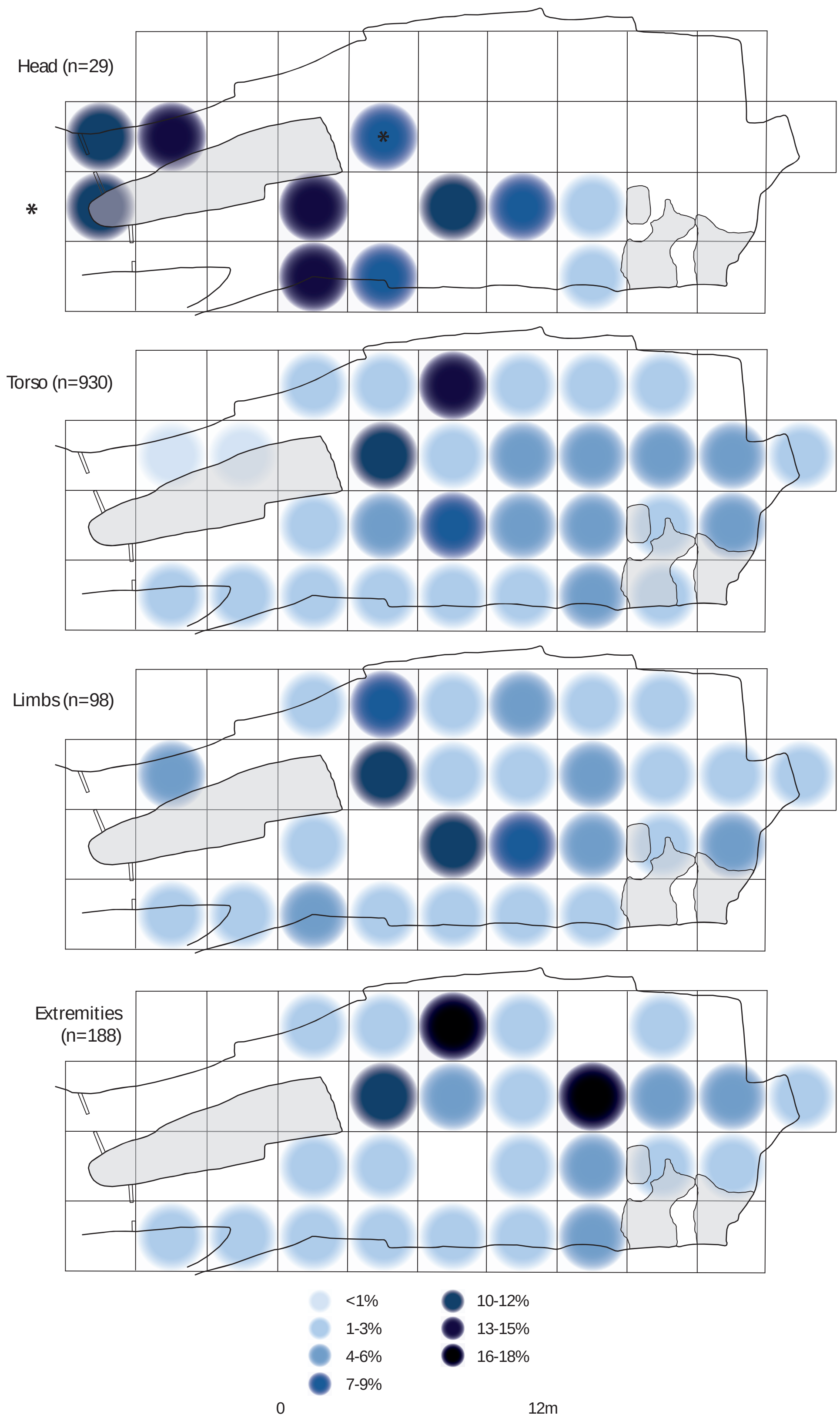

Illustration 6.12
Spatial distribution of Benton's 1929 and Shepherd 1979 human bone assemblages broken down by body region (see table 6.5); values are quoted as percentages of each body region represented. Asterisks indicate the location of additional 'crushed skulls' cited in Benton's report (1931: 181, 190)

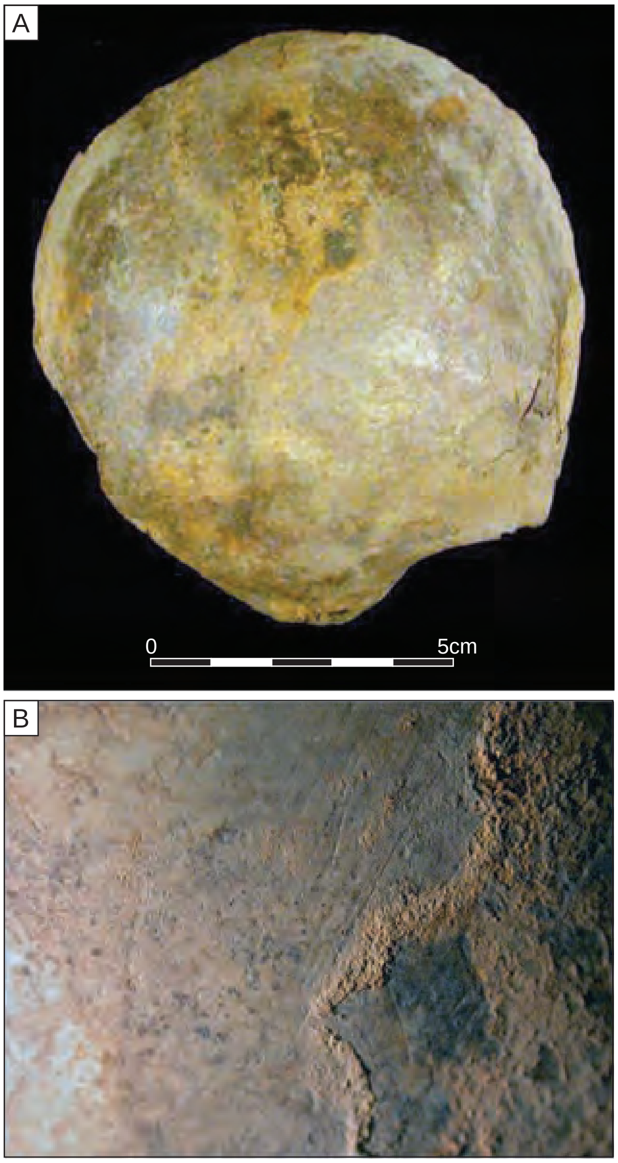

Illustration 6.13
(A) Child's frontal bone (SF231) with (B) detail showing striations; note continuation under adhering sediment (photographs: Rick Schulting)

bias (section 2.3.4). While cranial and mandible fragments are common, 57% of the bones are post-cranial. Sex cannot be determined for any of the individuals represented.

Sub-adult cranial fragments

The Late Bronze deposits yielded eight sub-adult cranial fragments; SF232 and SF234 were found in pieces but are probably from single bones and have been recorded as individual fragments. Three of the fragments (SF243–5), which were found close together by the west wall of the East Passage, near to the entrance (section 2.3.2; illus 2.13), probably come from the same individual; a child of less than 5–6 years old. At least three other children appear to be represented by cranial fragments, ranging from 2–12 years in age (table 6.5).

The most notable element from this group is a sub-adult frontal belonging to an individual aged around 2 years at death (SF231; Phase 1; Block 2.2; Context IIb18; illus 6.13A; table 6.5), with a frontal chord length of 92mm. The surface of this element is covered with groups of fine, parallel striations in multiple directions that can be seen to continue beneath sediment deposits that adhere to the vault (illus 6.13B). Taken individually, some of these could be seen as the result of taphonomic processes, such as the movement of the bone against stony ground (cf Andrews and Cook 1985). However, three factors argue against such an interpretation: first, no other cranial elements show comparable striations; second, they are too numerous, covering much of the surface of the bone; and third, the striations occur only on the outer surface of the bone, but might be expected to be equally distributed across all surfaces if resulting from post-depositional processes. It is unclear what implement was used to produce the striations, but they appear to be anthropogenic and ancient. The most probable explanation is that they relate to the removal of adhering soft tissues from the cranial vault by scraping or scouring: they are not cut marks that would indicate avulsion or reflection of the scalp, as one might find in scalping or cranial surgery.

A break to the mid-lateral right frontal displays some of the characteristics of peri-mortem fracture, with a well-defined, patinated internal bevel. The fracture edges themselves, however, were damaged post-mortem, making assessment difficult and leaving the question of peri-mortem injury or post-mortem damage open.

The rich brown colouration, seen particularly on the internal surface, is typical of bone that has been immersed in water or peat, though it has also been noted on human bone from chambered tombs in Orkney (Rick Schulting pers obs), where damp conditions can presumably produce a similar effect. A sample unfortunately failed to yield sufficient collagen for dating.

Sub-adult mandibles

Four sub-adult mandibles represent children ranging from 2–4 and 14–16 years of age (table 6.5). Three (SF225, SF227, SF235) were found in close association with cranial fragments in a relatively confined area of the East Passage (section 2.3.2; illus 2.13).

The stratigraphically earliest example is a sub-adult mandible (SF225; Phase 1; Block 2.2; Context IIb17) belonging to a child aged 4–6 years at death. It produced an AMS date of 1120–910 cal BC (SUERC-16623). In the block immediately overlying this, was another mandible, belonging to a child aged 2–4 years at death (SF235; Phase 1; Block 2.3; Context IIb16/17; illus 6.14A), with the permanent molar crypts just beginning to open (based on Ubelaker's (1978) standard dental development chart). The gonial region shows bilateral damage (illus 6.14B). This is the area that would be affected by decapitation blows, which typically travel completely through the neck and hit the posterior of the mandible. In this case, however, the splintered morphology of the damage and a lack of patination both indicate recent damage. It produced an AMS date of 1120–910 cal BC

Illustrations 6.14
(A) Child's mandible (SF235) with (B) details of recent damage to gonial region (photographs: Rick Schulting)

(SUERC-16622). A second sub-adult mandible fragment from the same context (SF227; Phase 1; Block 2.3; Context IIb16) belongs to a child aged *c* 7 years at death (age determination based on a radiograph that does not appear to survive in the site archive; Bruce 1981).

The fourth sub-adult mandible (SF312; Phase 1; Block 1.2; Context Ia22) represents an older individual than the others; an adolescent aged 14–16 years at death. It shows no signs of pathology or trauma and was found in association with the stake-built structures in the West Passage (section 2.3.4; illus 2.21). Its context would place it slightly later than the others, though still within the Late Bronze Age.

Post-cranial elements

The Shepherds also recovered 16 stratified post-cranial bones, again mainly composed of sub-adults. All but one bone derived from Block 2.3 in the East Passage (table 6.5).

Of two humeri, one is adolescent or adult size but lacks its epiphyses (SF1117) and the second belongs to a child aged 6–7 years at death (SF1103). A complete left radius (SF1118) belongs to a child aged 4–5 years at death (it is unstratified and thus not shown in table 6.5), while another fragmentary radius (SF1106) also belongs to a sub-adult of approximately the same age. The youngest individual, approximately 1 year old at death, is represented by an ulna (SF1104).

The sole adult bone known to date from the Late Bronze Age is a left second metatarsal from Block 1.2 (SF1120), one of only three human bones from the West Passage.

Summary

The human remains of known Late Bronze Age date comprise at least five children ranging from 1 to *c* 16 years of age at death (based on the four children's mandibles and the infant represented by an ulna), an adolescent and an adult (table 6.5).

During the Shepherds' excavation, only the sub-adult mandibles and cranial fragments were identified as human (which is why only these elements are plotted on plans of the entrance passages; illus 2.13, 2.21). This led to the suggestion that the entrance area of the cave was given over to the display of fleshed children's heads (Shepherd 2007: 199), perhaps wearing the hair rings that were also found in the Late Bronze Age deposits (illus 2.21). In this interpretation, the mandibles and hair rings were believed to have fallen from the heads as they decayed, becoming incorporated into the accumulating entrance deposits. When the faunal bone was analysed following the completion of the excavations, however, it became evident that numerous post-cranial human bones had also been recovered from the same contexts but had simply not been identified as human at the time. While the overwhelming preponderance of children's bones remains striking, the presence of these post-cranial elements suggests that Late Bronze Age rites practiced in the cave did not focus solely on the head, and casts doubt on some of the initial interpretations.

Although the idea of a display of fleshed heads may be less compelling than it seemed initially, the multiple striations on the sub-adult frontal (SF231) suggests that there was at least some element of manipulation and curation of human remains within the cave at this time.

6.8.3 Roman Iron Age

Only one human bone (a sub-adult maxilla fragment; SF1121) of likely Roman Iron Age date was recovered from stratified contexts during the Shepherds' excavation. This came from Block 2.7 in the East Passage, a complex set of deposits that formed over several centuries (section 2.4.2; table 6.6). The remainder of the human remains known to date from this period have been identified only where directly AMS dated. The majority of these comprise a series of cut-marked cervical vertebrae from Sylvia Benton's excavations: where the locations are recorded, these were found in the interior of the cave (one each in grid squares B4, C4, D4, C7 and D7; Benton 1931: 207; illus 6.15); it is not possible to attribute all vertebrae to a specific grid square (see below). Benton's original report (1931: 207) mentions nine cut-marked cervical vertebrae: six (four axis vertebrae and two atlas vertebrae) identified by Low and three (unspecified) by a certain Dr Dodgson (this is the only mention of this individual in the site archive, and it is unclear what happened to these bones). Of the seven vertebrae which survive

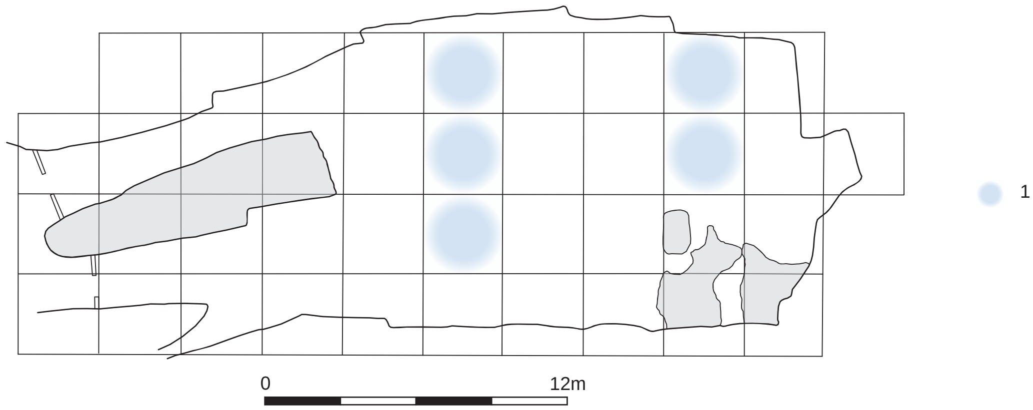

Illustration 6.15
Spatial distribution of cut-marked vertebrae (after Benton 1931: 207)

(six axis vertebrae and one atlas vertebra), six exhibit definite lesions with morphological features characteristic of peri-mortem sharp force injury (Sauer 1998; Novak 2000; Symes et al 2002; Knüsel 2005); the remaining axis vertebra (CV7; which did not appear in Low's original list) shows breakage that appears to be peri-mortem and related to decapitation (table 6.6). Five of these vertebrae derive from adults, with degenerative changes of one element (CV4) consistent with an older age at death. The remaining two vertebrae (CV3 and CV6) belong to sub-adults of less than 16–17 years of age, as seen in their unfused ephiphyseal rings. None of the surviving vertebrae can be matched to the same individual. Thus, we are dealing with the killing of at least six people; four adults and two children or young adolescents. Assuming that the elements identified by Dodgson belonged to separate individuals, the total would rise to nine. These vertebrae are highly unusual and describing them individually allows us to elucidate further details on the nature of this violent event.

Cut-marked vertebrae

CV1: Atlas vertebra, adult (grid square C7; illus 6.16)
This specimen is the only atlas among the surviving vertebrae, though Low (nd) notes the presence of two in his report. Although unstratified and not directly dated, the bone is assigned to the Roman Iron Age by association with the directly dated cut-marked vertebrae (table 4.1).

An oblique cut in the transverse plane directed from the posterior left side has completely removed the left inferior articular facet (through its process), the inferior margin of the left portion of the anterior arch and a piece of bone from the mid-line, from the inferior portion of the articular surface for the dens of the axis, as well as two small chips of bone from the right inferior articular facet, one (larger) from the medial margin and a smaller one from the lateral margin.

The injury appears to have resulted from a single blow to the posterior of the neck. As the cut is to the inferior surface, this vertebra would have remained attached to the head, assuming decapitation was completed by cutting through any remaining soft tissues.

Illustration 6.16
CV1: Inferior view showing sharp force trauma predominantly to left inferior articular surface (photograph: Rick Schulting)

CV2: Axis vertebra, adult (illus 6.17A)
A cut directed from the posterior right side has removed both inferior articular facets and the inferior portion of the spinous process and body, bisecting the vertebra obliquely in the transverse plane antero-posteriorly (illus 6.17B). The bone returned an AMS date of cal AD 120–340 (SUERC-16617).

The injury appears to have resulted from a single blow that may have clipped the left inferior articular facet of the atlas. Assuming that decapitation was completed by cutting through any soft tissues, the portion of the axis represented here, together with an undamaged atlas vertebra, would have remained with the head.

CV3: Axis vertebra, sub-adult (illus 6.18A)
The vertebra belongs to a child or adolescent aged less than 16–17 years at death (based on the unfused vertebral plate epiphysis of the body). The element is relatively small and thus is probably that

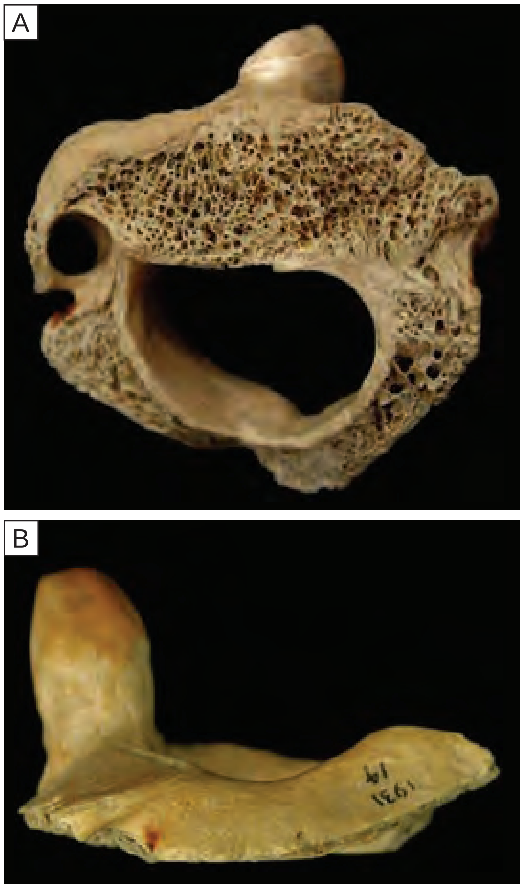

Illustration 6.17
CV2: (A) Inferior view of axis bisected by heavy blow with a sharp-edged implement and (B) left lateral view (photographs: Rick Schulting)

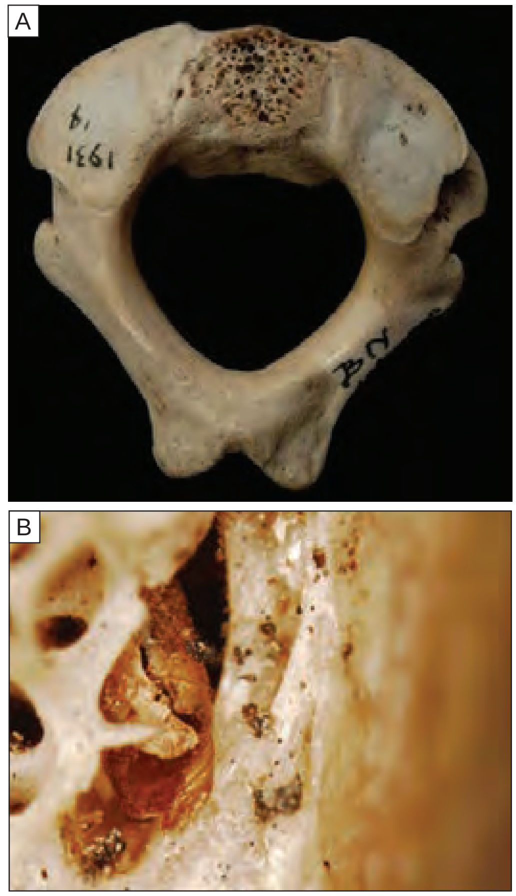

Illustration 6.18
CV3: (A) Superior view, showing heavy blow through the dens with (B) detail of fly pupa casing in the exposed cancellous bone of the dens (photographs: Rick Schulting)

of a child rather than an adolescent. The bone has been dated to cal AD 220–400 (SUERC-16618).

A cut directed from the posterior has detached the dens and its process from the body of the vertebra (ie through the intervertebral space between C1 and C2). The process of the dens seems to have snapped off with the weight of the head (as with CV7).

The injury appears to have resulted from a single blow to the posterior of the neck. This element would have remained with the torso, with the dens and the atlas being removed with the head.

A number of pupa casings are present in the cancellous bone exposed by the removal of the dens (illus 6.18B). Precise identification to species is made difficult by their incomplete and fragile state; nevertheless, their size, morphology (as far as can be made out) and context suggest that they are almost certainly pupae of the *Phoridae* family (Paul Moore pers comm). Phorid flies are attracted to decaying organic matter, including corpses, as the common name of 'coffin fly' for one species suggests (Benecke 2008). A single female will lay hundreds of eggs which hatch within a day or two. Larvae then feed for eight to sixteen days before moving to a drier spot to pupate (Disney 1994). Most species within the family are not immediately attracted to fresh corpses, and this, together with the presence of a fly pupa within the vertebra, suggests that this cycle of flies at least was feeding from well-decayed corpses in the cave, to the extent that the vertebra was already becoming dry. As the flies can burrow or follow small cracks in the soil to depths as great as 2m, this does not necessarily imply that the remains were exposed on the cave floor, though of course this is implied by Benton's discovery of bones lying on the surface when she visited the site.

CV4: Axis vertebra, adult (grid square D4; illus 6.19A)

This axis vertebra has osteophytes on the superior aspect of the articular surface of the dens and slight joint surface contour change of all four articular facets. There is also a syndesmophytic growth deriving from ossification of the anterior longitudinal ligament. There is a small area of eburnation anteriorly on the left inferior articular facet, indicating the erosion of the intervertebral disc, leading to bone-on-bone contact with the vertebra immediately below. A syndesmophyte would also suggest the possibility of spondyloarthropathy, diffuse idiopathic skeletal hyperostosis (DISH) or possibly trauma. These degenerative changes are consistent with an older individual. Due to its incompleteness, measurements to aid in sex determination, following Westcott (2000), could not be undertaken; nevertheless, the specimen's relatively large size suggests that the individual was likely male. The bone returned an AMS date of cal AD 230–400 (UB-6930).

A mid-line cut directed from the left posterior direction terminated in the left lateral mass inferior to the left superior articular facet in the posterior arch of the vertebra, removing a spall of bone from the left side posterior vertebral arch. The fineness of the blade producing this injury is particularly evident in the termination of the blow in the left lateral mass (illus 6.19B).

The injury appears to have resulted from a single blow to the posterior of the neck. However, the stroke in itself did not result in decapitation. Nor is there any indication of additional blows or secondary cuts that would be necessary to completely remove the head from the body. While it is conceivable that the required cuts could be made without leaving traces on the surrounding bone, this seems unlikely. It must be assumed, in the absence of the other vertebrae above and below the axis, that no such cuts were present on these elements and this is why they were not retained.

Illustration 6.19
CV4: (A) Superior view showing sharp force trauma to the left vertebral arch with (B) detail of sharp force trauma. The thinness of the weapon's edge is particularly evident here, and indicates a sword rather than, for example, an axe (photographs: Rick Schulting)

Regardless, as with many of the other injuries seen at the site, the injury to CV4 must represent a powerful blow from a sharp and relatively heavy implement.

CV5: Axis vertebra, adult (grid square D7; illus 6.20)
The bone returned an AMS date of cal AD 80–320 (SUERC-16619).

Eleven separate oblique cuts run from the right posterior in an antero-posterior direction in the transverse plan, one to the tip of the spinous process (perhaps associated with cut 4, see below). Three oblique cuts (1–3) can be observed to the right side of the neural arch at the base of the odontoid process of the dens (essentially, these are chop marks), where they terminate. Cut 4 terminates at the base of the odontoid process and removed a spall of bone from the superior aspect of the right lamina, the majority of the right superior articular facet and a small spall from the left superior articular facet; cut 4 may also have removed the superior tip of the spinous process and may demonstrate that the blade deformed as it passed through the tissue and bone. Another two short cuts (7, 8) have been made to the lateral aspect of the right lamina of the neural arch between cuts 6 and 9, while three more oblique linear cuts (6, 9, 10) appear on the posterior right lamina of the neural arch. A final cut (11) is present on the inferior spinous process.

This specimen appears to have been subjected to as many as 11 separate blows. The blow (cut 4) to the spinous process likely would have detached the right inferior articular facet and the inferior portion of the body of the overlying atlas. The sequence of these cuts may be the smaller ones first, then those on the posterior right lamina and then cut 4 and the superior three linear chops (cuts 1–3). As with CV4 (illus 6.19), the fineness of the blade is evident.

Despite the number of blows, the dens remained attached to the body of the vertebra and so, as with CV4, it cannot be said from the surviving evidence that this is a true decapitation. The cuts into the dens do indicate that the spinal cord was completely severed. All of the injuries are the result of forceful blows with a relatively heavy implement and not from, for example, a knife used to cut at the soft tissues surrounding the bone.

This is probably the vertebra that was subject to inconclusive SEM analysis (Wakely and Bruce 1989; Wakely 1993).

CV6: Axis vertebra, sub-adult (grid square B4; illus 6.21)
This axis vertebra is from a child or adolescent, aged less than 16–17 years at death (based on the unfused vertebral plate epiphysis of the body and apophyses), and dates to cal AD 220–400 (SUERC-16620).

A single cut to the mid-line from the posterior direction, nearly perfectly in the transverse plane, has sheared off the superior portion of the spinous process, the entire dens and its process and the medial portions of the superior articular facets bilaterally.

This injury appears to have resulted from a single blow to the posterior of the neck. The blow to the spinous process would have detached the right inferior articular facet and the inferior portion of the body of the atlas. This blow appears to have been delivered from directly behind the victim with the weapon held horizontally.

This specimen may represent a complete decapitation, though of course soft tissue could still have held the head onto the body,

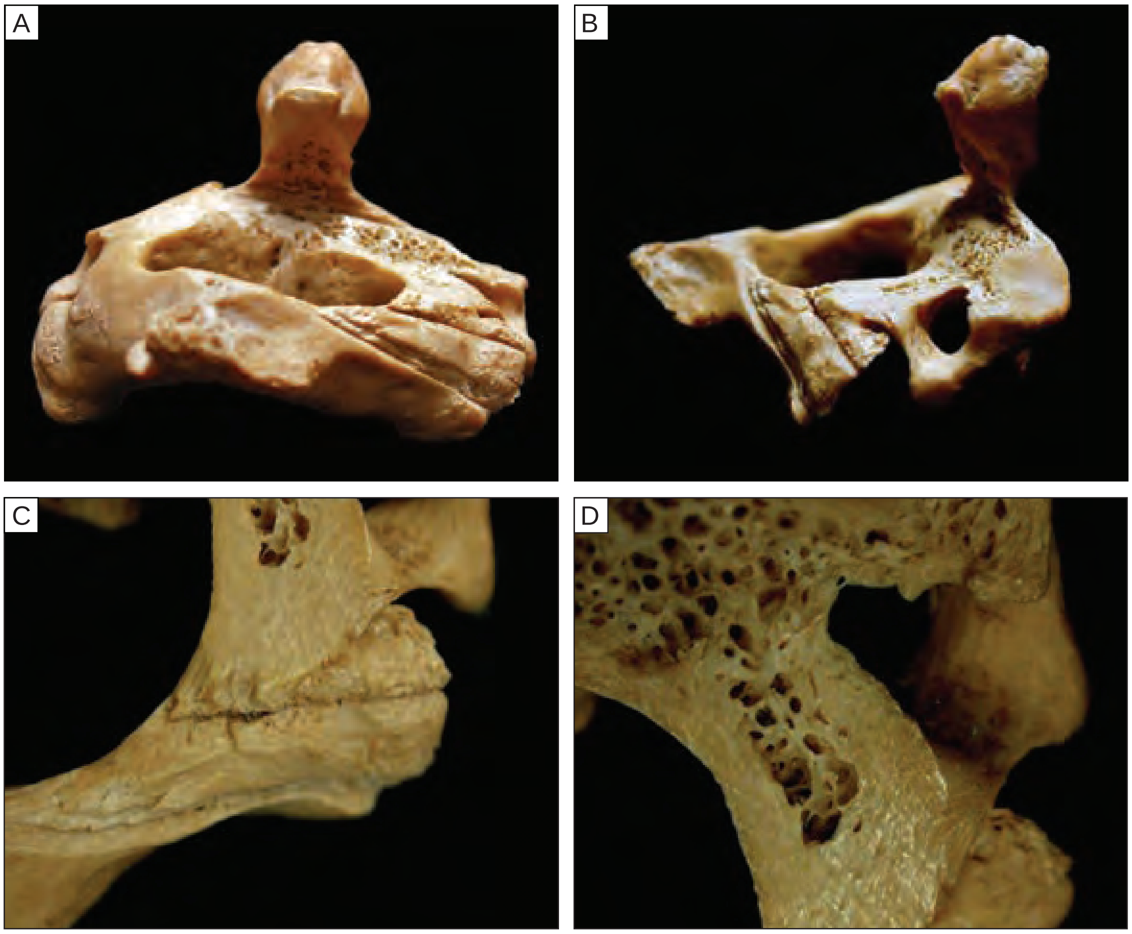

Illustration 6.20
CV5: (A) Superior view: multiple blows terminating in the right lateral mass and the dens are evident, (B) right lateral view showing multiple blows terminating in the right vertebral arch and the odontoid process, (C) detail showing series of blows into the right vertebral arch and superior right lateral mass, (D) detail showing cut across the right lateral mass, removing part of the superior articular surface; multiple striations from the weapon's edge are evident (photographs: Rick Schulting)

even once the axis was bisected. However, cutting through the remaining vessels and muscles would have been easily achieved and would have been unlikely to leave any marks on the vertebra. If the head had been completely removed, it would still retain the missing uppermost portions of the axis vertebra (held in place by alar ligaments and the apical ligament of the dens) together with the atlas. The extant element (CV6) would thus have remained attached to the torso.

CV7: Axis vertebra, adult (illus 6.22)
This axis vertebra comes from an adult. It displays a joint surface contour change of the body inferiorly, with marginal osteophytic growths on the right side and eburnation superiorly on the dens. Although not directly dated, the bone is assigned to the Roman Iron Age by association with the directly dated cut-marked vertebrae (table 4.1).

No cut marks are present on this specimen, but there is a dry/peri-mortem break of the laminae of the neural arch, posterior to the superior articular facets and through the right inferior articular facet. This may be a fracture caused by the weight of a largely detached head. Without clearer evidence, the status of this specimen remains uncertain, though in the context of the other vertebrae, the break might be considered suggestive of a peri-mortem injury associated with trauma to the neck resulting from decapitation.

Other bones
Aside from the cut-marked vertebrae, there are a few other surviving bones that can be placed confidently within the Roman Iron Age. Perhaps the most significant is a human right tibia shaft fragment (SF1100; illus 6.23A), *c* 13cm in length, found eroding out of what is now known to have been Benton's spoil heap outside the cave in 2006. The element is reasonably robust and could belong to a male (though this is tentative given its incompleteness). It has been AMS dated to cal AD 130–350 (SUERC-16621), and is of particular interest because it demonstrates a classic peri-mortem spiral fracture pattern running lengthways along the shaft (illus 6.23B). The fracture margins are sharp and the fracture surface is smooth and presents an undulating profile (cf Outram 2002; Knüsel 2005).

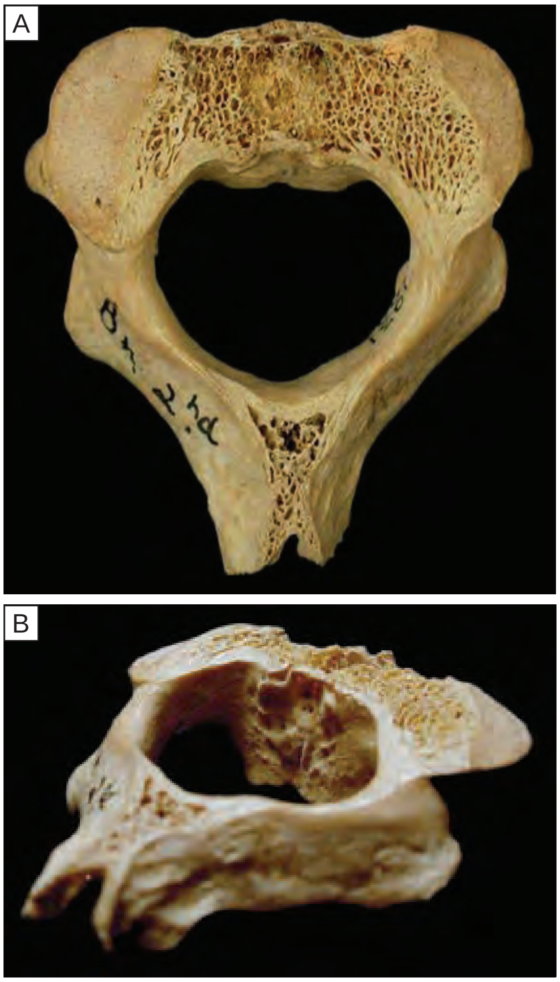

Illustration 6.21
CV6: (A) Superior view and (B) right oblique view showing the upper surface, including the odontoid process and the dens, removed by a single blow (photographs: Rick Schulting)

Illustration 6.22
CV7: Superior view showing missing vertebral arch, possibly as a result of traumatic fracture (photograph: Rick Schulting). There are no cuts visible on this specimen

From the Shepherds' excavations, an unstratified sub-adult thoracic vertebra (SF1101) from Area III produced a Roman Iron Age date of cal AD 130–380 (SUERC-16627). The unfused state of the epiphyseal rings indicates an age of less than 15–16 years at death. Furthermore, a sub-adult maxilla fragment (SF1121) can be attributed to the Roman Iron Age due to its stratigraphic position within Block 2.7 in the East Passage (section 2.4.2).

Finally, a fragment of a left temporal bone (SF1130), shown to be male through ancient DNA analysis (David Reich pers comm), was recovered from excavations of Benton's spoil heap in 2014 (box section 2). It produced an AMS determination of cal AD 250–420 (SUERC-68717).

Summary

The Roman Iron Age material, limited as it is, has a markedly different character to that of the Late Bronze Age. The scale and consistency of peri-mortem trauma shows that many of these individuals (perhaps at least nine) were deliberately decapitated. The majority of individuals were adult, with no young children represented; again, in marked contrast to the earlier assemblage.

Assuming that the small surviving collection of Roman Iron Age cut-marked vertebrae is representative, there is a certain degree of consistency to the injuries. The cut marks in all cases relate to a heavy, sharp-edged weapon, struck with varying but generally considerable force. This can be seen particularly in axis CV6 (illus 6.21), cleanly sliced through with a single stroke, which certainly suggests a sword or an axe. At the opposite extreme, axis CV5 (illus 6.20) displays as many as 11 cuts, still leaving the dens attached. While many of these are short, chopping blows, there is no indication of the associated crushing that might be expected with an axe. The thinness of the weapon's edge is also clear from a number of the cuts on CV5 (illus 6.20B), and on CV4 (illus 6.19B). Thus, it is probable that a sword is the implement responsible for all observed vertebral trauma.

The placement, and in some cases the number and close proximity, of the injuries suggests a ritualised aspect to what was clearly a violent event, at least with regard to patterning in the way in which the blows were struck. Each blow seems to have been delivered from behind in all cases and, in most but not all, to the left-hand side of the individual. This might suggest that the assailant stood to the right side of a kneeling victim. The multiple blows of CV5 which impacted the right side of the element, the opposite to the majority of others, suggest that the assailant may have stood to the left side of the victim while targeting the same area of the neck, but was apparently less proficient in the task of decapitation. This may suggest at least two assailants were involved. The fact that this sample of vertebrae derive from the most superior elements of the vertebral column, the repeated and close proximity of the cut and chop marks, and their having been delivered from behind, all suggest that the posture of the victim was controlled. Because of the absence of the corresponding mandibles and posterior cranial vault elements (occipital and parietals) of these individuals, it is difficult to determine the posture of the neck (see, for example, Boylston et al 2000; Pitts et al 2002; Buckberry 2008). However, given the apparent accuracy of the blows and the repeated left-side patterning and position of the cuts, it would seem most likely that the head of the victim was held in flexion (ie with the chin oriented toward the chest). A

Illustration 6.23
(A) Human tibial shaft fragment (SF1100) found on path outside the Sculptor's Cave entrance in 2006, (B) detail showing smoothly undulating fracture edges (photographs: Rick Schulting)

flexed head would stretch the *ligamentum nuchae*, making it taut, and expose the uppermost vertebrae to blows delivered from behind. By contrast, if the head were held in extension (ie with the neck extended, forming a more acute angle with the back), the occipital would obscure these vertebrae and would have received the blows instead. In the case of those vertebrae displaying multiple cut marks, the victim must have been held in place while multiple blows were delivered.

The upper two cervical vertebrae present a relatively small target for a blade swung with force, implying a considerable level of skill by the weapon's wielder. This applies even to the multiple blows – best described as hacking – seen in CV5, since they fall so closely together. While this is in the absence of the other vertebrae, we can assume, given that these examples were recognised, that any similar damage present on other cervical vertebrae would have been noted and commented upon. The dating evidence, as discussed above, is consistent with the cut vertebrae belonging to a single event, though it could alternatively represent a series of similar events made over a longer period. In either case, the injuries appear to be the result of execution-style killings rather than combat injuries or homicidal assaults.

The adult tibia shaft fragment, featuring classic peri-mortem spiral or helical fracturing, adds quite another dimension to the Roman Iron Age human bone assemblage from the Sculptor's Cave. Within the limits of radiocarbon dating, it falls within the same period as the decapitations. While the breakage pattern might suggest butchery for marrow extraction, the absence of a percussion scar would seem to exclude the possibility of marrow removal associated with anthropophagy (see Knüsel and Outram 2006: 256–7, figs 17.2, 17.4), although such indicators might not always be visible. The breaking of limbs might be undertaken in a context of torture or may represent a peri-mortem injury resulting from a fall or from interpersonal violence. As another possibility, the bodies of the executed may have been subjected to post-mortem violence or, less likely, to accidental damage by a rockfall (though this would have had to occur while the bone was still in a very fresh state). Further interpretation relies on the identification of patterning in the treatment of the entire skeleton, which is not possible from examination of a single element.

6.8.4 Unstratified/undated

Among the unstratified human remains from the Shepherds' excavations, one element merits individual attention. This is an adult frontal fragment (SF1128; illus 6.24A) missing much of the right side above the orbit. A linear fracture extends from the middle of the left orbit diagonally towards the mid-line. The fracture edge is oblique, suggesting that this may be a peri-mortem fracture, though this is uncertain, largely due to the incompleteness of this area of the bone. There is also a fracture to the upper-middle left frontal, exhibiting a semi-circular fracture margin, with a patinated internal bevel (illus 6.24B). These features could suggest a peri-mortem injury. As with the Late Bronze Age sub-adult frontal (SF231; illus 6.13), the colouration seen particularly on the internal surface suggests deposition in water or peat or exposure to damp. This specimen remains undated.

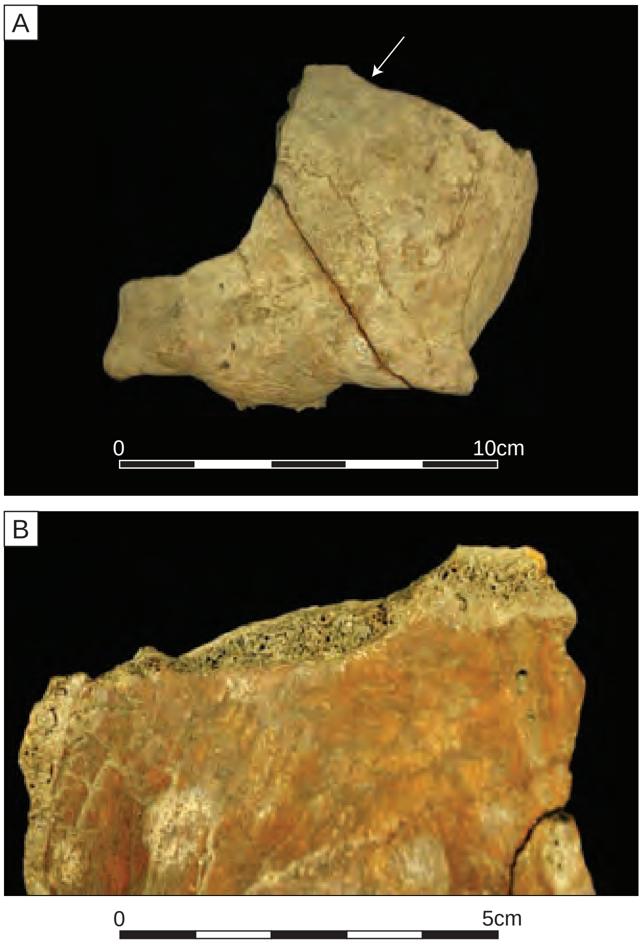

Illustration 6.24
(A) Adult frontal (SF1128) with arrow pointing to fracture, (B) detail showing endocranial (internal) surface of the left frontal fracture; note the patinated bevel (photographs: Rick Schulting)

Of the 104 human bones recovered from Benton's spoil heap in 2014, only three showed possible signs of trauma. The clearest example was the fifth left metatarsal of an individual aged less than 16–18 years at death (SF1131), which showed signs of sharp-force trauma (illus 6.25).

6.9 Stable isotope analysis

Rick Schulting and Ian Armit

Sampling of the human and faunal remains from the Sculptor's Cave for AMS radiocarbon dating at the Scottish Universities Environmental Research Centre (SUERC) provided the additional opportunity to undertake stable carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope analysis. These two isotopes provide information on aspects of the long-term diets of the individuals in question, over approximately the last decade of life in the case of adults (Ambrose and Krigbaum 2003). Measurements on bone collagen (as opposed to bioapatite, the mineral component of bone) are biased towards dietary protein at the expense of lipids and carbohydrates (Ambrose and Norr 1993). In the absence of

Illustration 6.25
The fifth left metatarsal of an individual aged less than 16–18 years (SF1131), which shows signs of sharp-force trauma (photograph: Ian R Cartwright, School of Archaeology, University of Oxford)

C4 plants such as millet, $\delta^{13}C$ indicates the contribution of protein derived from marine sources (Chisholm et al 1982) while $\delta^{15}N$ reflects primarily a trophic level effect, ie the place of an animal in the food chain as a herbivore, omnivore or carnivore (Schoeninger et al 1983; Hedges and Reynard 2007). Stable carbon isotope values on bone collagen for human consumers in north-west Europe range from about -21‰ for a purely terrestrial diet to about -12‰ for a purely marine diet. Stable nitrogen isotope values for terrestrial herbivores in north-west Europe can vary quite widely, but in general fall between about 4‰ and 7‰. Human consumers without a significant marine component in their diets usually have values of about 8–10‰, though they may be slightly higher if the animals they consume fall in the upper part of their range. Values can be substantially higher (*c* 14–16‰) if marine or aquatic foods (eg fish, birds, marine mammals) make a significant dietary contribution, since food chains in both cases can be much longer and thus the cumulative effect greater.

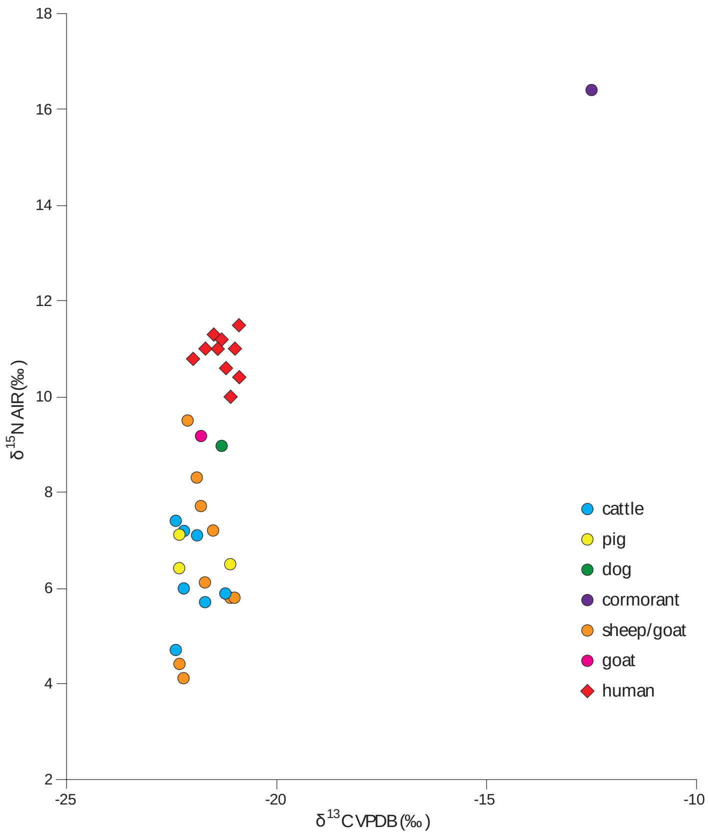

Illustration 6.26
Bivariate plot of $\delta^{13}C$ and $\delta^{15}N$ results on directly dated humans and animals from the Sculptor's Cave

Given the coastal location of the Sculptor's Cave and the recovery of marine fish bones (section 7.4.3), the significant use of marine resources certainly seems possible. However, a summary of $\delta^{13}C$ data associated with radiocarbon dating of human bone from around Scotland from between the Mesolithic and medieval periods suggests that the substantial use of marine foods was very much restricted to the Mesolithic and Viking periods (the evidence for the latter thus far being restricted to Orkney, though this may be a result of sampling bias) (Barrett et al 2001; Schulting and Richards 2002; Richards et al 2006). This is not to say that marine foods were never used in the intervening periods – there is clear zooarchaeological evidence that they were – but rather that this took the form of low-level (perhaps intermittent) use which was of little relative importance in the overall diet.

The isotopic results from the Sculptor's Cave are in keeping with this general pattern. Neither the results from the Late Bronze Age nor from the Roman Iron Age show evidence for any significant use of marine foods (table 4.1; illus 6.26). While fish bones are present at the Sculptor's Cave, the amount of protein and calories provided by them would have been overshadowed by those of domestic species (see section 7.4.3) and, in any case, it is entirely possible that food consumed by those individuals found within the cave was not typical of the everyday diet. The slight elevation in $\delta^{13}C$ in the average human value compared to that of the faunal remains is as expected, given the small trophic level shift in carbon (Bocherens and Drucker 2003). Trophic level shifts are much more pronounced in $\delta^{15}N$ and the human elevation above the faunal average suggests diets more than adequate in animal protein, though there are other considerations to be taken into account, such as the manuring of crops, which has been shown to raise $\delta^{15}N$ values in cereals (Bogaard et al 2007). It can also be noted that some of the sheep/goat $\delta^{15}N$ values are unusually high. At least one of these animals is immature and may still be showing a nursing effect, essentially raising their values by a trophic level over that of their mother (Schurr 1998).

Interestingly, the humans from the Sculptor's Cave (both Late Bronze Age and Roman Iron Age) form a relatively tight cluster that is distinct, for example, from the equally tight cluster of the Middle Iron Age cemetery population at Broxmouth hillfort, East Lothian (Armit and McKenzie 2013; illus 6.27); it is even more distinct from the strongly marine-influenced diets of some Viking and medieval individuals from Newark Bay, Orkney (Richards et al 2006). Low-level consumption of marine foods (less than 5–10% of the protein intake) by the Sculptor's Cave population is still possible; comparative samples from contemporary inland populations would be needed to assess this further.

The lack of evidence for substantial marine or freshwater aquatic resource use is a common feature throughout Iron Age Britain (Jay and Richards 2006; 2007). At the Glastonbury Lake Village in Somerset, stable isotope data on humans show negligible dietary use (Jay 2008) despite expectations based on the location of the settlement and the presence of fish and waterbirds. Even in the far north, data from the Pictish period in Orkney show strongly terrestrial isotope signatures. Only in the Viking Age do isotopic values become significantly elevated, indicating an increasing use of marine foods (illus 6.27) (Barrett et al 2001; Richards et al 2006). It is perhaps particularly interesting in the context of the local environment that the individuals deposited at the Sculptor's Cave do not seem to have relied upon either the coastal resources of the Moray Firth or the estuarine environs of Loch Spynie. Indeed, they seem to have even less of a marine component in their diet than the Middle Iron Age population at Broxmouth hillfort (illus 6.27). This might suggest that either the Sculptor's Cave individuals did not inhabit the immediate locality of the cave or that they failed to exploit the coastal resources and estuarine wetlands on any significant scale.

6.10 Reconstructing mortuary practices

Lindsey Büster and Ian Armit

6.10.1 The core assemblage: element index

In discussing the composition of the human bone assemblage, it is useful to look at element representation in order to assess differences in patterns between, for example, different age groups (section 6.6). Such analyses are always crude, given that certain elements, such as vertebrae and ribs, are more numerous in the human skeleton than, for example, mandibles, crania and long bones. In order to understand more clearly what element and body part representation might actually mean in terms of the mortuary treatments practised in the cave, it is necessary to establish a more formal index of elements.

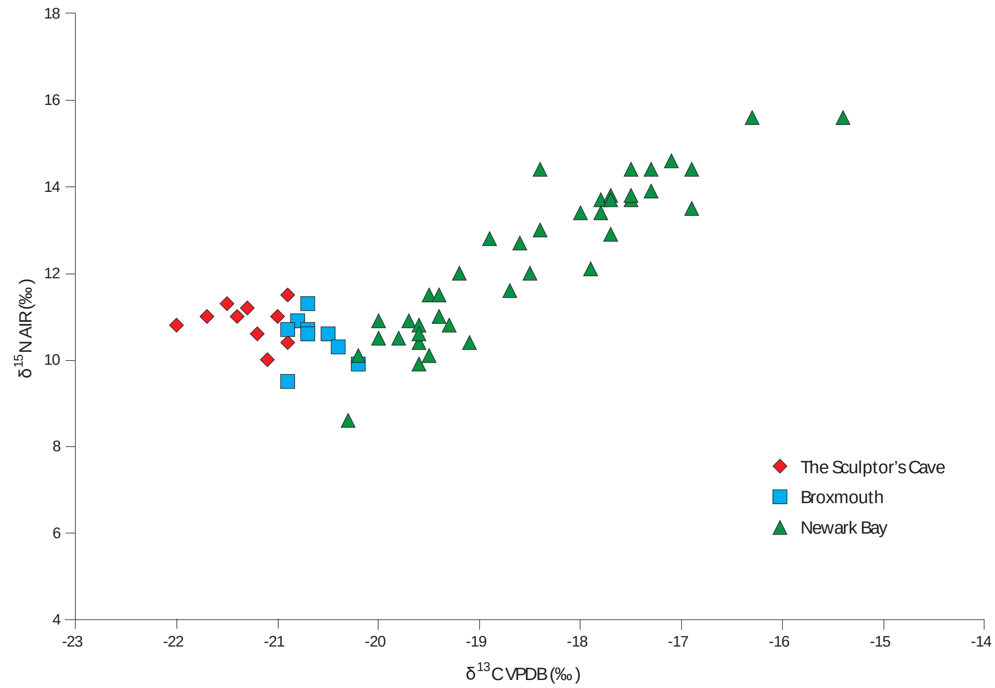

Illustration 6.27

Bivariate plot of $\delta^{13}C$ and $\delta^{15}N$ results obtained from analyses of human remains from the Sculptor's Cave, Broxmouth hillfort cemetery and Newark Bay (Broxmouth data from Armit and McKenzie 2013; Newark Bay data from Richards et al 2006, taking marine reservoir effect into account). The Newark Bay data range in date from the Viking to Medieval periods

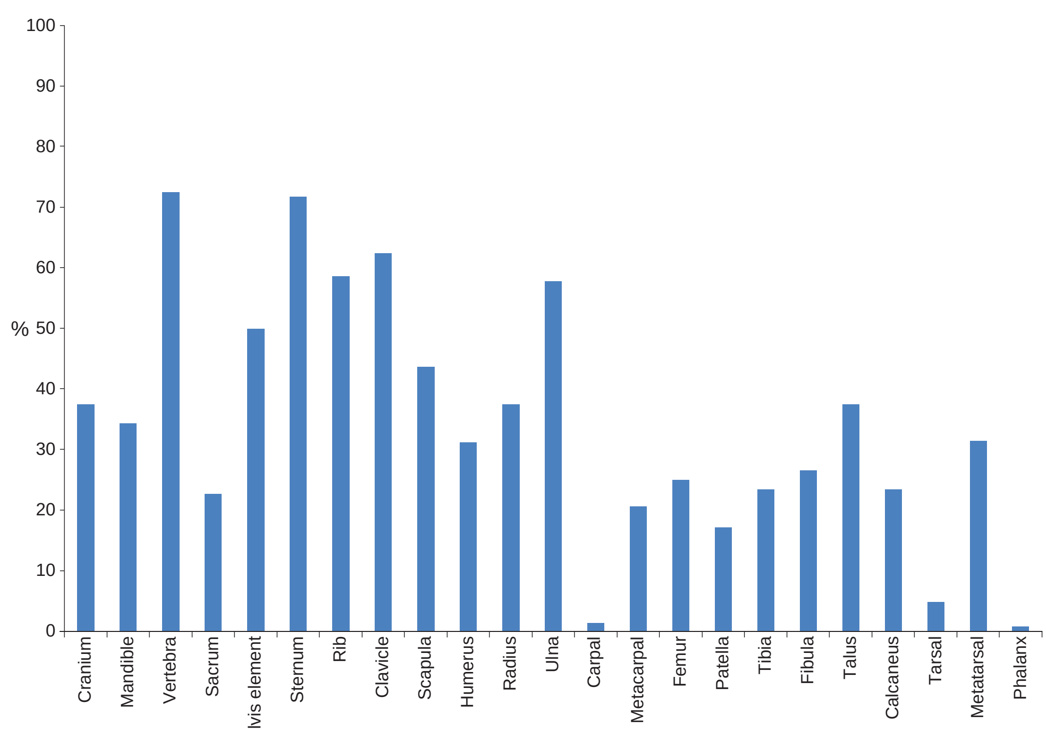

Illustration 6.28

Element index for the Sculptor's Cave human remains: core assemblage

Table 6.9
Element index for the Sculptor's Cave. Individual cranial and pelvis elements have been grouped to establish MNI for 'adult' (22) and 'juvenile' (10) age categories respectively. Pelvis elements include the ilium and ischium, together with elements described as 'pelvis' and 'hip bone'. Each pelvis comprises two ossa coxae (left and right), hence an 'element per capita' of two (after Knüsel et al 2016: 157, table 4.4.3). Carpals include scaphoid; talus includes astragalus; calcaneus includes os calcis; tarsals include cuboid and intermediate cuneiform. Undifferentiated sub-adults have been omitted. MNI for juveniles differs from that in table 6.4 due to the aggregation of child and infant age categories. Two bones identified as 'young' sacra have been included in the 'adult' age category, though (as noted in relation to table 6.2), it is possible that they represent unfused sacral vertebrae

Element	MNE							MNI		Elements per capita	Total elements expected	% representation
	Adult left	Adult right	Adult	Juvenile left	Juvenile right	Juvenile	Total MNE	Adult	Juvenile			
Cranium	0	0	6	0	0	6	12	6	6	1	32	37.50
Mandible	0	3	1	0	1	6	11	4	7	1	32	34.38
Vertebra	0	0	511	0	0	64	575	22	2	24/33	528/330	96.78/19.39 weighted av. 72.60
Sacrum	0	0	5	n/a	n/a	n/a	5	5	0	1	22	22.73
Pelvis element	2	1	1	9	9	1	23	2	10	2	64	35.94
Sternum	0	0	14	0	0	9	23	14	9	1	32	71.88
Rib	0	0	379	0	0	72	451	16	3	24	768	58.72
Clavicle	5	15	11	4	4	2	41	16	5	2	64	62.50
Scapula	3	3	5	6	5	6	28	6	9	2	64	43.75
Humerus	2	4	8	2	2	2	20	7	3	2	64	31.25
Radius	2	9	9	2	0	2	24	10	3	2	64	37.50
Ulna	6	9	12	3	5	2	37	13	5	2	64	57.81
Carpal	0	0	7	0	0	0	7	1	0	16	512	1.37
Metacarpal	0	0	58	0	1	9	68	6	1	10	330	20.61
Femur	4	2	6	1	3	0	16	6	3	2	64	25.00
Patella	0	0	5	0	0	6	11	3	3	2	64	17.19
Tibia	3	2	6	1	1	2	15	6	1	2	64	23.44
Fibula	0	1	16	0	0	0	17	9	0	2	64	26.56
Talus	7	2	14	1	0	0	24	12	1	2	64	37.50
Calcaneus	0	0	14	0	0	1	15	7	1	2	64	23.44
Tarsal	0	0	15	0	0	1	16	2	1	10	330	4.85
Metatarsal	1	0	102	0	0	1	104	11	1	10	330	31.52
Phalanx	0	0	5	0	0	2	7	1	1	28	896	0.78

Table 6.10
The nature of mortuary activity at a range of comparative sites (information from Knüsel et al 2016)

Site name	Location	Type of site	Date	Type of mortuary activity represented	Reference
Scaloria Cave	Puglia, Italy	Cave	Neolithic	Commingled deposit comprising predominantly disarticulated elements. Other rites represented include individual articulated burials	Knüsel et al 2016
Kunji Cave	Luristan, Iran	Cave	Bronze Age	Collective burial and secondary deposition	Emberling et al 2002
West Tenter Street	London, UK	Cemetery	Roman	Cemetery of single primary inhumations	Waldron 1987
Nanjemoy Creek	Maryland, USA	Ossuary	Late prehistoric	Secondary deposition	Ubelaker 1974

Table 6.11
Element index for the Sculptor's Cave, compared to those for Scaloria Cave, Kunji Cave, Nanjemoy Creek and West Tenter Street (after Knüsel et al 2016: 159, table 4.4.5, fig 4.4.9). Scaloria Cave element index based on the Ubelaker and Buikstra (1994) method of calculating MNI (Knüsel et al 2016: 156). Element index not available for ribs for Kunji Cave, Nanjemoy Creek or West Tenter Street

Element	The Sculptor's Cave	Scaloria Cave (B+U method)	Kunji Cave	Nanjemoy Creek	West Tenter Street
Cranium	37.50	59.09	97.00	92.17	80.50
Mandible	34.38	54.55	73.00	82.13	65.00
Vertebra	72.60	17.25	22.90	14.05	56.00
Sacrum	22.73	4.55	30.00	47.02	59.00
Pelvis element	35.94	34.09	30.00	81.03	66.50
Sternum	71.88	9.09	12.00	32.60	24.00
Rib	58.72	10.61	–	–	–
Clavicle	62.50	54.55	24.00	65.20	45.50
Scapula	43.75	36.36	67.00	74.45	53.00
Humerus	31.25	52.27	38.50	86.52	57.00
Radius	37.50	45.45	37.50	69.91	54.50
Ulna	57.81	40.91	37.50	79.47	61.50
Carpal	1.37	1.14	4.50	21.69	17.00
Metacarpal	20.61	11.36	19.50	35.96	50.00
Femur	25.00	79.55	53.00	91.07	59.00
Patella	17.19	22.73	21.00	41.07	26.50
Tibia	23.44	40.91	31.50	84.64	48.50
Fibula	26.56	20.45	39.00	54.70	32.50
Talus	37.50	36.36	30.00	51.72	47.50
Calcaneus	23.44	27.27	21.00	57.68	47.00
Tarsal	4.85	8.18	12.50	38.84	30.00
Metatarsal	31.52	18.64	20.50	40.75	41.50
Phalanx	0.78	3.57	7.57	6.73	13.71

An element index essentially calibrates the numbers of each element present in an assemblage in relation to how many such elements might be expected if all of the bones from complete bodies (based on the MNI) were present. To give a hypothetical example, if a given assemblage had an MNI of 50, we might expect to find 100 femora; if we found only 20 femora, we would have an element index for femora of 20%.

The element index (or 'bone representation index'; cf Knüsel et al 2016: 156) can be expressed as follows:

$$\frac{\text{number of elements present} \times 100}{\text{number of elements present if each skeleton were complete}}$$

The element index for the Sculptor's Cave is represented in table 6.9 and illus 6.28 (for the purposes of comparison with other sites, which employed different methods for element identification, certain of the categories in table 6.2 have been amalgamated). In line with the earlier analyses based solely on element as a percentage of the core assemblage (section 6.6), vertebrae remain the best represented element, at 73%, closely followed by sterna (72%). The next most numerous elements also represent parts of the upper body, with clavicles at 63% and ribs at 59%. In contrast, carpals, tarsals and phalanges are the least represented element, the latter with an index of only 0.78%. Crania and mandibles have similar representation at 38% and 34% respectively. Long bones of the lower limb also have very similar indices (femur 25%; tibia 38%; fibula 27%) suggesting similar representation of these elements; the somewhat lesser representation of the patella (17%) is indicative of the generally more common absence of this element. It should be remembered that these figures are calculated against an MNI; they are therefore useful as a relative indication of element representation but should not be regarded as absolute figures (since the actual number of individuals represented in the cave is likely to be higher than the MNI).

6.10.2 A comparative perspective

Calculation of the element index permits comparison of the Sculptor's Cave assemblage with other mortuary sites. In their analysis of various treatments of the dead represented at the Neolithic site of Scaloria Cave in south-east Italy, for example, Knüsel et al (2016: 159, table 4.45) compare their element index with that of a number of other sites in order to consider the kinds of mortuary contexts represented by these assemblages (table 6.10), including primary inhumation, collective burial and secondary deposition. This comparative approach is useful in helping tease out the potential funerary practices underlying the

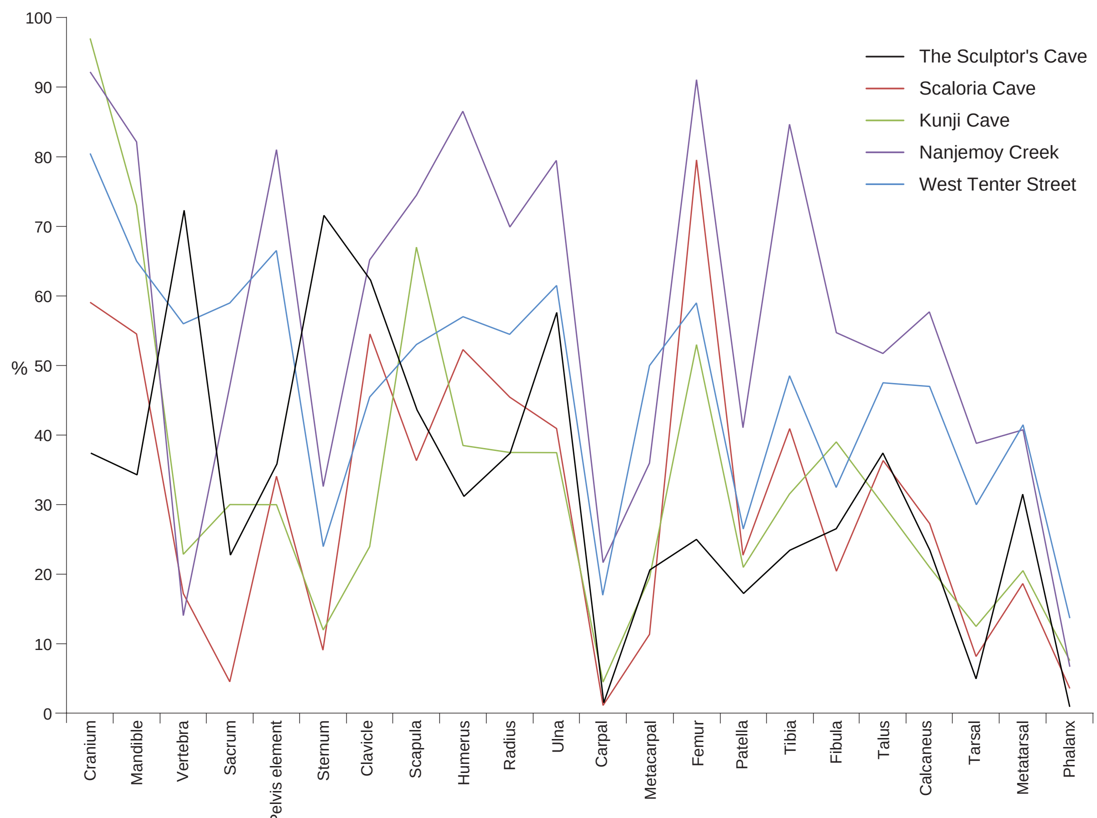

Illustration 6.29
Comparison of element indices for the Sculptor's Cave, Scaloria Cave, Kunji Cave, Nanjemoy Creek and West Tenter Street (after Knüsel et al 2016: 159, table 4.4.5, fig 4.4.9). Scaloria Cave element index based on the Buikstra and Ubelaker (1994) method of calculating MNI (Knüsel et al 2016: 156)

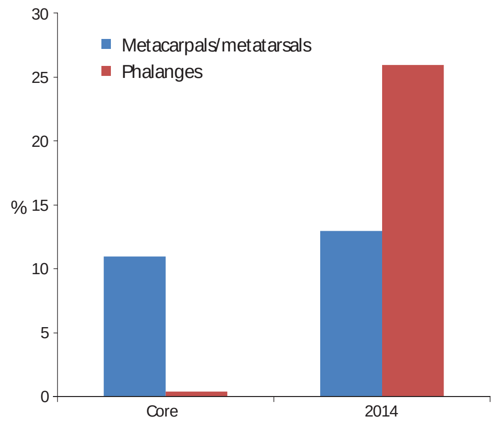

Illustration 6.30
Comparison of percentages of metatarsals and phalanges in the core bone assemblage versus that excavated from Benton's spoil heap in 2014

element index in each case, and thus forms a useful basis for the comparative discussion of the Sculptor's Cave core assemblage.

Comparison of these sites (and Scaloria Cave itself) with the element index for the Sculptor's Cave assemblage (table 6.11) shows considerable variation in patterning (illus 6.29). This must, to some extent, reflect the different mortuary processes at each of the sites, although we also need to bear in mind taphonomic differences relating to the various preservational environments. Collection strategies are also potentially an issue. It is clear, for example, that the representation of phalanges in the Sculptor's Cave core assemblage is lower than any of the comparative assemblages (table 6.11). Yet, comparing the percentages of phalanges represented in the core assemblage with that obtained in 2014 from Benton's spoil heap (box section 2; illus 6.30) demonstrates that phalanges were indeed present in considerable numbers at the Sculptor's Cave, but were apparently not collected or were discarded; by contrast, metacarpals and metatarsals were apparently collected almost as effectively as other bones.

The comparative representations of element index shown in illus 6.31 are intended to highlight two things: the graphs on the left visually display the differences in the patterning of element representation between the Sculptor's Cave and each comparative assemblage, while those on the right plot the divergence of the Sculptor's Cave assemblage against the element index of each comparative site (represented by a horizontal line at 0).

Comparison with West Tenter Street inhumation cemetery

The West Tenter Street assemblage derives from what is believed to be a large, but fairly typical, urban inhumation cemetery in Roman London (Waldron 1987). Comparing the West Tenter Street element index with that of the Sculptor's Cave highlights marked differences. The patterning of lower limb bones and extremities (hand and foot bones) is fairly similar between the two assemblages (illus 6.31A), although West Tenter Street has a larger overall representation of these elements. The pectoral girdle, the humerus and radius of the upper limb and torso elements (vertebrae), however, display more marked differences. Crania, mandibles, pelvis elements (excluding the sacrum), sacra and femora in particular appear to be much less well represented at the Sculptor's Cave. These are larger recognisable bones which are unlikely to have been missed during excavation and could suggest some selective removal of skeletal elements. Certainly, long bone and cranial fragments are the most frequently encountered human bones on later prehistoric settlement sites in Britain (Brück 1995; Armit and Ginn 2007). These differences suggest, unsurprisingly, that the Sculptor's Cave population does not represent the residue of a simple inhumation cemetery.

There are other significant differences in the element indices between these two sites. Most important, perhaps, is the over-representation of vertebrae, clavicles and sterna in the Sculptor's Cave assemblage relative to that from West Tenter Street (illus 6.31A). It is unfortunate that comparative figures are unavailable for rib representation, but we should note that the element index for ribs at the Sculptor's Cave is also very high.

Since the West Tenter Street assemblage represents the remains of complete articulated bodies, an over-representation of vertebrae, clavicles and sterna at the Sculptor's Cave could suggest one of three possibilities. First, additional upper limb and torso elements may have been selectively deposited in the cave. Second, some complete bodies within the cave may have had all but these elements removed. The third and most parsimonious explanation, however, would be that the torsos of individuals in the Sculptor's Cave were significantly better preserved than would be expected in an inhumation cemetery.

Under normal conditions of primary inhumation, those parts of the skeleton surrounded by large amounts of soft tissue and internal organs, perhaps closer to the gut, are likely to be more susceptible to destruction through microbial activity than other parts of the body (eg Booth 2016). The preferential survival of vertebrae, sterna, clavicles and (probably) ribs at the Sculptor's Cave thus raises the intriguing possibility that this bacterial activity had been arrested in some way. It has been noted during excavation at other caves along the Moray coast that these sites display exceptional conditions for the preservation of human bone and other organic materials, which extends to the preservation of ligaments on Late Bronze Age human remains at Covesea Cave 2 (Büster and Armit 2016). This is most likely due to a combination of fairly constant temperatures and humidity together with the sandy nature of the soil matrix and the salty atmosphere created by sea spray (as with historically documented seventeenth-century 'mummies' from Stroma; Lowe 1774: 16–17; Anon 1786: 346). The preservation of bodies could potentially also be enhanced by more active mortuary practices such as drying or smoking and/or the removal of organs. The survival of these torso elements also reinforces the impression from the disarticulated nature of the remains that bodies were not buried in the Sculptor's Cave, as was the case for the West Tenter Street inhumations, but left exposed on the surface.

There is a further taphonomic point to be made about the high representation of vertebrae and sterna particularly. Knüsel et al (2016: 157) note, in relation to the Scaloria Cave assemblage, that the *under*-representation of vertebrae, sacra and sterna is most likely due to the fact that these fragile bones are most likely to be fragmented and destroyed 'through mechanical breakage when they are moved, kicked, trampled, or re-deposited'. Thus, the over-representation of these elements in the Sculptor's Cave assemblage suggests that bodies were not subject to extensive disturbance, despite their disarticulated state upon excavation.

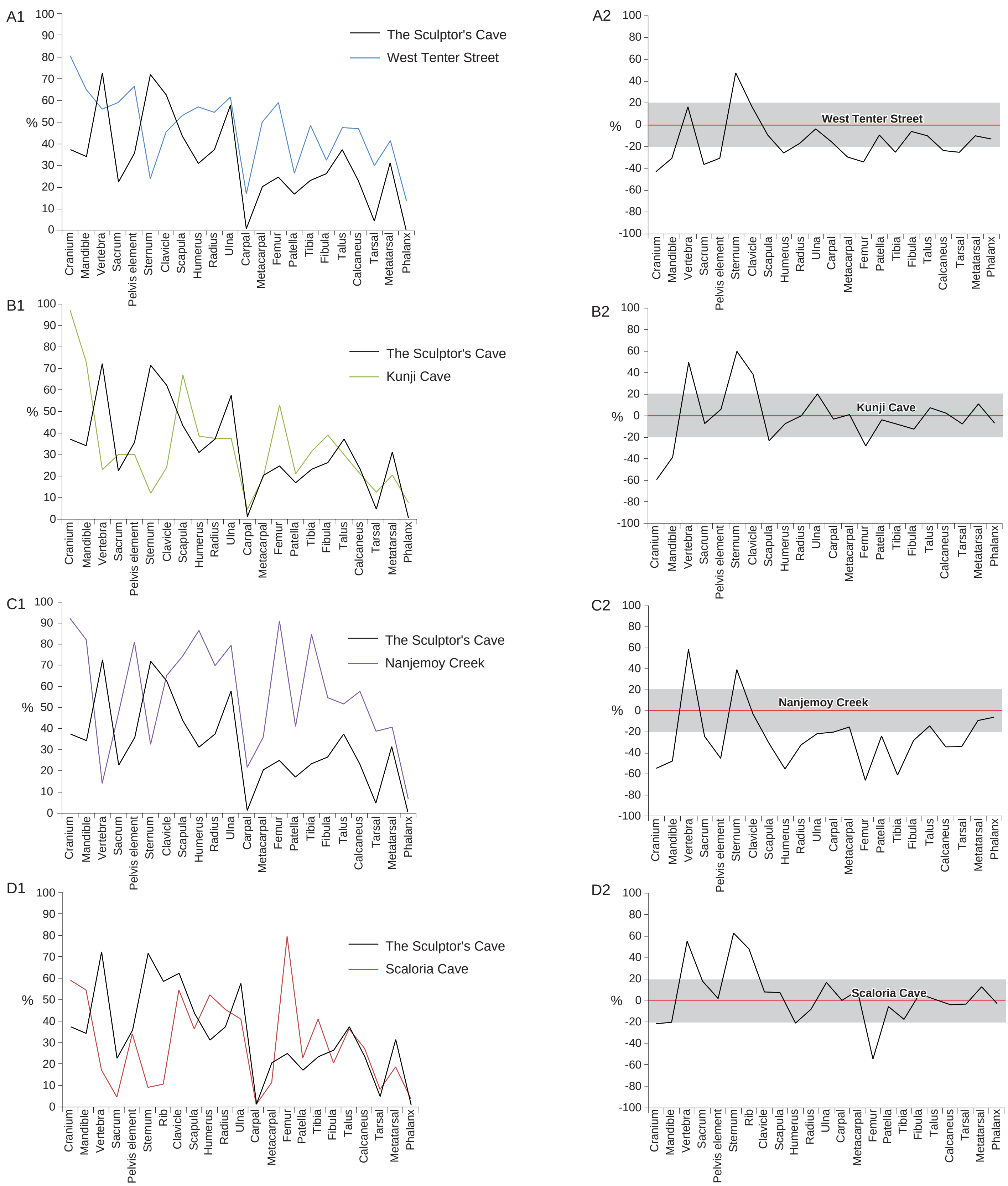

Illustration 6.31

Element index for the Sculptor's Cave compared with: (A1) West Tenter Street, and (A2) with West Tenter Street signature normalised to 0, (B1) Kunji Cave and (B2) with Kunji Cave normalised to 0, (C1) Nanjemoy Creek and (C2) with Nanjemoy Creek normalised to 0, (D1) Scaloria Cave and (D2) with Scaloria Cave normalised to 0. Element indices for ribs were not available for West Tenter Street, Kunji Cave or Nanjemoy Creek. Shaded areas are provided to aid visual comparison only, and do not represent statistical significance

Comparison with Kunji Cave: a collective tomb

Further insights can be gained by comparing the Sculptor's Cave with sites used for more complex forms of funerary deposition. Kunji Cave, in Luristan (table 6.10), is a Bronze Age collective burial site; once disarticulated, parts of the bodies were removed, though crania and mandibles seem to have been preferentially retained inside the cave (Emberling et al 2002). Comparison with the Sculptor's Cave again indicates a complex pattern of similarities and differences (illus 6.31B). In general, as with West Tenter Street, the representation of lower limb elements and extremities is similar between the two sites. Carpals, for example, are equally poorly represented at both. The preferential retention of crania and mandibles within Kunji Cave is very evident in the high absolute value of the element index for these bones (illus 6.31B1), in contrast to their relative paucity at the Sculptor's Cave. Meanwhile, the relative under-representation of fragile elements such as vertebrae, sacra and sterna at Kunji Cave is likely the product, as Knüsel et al (2016: 157) suggest, of fragmentation and destruction during the periodic reworking and redeposition of the assemblage, and again highlights the relatively minimal disturbance of the remains within the Sculptor's Cave.

Comparison with Nanjemoy Creek: ossuary

Nanjemoy Creek is a late prehistoric site in Maryland, USA, where bones of the dead were brought to be reburied after primary exposure elsewhere (Ubelaker 1974). Although these are secondary deposits, care appears to have been taken 'to gather small bones such as hand and foot bones' (Knüsel et al 2016: 156). This is reflected in a relatively high element index for these bones, although it is noteworthy that phalanges are as under-represented here as they are at the Sculptor's Cave, especially when the additional phalanges recovered from Benton's spoil heap are taken into account (illus 6.30; these were not included in the element index analysis). Long bones and crania are extremely well represented at Nanjemoy Creek, with indices above 90% for crania and femora (illus 6.31C; table 6.11). Although the element indices for lower limb elements and extremities are consistently lower at the Sculptor's Cave, the actual patterning is not greatly different, suggesting that the differences may be taphonomic. Very clear differences are apparent, however, in relation to elements of the head and upper body. Crania and mandibles especially are, for example, more poorly represented at the Sculptor's Cave, while (as with the other comparative sites) representation of the elements of the torso (vertebrae and sterna) is much higher, suggesting that these elements survived much better at the Sculptor's Cave than they did elsewhere.

Table 6.12
Element index for adults (including 'young') and juveniles (comprising 'child' and 'infant' categories) in the Sculptor's Cave core assemblage. Undifferentiated sub-adults not included. Individual cranial and pelvis elements have been grouped to establish MNI for each age category. MNI for juveniles differs from that in table 6.4 due to the aggregation of child and infant age categories

Element	Adult	Juvenile
Cranium	27.27	60.00
Mandible	18.18	70.00
Vertebra	96.78	19.39
Sacrum	22.73	n/a
Pelvis element	9.09	95.00
Sternum	63.64	90.00
Rib	71.78	30.00
Clavicle	70.45	45.00
Scapula	25.00	85.00
Humerus	31.82	30.00
Radius	45.45	20.00
Ulna	61.36	50.00
Carpal	1.99	0.00
Metacarpal	26.36	10.00
Femur	27.27	20.00
Patella	11.36	30.00
Tibia	25.00	20.00
Fibula	38.64	0.00
Talus	52.27	5.00
Calcaneus	31.82	5.00
Tarsal	6.82	1.00
Metatarsal	46.82	1.00
Phalanx	0.81	0.71

Comparison with Scaloria Cave: a commingled mixed funerary deposit

The Scaloria Cave assemblage incorporates several different mortuary practices, including primary inhumation, secondary deposition of skeletonised elements from excarnated individuals and the secondary deposition of skeletal elements brought from elsewhere (Knüsel et al 2016; table 6.10). Once again, the representation of lower limb elements and extremities between the two sites follows a similar pattern, although there is a marked under-representation of femora at the Sculptor's Cave (illus 6.31D). Crania and mandibles are also better represented at Scaloria Cave. What is most striking in the comparison between these two sites, however, is the much higher representation of torso elements (vertebrae, ribs and sterna) at the Sculptor's Cave. The paucity of these elements at Scaloria Cave has been interpreted as a product of periodic reworking and secondary deposition of the bone deposits at this site (ibid: 157). It might also suggest, however, that the salty coastal atmosphere at the Sculptor's Cave was a major factor in creating the exceptional preservational conditions observed.

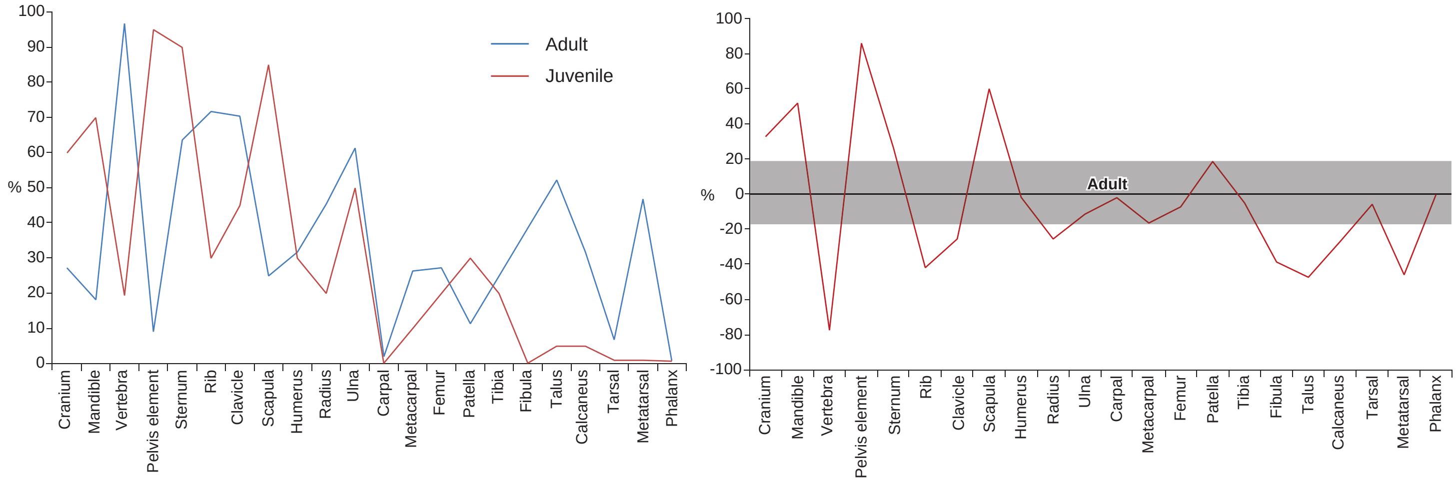

Illustration 6.32
Comparison of element indices for adults (including 'young) and juveniles (comprising 'child' and 'infant') from the Sculptor's Cave assemblage (left) and with adults normalised to 0 (right)

6.10.3 Element index by age

These comparisons show that there is no easy template from which to interpret the Sculptor's Cave human remains. Nonetheless, comparison with other funerary sites does bring some aspects of the assemblage into sharper focus; notably, the very high representation at the Sculptor's Cave of the torso (suggesting that post-mortem bacterial activity was suppressed by some natural and/or anthropogenic mechanism in these individuals) and the paucity of crania, mandibles and major long bones.

To interrogate these data in more depth, however, it is useful to break down the Sculptor's Cave assemblage further. We have already noted the markedly different demographic profile between those individuals known to date to the Late Bronze Age and those known to date to the Roman Iron Age (section 6.5; illus 6.3), and have used this as a basis to argue that the Sculptor's Cave human bone assemblage likely comprises two mortuary populations with different age-at-death characteristics: a Late Bronze Age population dominated by juveniles and a Roman Iron Age population dominated by adults. With this in mind, the element index for the Sculptor's Cave bone assemblage can be divided according to age at death (table 6.12; illus 6.32) in order to examine whether different funerary treatments were applied to the different age groups: this might reflect, albeit in a slightly blurred way, a chronological division between Late Bronze Age and Roman Iron Age mortuary practices.

Illus 6.32 demonstrates that the element indices for the adult (MNI: 22) and juvenile (MNI: 10) bone assemblages display very different patterning; in fact, they are arguably more different from each other than the Sculptor's Cave core assemblage is from any of the comparator sites considered above. This suggests strongly that the age-based division, crude as it is, may indeed reflect a chronological division between Late Bronze Age and Roman Iron Age populations. In particular, juvenile crania, mandibles, pelvis elements and scapulae are far better represented than the equivalent adult elements, while adult vertebrae, ribs and clavicles are far better represented than the equivalent juvenile elements, as are the small bones of the hands and feet (illus 6.32). This last observation suggests perhaps the presence of complete adult bodies in the cave but more selective deposition of individual juvenile bones. There is, of course, the caveat that small juvenile bones may have survived less well or may have been missed during excavation; although this may well be part of the explanation for the variations in the element index, it would not account for the over-representation of certain bones in the juvenile group (eg sterna and scapulae), which is much more suggestive of some deliberate selection strategy. Indeed, this initial comparison suggests that we may be looking at a change in role for the Sculptor's Cave from an ossuary for the secondary deposition of predominantly juvenile bones in the Late Bronze Age to a place where complete bodies were left exposed in the Roman Iron Age (perhaps for the purpose of excarnation, or for their natural or artificial preservation as mummies). To explore this further it is useful to return to our inter-site comparisons, this time splitting the Sculptor's Cave assemblage into these two age-based groups.

The Sculptor's Cave adults (adults and 'young')

As with the element index for the combined Sculptor's Cave core assemblage, the adult signature closely resembles that of the West Tenter Street inhumation cemetery in the frequencies for lower limb and extremity elements, but displays significantly different patterning for elements from the upper limbs and torso (illus 6.33A). The numbers and patterning of the extremities in particular provides a strong indication that this part of the Sculptor's Cave assemblage, like that of West Tenter Street, derives from the former presence of complete fleshed bodies. The significant over-representation of vertebrae, sterna and clavicles in the Sculptor's Cave adults relative to West Tenter Street supports the interpretation, discussed above, that the bodies were not buried in the cave but were exposed on the surface, leading to desiccation and inhibited decay of the bones of the torso. It may also, however, reflect human intervention in the form of specific mortuary treatments such as smoking, drying or organ removal to arrest bacterial activity; unfortunately, in the absence of the

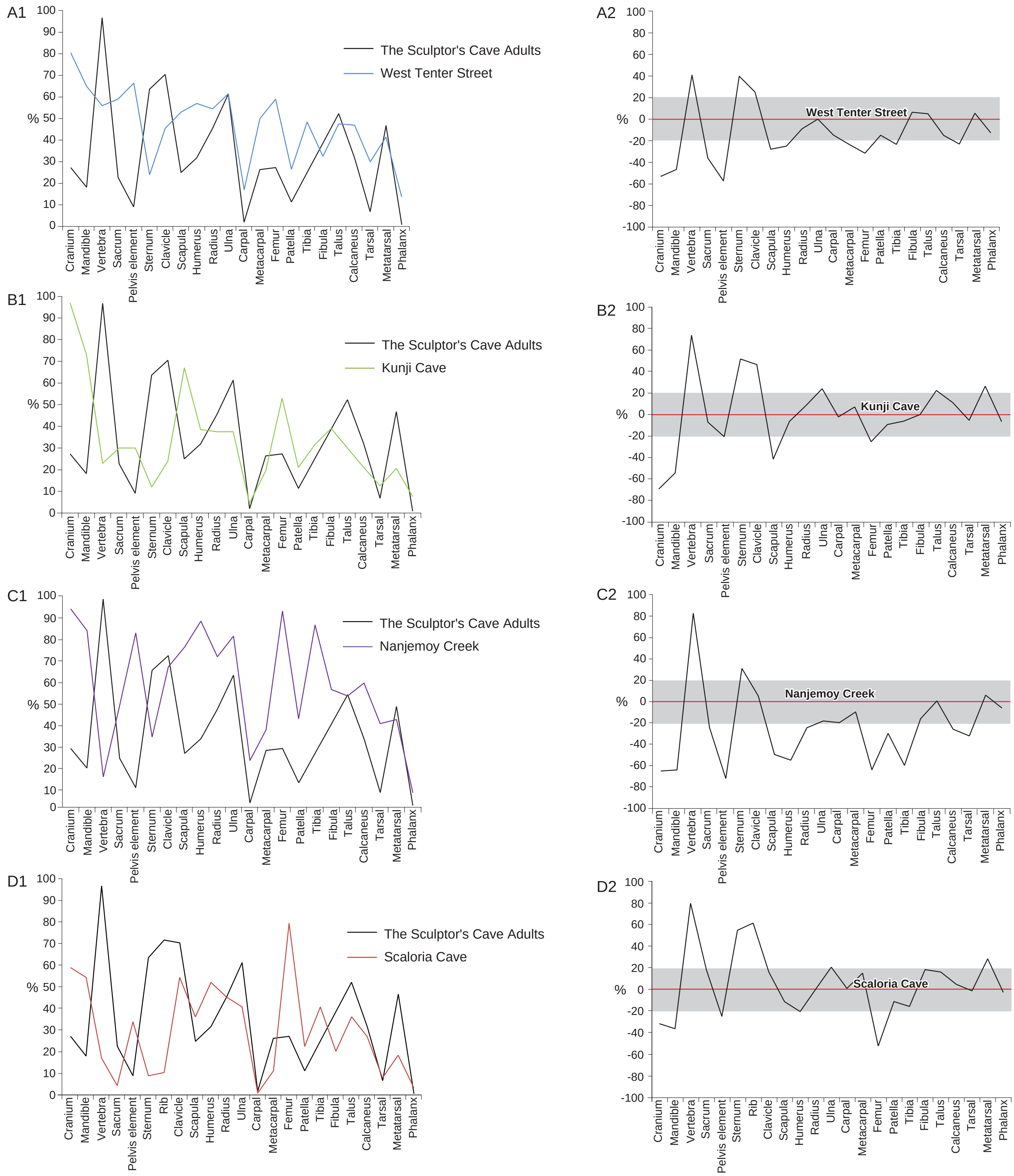

Illustration 6.33

Element index for adults (including 'young') from the Sculptor's Cave and comparative sites. Shaded areas are provided to aid visual comparison only, and do not represent statistical significance

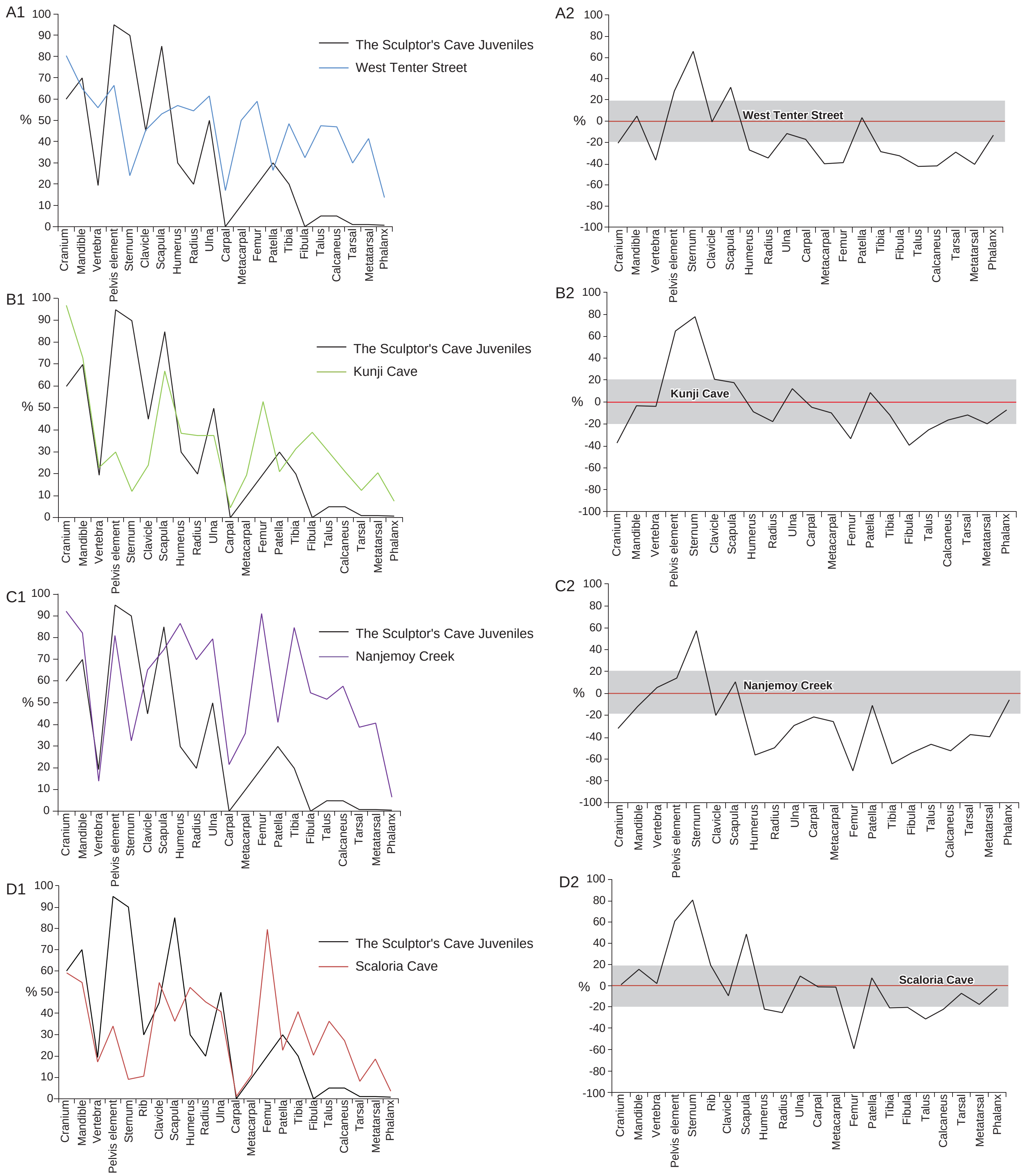

Illustration 6.34

Element index for juveniles (comprising 'child' and 'infant') from the Sculptor's Cave and comparative sites. Shaded areas are provided to aid visual comparison only, and do not represent statistical significance original bone assemblage, these hypotheses cannot be more fully explored through, for example, the identification of potential cut marks, which are unlikely to have been noted during their initial examination.

Interestingly, given the decapitations which are known to have taken place around the third century AD, the relative under-representation of crania and mandibles in the adult Sculptor's Cave population suggests the deliberate removal of at least some of these heads. Since some of the cut-marked vertebrae would have stayed with the fleshed head after decapitation, it may be the case that the heads were removed from the cave only after a period of disarticulation (sufficient to leave behind these particular elements). The under-representation of femora, sacra, scapulae, humeri and especially pelvis elements in comparison to West Tenter Street may also reflect the selective removal of specific bones.

Comparisons with Kunji Cave add little to the picture, merely reinforcing the relative over-representation of the elements of the torso and under-representation of crania and mandibles among the Sculptor's Cave adults (illus 6.33B). Comparison with the ossuary at Nanjemoy Creek produces similar results (illus 6.33C); in particular, however, the large difference between the element indices of crania and mandibles at the Sculptor's Cave and Nanjemoy Creek suggests that adult heads are indeed significantly under-represented at the Sculptor's Cave and that divergence from the Kunji Cave assemblage is not merely the product of selective retention of crania at the latter site.

Though far from identical, the element indices at Scaloria Cave are perhaps the most similar to those of the Sculptor's Cave adults (illus 6.33D). Scaloria Cave represents a complex set of funerary practices, including movement and secondary deposition of disarticulated elements from complete bodies that were apparently excarnated inside the cave or elsewhere before being deposited (table 6.10). Higher numbers of vertebrae and small bones of the hands and feet suggest that the adult bodies at the Sculptor's Cave may have been subject to less post-depositional reworking and secondary deposition than those at Scaloria Cave and further attest to the unusual preservational environment at the Sculptor's Cave. Meanwhile, the under-representation of crania, pelvis elements, scapulae and long bones such as femora and tibiae at the Sculptor's Cave provides further evidence that these large, easily recognisable elements may have been retrieved from the disarticulated adult bodies for secondary deposition elsewhere.

The Sculptor's Cave juveniles

Comparison of the juvenile bones from the Sculptor's Cave with the various comparative sites is difficult, since these latter sites are dominated by adult remains that are generally more robust and (taphonomic considerations aside) more likely to survive and be retrieved. There are indications, however, that the juvenile bones at the Sculptor's Cave are, in fact, rather well preserved. The most striking example of this is the element index for sterna. At 90%, this is substantially greater than the equivalent index for the adult bones (64%), despite the sternum being one of the more fragile bones of the body and one of the least likely to survive in a disturbed environment (Knüsel et al 2016: 157).

When compared with West Tenter Street inhumation cemetery (illus 6.34A), the Sculptor's Cave juvenile assemblage displays very different patterning. Although survival and collection bias for small juvenile bones must be borne in mind, as must the demographic profile of the West Tenter Street cemetery population (with a substantial proportion of adults), there is a clear under-representation of juvenile hand and foot bones at the Sculptor's Cave, suggesting perhaps that complete juvenile bodies were not present in the cave. This hypothesis is supported by the under-representation of vertebrae, given how well they are represented among the adult population (illus 6.32, 6.33). Given that West Tenter Street represents complete inhumed bodies, the high element indices of scapulae, sterna and pelvis elements among the juvenile Sculptor's Cave population (at 85%, 90% and 95% respectively) is striking. Similarly, though juvenile crania at the Sculptor's Cave are less well represented than those at West Tenter Street, the difference is smaller than with those of the adult population, suggesting that crania may also have been selected for secondary deposition at the site or, at the very least, not removed (as has been argued for the adults; see above).

Comparison with Kunji Cave reveals some interesting results (illus 6.34B). The assemblage at Kunji Cave reflects the selective removal of bones from complete disarticulated bodies, resulting in the destruction of small, fragile elements and the over-representation of certain others such as crania, which were selectively retained within the cave (table 6.10). Since Kunji Cave is thought to represent such a destructive environment for small skeletal elements, it is significant that the juvenile population at the Sculptor's Cave has even lower representation of the bones of the hands and feet, suggesting that very few of these elements entered the cave at all. The same could be argued for humeri and radii, since they are also under-represented in relation to Kunji Cave and are sufficiently robust that they are unlikely to have been destroyed by reworking inside the cave. Since it seems that crania were selectively retained at Kunji Cave, it is hard to assess the significance of the difference between the two sites in terms of this skeletal element. The fact that the indices for pelvis elements and scapulae are so much higher for the juvenile Sculptor's Cave population than at Kunji Cave suggests, however, that either we have a situation such as that presented by crania at Kunji Cave, whereby all juvenile bones other than these select skeletal elements were cleared out of the Sculptor's Cave, or that we are looking at selective secondary deposition within the cave of these elements from bodies which had become disarticulated elsewhere.

Nanjemoy Creek represents exactly this; the secondary deposition of bones from bodies which had been buried or exposed at another location. The pattern between the two assemblages is, however, still markedly different (illus 6.34C). At Nanjemoy Creek, every effort was apparently made to collect as many of the bones as possible, including small hand and foot bones, which would account for the vastly inflated element indices for these elements in comparison with the Sculptor's Cave assemblage. It does suggest, however, that if the juvenile remains from the Sculptor's Cave do represent the secondary deposition of disarticulated remains, then it was only certain bones that were selected. This is perhaps reinforced by the substantial under-representation of limb bones among the juvenile Sculptor's Cave assemblage; these are robust bones unlikely to have become fragmented and destroyed within the cave itself, suggesting either that they were selectively retrieved from the site or that they were never present to begin with. Pelvis elements on the other hand are well represented at both sites; these are larger recognisable bones which are frequently recovered from secondary contexts, such as those deposited in disused grain pits at the Iron Age hillfort of Danebury in Hampshire (Craig et al 2005: table 1), lending some weight to the possibility that the juvenile (and likely Late Bronze Age) bones at the Sculptor's Cave are a result of secondary deposition. In this context, and given early interpretations of the site as dominated in the Late Bronze Age by the display of fleshed juvenile heads (Shepherd 2007: 199), it is noteworthy that crania and mandibles are far less well represented at the Sculptor's Cave than at Nanjemoy Creek; certainly there appears to have been no additional selection of these elements over others for deposition at the Sculptor's Cave.

The representation of juvenile crania and mandibles at the Sculptor's Cave is, however, very similar to that at Scaloria Cave (illus 6.34D), suggesting either selective retrieval of these elements or, perhaps more likely, the destruction of these fragile bones during successive reworkings of the deposits. We have demonstrated that, at least in relation to the stratified Shepherd assemblage, many of the juvenile bones are likely to be Late Bronze Age in date (illus 6.3); as such, and concentrated as they were in the entrance passages, these may have been subject to more intensive and periodic post-depositional processes than the Roman Iron Age bones, which represent some of the last deposits to enter the cave. Despite the frequent reworking of deposits at Scaloria Cave, the element indices for small fragile bones of the hands and feet are far higher than at the Sculptor's Cave, lending additional weight to the hypothesis that many of these bones may not have originally been present within the cave. This is also true for long bones, which are less well represented among juveniles at the Sculptor's Cave than at Scaloria Cave and which are likely to have been sufficiently robust to have survived within the cave if they were originally present and not selectively removed. The same over-representation of scapulae, sterna and pelvis elements in the juvenile Sculptor's Cave population is however a feature of the Nanjemoy Creek assemblage, suggesting the selective secondary deposition of these larger recognisable elements.

Summary

The weight of evidence from these comparative assessments suggests that whole adult bodies were brought into the Sculptor's Cave during the Roman Iron Age; at least six of these individuals (represented by the cut-marked vertebrae) entered the cave alive and were killed there, but it is unlikely that this decapitation event accounts for all of the human remains. The preservational environment (perhaps aided by human intervention in the form of smoking, drying etc) ensured excellent survival of 'fleshy' parts of the body (particularly the torso) that would otherwise disarticulate in a more conventional burial environment. Subsequently, when bodies had become substantially disarticulated, certain elements – notably heads (crania and mandibles), femora and pelvis elements – appear to have been selectively removed from the cave.

By contrast, comparative assessment of the juvenile assemblage suggests that whole bodies were not brought into the Sculptor's Cave during the Late Bronze Age. Instead, the cave appears to have been used for the secondary deposition of bodies and/or body parts that had been subject to primary funerary treatment elsewhere. There are no certain peri-mortem injuries on the surviving Late Bronze Age human remains, although the frontal bones of a sub-adult (SF231) and an adult (SF1128) exhibit some characteristics of peri-mortem fracture. Post-mortem modification in the form of multiple striations are unambiguously present on the sub-adult frontal (SF231) and could be seen as consistent with the curation and display of juvenile heads at the cave entrance.

Chapter 7

ENVIRONMENT, ECONOMY AND SUBSISTENCE

7.1 Introduction

Benton's excavation of the Sculptor's Cave occurred long before the development of modern scientific approaches to the environmental and economic context of archaeological sites. Consequently, aside from a brief statement on the animal bones (Benton 1931: 207), her published report has little to say on the subject. By the time of the Shepherds' excavations, however, environmental sampling was becoming commonplace, and considerable attention was paid to this aspect of the work. Significant quantities of material were wet-sieved on site, and some of the resulting residues survived in the site archive along with preliminary specialist reports, enabling reanalysis of plant macrofossils, charcoal, shell etc, during the present project. A substantial faunal bone assemblage was also recovered. As a result, it is possible to provide some insights into the environmental context of the cave and the subsistence practices of the human populations that used it (even if the latter must be tempered by the realisation that the cave was far from a standard domestic settlement; as such, we must be wary of selectivity in the material brought there).

In addition to the analysis of material from the Shepherd archive, new samples were taken in 2014 to facilitate soil micromorphological analysis of the surviving non-anthropogenic deposits.

7.2 Landscape reconstruction

Michael Stratigos

7.2.1 Background

The sandstone cliffs between Burghead and Lossiemouth, where the Sculptor's Cave lies, slope gently southwards to the coastal plain known as the 'Laich o' Moray' (illus 7.1). The region is now mostly rich, low-lying, arable land, with forestry plantations on the coastal dunes to the east and west. This landscape has, however, undergone radical transformations, both natural and man-made, since later prehistory.

Glacial isostatic models put this part of the Moray coast in a region of uplift, resulting in relative fall in sea level (Clayton 2003; Sturt et al 2013), though the applicability of these large-scale models to this relatively small region cannot always be assumed given the well established local nature of relative sea level changes (Griffiths et al 2015). Nonetheless, it is clear that there has been some relative sea level fall since later prehistory. Perhaps the most important landscape change, however, has been the cutting off of the formerly extensive sea loch of Loch Spynie from the Moray Firth (illus 7.2) and the loch's subsequent drainage. This has created a modern landscape far removed from the extensive and diverse wetland which formerly separated the north-facing coastal cliffs from the Moray coastal plain to the south.

The earliest attempts to understand the palaeogeography of this region date to the nineteenth century (eg Martin 1837; Gordon 1859), which noted earlier historical references to Loch Spynie being formerly connected to the sea and the former courses of the Rivers Spey, Findhorn and Lossie (Martin 1837). In the absence of modern primary data, more recent scholarship has made little advance, continuing instead to rely on documentary and cartographic evidence (Ross 1992; Jones and Keillar 2002; Jones and Mattingly 2002; Main 2009). What does seem certain, however, is that the connection between Loch Spynie and the Moray Firth was threatened from the fourteenth century onwards (Lewis and Pringle 2002: 12–13). By the time of the Pont maps *c* AD 1600, the former sea loch had become freshwater, and remained so until its draining in the early nineteenth century (Leslie 1811: 34–5). To the west, around Roseisle, there was a substantial body of open water surrounded by low-lying boggy terrain which was similarly impacted by incursions of windblown sand and eighteenth- and nineteenth-century drainage schemes. Reconstructing the former extent of these wetland and estuarine environments during later prehistory is important if we are to understand the landscape context of the Sculptor's Cave and the activities that took place there.

The following discussion combines modern data and historic records (written and cartographic) in an attempt to give the best possible reconstruction of the marine, intertidal and wetland environments of the region through time.

7.2.2 Sources

A full description of the methods and sources used to compile this report is included in the site archive. Cartographic, geotechnical and archaeological sources (table 7.1) have been analysed here to provide an interpretation for the condition of the Laich o'Moray at specific periods in the past.

7.2.3 Results

The landscape history of the Laich o' Moray is characterised by marine transgressions and isostatic uplift, as evident in a range of geomorphological features including raised beaches, and marine

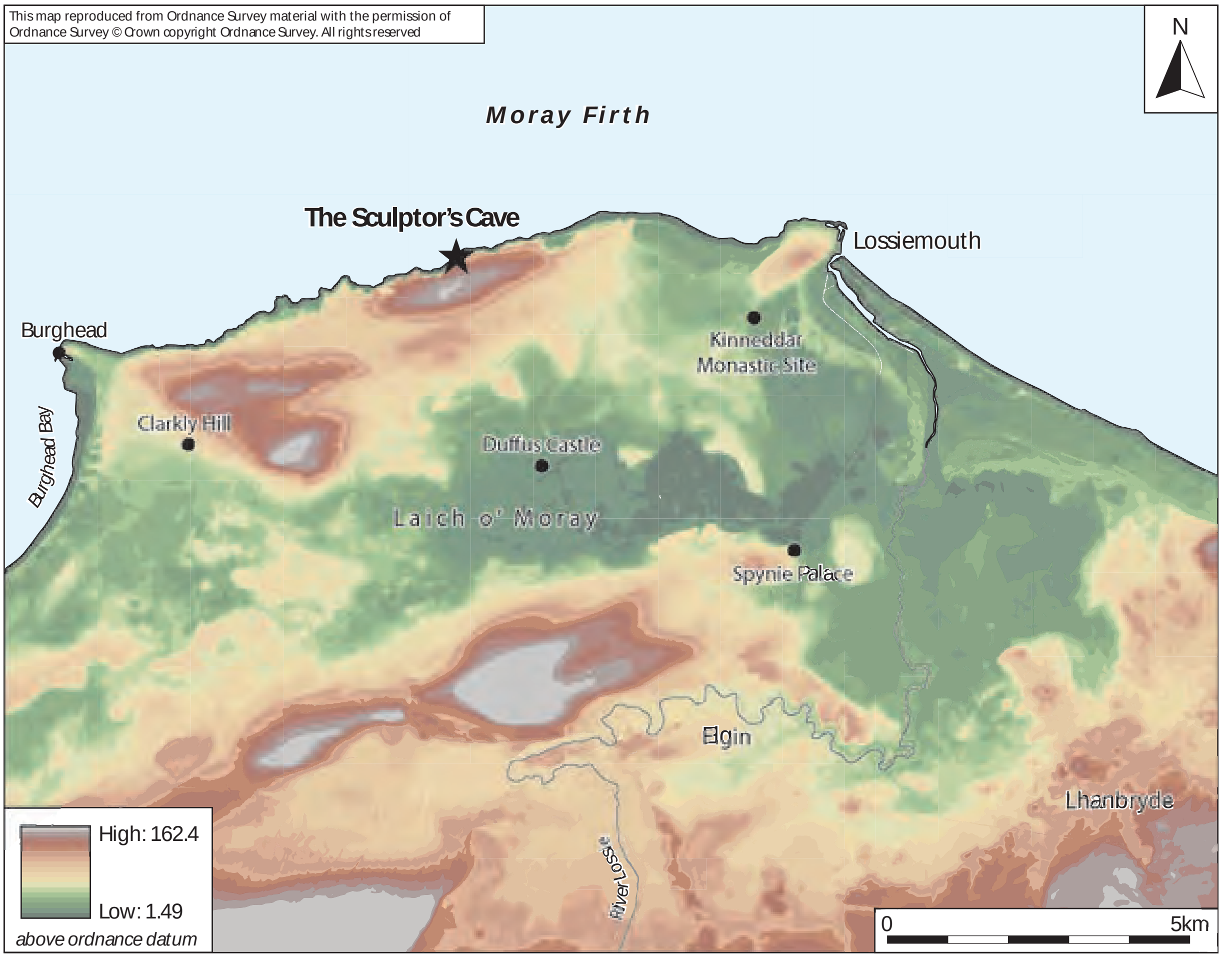

Illustration 7.1
Topography of the Laich o' Moray

and lacustrine sediments. The following account attempts to reconstruct the development of the landscape through time as far as can be ascertained using the sources described in table 7.1.

Palaeoenvironmental reconstruction

Immediately prior to the Loch Lomond Stadial (before *c* 10,000 cal BC), the Laich o' Moray was submerged, with sea level at least as high as +10m OD, creating an archipelago of the higher ground between Burghead and Lossiemouth (Comber 1995: 54; Lambeck 1995; Smith et al 2012). Evidence for this is seen in the quaternary marine silts and sands that cover most of the areas of the Laich o' Moray below +10m OD (BGS 1:50,000). Between 10,000 cal BC and 8000 cal BC, sea level dropped to between -1m OD and -3m OD (Smith et al 2012) and the Loch Spynie basin became terrestrial: a period probably represented by the submerged forest and land surface at Burghead beach (SCAPE nd: site #12864). This period of falling sea level, during the last glacial maximum, is followed by marine transgression that reached at least as high as +6m OD in this area (Smith et al 2012: 69). This period is represented by raised beach ridges that are evident under what is now pine plantation at Lossie Forest and are composed of finer sediment over the clastic layers indicated in three British Geological Survey (BGS) cores (Borehole Scan; BGS nd: IDs 764066, 725059, 608077). Likely cognate beach ridge formations are found at Culbin Sands and in the Dornoch Firth area, with the clastic layers dating from the earlier Holocene (before 4500 cal BC) and the finer sands and gravel to the later Holocene (after 4500 cal BC) (Comber 1995; Firth et al 1995; Hansom 2001). The outlet of the Loch Spynie basin passed through a relatively narrow gap, *c* 300m by 500m, between the beach ridge formations, where the River Lossie now flows (illus 7.2). At the west end of the Laich o' Moray were a series of freshwater lochs, the largest at Roseisle (illus 7.3). Throughout prehistory, these occupied a wide expanse of boggy ground, with islands of drier land reflected in several *inch* place names.

Between the late stages of the Mesolithic and medieval periods, despite continued relative sea level fall due to isostatic rebound, the Loch Spynie basin continued as an estuarine landscape, with freshwater wetland environments persisting to the west. It is likely that the Loch Spynie estuary was progressively shrinking (although not necessarily in a uniformly linear way) throughout prehistory and into the second millennium AD as relative sea level continued to fall through isostatic uplift. Although the rates of change are difficult to pinpoint, one model

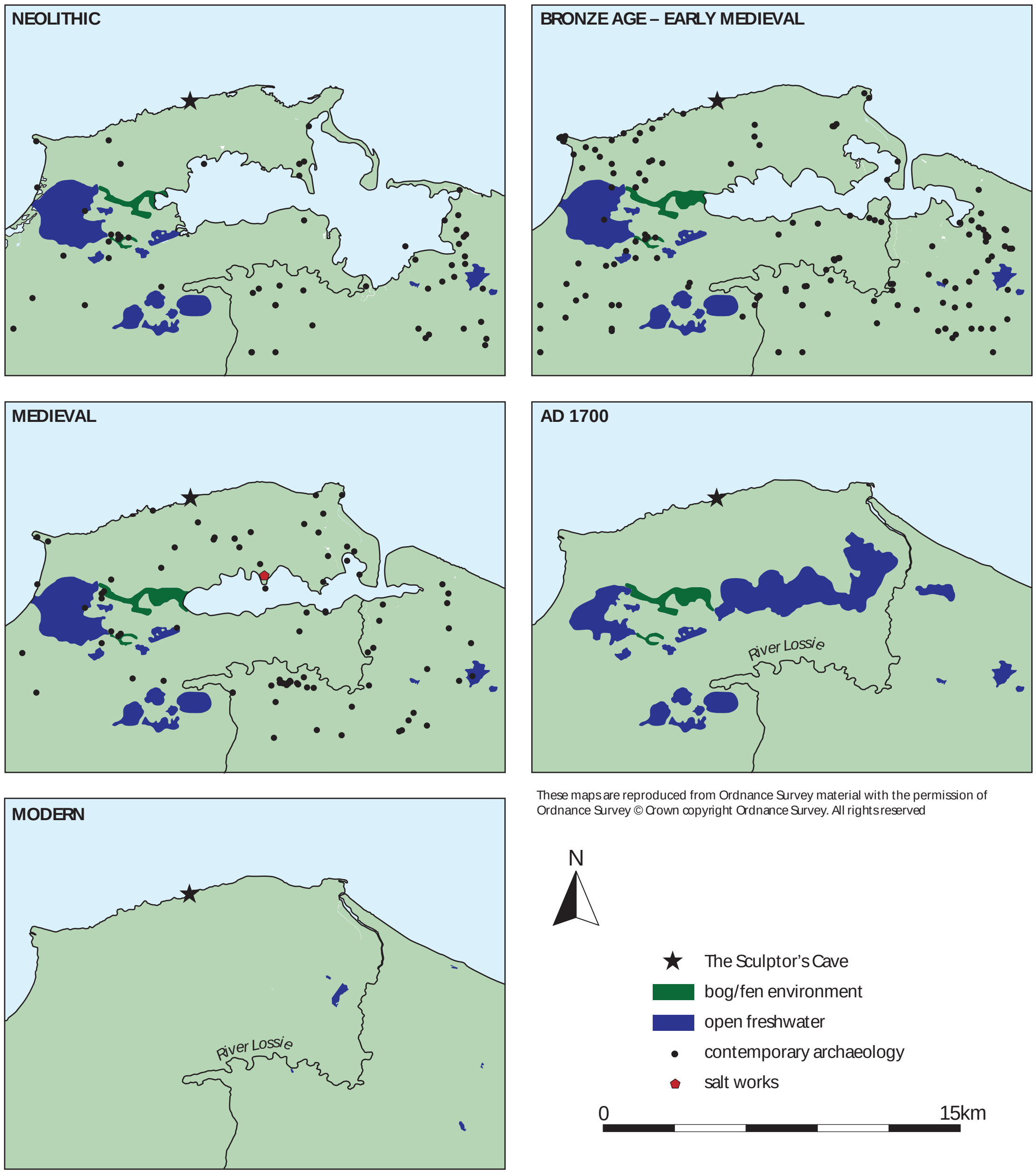

Illustration 7.2
Reconstructed palaeoshorelines of the former Loch Spynie estuary and surrounding lochs and bog/fen environments of the Laich o' Moray

suggests relative sea level in this area at +1.5–2m OD as late as *c* AD 700 (Smith et al 2012). Although Loch Spynie remained connected to the sea until at least the middle of the fourteenth century (Innes 1837: charter 163), it is not depicted as a sea loch on the Pont maps, which date to the late sixteenth century. It can therefore be assumed that the sea loch closed off *c* AD 1400–1600.

In the fourteenth century, difficulties with sediment accumulation were occurring: it is recorded that Bishop John of Pilmuir (Bishop of Elgin from AD 1326–62) attempted to keep the basin navigable in and between ships that had beached and sunk in the shallow waters (Simpson 1927: 17). More widely, aeolian sand accumulation caused problems for medieval communities across north-east Scotland (and indeed the rest of north-west Europe), with records of windblown sand resulting in medieval settlement abandonment. For example, on 19 August 1413, a severe storm buried the town of Forvie near Newburgh, Aberdeenshire, under 30m of dune sand (Griffiths 2015: 108). It is possible that a similar event was responsible for finally cutting off Loch Spynie from the Moray Firth, as windblown sand sits across the point where the basin connected to the sea through the beach ridges (BGS 1:50,000). It is also likely that increased alluvial sedimentation from the River Lossie reduced the volume of the Loch Spynie basin and supplied material for

Table 7.1
Data sources used to reconstruct the former, and changing, extent of Loch Spynie over time

Data	**Source**
British Geological Survey Borehole Scans	http://www.bgs.ac.uk/data/boreholescans/home.html
British Geological Survey 1:50,000 Superficial Geology	http://mapapps.bgs.ac.uk/geologyofbritain/home.html
Ordnance Survey 5×5m Digital Terrain Model	https://digimap.edina.ac.uk/
Pont Maps of Scotland (1583–1614)	http://maps.nls.uk/pont/
Blaeu Atlas Maior (1662–5), Volume 6	http://maps.nls.uk/atlas/blaeu-maior/vol/6
Roy Military Survey of Scotland (1747–55)	http://maps.nls.uk/roy/index.html
Plan of the Loch of Spynie and Adjacent Grounds, Moray	Kinnaird 1783; http://www.scotlandsplaces.gov.uk/record/nrs/RHP427/plan-loch-spynie-and-adjacent-grounds-moray/nrs
First Edition 6" Ordnance Survey (Elgin Sheets, I, II, III, VI, VII, VIII)	http://maps.nls.uk/os/6inch/index.html
Canmore Database, Sites and Monuments of Scotland	https://canmore.org.uk/site/search
Registrum Episcopatus Moraviensis, e pluribus codicibus consarcinatum circa AD 1400	Innes 1837

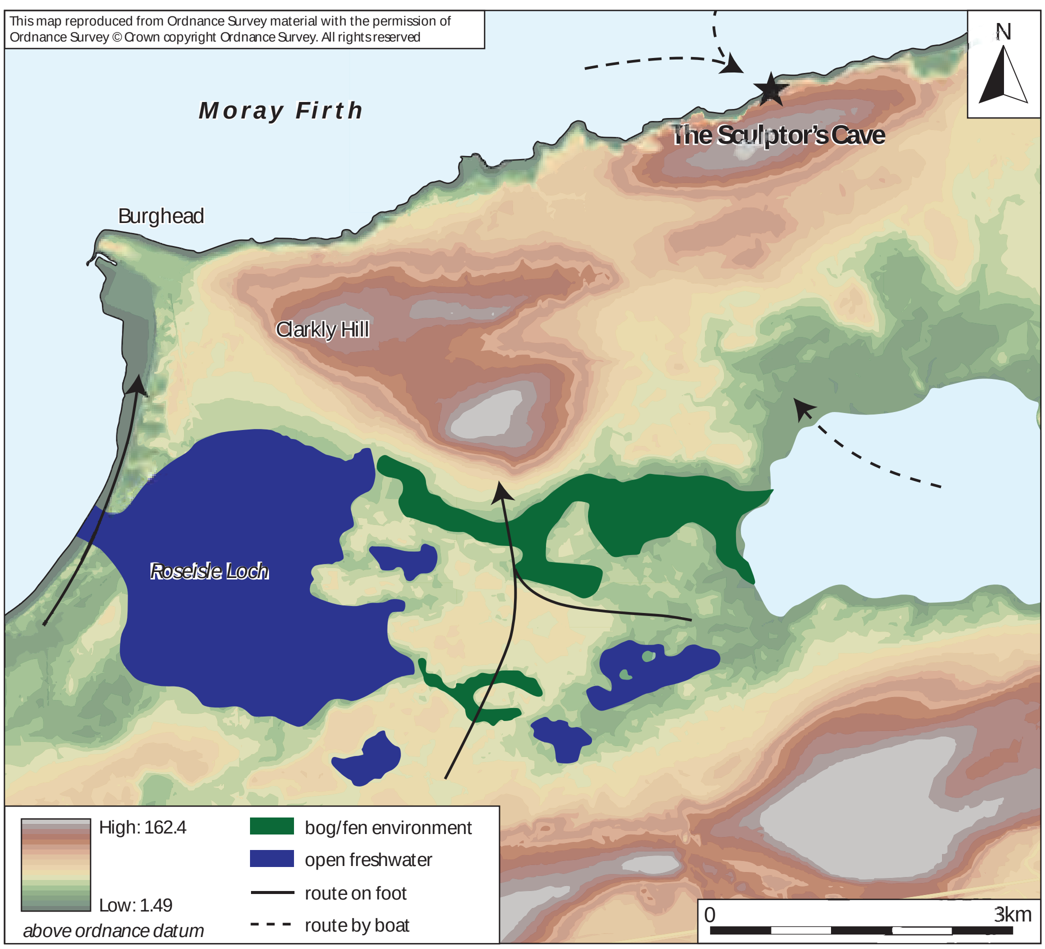

Illustration 7.3
Map showing the most likely routes to the Sculptor's Cave during the later prehistoric period

the formation of the blocking beach ridges and dunes. Although local factors have not been accounted for, the increased sediment loading of the river can be speculated to have been due to more intense agricultural practices and maintenance of a more deforested landscape from the Iron Age (*c* 800 BC) onwards (Edwards and Whittington 1997: 76–7), with forest cover diminishing to ~5% in Scotland between the sixteenth and twentieth centuries (Mather 2004). Despite the attempts of the Bishops of Elgin to maintain the connection of the Loch Spynie basin to the sea, some combination of sedimentation (both alluvial and aeolian), together with isostatic rebound, are ultimately responsible for Loch Spynie becoming cut off from the Moray Firth between AD 1400–1600.

At the west end of the Laich o' Moray, a large formation of dune sand accumulated landwards of Burghead Bay. As the Roseisle Loch appears on the seventeenth-century Blaeu and Pont maps but not on the Roy map of the mid-eighteenth century, it is tempting to think that the same storm or series of storms that overwhelmed the Culbin Estate, *c* 17km to the west, in AD 1694 (Griffiths 2015: 108) was responsible for the sand accumulation at Burghead. This storm event has been identified through excavation at Clarkly Hill, but its date here can only be pinned down to the post-medieval period (Hunter 2012).

By the time of the Roy map, all that remained of the former Laich o' Moray was the substantial freshwater Loch Spynie and a series of other small, relict freshwater lochs. The latter, and the boggy ground around them, were systematically drained as agricultural improvement began in earnest after *c* AD 1750 (Stratigos 2016). Loch Spynie itself was drained in the first decades of the nineteenth century through a complex series of canals, dykes and pumps (Leslie 1811: 34–5). A drainage scheme, dug through the Holocene beach ridges to the north-west of where the River Lossie now flows, is still used to keep the former Loch Spynie basin dry. By the production of the First Edition 6" Ordnance Survey map (1870–1), the only survival of the Laich o' Moray wetland environment was the small fragment of the former Loch Spynie that remains visible today.

Archaeological evidence for the extent of wetland environments

The recorded archaeology closely respects the extent of the former wetlands (illus 7.2). Sites and findspots relating to the Mesolithic and Neolithic appear to respect a former shoreline at *c* +6m OD, while Bronze Age to early medieval (*c* AD 1000) sites respect a palaeoshoreline at *c* +3m OD. Medieval settlement and agricultural remains respect a much reduced shoreline at *c* +2m OD. This pattern aligns closely with the history of relative sea level change and sedimentation processes outlined above.

A group of shell middens provides further confidence and insight into the former extent of the Loch Spynie estuary. Although not dated directly, some have produced finds that give some indication as to the period in which they were in use. The Nether Meft shell midden, *c* 1km east of the current course of the River Lossie, was over 50m in diameter, comprising layers of oysters, cockles, limpets, whelks and mussels up to 0.5m deep (Morrison 1871: 251–2). Although no diagnostic artefacts were recovered, ash, charcoal and burnt stone attest to an anthropogenic origin, and flint flakes recovered nearby may suggest a prehistoric date. Other shell middens in the area include one at Caysbriggs, measuring 91m by 27m, which produced medieval artefacts (Lubbock 1864: 335), and another 500m west of Spynie Palace, measuring over 40m in diameter and composed mostly of oyster shells (Shepherd and Keillar 1980). These middens indicate the likely positions of former shorelines and dating their stratigraphy might ultimately allow for more precise reconstructions of the chronology of the former extent of the Loch Spynie estuary. A further site that sheds light on the former extent of the estuarine environment is a medieval salt works at Salter Hill (illus 7.2). Within the former extent of Loch Spynie, near Duffus Castle, this salt-working site is now ploughed out, but a recognisable depression was evident as late as the early twentieth century (Mackintosh 1924: 72). Finally, the presence of a 9.1m-long oak-framed vessel, found in AD 1833 at Easter Oakenhead (Canmore ID 16519), provides evidence for the former use of the Loch Spynie estuary as a harbour. The exact findspot is imprecise, being located only to the eastern end of the former Loch Spynie (Mowat 1996: 86).

Access to the Sculptor's Cave and its landscape context

During prehistory, access to the stretch of land between Burghead and Lossiemouth, and thus to the Sculptor's Cave, could have been achieved on foot by one of two routes, both from the west (illus 7.3). The most straightforward option would have been to approach along the beach at Burghead Bay (a distance of around 8km), crossing the outlet burn of the Roseisle Loch, which may have been a substantial watercourse (it is depicted on Pont and Blaeu maps as feeding a mill). The second route was through the 3.5km-wide stretch of low-lying bog or fen between the western extremity of Loch Spynie and Roseisle Loch. While there is no evidence to suggest that this stretch of boggy ground would have been impassable, the absence of recorded sites suggests that it was wet enough to have been unfavourable for settlement at any point in later prehistory. At Wester Buthill (Canmore ID 149065), a possible trackway was indicated by aerial photographs next to a Pictish barrow cemetery among a range of other likely later prehistoric and early historic features (Greig 1999), suggesting that specific routeways were constructed.

The easiest way to move across the Laich o' Moray throughout prehistory, however, would almost certainly have been by boat. Logboats would have been ideal for use on the sheltered water of the Loch Spynie estuary, on the River Lossie, and on the lochs that scattered this landscape, but were not likely to have been used in the open Moray Firth in anything but the slightest of sea states (Coates 2005: 518). There is almost no direct evidence of other types of watercraft in Scotland until the appearance of Viking Age vessels in the ninth century, although it could be speculated that coracles were available, given the strong historic tradition of 'curragh' use on the nearby Spey (Hornell 1936: 5). There is also tentative evidence of an Early Bronze Age coracle burial at Barns Farm, Fife, hinting at the antiquity of skin boat traditions in Scotland (Watkins 1980; 1982: 118–19). However, secure and direct evidence for prehistoric watercraft outside of logboats remains very rare. The Oakenhead boat and the historic references described previously are strong evidence that the Loch Spynie estuary was used as an anchorage in the medieval period, so, while speculative,

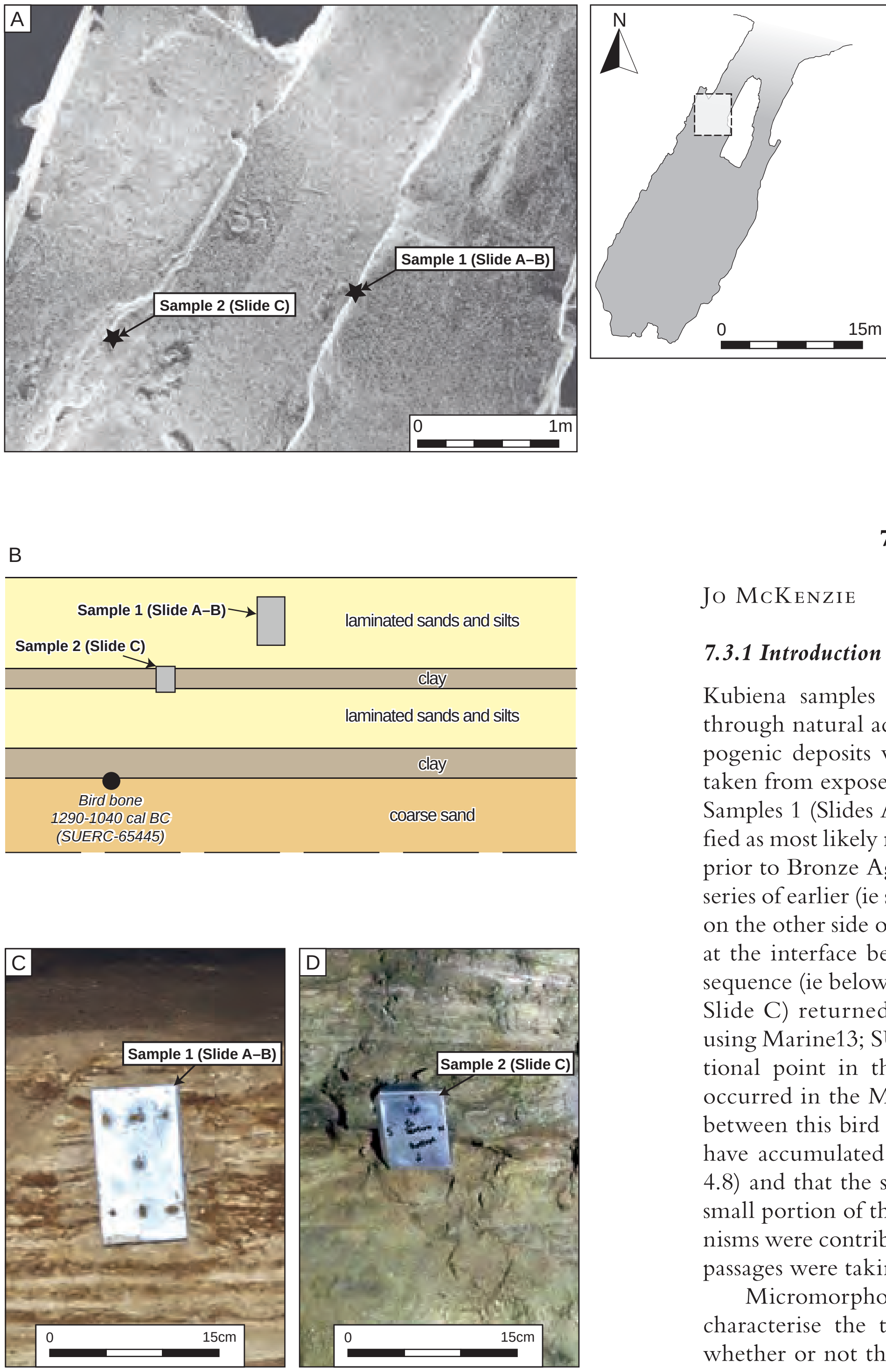

Illustration 7.4
Locations of micromorphology samples 1 (Slide A–B) and 2 (Slide C) in the Sculptor's Cave West Passage: (A) is a digital plan of the central part of the West Passage showing the in situ locations of the samples in exposed sections left by Benton's excavations, and (B) is a composite schematic showing the relative stratigraphic positions of both samples; (C, D) are photographs of the respective kubiena tins in situ within the deposits

it is not unreasonable to assume that it was in similar use in prehistory.

7.2.4 Conclusions

The Laich o' Moray has been radically altered through natural processes of deglaciation and climate change, followed more recently by human-induced landscape change. Through the period of human occupation, the Laich o' Moray has transformed from a marine environment to a dynamic estuary with surrounding lochs and bogs to a uniformly freshwater wetland environment, before being drained wholesale in the eighteenth and nineteenth centuries.

7.3 Soil micromorphology

Jo McKenzie

7.3.1 Introduction

Kubiena samples for micromorphological analysis were taken through natural accumulations underlying the excavated anthropogenic deposits within the Sculptor's Cave. The samples were taken from exposed sections created during Benton's excavations. Samples 1 (Slides A and B) targeted a sequence of deposits identified as most likely representing the cave environment immediately prior to Bronze Age activity, while Sample 2 (Slide C) targeted a series of earlier (ie stratigraphically lower) clay-dominated deposits on the other side of the passage (illus 7.4). A seabird bone stratified at the interface between a layer of coarse sand and a lower clay sequence (ie below the clay-dominated deposits contained within Slide C) returned an AMS date of 1290–1040 cal BC (corrected using Marine13; SUERC-65445), indicating that this clear transitional point in the depositional environment within the cave occurred in the Middle to Late Bronze Age. Given that deposits between this bird bone and the start of human activity appear to have accumulated over as little as *95–225* years (chapter 4; illus 4.8) and that the sampled deposits discussed here represent just a small portion of this sequence, it is possible that whatever mechanisms were contributing to sediment build-up within the entrance passages were taking place on a roughly annual cycle.

Micromorphological analysis aimed to comprehensively characterise the two sediment sequences in order to identify whether or not they contained evidence for human activity and whether their formation could shed light on the nature of the cave environment at this time.

The Sculptor's Cave is located within the Hopeman Formation: a coastal band of Permian and Triassic sandstones surrounded by older Devonian rocks. Rocks of these periods are rare in Scotland – most having been eroded since deposition – but are found around Elgin and particularly along the Lossiemouth to Burghead coast. They are often known as 'New Red Sandstone', differentiating them from the older and much more extensive 'Old Red' sandstones of the Devonian (Craig 1991; Auton et al

2011). The sandstones of the Hopeman Formation are classed as texturally mature: composed almost entirely of weathering-resistant quartz, typically well sorted and rounded as a result of aeolian transportation (Williams 1973). Fringed by marine beach deposits of gravel, sand and silt, and adjacent to superficial (drift) geological units including mapped areas of blown sand immediately adjacent to the coastal fringe, raised marine deposits, and till, the Sculptor's Cave is potentially open to incoming sediment originating from a wide range of geological sources (BGS 2015). Although currently inaccessible at high tide, the Sculptor's Cave itself is not thought to have been within tidal reach since the Neolithic or earlier (section 7.2).

7.3.2 Method

Julie Boreham and Jo McKenzie

Thin sections were prepared following the production methodology provided by Murphy (1986) and adapted by Julie Boreham at Earthslides.com. Full details are provided in the site archive. A range of magnifications (×10–×400) and light sources (plane polarised, crossed polars, oblique incident) were used to obtain detailed descriptions of the sediment sequence, which were recorded using a modified table designed to focus on sediment mineralogy, grain size and morphology, deposit structure and soil pedofeatures (see site archive).

7.3.3 Analysis

Sample 1 (Slide A–B)

The sediments form a continuous sequence, divided into 26 deposits (illus 7.5), recorded from the base of the sequence at lower Slide B (D1) to the top of upper Slide A (D26). The uppermost deposit (D12) in Slide B is likely to continue into Slide A as D13. The sediments can be divided into two main and two further categories:

1. Sand deposits (D1, D3, D5, D6, D8, D10, D12, D13, D15, D17, D19, D21, D23): these range in grain size from very fine (63–125μm) to coarse (up to 1mm), with mineral grains dominantly smooth and rounded in shape. They are generally poorly sorted at the microscopic scale and contain a varying, through always very minor, proportion of larger (though still all <4mm) rock fragments (section 7.3.4).
2. Laminations of clay and silt (D2, D16, D18, D20, D22, D24, D26): these are characterised by generally alternating and sometimes interleaving fine lenses of silt and clay, ranging from poorly to well expressed.
3. Three sections of the sequence consist of interleaving laminations of clay, silt and discrete bands of sand (D4, D9, D11) which, although clearly representing several discrete events, cannot be separated into individual sand and clay/silt lenses.
4. Three further deposits (D7, D14, D25) represent a fourth depositional category: accumulations of generally non-laminated clay and some silt within discrete horizons defined by concentrations of particularly coarse-grained sediment and rock fragments.

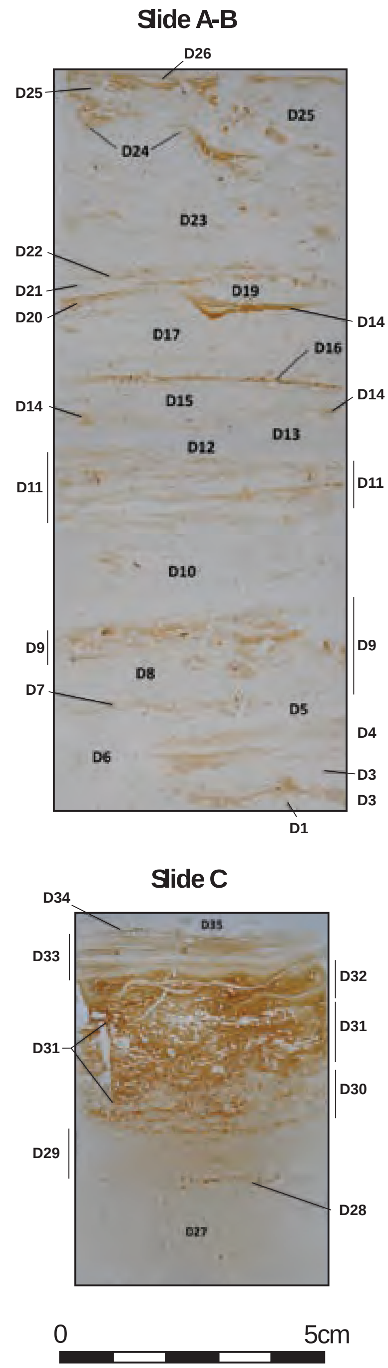

Illustration 7.5
Detailed sequence of deposits in Slide A–B (upper, laminated deposits) and Slide C (lower deposits, including interface between laminated sands and underlying clay)

The deposits lie generally on a horizontal plane, with relatively clear though sometimes diffuse boundaries. Episodes of apparent disturbance interrupt this: at the base of the sequence, deposits D1–D4 are truncated halfway along the sample width, indicating possible localised turbation by soil fauna. At the top, chunks of clay/silt lamination apparently originating from disaggregated deposit D24 appear adrift within D23 below. Large cracks within extant fragments indicate drying, as does a large fissure extending through D25–D26.

Sample 2 (Slide C)

A continuous sequence through this smaller sample was divided into nine separate deposits (illus 7.5) recorded from the base of the sequence (D27–D35). The Slide C sequence can be categorised as follows:

1. Sand deposits (D27, D29, D35): similar in mineralogy and overall texture to those of Slide A–B, with the exception of D29, which shows extensive lamination throughout (section 7.3.4).
2. Laminations of clay and silt (D33): characterised by alternating fine lenses of silt and clay, generally very well expressed with less interleaving than those seen in Slide A–B.
3. Two further thin deposits (D28, D34) representing discrete horizons defined by concentrations of coarser-grained sediment which show significant clay accumulation (generally non-laminated, discontinuous and undulating).
4. The clay-dominated sequence (D30, D31, D32): three deposits, unique in texture to Slide C, defined by significant accumulation of clay but varying in individual microstructural and compositional features. These appear to represent a sequence of events reflecting a very different cave environment to that seen in the rest of the sample sequence.

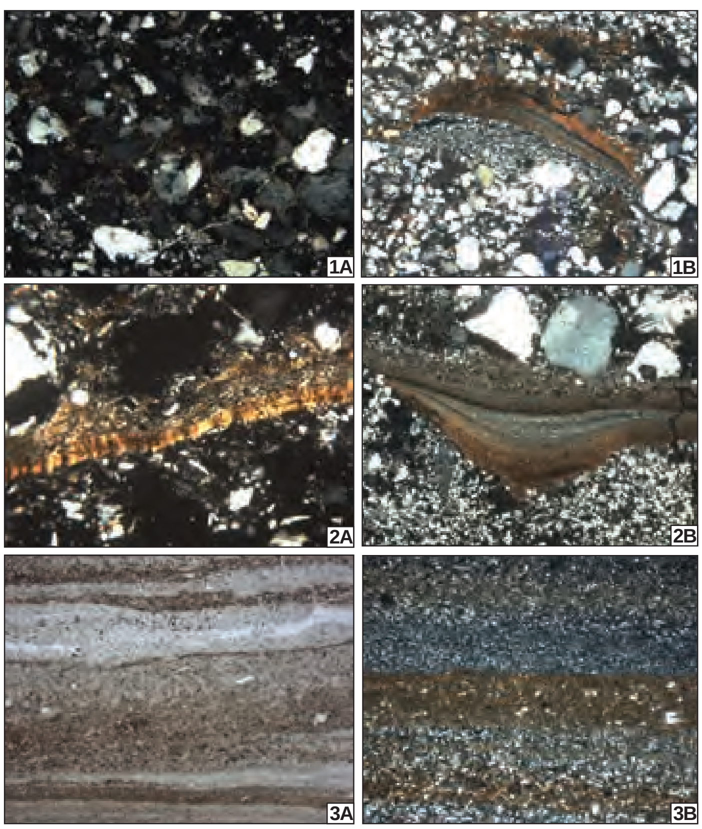

Illustration 7.6
(1A) Illuvial clay coatings form a localised 'bridged' or gefuric microstructure in D10 (crossed polarised light, image width: 1.5mm), (1B) inverted, displaced fragment of clay and silt lamination within sand deposit D10 (crossed polarised light, image width: 5mm), (2A, 2B) bright, clear, strongly oriented (limpid) clay in D11 (2A) contrasts with the opaque orange tones of the finely laminated, but weakly oriented clay domains in D18 (2B), (crossed polarised light, image widths: 5mm), (3A, 3B) finely laminated clayey silt deposit D33 (seen at image widths of 5mm, in plane polarised light (3A) and 1.5mm, in crossed polarised light (3B))

As seen in Slide A–B, there is evidence for minor disturbance to the profile. An extended vertical channel runs the depth of lower clay D31 on the left of the slide, which may indicate drying/cracking. The uppermost D29 lenses are also apparently truncated midway across their length (illus 7.6, 2B). It is possible that this represents removal of the upper part of D29 through aeolian or (more likely) colluvial action prior to the development of D30 (section 7.3.4).

7.3.4 Main deposit group profiles

Sand deposits

The generally very similar mineralogy of the 13 sand deposits in Slide A–B suggests a largely out-of-cave origin for the material, with the variety of rock fragments and dark minerals plus the relatively few extant sandstone fragments present suggesting sediment sources additional to the sandstone bedrock. Aeolian transport of sediment into the cave is also strongly suggested by both size ratio and sphericity/roundness. Grains typically peak at medium sand size (the upper limit for quartz grains movable by strong winds; Nichols 2009: 115) and the smooth, rounded grains characteristic of aeolian sediments are dominant (detailed characterisation of deposits can be found in the site archive). Transport from a local environment is also suggested by the relatively poor sorting of the sands at the microscopic scale: sand grains are typically fractionated by size, shape and density the greater the distance of travel (ibid: 117). Well sorted at the macro scale, at higher magnification, the sands within this sequence (adjacent to the cave entrance) are relatively poorly sorted within their broad size classes, indicating transport from relatively nearby, ie the adjacent beach. Low compaction and a voided, open deposit structure are typical.

Organic content is uniformly very low, with the majority of the sand deposits showing little or no fine material groundmass, with only rare, discrete small patches of silty clay with small amounts of amorphous organic material present. Organic inclusions are similarly rare, as are diatoms, and no anthropogenic materials are identified.

The soil pedofeatures present relate to illuviation processes. Bright yellow 'limpid' clay coatings are seen in all these deposits, with particular concentrations in deposits D8, D10 (illus 7.6, 1A) and D23, and indicate movement of fine clay down-profile as a result of water percolation. Small nodules of iron accumulation, also indicators for illuviation, are present in small numbers in several horizons.

Slide C, located further into the cave, shows three similarly sand-dominated deposits. Two of these (D27, D35) are very similar to those described above, but the third (D29) is notably different, showing clear lamination and a degree of sorting within its sequence of individual sand lenses which is not seen in the rest of this deposit group (illus 7.5). This points to a more gradual accumulation of sand at this point in the profile and may also relate to the location of this sample further within the cave, perhaps subject to degrees of variation in wind strength/ direction compared to the sequence adjacent to the cave entrance.

A particularly interesting feature is the presence of displaced fragments of clay/silt laminations within several of the sand/ interleaving deposits (D4, D6, D10, D17, D23 and D29; an example in D10 is shown in illus 7.6, 1B). Fragments such as this have been interpreted as indicative of clay-rich layers exposed and dried at the soil surface as a result of processes of disturbance such as colluviation (Stoops et al 2010: 225). This is perhaps particularly well illustrated in deposit D29.

Clay/silt laminations

Layers D2, D16, D18, D20, D22, D24 and D26 are finely laminated, usually alternating bands of clay and silt of varying thickness, with a high coarse mineral input. Silts appear undisturbed and are probably (due to its high resistance to weathering) composed almost entirely of quartz; only in D18 can silt-sized mica be tentatively identified (illus 7.5). The clays almost all show absent, weak or generally discontinuous small bands of orientation, with only clay laminations within D9 and especially D11 (both deposits composed of interleaving sand, silt and clay) showing the limpidity characteristic of strong parallel orientation (illus 7.6, 2A, 2B).

The only deposit broadly within this category in Slide C is D33. Located immediately above clay sequence D30–D32 (illus 7.5), this is the thickest (8mm) and most finely laminated of the clay/silt sequences, with over 24 individual episodes of deposition (illus 7.6, 3A, 3B). However, it shows notably little or no coarse mineral fraction or organic component and is in this respect more similar to the clay it seals than the clay and silt depositions of Slide A–B. Clearly, the accumulation of deposit D33 seems to have taken place when the environmental conditions which produced the clay sequence at least still partly prevailed.

Clay-dominated deposits

The defining event of Slide C is the sequence of clay-dominated deposits seen within the majority of the upper part of the slide (D30, D31, D32; illus 7.5; 7.7, 2A, 2B). These can be interpreted as a single sequence of events indicative of a significant and established change in the in-cave environment from generally dry or subject to wetting/drying to significantly or completely waterlogged. All three deposits show elements of a vughy microstructure: the presence of amorphous to often star-shaped voids, which may relate to the markedly saline conditions noted during slide manufacture, and the action of gypsum salts on the structure of the clay matrix (illus 7.7, 2A). Clay orientation is also distinctive to all three deposits. A faint but consistent horizontal lamination is partially masked by an undulating, poorly oriented clay matrix, although upper deposit D32 shows a sequence of very clearly expressed clay laminations bisected by occasional large cracks. This faintly turbated appearance is strongly suggestive of deposition within a waterlogged environment.

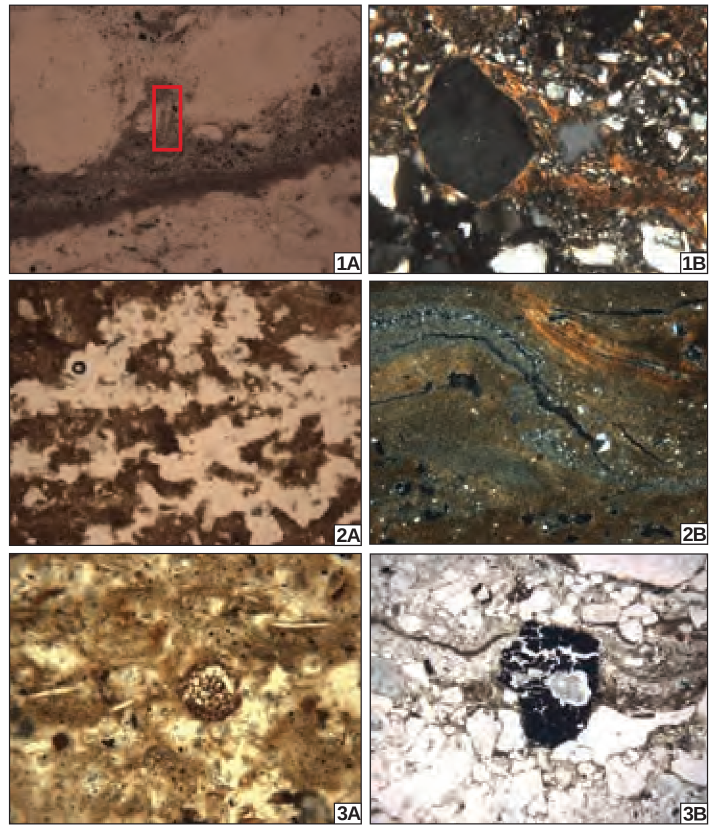

Illustration 7.7

(1A) Red outline highlights diatom aligned vertically just above oriented (limpid) clay lens of D11 (same view as illus 7.6, 2A; plane polarised light, image width: 5mm), (1B) D7: illuvial clay forms coatings around coarse quartz grain; to base of image, redder, iron-rich laminations of clay can be seen (crossed polarised light, image width: 1mm), (2A) vughy, voided and (to right) cracked microstructure of deposit D31 (plane polarised light, image width: 2mm), (2B) undulating clay/fine silt laminations within deposit D32 (plane polarised light, image width: 1.5mm), (3A) organic inclusions including fungal sclerotia (top centre) in clay lens within deposit D2 (plane polarised light, image width: 1mm), (3B) carbonised fragment in clay/silt lamination in deposit D9 (plane polarised light, image width: 1.5mm)

In lowest deposit D30, vughy, undulating patches of clay are mixed with areas dominated by medium sand, which dwindle to near absent in D31 and D32. This may suggest at least some settling through water of heavier mineral grains within the clay-dominated sequence. All three deposits show extremely few additional features: no anthropogenic material, few organic inclusions and rare (illuvial) pedofeatures.

Organic content, organic and biogenic inclusions, and potential anthropogenic influence

The amount of organic material in the Sculptor's Cave sediment sequence is extremely low and relatively undiagnostic. Organic inclusions include plant-derived fragments (cell residue, rare sections through probable root fragments), which are seen in all of the laminated clay/silt horizons in Slide A–B with the exception of D26 but are rarely present in Slide C. Rare fungal sclerotia are seen in six of the Slide A–B deposits, mostly the laminated clay/silt horizons (illus 7.7, 3A). Small fragments of carbonised material, all of windblow size and none necessarily diagnostic of anthropogenic activity, are seen in several deposits, with the largest in otherwise low organic content deposit D9 (illus 7.7, 3B). Only two probable carbonised fragments can be seen in the Slide C sequence (both in pre-clay deposit D28); both show clear cellular structure (potentially charcoal, though too small for secure identification) and one appears red in oblique incident light, potentially indicating a reheated mineralised fragment. Rare heated mineral grains are seen, again preferentially within Slide A–B, but their number and size are too small to indicate direct anthropogenic activity within the cave. Input of amorphous organic material, identifiable as orange to brown fine material groundmass, is also quite strongly biased towards the laminated clay/silt lenses and is almost absent from the sand deposits.

A perhaps surprising feature of both sequences is the almost complete absence of diatoms and other silica bodies such as (in this environment) spicules or foraminifera. Diatoms are microscopic algae which are abundant in almost all aquatic habitats and are important diagnostic indicators in palaeoenvironmental reconstruction, partly due to a robust siliceous structure which ensures that they survive well in most conditions. Eleven deposits in the Slide A–B sequence show diatoms/spicules: usually one, no more than three, some only tentatively identified (illus 7.7, 1A). This low number would more commonly indicate a generally non-aquatic environment. For Slide C, no diatoms are securely identified, despite other features of the clay-dominated portion of this sequence strongly indicating waterlogged conditions (section 7.3.5).

Soil pedofeatures

Pedofeatures within both of the Sculptor's Cave sample sequences reflect processes of physical and chemical movement through illuviation: clay features, as discussed above, and, to a lesser extent, features of iron mobilisation and deposition. Small, usually dark red, iron 'nodules' and occasional plant pseudomorphs are seen in small numbers throughout the sequence and represent iron accumulation. These features are indicative of general illuviation throughout the profile.

7.3.5 Interpretation

Deposit formation

While the sampled sequences generally show clear, undisturbed sediment stratigraphies, any interpretation of the environment beyond the scale of these individual profiles must consider the small size of the thin section sample. This is particularly true for the potentially very varied local sedimentary environment within a cave (Farrand 2001: 13).

Windblown deposits

The most likely formation process for both sand- and silt-dominated layers in both sequences is aeolian accumulation, albeit clearly influenced by water movement, with the clay- and silt-dominated lenses providing more detail on post-depositional processes alongside the typically aeolian structures of the coarse sand deposits. The strongly oriented horizons of D9 and D11 suggest illuviation and a classic down-profile movement of fine clay (Stoops et al 2010: 218). Above these features (D10, D12 and especially D13 in Slide A–B, and also D29 in Slide C), localised patches of bridged limpid clay coatings point to drying (ibid: 221). Patterns of clay movement and deposition within the mid-section of the Slide A–B sequence (D9–D17) and possibly the lower, pre-clay portion of Slide C (D28–D29) therefore indicate water movement combined with periodic drying out. Vertical cracks extending through individual clay-rich deposits (eg D16, D18) support this interpretation. Non-laminated clay and coarse mineral deposits D7, D14 and (possibly) D25 in Slide A–B, and D28 and D34 in Slide C, also feature frequent clay accumulations, and here it appears that these lenses of coarser and/or less voided material act as hiatus points for illuvial material.

More prevalent are the non-oriented to poorly oriented clay laminations. A significant feature of these deposits is their higher concentration of organic features compared to the sands, including varying degrees of amorphous organic content (illus 7.6, 2B; 7.7, 3A). Localised concentrations of organic materials of this kind may indicate surface exposure and may point to these particular clay-rich lenses representing (presumably short-lived, since organic content is still low overall) ephemeral surface horizons. At high wind velocities, silt- and clay-sized particles can be carried as suspended load 'dust' (Nichols 2009: 115). This is very possible along the exposed Moray coastline, known for previous dramatic storm and sand-blow events, such as that which devastated the nearby Culbin Estate in 1694 (Ross 1992; section 7.2.3). These sequences may therefore include phases of surface dryness, suggested by the illuvial cycling described above and formed from a mix of fine dusts and blown-in detritus. It is notable that the Slide C profile, located further within the cave and therefore presumably at a more sheltered location, does not display this kind of deposit.

Waterlogged deposits

A very different sequence is seen in the upper section of Slide C. Here, a group of three strongly clay-dominated layers show a range of features indicating the development of a waterlogged environment at this point in the profile: dense deposits of gently turbated though horizontally laminated clay, poorly oriented; a coarse fraction heavily weighted towards the lower deposit; and a vughy structure indicative of a highly saline environment.

Resin curing failures during the processing of Slide A–B identified the presence of salts, although not concentrated enough to be present in crystal form (eg gypsum) and thus identifiable in thin section. At too low a level to suggest saline immersion, it seems that the coastal atmosphere likely deposited salts as an aerosol onto sediment surfaces (Julie Boreham pers comm).

Effects of this saline environment were dramatically more pronounced in Slide C, where elementary chemical analysis showed a markedly higher saline content than in Slide A–B (Julie Boreham pers comm). One effect of a saline environment is the general retardation of processes of clay movement (and thus the development of illuvial pedofeatures) through flocculation, where individual clay particles aggregate as a result of a chemical reaction with another substance, usually saltwater, and thus become heavier, faster-settling particles. The lower, pre-clay deposits of Slide C (D27, D28 and D29), despite being sealed by an extremely clay-rich deposit sequence, show relatively few of the clay illuviation features which are such a distinctive feature of Slide A–B (illus 7.5; 7.6, 2A, 2B).

Other structural features illustrate likely input differences at the two sample locations. D33's extensive sequence of laminations contrasts with the more exposed Slide A–B, where only limited development of such sequences is seen before coarser aeolian deposition once more prevails. There is also far less organic material present in Slide C than in Slide A–B, probably due to decreased input of blown 'dust' settling into the deposits.

An interesting feature of both sample sequences is the general lack (in Slide A–B) and the complete absence (in Slide C) of identifiable diatoms. These distinctive silica bodies are found in almost all aquatic environments, to the extent that they are commonly used as proof of immersion in water in forensic science (Smol and Stoermer 2010: 534). In micromorphology, they are a common indicator of a waterlogged environment. One reason for this absence, especially in Slide C, may be the amount of light present in the cave. Diatoms rely on the sun for energy and therefore only exist within the photic zone, that is, the depth to which sunlight can penetrate water. The extent of this zone relies not only on the location of the water body relative to penetration of sunlight, but also the clarity of the water. It is possible that these elements of the in-cave environment inhibited diatom colonisation and may reflect the location of the main body of standing water towards the rear of the cave. The most clearly identifiable of these features in the whole sample sequence comes not from the clay, but from one of the potentially 'wetter' deposits within the sequence nearer to the cave entrance (D11; illus 7.7, 1A).

Anthropogenic activity

There is a general lack of diagnostic features for anthropogenic activity in both sample sequences. However, given the remote location of the cave, the few windblown particles of carbonised material in both sequences (notably, also in the pre-clay (pre-waterlogging) portion of Slide C) could indicate some human presence both prior to and after the development of standing water in the Sculptor's Cave.

7.3.6 Conclusions

Information from the two sample profiles combine to produce a fairly robust interpretation for the development of the Sculptor's Cave deposits through time. The earlier deposits, represented in in-cave Slide C, separate into three very clear phases: an upper and lower sequence of sand- and silt-dominated deposits which are broadly similar to those seen in Slide A–B and which represent aeolian deposition, and a central sequence of deposits dominated by clay accumulation which display a range of physical (structural) and chemical characteristics indicative of the development of a waterlogged environment, ie the development of a body of standing water within the cave. Specific features of both upper and lower sand- and silt-dominated phases of accumulation at this location may reflect the more sheltered environment of the cave interior. Near to the entrance, the later deposits of Slide A–B represent an initial aeolian sequence which, through a mixture of wetting and drying cycles, developed a series of clay, silt and slightly organic-influenced layers that indicate illuviation of fine material within sand horizons, plus likely phases of surface dryness and accompanying 'dirty', organic-influenced clay lenses formed from a mix of fine dusts and blown-in detritus.

7.4 Animal bone

Clare Rainsford

7.4.1 Introduction

A substantial assemblage of animal bone was recovered from the Shepherds' excavations at the Sculptor's Cave. This was initially assessed by Dale Serjeantson (nd) and the data made available to Bradford for reanalysis within the revised phasing and chronological framework (the bone itself was not systematically reanalysed).

7.4.2 Methods

The assemblage comprised 3673 bone fragments (table 7.2), retrieved both via hand collection (1396 fragments) and from wet-sieved samples (2277 fragments). These were analysed together, as sample sizes for most phases otherwise became problematically small, and the material recovered from wet sieving showed generally similar patterns to the hand-collected material. Almost two-thirds of the assemblage (2185 fragments; 60%) was identified to some taxonomic level, although it should be noted that this includes mammals only identified to size class (large/medium/small), unidentified fish and unidentified birds. Biometric measurements are contained in the site archive. Benton (1931: 207) mentions 536 animal bones from her excavations, which probably reflects a more selective recovery strategy. These bones do not survive and the brief description in Benton's report suggests a similar species coverage to the Shepherd material.

7.4.3 Results

The faunal material assemblages from Phases 1 and 2 (Late Bronze Age and Iron Age), are, in terms of fragment count, largely equal in size (tables 7.2, 7.3). The proportion of unidentified material is higher in Phase 2 compared to Phase 1 (52% compared to 35%), potentially indicating higher fragmentation in Phase 2. A substantial proportion of the overall assemblage (753 fragments, 21%) was unstratified or else from disturbed (Phase 3) or mixed (Phase 2/3) deposits.

Mammal remains

The Sculptor's Cave assemblage is dominated by the remains of domestic mammals, predominantly sheep/goat and cattle, with pig the third most abundant taxon (table 7.3). Minimum number of individuals (MNI) figures (calculated by Lindsey Büster) are given in table 7.4. Other mammals, including dog, horse, wild mammals and micromammals, are very uncommon, totalling less than 5% of the identified assemblage. Small but diverse assemblages of both birds and fish were also present and are discussed in more detail below.

Table 7.2
Faunal assemblage from the Shepherd excavations at the Sculptor's Cave by block. All numbers given are number of identifiable specimens (NISP)

Species	**Phase 1**						**Phase 2**							**Phase 2/3**	**Phase 3**	**Unstratified**	**Total**
	1.1	**1.2**	**2.1**	**2.2**	**2.3**	**2.4**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**2.5**	**2.6**	**2.7**	**2.8**		
Cattle (*Bos taurus*)	2	42	1	10	6	1	29	6	13	9	1	3	10	22	–	22	**177**
Sheep (*Ovis aries*)	–	3	–	5	–	–	–	1	–	–	–	–	–	–	–	–	**9**
Goat (*Capra hircus*)	–	–	59	–	1	–	–	–	–	–	–	–	–	–	–	–	**60**
Sheep/goat (*Ovis/Capra*)	2	84	–	23	12	–	9	17	16	38	2	2	3	15	–	14	**237**
Pig (*Sus scrofa*)	2	20	–	3	–	–	2	3	5	3	1	–	–	4	–	9	**52**
Horse (*Equus caballus*)	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	**1**
Roe deer (*Capreolus capreolus*)	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	**3**
Dog (*Canis familiaris*)	–	–	–	1	–	–	–	–	–	–	17	–	–	–	–	–	**18**
Fox (*Vulpes vulpes*)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	**1**
Beaver (*Castor fiber*)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	**1**
Large ungulate	2	64	–	15	4	–	8	2	24	13	2	4	4	4	–	15	**161**
Medium ungulate	4	89	–	45	19	–	18	7	34	95	4	–	2	13	–	23	**353**
Small mammal	–	1	–	–	–	–	2	–	–	–	–	–	–	–	–	–	**3**
Shrew (*Sorex* sp.)	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	**1**
Field vole (*Microtus agrestis*)	–	9	–	1	–	–	–	–	1	–	–	–	–	–	–	1	**12**
Vole	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	**1**
Rat (*Rattus* sp.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	**1**
Mouse/vole	–	3	–	1	1	–	1	2	1	–	–	–	–	1	–	5	**15**
Frog (*Rana temporana*)	–	–	–	2	–	–	–	–	1	–	–	–	–	–	1	–	**4**
Toad (*Bufo bufo*)	1	–	–	–	–	–	1	–	1	1	1	–	–	–	1	–	**6**
Bird	–	5	3	5	–	1	3	2	1	2	5	4	–	2	3	31	**67**
Fish	22	262	–	41	14	90	51	58	31	82	11	4	3	15	13	305	**1002**
Total ID	**35**	**584**	**63**	**152**	**57**	**92**	**124**	**98**	**128**	**246**	**44**	**17**	**22**	**76**	**18**	**429**	**2185**
Unidentified	15	384	4	110	16	7	158	61	145	336	7	6	9	33	5	192	**1488**
Total by block	**50**	**968**	**67**	**262**	**73**	**99**	**282**	**159**	**273**	**582**	**51**	**23**	**31**	**109**	**23**	**621**	**3673**
Total by phase	**1519**						**1401**							**109**	**23**	**621**	**3673**

Table 7.3
Domesticates from the Sculptor's Cave by phase. All numbers given are number of identifiable specimens (NISP).

Species	Phase 1	Phase 2	Total
Cattle (*Bos taurus*)	62	71	**133**
Sheep (*Ovis aries*)	8	1	**9**
Goat (*Capra hircus*)	60	0	**60**
Sheep/goat (*Ovis/Capra*)	121	87	**208**
Pig (*Sus scrofa*)	25	14	**39**
Horse (*Equus caballus*)	0	1	**1**
Dog (*Canis familiaris*)	1	17	**18**
Medium ungulate	157	160	**317**
Large ungulate	85	57	**142**
Total	**519**	**408**	**927**

Table 7.4
Minimum number of individuals (MNI) for major domesticates in Phases 1 and 2

Species	Phase 1		Phase 2	
	MNI	Element	MNI	Element
Sheep/goat (*Ovis/Capra*)	7	Ulna (right)	3	Tibia (right)
Cattle (*Bos taurus*)	4	Pelvis (right)	3	Radius (right)
Pig (*Sus scrofa*)	2	Radius (right)	3	Femur (left)

Sheep/goat
By fragment count, sheep/goat is the most numerous taxon in the Sculptor's Cave assemblage. Both sheep and goats have been positively identified from the assemblage, although, excluding the associated bone group (ABG; discussed below), only one other element has been identified to goat, in comparison to nine sheep elements. All elements of the skeleton appear to be present, with little evidence of selection in terms of body parts (table 7.5).

While age distribution is difficult to discuss in small sample sizes, for sheep it appears relatively even, with both young and older animals entering the assemblage and no clear kill-off peak (illus 7.8). Wear data are available from ten mandibles. Of these, M3 is present and in wear in seven cases, and dP4 is present in three with unerupted or absent M3, again indicating the presence of both older and younger sheep. Elements from foetal and immature animals are also present in both Phases 1 and 2.

Cattle
After sheep/goat, cattle remains are the second most abundant taxon from the Sculptor's Cave. On average across the assemblage, sheep/goat and cattle are in a ratio of 1.7:1. There is a slight increase in cattle remains in Phase 2 compared to Phase 1, with the ratio changing from 2.3:1 (sheep/goat: cattle, including cattle-size and sheep/goat-size categories) in Phase 1 to 1.9:1 in Phase 2. This is consistent with trends across Britain, with cattle generally becoming more prevalent in the Iron Age.

As with sheep/goat, all elements of the cattle skeleton appear to be present, with little evidence of selection in terms of body parts (table 7.6).

Table 7.5
Element representation for sheep/goat

Element	Phase 1	Phase 2
Head/neck		
Maxilla	3	–
Mandible	–	5
Skull	4	1
Horn core	1	–
Cervical vertebra	18	2
Tooth	17	23
Body		
Thoracic vertebra	12	5
Femur	9	5
Scapula	6	–
Humerus	7	1
Radius	8	3
Ulna	9	1
Rib	9	11
Sacrum	1	1
Pelvis	16	2
Tibia	10	6
Long bone	1	–
Patella	3	1
Extremities		
Astragalus	4	1
Calcaneus	2	–
Metacarpal/metatarsal	24	15
Phalanges	13	5
Caudal vertebra	2	–
Total	**179**	**88**

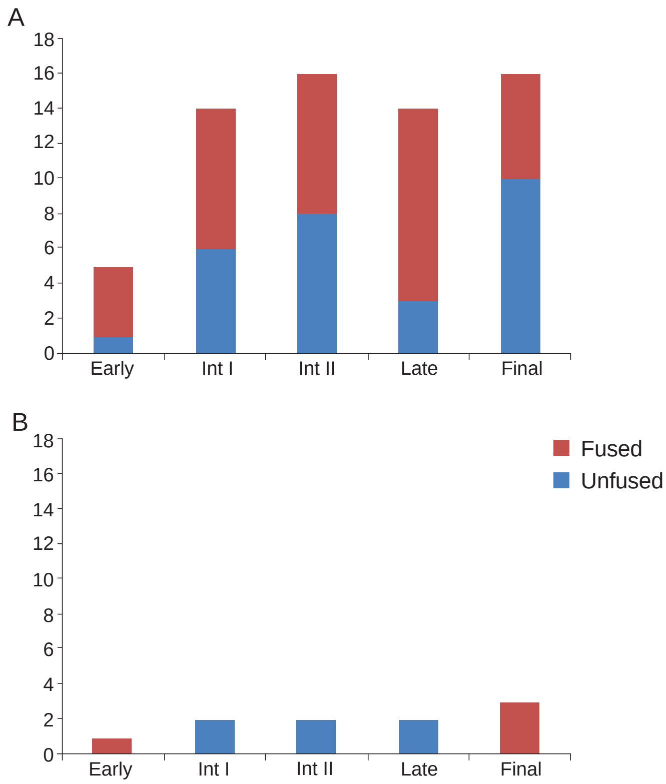

Illustration 7.8
Element fusion data for sheep/goat from (A) Phase 1 and (B) Phase 2 (categories follow O'Connor 1989)

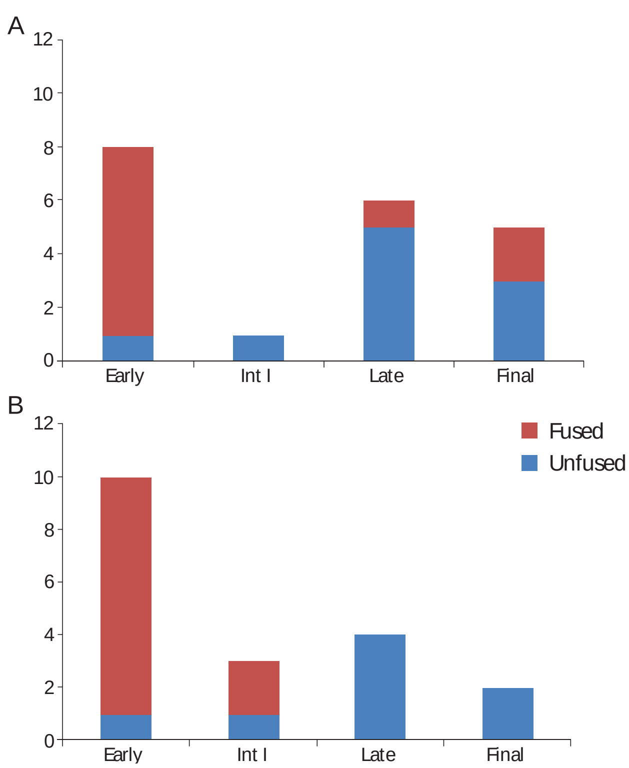

Illustration 7.9
Element fusion data for cattle from (A) Phase 1 and (B) Phase 2 (categories follow O'Connor 1989)

Table 7.6
Element representation for cattle

Element	Phase 1	Phase 2
Head/neck		
Skull	3	2
Maxilla	–	1
Mandible	1	1
Cervical vertebra	3	–
Tooth	5	12
Body		
Thoracic vertebra	1	–
Femur	3	–
Scapula	2	2
Humerus	3	–
Radius	2	4
Ulna	1	2
Tibia	4	2
Rib	8	4
Sacrum	2	1
Pelvis	5	–
Extremities		
Astragalus	1	1
Calcaneus	1	1
Sesamoid	–	3
Metacarpal/metatarsal	5	15
Phalanges	7	14
Caudal vertebra	3	–
Symphysis	1	5
Total	**61**	**70**

No ageable cattle mandibles are present in the assemblage, but epiphyseal fusion data show that, in Phase 1, the majority of elements with late- and final-fusing epiphyses are unfused at the point of death, while those with early-fusing epiphyses are predominantly fused, suggesting that most cattle entering the cave assemblage were aged approximately 3–4 years, with few surviving beyond this point (illus 7.9). A number of bones from foetal or very immature animals are also represented. In Phase 2, the ageable cattle bones are predominantly foetal or very immature, although a single M3, which is in wear, indicates that adult cattle were also present. Knife marks on one immature cattle scapula indicate that these animals were eaten (Serjeantson nd).

Pig
The third most common mammalian species in the assemblage is pig, although this is poorly represented compared to sheep/goat and cattle, making up less than 10% of the overall identified mammalian bone. The majority of pigs appear to be immature, since almost no late- or final-fusing elements are fused. Half of the pig elements for which age data were available were categorised as foetal or very immature, and in two of the three mandibles dP4 was erupting. Pigs typically exhibit a young kill-off pattern, with most being killed for meat prior to reaching skeletal maturity. However, the proportion of very young pigs is notable and bears comparison to the very young cattle and sheep mentioned above. It is possible that not all of these pigs were domestic. Serjeantson (nd) identified one probable and one possible wild boar canine on the basis of biometric measurements, both from Phase 1 (IIb17); there were also several boar tusks from the Benton assemblage, one of which was worked (SF849; illus 5.19). This raises the possibility that at least some of the other earlier pig remains are the result of hunting rather than domestic farming.

Dog
The presence of dogs around the cave is attested by a single metacarpal in Phase 1 (IIc17) and an ABG in Phase 2 (Ib2b: see discussion below), but also by dog gnawing on a few elements from both Phases 1 and 2.

Horse
One stratified element of horse (a left lateral metacarpal) was found in Phase 2 (Ib6).

Wild animals
Wild mammals are very sparse in the assemblage. Although three elements of roe deer were present (one each in Phases 1 (Ib47) and 2 (Ib6) and one unstratified; table 7.2), red deer was apparently absent from the Shepherd assemblage, despite the occurrence of numerous tools made from the bones and antlers of this species (see section 5.3.2) and the presence of red deer bone in Benton's assemblage (Neill 1931: 208). Elements of fox and beaver were also present in the unstratified material (both were also noted in Benton's assemblage; ibid), as was an unstratified hare carpal (Serjeantson nd: 6), though the latter was absent from the surviving archive. Other small mammals included voles, mice and shrews, as well as amphibians (frogs and toads).

Associated bone groups (ABGs)
Two associated bone groups (partial or complete animal skeletons; Morris 2011) were present in the assemblage. The first is an ovicaprid ABG from IIb19 (Block 2.1, Phase 1), dated to 1130–910 cal BC (SUERC-16613; section 2.3.2) and identified by Serjeantson (nd) as a goat of 3.5–5 months of age. The skeleton is almost complete, with elements present from all the major body areas excepting the upper forelimb. There are no butchery marks to indicate whether the carcass was processed and no contextual information is available to ascertain whether this was found in articulation or as scattered bones.

The second ABG is a dog skeleton from Ib2b (Block 1.7, Phase 2; illus 2.33) and is AMS dated to 400–200 cal BC (SUERC-16593; section 2.4.3). The skeleton is substantially less complete than that of the goat, consisting predominantly of skull, torso and lower right leg; this is likely due to disturbance by Benton or later, since it sat at the top of the Shepherd sequence. All elements present are fused and the teeth are in wear, indicating an adult animal (Serjeantson nd). With a complete right radius length of 15.8cm, the dog had a likely shoulder height of around 52cm (Harcourt 1974), representing a medium-sized animal of roughly border collie size.

Bird remains
A small assemblage of bird bones was recovered, comprising only 2% of the total identified assemblage (tables 7.2, 7.7). Around half of this assemblage is from unstratified contexts and the remainder is distributed relatively evenly across the phases. The birds are a mixture of coastal and seabirds (gulls, cormorants, auks) and a few land-based birds (raven, curlew, great-crested grebe, redwing). Of these, the most notable is the single element of white-tailed eagle from IIc23 (Block 2.2, Phase 1). The white-tailed eagle is a large predatory bird with a wingspan of up to 2.5m and would have been relatively common around the Scottish coastlines. All of these birds would have been present year-round in the vicinity of the cave, aside from the redwing, which is present mainly from September to April. The presence of a very similar range of birds is attested at the Iron Age site of Old Scatness in Shetland, where it was considered that all of the seabirds and many of the land-based birds (including, arguably, the raven) were consumed (Nicholson 2015a). However, there are no butchery marks on the bird bones from the Sculptor's Cave and it is possible that at least some of these bones were introduced into the cave without human agency.

Table 7.7
Bird assemblage from the Sculptor's Cave. All numbers given are number of identifiable specimens (NISP)

Species	Phase 1	Phase 2
White-tailed eagle (*Haliaetus albicilla*)	1	–
Cormorant (*Phalacrocorax carbo*)	1	–
Guillemot (*Uria aalge*)	–	1
Razorbill (*Alca torde*)	–	1
Puffin (*Fratercula arctica*)	–	1
Great-crested grebe (*Podiceps cristatus*)	–	1
Curlew (*Numenius arquata*)	–	1
Raven (*Corvus corax*)	–	1
Small bird	7	6
Medium bird	1	4
Large bird	–	1
Total	**10**	**17**

Fish remains

A substantial assemblage of fish bone was recovered, predominantly from the wet-sieved samples. The majority is unidentified or identified only to size class (large/medium/small/tiny; table 7.8). The identified fish remains are mostly from marine taxa, including gadids, wrasse, mullet, gurnard and flatfish. Most spend part or all of the year in shallow coastal waters and could have been fished in the vicinity of the cave. The majority of both identified and unidentified fish are small or very small, with most under 250g and some of the unidentified species under 10g in weight (Serjeantson nd). However, there is some variability, with a few large or medium-sized fish present throughout the assemblage. There is little apparent diachronic change, although it is worth noting that Phase 2 (Ib15) provides the only evidence for fish which may have had to have been fished further offshore, including one element of a large cod (estimated weight: 12lb/5.5kg).

Table 7.8
Fish assemblage from the Sculptor's Cave (sizes are based on Colley 1983). All numbers given are number of identifiable specimens (NISP)

Species	Phase 1	Phase 2
Ray (*Raja* sp.)	–	7
Gadid (*Gadiforme*)	3	8
Cod (*Gadus morhua*)	–	1
Haddock (*Melanogrammus aeglefinus*)	–	2
Herring (*Clupea harengus*)	1	1
Wrasse (*Labridae*)	17	9
Mullet (*Mugilidae*)	4	1
Gurnard (*Trigildae*)	1	–
Salmon/trout (*Salmo* sp.)	–	1
Flatfish (*Pleuronectiforme*)	2	–
Flounder (*Platichthys flesus*)	1	1
Plaice (*Pleuronectes platessa*)	1	–
Large fish	1	3
Medium/large fish	6	7
Medium fish	15	6
Small/medium fish	10	–
Small fish	71	14
Small/tiny fish	1	–
Tiny fish	3	2
Unidentified fish	260	186
Total	**397**	**249**

The dominance of very small fish in the assemblage suggests the possibility that a large proportion may not have been introduced to the cave by humans, with Serjeantson (nd) suggesting the cormorant or shag, or potentially the sea otter, as the most likely non-human agents. The presence of amphibian and rodent bones, predominantly vole, supports this argument, as these may also have been introduced by non-human predators. However, it is worth noting that very few rodent and amphibian remains are present in comparison to the fish remains. The fish assemblage does not appear to be separated either spatially or temporally from the domestic animal bone assemblage, which would seem to indicate that fish were being introduced into the cave while in use by humans, making it less likely to be the work of non-human predators, unless human use was sporadic or light. The capture and drying of small yearling saithe for winter consumption has been argued at the Iron Age site of Old Scatness, Shetland (Nicholson 2015b). While the capture and processing of small fish is unlikely to have been the main activity at the Sculptor's Cave, Old Scatness and other sites demonstrate that fish of this size were not beyond the realm of human consumption.

7.4.4 Discussion and wider context

Despite the unusual location of the site, the faunal material from the Sculptor's Cave appears to be more or less typical of later prehistoric assemblages. Comparison with the Bronze Age and Iron Age assemblages from Tofts Ness, Sanday (Nicholson and Davies 2007), for example, shows very similar patterning in the mammalian remains, with sheep/goat and cattle overwhelmingly dominant (illus 7.10). Pig and other mammals appear to comprise a slightly larger proportion of the assemblage at the Sculptor's Cave compared to Tofts Ness.

There is no strong evidence to suggest how or why domestic animal remains were introduced to the cave, although the element representation would appear to indicate the presence of whole bodies. Knife marks have been noted on a few elements of both sheep/goat and cattle, which can all be interpreted as standard jointing of the carcass: removing the lower legs (radius, ulna, astragalus), removal of meat at shoulders and hips (scapula, pelvis), sectioning of the torso (vertebrae, ribs). Evidence of burning and carnivore gnawing on a small percentage of the assemblage is also consistent with the bone being predominantly the result of human consumption practices, although some of the fish assemblage may have been collected by a non-human predator. The presence of foetal or very immature bones of sheep/goat, cattle and pigs indicates that the cave was in use in the spring and summer, and that it may have been visited at lambing or calving time. The wild taxa – predominantly seabirds and fish – would have been available within the vicinity of the site, but it does not appear that they constituted a strong reason for visiting the Sculptor's Cave, since they would not have dominated the diet in terms of meat weight.

It is interesting to compare the Sculptor's Cave with High Pasture Cave, on the west coast of Scotland (Drew 2005), which is of a similar date and degree of inaccessibility but which has a markedly different faunal assemblage. At High Pasture Cave, the assemblage is dominated by selected portions of pig carcasses. Pigs are often considered to be a 'luxury' animal, as they are raised

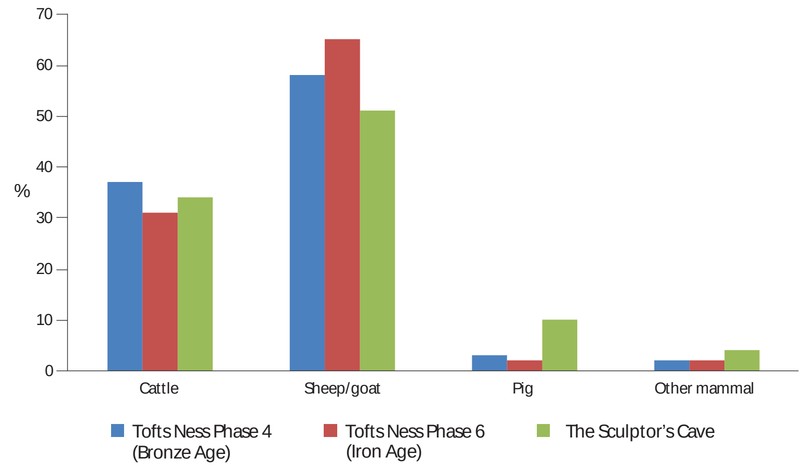

Illustration 7.10
Distribution of major mammalian groups at Tofts Ness (data from Nicholson and Davies 2007) and the Sculptor's Cave. Proportions are given as percentage of total mammalian bone

for nothing but meat, and the Sculptor's Cave fits the general pattern of having very little pig in an assemblage predominantly composed of cattle and sheep. Indeed, the animal remains appear indistinguishable from domestic sites of a similar date on Orkney and Shetland. While the island ecology and settlement structure may be different, the sites are all similar in terms of the locales exploited: focused on farming but facing the sea.

7.5 Marine Molluscs

Daniel Shaw

7.5.1 Introduction

Marine shells were found, in varying concentrations, in a range of contexts during the Shepherd excavations (table 7.9). Some contexts contained large quantities of complete or near-complete shells (eg Ia22, Ib6a, IIc13a; Blocks 1.2, 1.6 and 2.5 respectively) whereas others had only fragmentary pieces. As the assemblage appeared to be a mixture of hand-collected and wet-sieved material, it was not possible to produce reliable quantitative analysis, but some comments can be made.

7.5.2 Quantification

The assemblage is dominated by limpets, with three species being present: the common limpet (*Patella vulgata*), the rough limpet (*Patella ulyssiponensis*) and the Chinaman's hat (*Calyptraea chinensis*). Together these three comprise 86% of the total identifiable assemblage (63%, 10% and 13% respectively). Rough periwinkles (*Littorina saxatillis/arcana*) are also quite well represented, making up 13% of the total identifiable assemblage. Twenty per cent of the total assemblage comprises unidentifiable shells. These were either too eroded or too fragmentary for a firm identification to be made. Two common mussel shells (*Mytilus edulis*) from context Ia22 (Block 1.2) are the only examples of this species.

7.5.3 Modified shells

Eighteen common limpet shells, one rough limpet shell and one Chinaman's hat shell are perforated. Of the common limpet shells, one was recovered from Ia22 (Block 1.2), eight from Ib6a (Block 1.6), one each from IIb15 and IIb15b (Block 2.4) and seven from IIc13a (Block 2.5). The rough limpet shell was recovered from Ib6a and the Chinaman's hat shell from IIc13a. In most cases perforation appears to have been the result of human action, but a minority with particularly regular and small holes are possibly the result of natural predation by other molluscs.

7.5.4 Conclusions

Although the uncertainties over collection strategy prevent any detailed interpretation, the broad outlines of the marine shell assemblage are nonetheless clear and indicate certain key contexts (eg Ia22, Ib6a, IIc13a) as being particularly rich in shell. Eighty per cent of the assemblage was recovered from Phase 2, with a particular concentration (44%) in Block 1.6 in the West Passage.

7.6 Carbonised plant macrofossils and charcoal

John Summers

7.6.1 Introduction

During the Shepherds' excavations, the deposits within the two entrance passages were extensively sampled. Many of these samples were processed and assessed at the time (Fairweather nd; Boyd 1985), while a quantity of material was retained in the archive. Following a detailed programme of processing and sorting, the entire collection of sampled sediment has now been fully processed and investigated for plant macrofossils and charcoal. The resulting material represents a rich record of plant use associated with human activity in the cave.

7.6.2 Methods

Many samples were processed by flotation shortly after excavation. For most samples, no record survives of the volume of sediment processed. A small amount of unprocessed material was found in the archive, for which sediment volumes were recorded during processing. Unfortunately, these are a minority, and many appear to represent small sub-samples, which produced much less carbonised material than the samples processed in the 1980s, meaning little valuable information can be gleaned from these data. In the absence of sample volumes for the majority of the material, therefore, all remains have been grouped according to context, with litred and unlitred samples combined. Full details of the

Table 7.9
Percentage (by weight) of identifiable species of marine mollusc represented in each stratigraphic block

Phase	Block	% of total identifiable species by weight (g)					% of unknown/ fragments of total weight (g) by block	Total weight (g) by block	% of total assemblage
		Common limpet (*Patella vulgata*)	Rough limpet (*Patella ulyssiponensis*)	Chinaman's hat (*Calyptraea chinensis*)	Rough periwinkle (*Littorina saxatillis/arcana*)	Common mussel (*Mytilus edulis*)			
1	1.1	–	–	–	–	–	–	–	–
	1.2	57	3	7	32	1	43	954	8
	2.1	–	–	–	–	–	–	–	–
	2.2	–	–	–	–	–	100	12	0.1
	2.3	100	–	–	–	–	83	29	0.2
	2.4	69	1	16	14	–	17	997	8
									17
2	1.3	58	–	–	42	–	70	243	2
	1.4	37	–	10	53	–	51	39	0.3
	1.5	45	4	15	36	–	32	1588	13
	1.6	61	18	12	9	–	14	5276	44
	1.7	67	–	0	33	–	88	24	0.2
	2.5	77	7	14	2	–	11	2484	21
	2.6	100	–	–	–	–	50	14	0.1
									80
2/3	2.7	51	–	–	49	–	9	227	2
									2
3	2.8	56	–	22	22	–	9	89	1
									1
Total weight (g)								**11976**	—
Species as % of total assemblage		63	10	13	13	1	–		

Table 7.10
Detailed results from Phase 1 deposits containing identifiable plant macrofossils. X: low, XX: medium and XXX: high abundance

Taxon	Number/abundance by block				
	1.1	1.2	2.2	2.3	2.4
Cereal grains					
Cereal NFI	1	140	–	–	–
Hordeum sp. – Barley	–	113	1	–	–
(*Hordeum* sp. – tail grain)	–	(1)	–	–	–
(*Hordeum* sp. – immature grain)	–	(12)	–	–	–
Hordeum vulgare var. *vulgare* – Hulled barley	1	58	–	–	1
(Hulled barley – twisted grain)	–	(3)	–	–	–
(Hulled barley – immature grain)	–	(18)	–	–	–
(Hulled barley – germinated grain)	–	–	–	–	(1)
Hordeum vulgare var. *nudum* – Naked barley	–	15	–	–	–
(Naked barley – twisted grain)	–	(2)	–	–	–
Triticum sp. – Wheat	1	6	–	1	–
Triticum dicoccum/spelta – Emmer/spelt wheat	–	1	–	–	–
Triticum/Hordeum sp. – Wheat/barley	–	–	–	1	–
cf *Avena* sp. – Oat	–	1	–	–	–
Avena sp. – Oat	–	–	1	–	–
Cereal indeterminate detached embryos	–	1	–	–	–
Cereal chaff					
Cereal indeterminate culm	–	–	–	–	1
Wild taxa					
Chenopodium sp. L. – Goosefoot	–	1	–	–	–
Spergula arvensis L. – Corn spurrey	–	1	–	–	–
Prunus spinosa L. – Blackthorn	–	1	–	–	–
Galium sp. L. – Bedstraw	–	1	–	–	–
Eleocharis cf *palustris* (L.) Roem. and Schult – Common spike-rush	–	1	–	–	–
Hazelnut shell					
Corylus avellana L. – Hazel (nutshell) (g)	0.7	36.6	0.2	–	0.3
Charcoal					
Charcoal >2mm	XX	XXX	XXX	XXX	XXX
Other carbonised material					
Monocot. culm	–	–	–	–	X
Monocot. culm base	–	–	X	–	–
Indeterminate root base	–	–	X	–	–
Dicot. stem/root	–	–	–	–	X
Ericaceous charcoal	X	XX	X	–	XX
Ericaceous leaf	–	–	X	–	–
Vaccinium sp. stem	–	–	X	–	–
Fucoid algae	–	13	2	–	5
Root/tuber	–	2	–	–	–
Indeterminate carbonised organic	–	X	–	X	–

methods used are contained in the site archive.

A sub-sample of 30 deposits was also selected for charcoal identification and quantification based on assessment data concerning charcoal abundance, combined with a judgement on which of these deposits were of greatest archaeological interest (based on, for example, the presence of human skeletal and/or artefactual material). An attempt was made to investigate material from all phases, although only three samples with sufficient charcoal content could be identified from Phase 2/3 and only one from Phase 3.

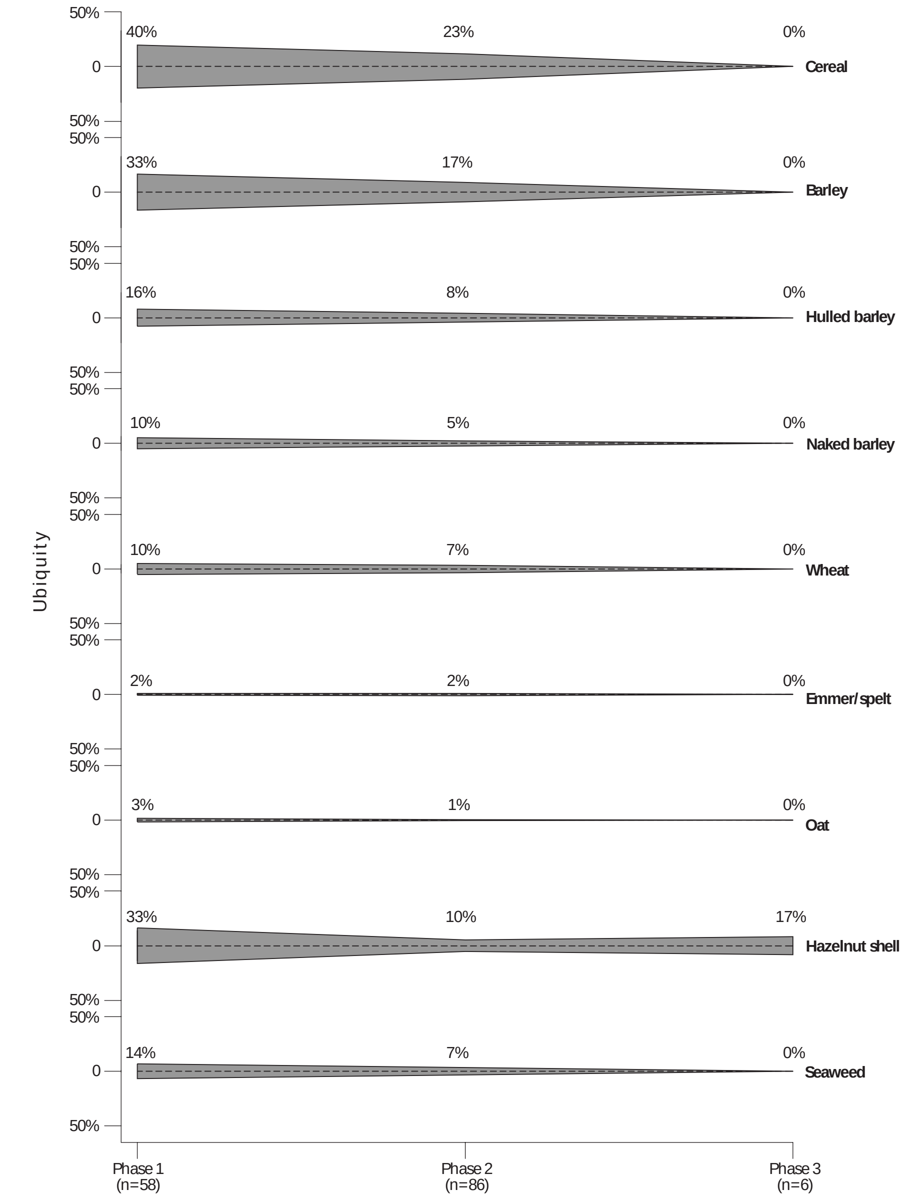

Illustration 7.11
Ubiquity scores for key taxa, arranged by phase. Phase 2/3 omitted due to intermediate nature and low number of sampled deposits

7.6.3 Results

Tables 7.10, 7.12 and 7.15 show the results from all phased samples containing carbonised plant macrofossils. Tables 7.11, 7.13, 7.14 and 7.16 display the charcoal data from the 30 samples selected for full identification and quantification.

Phase 1: Late Bronze Age

Carbonised plant macrofossils

Samples were present from 58 contexts attributable to Phase 1. Cereal remains were recorded in 40% of the sampled contexts (illus 7.11). Most evidence of cereal remains was encountered in Block 1.2 (table 7.10), which appears to have been a focal point for the use and carbonisation of cereals during Phase 1. Within the Phase 1 contexts, the most commonly encountered cereal was barley (33% ubiquity), with hulled barley (16% ubiquity), including asymmetric grains (*Hordeum vulgare* var *vulgare*), being well represented. A lower concentration of naked barley (10% ubiquity), also including asymmetric grains (*Hordeum vulgare* var *nudum*), was recorded. The remains were well preserved in many instances and the identifications considered accurate. This implies that both hulled and naked barley varieties were being cultivated, perhaps being brought to the cave from multiple sources. A number of individual deposits contained a mixture of hulled and naked forms. The hulled trait in barley is controlled by a single recessive gene (Zohary and Hopf 2000: 60) and an alternative explanation to dual cultivation is that the crop at this time was genetically mixed, with both hulled and naked types present in the population. Some specimens did appear to be intermediate, perhaps being weakly hulled, and were recorded only as *Hordeum* sp.

Wheat (*Triticum* sp.) was recorded in 10% of deposits. Where identifiable, grain morphology was indicative of glume wheat (*T. dicoccum/spelta*), although only a single grain of this type was recorded (in Ia20, Block 1.2). Wheat was an important cereal across Britain, including northern Scotland, from the Neolithic period (eg Fairweather and Ralston 1993: 319–20).

Oat remains were an occasional occurrence (3% ubiquity). In the absence of diagnostic chaff elements, it is not possible to determine whether a wild or cultivated variety is represented. However, considering the period, it is most likely that they are present as weeds among other cereal crops. Evidence of regular oat cultivation in the region is not generally recognised until the Late Iron Age (cf Hastie 2010: 20), although oat has been recorded in much earlier assemblages, such as occasional specimens in the Neolithic archaeobotanical material from Balbridie, Aberdeenshire (Fairweather and Ralston 1993: 319).

Non-cereal remains comprised a number of seeds from wild plant taxa, including goosefoot (*Chenopodium* sp.), blackthorn (*Prunus spinosa*), corn spurrey (*Spergula arvensis*), dock (*Rumex* sp.), common spike-rush (*Eleocharis palustris*) and bedstraw (*Galium* sp.). Goosefoot and dock tend to prefer more fertile soils and may reflect the manuring of arable fields (though goosefoot is also frequently found on the upper stony beaches in the vicinity of the Sculptor's Cave; Janet Trythall pers comm). Common spike-rush could also have been gathered from heathland habitats with other heathland taxa, such as heather.

In addition to cereals were frequent carbonised fragments of hazelnut shell (*Corylus avellana*), which were recorded in 33% of deposits. In contexts Ia22a and Ia23d (Block 1.2), nutshell fragments were particularly abundant, and a number of others (Ia22, Ia23/27 and Ia27; Block 1.2) contained >50 fragments. The richer samples in particular are indicative of concentrated deposits resulting from the shelling and consumption of hazelnuts, with shells most likely discarded in the fire. A single sloe stone (*Prunus spinosa*) was recorded in Ia23c (Block 1.2) and could also represent gathered fruit that was processed and consumed at the site. However, the evidence of a single stone is inconclusive; it could have entered the cave with fuel resources (see charcoal, below).

The remains of ericaceous stems/charcoal (ie heather) were common (43% ubiquity) in the samples. This is likely to have been readily available in heathland habitats a small distance inland (see also charcoal, below). Heather makes a good fuel but can also be used for bedding and craft production (eg Dickson and Dickson 2000: 261).

Also frequently recorded were remains of seaweed, more specifically wracks (fucoid algae), which were present in 14% of deposits. This is perhaps to be expected considering the site's location. However, seaweed, including wracks, produces a thick acrid smoke when burned (Rachel Ballantyne pers comm) and, combined with the abundant charcoal evidence, it is unlikely that it was present as a significant proportion of the fuel resource. Seaweed could have been an incidental inclusion, associated with gathered marine resources such as shellfish (see section 7.5). Alternatively, it could have been deliberately added to fires, perhaps if the smoke had a role in funerary activities. Elsewhere in Scotland, such as Orkney, cramp (the product of burning seaweed) was frequently included in cist burials and cremations from the Late Neolithic to Middle Bronze Age (Photos-Jones et al 2007) and may have been a significant component in funerary rites. Seaweed ash may also have had an economic role, with records of its use for preserving food into the historic period (Summers 2015); this is, however, less likely in the present context.

A single deposit of probable cramp was present within the archive but was unstratified. The material was pale grey, amorphous and bubbled, though not vitrified. Within the matrix were numerous small stones (*c* 2–10mm), fragments of marine shell and occasional pieces of charcoal. Although it is not possible to be certain, this material might be modern, since it retained the smell of burning, which suggests the retention of volatiles that would be lost over prolonged burial. The historic seaweed burning industry in Scotland was concentrated in the west Highlands, the Hebrides and Orkney (Rymer 1974; Kenicer et al 2000) and does not appear to have had economic significance in the Covesea area. However, any burning event including seaweed could have led to the formation of such a deposit and it may simply represent remains from an informal fire within or just outside the cave mouth.

The frequent occurrence of cereal remains is a strong indication that cereals were regularly consumed within the Sculptor's Cave during the Late Bronze Age. Combined with evidence from hazelnut shell and faunal remains (section 7.4), it seems likely that food preparation and consumption activities were being undertaken within the cave itself. Block 1.2 yielded the bulk of the archaeobotanical remains, most likely indicating that this was the primary area for the carbonisation of plant material and its subsequent deposition.

Charcoal

Six samples from Phase 1 (Blocks 1.2 and 2.2) were targeted for analysis and were selected on the basis of their abundant charcoal content and their association with artefact-rich deposits, dated contexts or those containing human remains (table 7.11). A total of 586 charcoal fragments were identified, with a total weight of 109g. A wide range of taxa were represented: Scots pine (*Pinus sylvestris*), oak (*Quercus* sp.), birch (*Betula* sp.), alder (*Alnus* sp.), hazel (*Corylus* sp.), willow/poplar (*Salix/Populus* sp.), heather (*Calluna vulgaris*), apple/pear/hawthorn/whitebeam (Maloideae), gorse (*Ulex europaeus*) and holly (*Ilex aquifolium*). Birch was dominant by weight (52%) and fragment count (36%), excluding the 'indeterminate' portion of the assemblage.

Within the assemblage, numerous fragments of alder and hazel displayed strong ring curvature characteristic of small branches. Ring counts ranged from 3–15, although few fragments displayed an entire sequence. The exception to this pattern was oak, which routinely showed moderate to weak ring curvatures, indicating the cutting of larger branches and trunks. A number of the fragments also contained tyloses in the vessels, which is a feature of heartwood. In IIc23 (Block 2.2), fragments of hazel also showed moderate ring curvature, as did occasional fragments of alder, birch and Maloideae, suggesting that more than just slender branches were cut. However, overall, the evidence was weighted towards smaller branches and trunks than the felling of large trees.

Seasonality was difficult to assess as the small number of fragments with evidence of bark were diffuse or semi-ring porous types, where the distinction between early and late wood is less clear. In some instances, different fragments from the same sample were judged to have complete outer rings (autumn/winter) and partial outer rings (spring/summer). This could either reflect problems with preservation and recognition, particularly in relation to diffuse porous types, or the potential incorporation of gathered deadwood, which could have fallen in any prior season.

The wide range of taxa and the frequent strong ring curvature is not typical of driftwood, a potential source of wood for a coastal site, and it is more likely that the wood was gathered from inland habitats.

The range of taxa is indicative of four main habitat groups, which give an insight into woodland availability in the vicinity of the cave. Deciduous woodland is indicated by oak and hazel as well as Maloideae and holly. These taxa also all grow as part of hedgerow habitats. Together these make up 26% of the Phase 1

Table 7.11
Charcoal data from Phase 1 deposits

Taxon	**Common name**	**Fraction**	**Weight (g) by block**	
			1.2	**2.2**
Pinus sylvestris	Scots pine	>5mm	–	0.05
		2–5mm	–	–
		Total	–	0.05
Pinaceae	Pine	>5mm	–	–
		2–5mm	–	–
		Total	–	–
Quercus sp.	Oak	>5mm	1.2	0.2
		2–5mm	0.3	0.2
		Total	1.5	0.4
Betula sp.	Birch	>5mm	27.5	–
		2–5mm	2.6	–
		Total	30.1	–
Alnus sp.	Alder	>5mm	4.1	3.7
		2–5mm	0.1	0.2
		Total	4.2	3.9
Corylus sp.	Hazel	>5mm	7.9	1.5
		2–5mm	1.0	0.1
		Total	8.9	1.6
Salix/Populus sp.	Willow/poplar	>5mm	0.1	–
		2–5mm	–	–
		Total	0.1	–
Calluna vulgaris	Heather	>5mm	0.05	0.04
		2–5mm	0.08	0.04
		Total	0.1	0.08
Prunus sp.	Cherries	>5mm	–	–
		2–5mm	–	–
		Total	–	–
Maloideae	Apple/pear/hawthorn/rowan	>5mm	1.1	–
		2–5mm	–	–
		Total	1.1	–
Ulex europaeus	Gorse	>5mm	1.4	0.9
		2–5mm	0.07	0.1
		Total	1.5	1.0
Ilex aquifolium	Holly	>5mm	1.2	–
		2–5mm	0.2	–
		Total	1.4	–
Indeterminate diffuse-porous	–	>5mm	1.0	0.2
		2–5mm	0.8	0.06
		Total	1.8	0.3
Indeterminate	–	>5mm	16.0	0.07
		2–5mm	29.2	5.0
		Total	45.2	5.1
Total	–	**>5mm**	**61.7**	**6.6**
		2–5mm	**34.5**	**5.8**
		Total	**96.2**	**12.4**

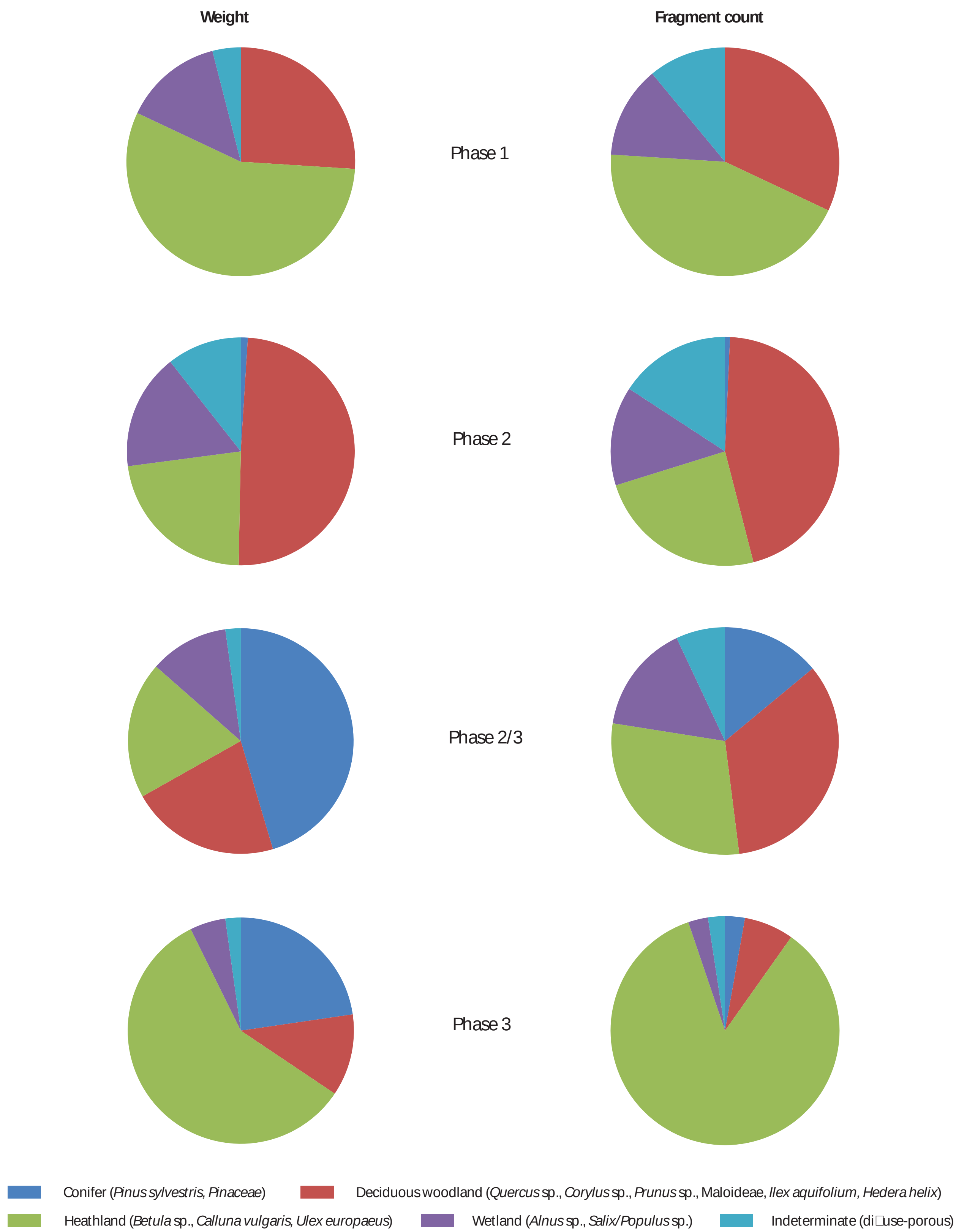

Illustration 7.12

Charcoal distribution by habitat group, based on weight and fragment count by phase. Conifer has been excluded from the Phase 1 charts owing to its minor presence within the assemblage

Table 7.12
Detailed results from Phase 2 deposits containing identifiable plant macrofossils. X: low, XX: medium and XXX: high abundance

Taxon	Number/abundance by block					
	1.3	1.4	1.5	1.6	2.5	2.6
Cereal grains						
Cereal NFI	27	–	–	5	76	–
Hordeum sp. – Barley	39	–	2	3	17	–
(*Hordeum* sp. – tail grain)	–	–	–	–	(1)	–
(*Hordeum* sp. – immature grain)	(4)	–	–	–	–	–
Hordeum vulgare var. *vulgare* – Hulled barley	21	–	–	–	14	1
(Hulled barley – twisted grain)	(1)	–	–	–	(2)	(1)
Hordeum vulgare var. *nudum* – Naked barley	3	–	–	2	–	–
Triticum sp. – Wheat	1	–	–	2	32	–
(*Triticum* sp. – tail grain)	–	–	–	–	(4)	–
Triticum dicoccum/spelta – Emmer/spelt wheat	–	–	–	1	–	–
Triticum dicoccum – Emmer wheat	–	–	–	–	2	–
Avena sp. – Oat	–	–	–	–	1	–
Cereal indeterminate detached embryos	–	–	–	–	2	–
Hordeum sp. – Barley rachis	–	–	–	–	2	–
Triticum dicoccum – Emmer wheat glume base	–	–	–	–	54	–
Triticum dicoccum – Emmer wheat spikelet fork	–	–	–	–	12	–
Triticum dicoccum/spelta – Emmer/spelt wheat glume base	–	–	–	–	32	–
Triticum dicoccum/spelta – Emmer/spelt wheat spikelet fork	–	–	–	–	12	–
Triticum dicoccum/spelta – Emmer/spelt wheat rachis	–	–	–	–	12	–
Triticum sp. – Wheat rachis	–	–	–	–	7	–
Triticum sp. – Wheat basal rachis	–	–	–	–	2	–
Triticum sp. – Wheat awn fragment	–	–	–	–	7	–
Cereal chaff						
Cereal indeterminate culm	–	–	–	–	1	–
Wild taxa						
cf *Rhynchospora* sp. Vahl. – Beak-sedge	–	–	–	1	–	–
Chenopodium sp. L. – Goosefoot	–	–	–	–	6	–
Caryophyllaceae indeterminate – Pink family	–	–	–	–	1	–
Rumex sp. L. – Dock	–	–	–	–	1	–
Plantago lanceolata L. – Ribwort plantain	–	–	–	–	1	–
Veronica sp. L. – Speedwell	–	–	–	–	1	–
Carex sp. L. – Sedge	–	–	–	–	1	–
Poaceae indeterminate – Grass (large)	–	–	–	–	2	–
Poaceae indeterminate – Grass (medium)	–	–	–	–	1	–
Poaceae indeterminate – Grass (small)	–	–	–	–	1	–
Hazelnut shell						
Corylus avellana L. – Hazel (nutshell) (g)	5.271	0.294	–	0.038	–	–
Charcoal						
Charcoal >2mm	XXX	XXX	XXX	XXX	XXX	–
Other carbonised material						
Monocot. culm	–	–	–	–	X	–
Monocot. culm base	–	–	–	–	–	–
Cyperaceae stem	–	–	–	–	X	–
Indeterminate root base	–	–	–	–	–	–
Dicot. stem/root	X	–	–	–	–	–
Ericaceous charcoal	XX	X	XX	XX	XX	–
Ericaceous leaf	–	–	–	X	–	–
Fucoid algae	8	–	–	–	10	–
Root/tuber	–	–	–	1	–	–
Indeterminate carbonised organic	–	–	–	–	X	–

Table 7.13
Charcoal data from Phase 2 deposits

Taxon	Common name	Fraction	Weight (g) by block					
			1.3	1.4	1.5	1.6	2.5	2.6
Pinus sylvestris	Scots pine	>5mm	–	–	–	–	–	0.05
		2–5mm	–	–	–	–	–	–
		Total	–	–	–	–	–	0.05
Pinaceae	Pine	>5mm	–	0.05	0.2	0.02	–	0.5
		2–5mm	–	–	0.02	–	–	0.1
		Total	–	0.05	0.2	0.02	–	0.6
Quercus sp.	Oak	>5mm	1.8	1.2	3.6	4.9	1.0	1.6
		2–5mm	0.6	0.3	0.9	1.9	0.4	0.3
		Total	2.4	1.5	4.5	6.8	1.4	1.9
Betula sp.	Birch	>5mm	–	0.02	0.4	0.4	0.7	0.05
		2–5mm	–	–	–	0.08	0.3	0.05
		Total	–	0.02	0.4	0.5	1.0	0.1
Alnus sp.	Alder	>5mm	2.8	0.3	1.9	2.3	3.6	0.5
		2–5mm	0.01	0.2	0.2	0.2	0.5	0.04
		Total	2.8	0.5	2.1	2.5	4.1	0.5
Corylus sp.	Hazel	>5mm	7.3	0.2	1.4	3.5	3.6	1.3
		2–5mm	1.5	0.02	0.4	0.6	0.3	0.2
		Total	8.8	0.2	1.8	4.1	3.9	1.5
Salix/Populus sp.	Willow/poplar	>5mm	0.06	–	0.4	2.1	–	–
		2–5mm	0.01	–	0.06	0.2	–	–
		Total	0.07	–	0.5	2.3	–	–
Calluna vulgaris	Heather	>5mm	0.8	0.5	1.1	1.9	0.6	0.1
		2–5mm	0.9	0.4	1.2	1.2	0.2	0.02
		Total	1.7	0.9	2.3	3.1	0.8	0.1
Prunus sp.	Cherries	>5mm	0.08	–	–	0.3	0.1	–
		2–5mm	–	–	–	0.04	–	–
		Total	0.08	–	–	0.3	0.1	–
Maloideae	Apple/pear/hawthorn/rowan	>5mm	0.1	–	–	–	0.1	–
		2–5mm	–	–	–	–	–	–
		Total	0.1	–	–	–	0.1	–
Ulex europaeus	Gorse	>5mm	4.0	–	1.2	2.4	0.4	0.5
		2–5mm	0.4	–	0.2	0.7	0.09	0.09
		Total	4.4	–	1.4	3.1	0.5	0.6
Ilex aquifolium	Holly	>5mm	0.2	1.4	0.2	0.4	2.6	0.1
		2–5mm	0.05	0.2	0.1	0.1	0.2	–
		Total	0.3	1.6	0.3	0.5	2.8	0.1
Indeterminate diffuse-porous	–	>5mm	1.3	0.2	1.0	2.0	0.3	0.07
		2–5mm	1.6	0.07	0.8	0.9	0.6	0.1
		Total	2.9	0.3	1.8	2.9	0.9	0.2
Indeterminate	–	>5mm	18.2	0.6	0.9	3.4	20.1	0.5
		2–5mm	56.0	6.8	12.1	34.8	59.0	5.4
		Total	74.2	7.4	13.0	38.2	79.1	5.9
Total	–	**>5mm**	**36.6**	**4.5**	**12.3**	**23.6**	**33.1**	**5.3**
		2–5mm	**61.1**	**8.0**	**16.0**	**40.7**	**61.6**	**6.3**
		Total	**97.7**	**12.5**	**28.3**	**64.3**	**94.7**	**11.6**

assemblage by weight (excluding the indeterminate specimens) and 32% by fragment count (illus 7.12).

Alder and willow are generally found in wetter areas such as the margins of streams, rivers and lakes, and other damp areas such as bogs and mires. Alder and willow/poplar constituted 14% of the charcoal remains from Phase 1 by weight and 13% by fragment count.

Heather is a heathland taxon, growing on acidic soils on moors, heaths and bogs. Birch is also common on the acidic soils of heathland, moors and bogs, comprising a scrub component in these areas. Gorse is quite an invasive species that can occupy a range of habitats but is often found on sandy or peaty soils, quite often in heathland areas (Stace 1997: 436). At present, large areas of gorse exist along the coast in the vicinity of the Sculptor's Cave. Birch, heather and gorse made up 56% of the Phase 1 charcoal by weight and 44% by fragment count.

Coniferous wood was very sparsely represented (0.05% by weight and 0.2% by fragment count) and cannot be considered to have made any significant contribution to the fuel resource during Phase 1.

Overall, the Phase 1 charcoal assemblage indicates that deciduous woodland taxa and heathland taxa made up the bulk of the fuel debris recovered from the deposits. Taxa such as oak and hazel are likely to have represented the best long-burning fuel woods and may have been preferentially sought. The prevalence of roundwood indicates a preference for smaller stems and branches. These would not only have been easier to cut or gather as fallen wood, but also easier to carry to the cave as bundles. The heathland taxa are likely to have grown in large open areas, readily accessible from the site, representing the most easily obtained fuel resource. Heather and gorse both burn fiercely and gorse in particular retains its deadwood, making a ready supply of kindling. It is possible that these taxa in part fulfilled the role of kindling in the fires lit within the cave.

Phase 2: Iron Age

Carbonised plant macrofossils

Eighty-six sampled deposits were represented from Phase 2, with 23% containing carbonised cereal remains (illus 7.11). Within the Phase 2 contexts, barley was most frequently recorded among the identifiable cereals (17% ubiquity), with both hulled (8% ubiquity) and naked (5% ubiquity) varieties present. Wheat remains were recorded in 7% of deposits, with glume wheat grains also identified (2% ubiquity). Emmer wheat (*T. dicoccum*) glume bases were identified in IIc13 (Block 2.5), suggesting that this was the primary wheat species present, most likely in both phases.

The largest collection of wild taxa was also found in IIc13, which included goosefoot (*Chenopodium* sp.), pink family (Caryophyllaceae), dock (*Rumex* sp.), ribwort plantain (*Plantago lanceolata*), speedwell (*Veronica* sp.), sedge (*Carex* sp.) and wild grasses (Poaceae) (table 7.12). Many of these taxa can occur as arable weeds and, together with the emmer wheat glume bases, indicate the presence of cereal processing by-products. The presence of processing by-products from de-husking and fine sieving is of interest in a cave context. At least some of the cereals consumed at the site were transported in a semi-processed state, with final processing taking place at the cave prior to consumption. It is likely that wheat at this time was stored as spikelets and that this material was probably drawn directly from stored products for use at the cave.

Hazelnut shell was recorded in nine contexts (10%) and was particularly prevalent in two Block 1.3 contexts: Ia17, where it was represented by 79 fragments, and Ic8, where it was represented by 275 fragments. As with the Phase 1 assemblage, high densities of hazelnut shell are likely to represent the disposal of shells from consumed nuts into hearths within or in the vicinity of the cave.

Heather (ericaceous charcoal) was frequently recorded and occurred in 45% of deposits. As noted above, heather could have had a number of roles, although it may have primarily functioned as an expedient, locally available fuel resource. Seaweed (fucoid algae) was present in four deposits and is unlikely to have had a significant role in the cave during Phase 2. Charcoal was quite well represented, most likely as the remains of spent fuel debris.

The number of plant remains recovered, in terms of both cereals and hazelnut shell, indicate that structured visits including food preparation and consumption were also a feature of the Iron Age use of the site.

Charcoal

A similar range of wood types was recognised in the 18 charcoal samples analysed from Phase 2 as from those of Phase 1 (table 7.13). The dominant taxon by count in Phase 2 was oak (*Quercus* sp.), accounting for 21% of the assemblage, while the most dominant taxon by weight was hazel, accounting for 22% of the assemblage (excluding the indeterminate category).

In the Phase 2 assemblage, the deciduous woodland grouping (oak, hazel, Maloideae, holly) accounted for 50% by weight and 45% by fragment count (illus 7.12). This is greater than the proportion calculated in the Phase 1 samples. Wetland taxa (alder, willow) made up 17% of the assemblage by weight and 14% by fragment count, which is comparable to the results from Phase 1. Heathland taxa (birch, heather, gorse) accounted for 23% by weight and 24% by fragment count, which is lower than the same group in Phase 1.

As in the previous phase, many of the fragments showed strong ring curvature characteristic of smaller diameter roundwood, such as small branches. Although complete sequences were again rare, ring counts ranged from 3–13. Fragments of oak and occasional fragments of hazel and alder also displayed moderate ring curvature, characteristic of larger branches and small trunks, but evidence of large trunks was limited. No reliable evidence for seasonality was identified.

These results indicate the persistent exploitation of deciduous woodland, scrub or hedgerow habitats during Phase 2. There does, however, appear to be a decline in the exploitation of heathland habitats for fuel resources. It is likely that these habitats remained available in the proximity of the site but that the fuel resource was less valued than previously.

Phase 2/3: Iron Age/Roman Iron Age

Plant macrofossils

Four contexts were sampled from Phase 2/3. The majority were devoid of carbonised plant macrofossils, although a small amount of fucoid algae was identified in IIb2 (Block 2.7).

Table 7.14
Charcoal data from Phase 2/3 deposits

Taxon	Common name	Fraction	Weight (g) by block 2.7
Pinus sylvestris	Scots pine	>5mm	10.2
		2–5mm	–
		Total	10.2
Pinaceae	Pine	>5mm	0.9
		2–5mm	0.03
		Total	0.9
Quercus sp.	Oak	>5mm	2.3
		2–5mm	0.6
		Total	2.9
Betula sp.	Birch	>5mm	1.5
		2–5mm	0.02
		Total	1.5
Alnus sp.	Alder	>5mm	1.5
		2–5mm	0.04
		Total	1.5
Corylus sp.	Hazel	>5mm	1.5
		2–5mm	0.08
		Total	1.6
Salix/Populus sp.	Willow/poplar	>5mm	1.2
		2–5mm	–
		Total	1.2
Calluna vulgaris	Heather	>5mm	1.5
		2–5mm	0.4
		Total	1.9
Prunus sp.	Cherries	>5mm	0.05
		2–5mm	–
		Total	0.05
Ulex europaeus	Gorse	>5mm	1.3
		2–5mm	0.1
		Total	1.4
Ilex aquifolium	Holly	>5mm	0.2
		2–5mm	–
		Total	0.2
Hedera helix	Ivy	>5mm	0.4
		2–5mm	–
		Total	0.4
Indeterminate diffuse-porous	–	>5mm	0.4
		2–5mm	0.1
		Total	0.5
Indeterminate	–	>5mm	1.3
		2–5mm	6.1
		Total	7.4
Total	–	**>5mm**	**24.2**
		2–5mm	**7.5**
		Total	**31.7**

Charcoal
Three samples were examined for their charcoal content from Phase 2/3, which contained a similar range of taxa to the previous phases (table 7.14). The most significant difference from the preceding phases was the significant proportion of conifer charcoal, consisting predominantly of Scots pine, which constituted 45% of the assemblage by weight (illus 7.12). Oak had the highest fragment count (22%). Pine was represented by a number of large fragments in context IIb2. This high concentration in a single sample may reflect an opportunistically available log or tree, either in local woodland or as driftwood, although a more general increase in pine woodland in the local area is possible.

Maloideae was entirely absent, and ivy (*Hedera helix*) was only recorded as a single fragment in IIb2. Ivy is unlikely to have been gathered for fuel in its own right and may have been transported to the site on other wood cut/gathered for fuel. As such, it has been placed in the deciduous woodland category, since this is the most likely habitat from which it was obtained.

Deciduous woodland (oak, hazel, holly) is best represented in the Phase 2/3 deposits (33% by fragment count and 21% by weight). Heathland (birch, heather, gorse) was the next most abundant (30% by fragment count and 20% by weight), followed by wetland species (alder, willow), which represented 16% by fragment count and 11% by weight. Aside from the increased proportion of coniferous wood, the proportion of taxa is more comparable to Phase 1 than Phase 2. This shows that the presence of heathland habitats likely continued in the vicinity of the site but that less use of this resource for fuel was made in Phase 2.

Phase 3: Roman Iron Age

Plant macrofossils

Six sampled deposits were examined from Phase 3. All were devoid of carbonised plant macrofossils (illus 7.11). However, a range of uncharred material was recorded in posthole IIc7 (Block 2.8; table 7.15). Identifiable seeds included dock (*Rumex* sp.), henbane (*Hyoscyamus niger*), sedge (*Carex* sp.) and small grass (Poaceae). In addition were common remains of heather (Ericaceae) and crowberry (*Empetrum* sp.) accompanied by moss (Bryophyte) and wood. Anaerobic preservation appears to have been the mechanism for survival of this material, although whether this was through waterlogging or another means is uncertain. Preserved wood within this posthole likely represents surviving elements of the original post, although the material was too fragmentary and friable to allow for identification. The same could also be true for wood remains in posthole IIb7. These species are not what one would expect to grow in proximity to the cave and they would appear to have been deliberately brought to the site, presumably from nearby habitats. Whether this represents modern material brought into the cave or a specific set of preservation conditions in some of the upper layers of deposits is uncertain at present and the possibility that they are intrusive remains a possibility. Posthole IIb7 also contained uncharred wood and a fragment of uncharred hazelnut shell. Abundant charcoal was recorded in IIb7 and IIc2 (see below).

Charcoal

Three samples were examined for their charcoal content (table 7.16). The heathland group was dominant (58% by weight and 85% by fragment count), largely due to the concentration of heather charcoal in IIc2 (Block 2.8; illus 7.12). The fact that numerous taxa were present in Phase 3, as indicated by the varied remains from posthole IIb7, indicates that a range of habitats were still available for exploitation, although their extent compared to earlier periods is unknown. The prevalence of heather charcoal in IIc2 may either indicate that woodland resources were less easily accessible, at least in proximity to the cave, or that concern was only to gather readily available fuel. The heather charcoal could also have been gathered with peat or heathy turves, such as those comprising possible wall foundations in IIb14 (Block 2.5; illus 2.27).

The expedient gathering of heather as fuel may reflect less structured and shorter visits to the cave during this period, an interpretation supported by the absence macrofossil remains.

Table 7.15
Detailed results from Phase 3 deposits containing identifiable plant macrofossils. X: low and XX: medium abundance

Taxon	Number/abundance by block
	2.8
Wild taxa (uncharred)	
Rumex sp. L. – Dock	131
Hyoscyamus niger L. – Henbane	78
Carex sp. L. – Sedge	4
Poaceae indeterminate – Grass (small)	1
Charcoal	
Charcoal >2mm	X
Other carbonised	
Ericaceous charcoal	XX

7.6.4 Preserved stakes

Two preserved wooden stakes from an unstratified deposit within the East Passage were lifted in sediment blocks during the Shepherds' excavation. Both were pieces of hazel (*Corylus* sp.) roundwood, still with adhering bark. Both pieces had dried out and displayed shrinkage, distortion and cracking. One measured 0.03m in diameter and 0.1m in length and was set in a stakehole 0.04m in diameter. The second measured 0.02m in diameter, tapering to 0.01m, and 0.09m in length, and was set in a stakehole 0.03m in diameter, tapering to 0.02m. The latter appeared to have had a point formed at one end by two or three longitudinal cuts *c* 30–35mm in length. However, these were difficult to identify clearly due to the distorted nature of the dried-out wood. The poor preservation of the stakes meant that it was not possible to determine a count of growth rings that would provide an age at death or to examine the terminal growth ring to identify the season during which the wood was cut. Whether the stakes were cut as branches from hazel trees found in the surrounding area or were from coppiced trees in managed woodland somewhere inland is likewise impossible to determine.

7.6.5 Discussion

Preservation of carbonised plant remains within the cave deposits was good and it appears that the fine sediments and limited post-depositional disturbance helped to protect material from mechanical damage. Despite the unusual nature of the setting, there is good evidence for plant use, in particular the processing of cereals and gathered wild foods. Although evidence of cereals was most frequently encountered in Phase 1 deposits, there was good evidence for cereal processing activities in Phase 2, despite the overall less intensive deposition of cereal remains during this period. It appears that Iron Age use of the cave incorporated some apparently 'domestic' activities involving the processing of cereals; in at least one deposit (IIc13; Block 2.5) there was evidence for the de-husking of emmer wheat, which appears to have been brought to the site as whole spikelets, at least on some occasions. The other deposits of cereal remains are more characteristic of cleaned grain and may indicate that most cereals were brought to the site in fully processed form. Hazelnut shell is the clearest evidence of gathered wild plant foods, although other plants, less readily

Table 7.16
Charcoal data from Phase 3 deposits

Taxon	**Common name**	**Fraction**	**Weight (g) by block**
			2.8
Pinus sylvestris	Scots pine	>5mm	1.7
		2–5mm	–
		Total	1.7
Pinaceae	Pine	>5mm	0.8
		2–5mm	0.08
		Total	0.9
Quercus sp.	Oak	>5mm	0.5
		2–5mm	0.2
		Total	0.7
Betula sp.	Birch	>5mm	0.5
		2–5mm	0.06
		Total	0.6
Alnus sp.	Alder	>5mm	0.5
		2–5mm	–
		Total	0.5
Corylus sp.	Hazel	>5mm	0.5
		2–5mm	0.1
		Total	0.6
Salix/Populus sp.	Willow/poplar	>5mm	0.1
		2–5mm	0.01
		Total	0.1
Calluna vulgaris	Heather	>5mm	2.1
		2–5mm	3.7
		Total	5.8
Ulex europaeus	Gorse	>5mm	0.4
		2–5mm	0.1
		Total	0.5
Ilex aquifolium	Holly	>5mm	–
		2–5mm	0.04
		Total	0.04
Indeterminate diffuse-porous	–	>5mm	0.1
		2–5mm	0.1
		Total	0.2
Indeterminate	–	>5mm	0.2
		2–5mm	4.8
		Total	5.0
Total	**–**	**>5mm**	**7.4**
		2–5mm	**9.2**
		Total	**16.6**

preserved through carbonisation, may also have been consumed. A considerable proportion of the Phase 1 and 2 charcoal assemblages were composed of hazel, and it is possible that some of the nutshells became carbonised while still attached to branches burned as fuel. However, the occasionally large volumes of hazelnut shells present, for example, in Ia22a and Ia23d (Block 1.2, Phase 1) and Ic8 (Block 1.3, Phase 2), do suggest consumption.

Although the cave is unlikely to have been subject to long-term occupation, the carbonised remains indicate that visits were more than just brief stops. The remains of cereal processing and the likely preparation and consumption of meals, including cereal-based foods and hazelnuts along with meat and fish (see section 7.4), suggest longer periods of activity. Unfortunately, it is impossible to determine whether these were simple overnight stays or activity which lasted a few days.

During Phase 1, the carbonisation of cereals and hazelnut shells appears to have been concentrated in the West Passage, more specifically in deposits within Block 1.2. This may be reflective of the zonation of activity within the cave at this time, with cooking and consumption activities perhaps being restricted in their extent. During Phase 2, there appears to be a wider distribution of such activities in the cave, with carbonised cereal deposition in both the West Passage (Block 1.3) and the East Passage (Block 2.5) and carbonised hazelnut shell in the West Passage (Block 1.3). The more defined area of deposition during Phase 1 may be reflective of the more structured use of the cave in a funerary context at this time.

It seems that those using the cave brought much of the food resources they needed with them. Although the location of settlement and agriculture for those visiting the cave is unknown, it seems unlikely that this was in the immediate vicinity of the coast due to the likely extent of Loch Spynie during prehistory, which would have cut this area off from inland settlement further to the south (see section 7.2). Transport of people and resources to the site by boat across the loch is likely to have enabled the movement of larger items, such as volumes of grain, and minimised the distance over which they needed to be carried.

Charcoal remains, which included a significant proportion of smaller-diameter roundwood, indicate that fuel wood was gathered locally. During Phases 1 and 2, much of the wood was from deciduous woodland taxa, particularly oak and hazel. These are good fuel woods and may have been preferentially selected. This material could have come from woodland margins or hedgerow-type habitats and could have included a proportion of fallen branches that were easily gathered. Also well represented were more scrubby heathland taxa in the form of birch, heather and gorse. Open heathland habitats currently exist close to the coast around the Sculptor's Cave, including large areas of gorse, and this may also have been the case in prehistory. Gorse and heather in particular make good kindling and may have fulfilled this role at the cave.

A more minor group comprised trees of wetland habitats (alder and willow/poplar), probably derived from the formerly extensive wetlands around Loch Spynie (see section 7.2). The use of pine was less structured and appears to have been opportunistic, perhaps targeting driftwood, with the bulk of the evidence from a single Phase 2/3 deposit (IIb2).

Interestingly, there is no evidence of decline in the exploitation of woodland taxa between Phases 1 and 2. The transition between the Late Bronze Age and Early Iron Age is noted for climatic decline from *c* 800–750 BC (eg Brown 2008), which could have had a significant impact on woodland and tree cover. However, there is little evidence of this from the Sculptor's Cave charcoal assemblage. If there was any decline in local deciduous woodland, it would appear that those using the cave continued to preferentially select predominantly high-quality fuel wood, in particular oak and hazel. Evidence of two preserved stakes within the cave demonstrates that hazel was also used structurally, although whether this was standard practice is difficult to confirm on the basis of just two surviving examples.

Present-day Moray has favourable climate and soils for arable cultivation, including wheat and barley. It is likely that this was also true during the Late Bronze Age and that agriculture would have been successful, subject to careful management and soil improvement. Published sites with contemporary evidence for cereal cultivation are rare in the Moray area; an exception is Grantown Road, Forres, where hulled barley was the dominant crop, though the assemblage was poorly preserved (Roberston 2016). A number of sites in Sutherland have also been excavated and sampled. Bronze Age deposits at Lairg (Holden 1998) showed a focus on naked six-row barley, with only occasional hulled-type grains identified. No other cereal types were identified in the deposits, dated to 2000–1000 BC. The settlement at Lairg, Sutherland, is somewhat further north and in an area more marginal to arable cultivation, which could explain the narrower range of cultivated taxa in its assemblage, in particular the absence of wheat. Cereals from Upper Suisgill, also in Sutherland (van der Veen 1985), were dominated by naked six-row barley but were accompanied by a small number of hulled barley grains, wheat and oat. The range of cereals at Suisgill is broadly comparable with those from the Sculptor's Cave except for the predominance of naked barley over the hulled variety at the former.

Excavation of a roundhouse at Navidale, Sutherland, dated to 1400–1200 BC, produced limited evidence of barley and hazelnut (Dunbar 2007: 146). The structure lay in a Bronze Age agricultural landscape which appears to have fallen into decline due to the effects of soil erosion and depletion. This may have been a common occurrence in similar upland areas in Sutherland (ibid: 164–5). Moray, however, is more fertile, with a more favourable climate for agriculture, and Iron Age settlements such as Birnie (eg Hunter 2010b) are a clear indication that successful settlement and agriculture continued here throughout the Iron Age. Hulled barley was dominant in Late Bronze Age and Iron Age contexts at the extensive settlement of Kintore, Aberdeenshire, though naked barley appears also to have been grown as a separate crop (Holden et al 2008: 252). A roundhouse at Oldmeldrum, Aberdeenshire, produced an assemblage dominated by naked barley, accompanied by rarer hulled barley and occasional oats (Hastie 2010).

Something many of the above sites have in common is the predominance of naked barley during the Bronze Age, which is often considered not to have been replaced by the hulled variety until the Iron Age (eg Hastie 2010: 20). However, at the Sculptor's Cave, there is a predominance of the hulled variety from the Bronze Age onwards, which may suggest that it was more regularly selected for consumption, at least in this context. On the other hand, the remains from Kintore (Holden et al 2008: 252) show that some contemporary arable economies were dominated by the hulled variety, perhaps as a dual crop in parallel with naked barley. This indicates that there may have been variability in the selection of crops by different settlements/communities based on local conditions or cultural preference. Potential data from more closely associated settlements in the future may help refine understanding of the local arable economy that formed the subsistence of those using Sculptor's Cave, but, at present, the dominance of hulled barley is unusual within the regional Bronze Age setting. Persistent evidence of cereal remains and hazelnut shells in the Phase 2 deposits demonstrates continued organised visits to the cave at this time.

CHAPTER 8

CAVES, COSMOLOGY AND IDENTITY

8.1 Introduction

The preceding chapters have demonstrated the remarkable longevity of human activity at the Sculptor's Cave and the extraordinary role that it played in the spiritual life of the communities who visited it. As with many caves, however, the wealth of material recovered has not been easy to interpret. Despite Sylvia Benton's best efforts, the excavation and recording methods of her day were insufficient to tease out the subtle and complex stratigraphy, especially in the dark confines of the cave. In particular, the challenges inherent in understanding a large, disarticulated human bone assemblage could not be met by the osteological methods available in the first half of the twentieth century, and the cursory reports delivered by the anatomists involved in the original analysis of the Sculptor's Cave material betray a lack of appreciation of its potential. While this is entirely understandable, the subsequent disposal of all but a handful of the bones remains unfortunate, and although the surviving handwritten lists provide a certain degree of information, much more detailed interpretations would have been possible had the bones themselves survived.

The archive derived from the Shepherds' excavations has been much more amenable to reanalysis. Nonetheless, their work was constrained by excavation of only relatively small and spatially isolated blocks of sediment left in place at the end of Benton's campaign. Within such restricted areas, fine-grained stratigraphy was difficult to read and structural evidence was inevitably partial. The time that has elapsed between fieldwork, post-excavation and publication has also led to unavoidable difficulties of interpretation.

Despite these problems, combining the evidence from the Benton and Shepherd archives with the benefit of recent methodological developments has allowed for a more detailed picture to emerge. Indeed, the delay between excavation and analysis has presented its own opportunities, allowing for the application of analytical techniques which were unavailable at the time. AMS radiocarbon dating and Bayesian analysis has, for example, greatly refined our chronological framework for activity at the cave, while modern osteological examination of the surviving human remains, along with element index analysis of the bone lists, has added greater depth to our understanding of the changing funerary role of this enigmatic site.

The publication of the Sculptor's Cave coincides with a resurgence of academic interest in the prehistoric and later use of subterranean environments. Major recent works include Marion Dowd's (2015; 2016) syntheses of caves in Ireland, as well as larger European (Bergsvik and Skeates 2012; Bergsvik and Dowd 2018) and global (Moyes 2012) surveys. Meanwhile, broader discussions have considered the unique nature of cave environments (Dowd and Hensey 2016) and the theoretical and technical challenges they pose (Büster et al 2019b). At the same time, there has been increasing recognition of the complex and potentially protracted nature of later prehistoric funerary practices and significant methodological advances in the ways in which disarticulated and commingled human bone assemblages are approached (eg Armit 2012; 2017; Osterholtz et al 2014; Booth and Madgwick 2016; Crozier 2016; Knüsel et al 2016; Osterholtz 2016). It is within this broad research background that the importance of the Sculptor's Cave archive can be fully realised. Before embarking on any detailed discussion, however, it is useful to give a sense of the Sculptor's Cave sequence as a whole and to explain what it might have meant in human terms.

8.2 The Sculptor's Cave: a speculative biography

Earlier chapters have examined the evidence from the Sculptor's Cave in great detail and interpretations have been advanced with caution and due consideration of alternative possibilities. In the midst of all the detail, however, it can be hard to discern the bigger picture. This section is, therefore, rather different. Here we provide a brief narrative – shorn of most of the earlier caveats – conveying what we *think* might have been happening at the Sculptor's Cave over these 14 or so centuries: a period of around 50 generations spanning the Late Bronze Age to the end of the Roman Iron Age. While based on detailed archaeological arguments, what follows is also the product of informed speculation and analogy.

The first visits to the Sculptor's Cave probably took place in the Early Bronze Age, although these were brief and episodic, leaving little trace beyond occasional discarded flints and some signs of burning in the sand that accumulated on the cave floor. While we know very little about the nature of this earliest activity, the treacherous access from both land and sea suggests that even these early visitors may have been drawn by spiritual or religious impulses rather than mundane practicality. Indeed, some of the neighbouring coastal caves were already being used for funerary activity at this time.

Later, during the Middle Bronze Age, a fall of material from the cliff above the Sculptor's Cave partly blocked its entrance, trapping water in the interior. Over the next couple of centuries, most of this blocking material eroded away, allowing thin lenses of windblown sand to form in the entrance passages, which gradually dried out. By the Late Bronze Age (*c* 1000 BC), it became possible to walk along the dry passages and to look across the shallow, stagnant pool within the main body of the cave.

It is around this time that funerary activity in the Sculptor's Cave began. The deposition of a young goat in the East Passage may have served to mark this new chapter in the cave's life. Successive wooden structures in the West Passage served as screens to restrict access to the watery interior, or perhaps as racks for the display of the dead. Either way, these structures blocked the narrow passages, lowering the temperature inside so that one's breath crystallised in the air, even at the height of summer. The cold, the dark, the water, the silence and the presence of the dead made the cave an awe-inspiring place, eminently suitable for communion with the ancestors and the supernatural.

Over the course of a generation or so, the dead were brought into the cave. The bodies were mainly those of children who had already lain for a time elsewhere. Although the bodies had partially decayed – often missing parts of their hands and feet – they remained clothed or wrapped as mummy bundles. Some wore gold-covered rings in their hair that eventually dropped onto the cave floor, where they were absorbed into the accumulating deposits. At some point, someone gathered six of these hair rings together and, crossing the shallow pool of water, placed them carefully under a low overhang at the rear of the cave, perhaps as an offering to the spirits of the dead or perhaps simply for safekeeping. But other objects remained where they fell, either in the entrance passages or trampled into the damp ground at the edge of the pool, where the passages gave way to the main body of the cave.

Those young individuals whose bodies ended up in the cave were specially chosen for this purpose. Perhaps this was intended as a particular honour or perhaps these mummy bundles, decorated with gold and bronze finery, were seen rather as offerings to underworld deities. As liminal beings themselves, not yet fully socialised into adulthood, children were well-suited to mediate with the chthonic spirits. Other members of the community, by contrast, underwent funerary rites elsewhere that resulted in the ultimate disintegration and disappearance of their remains.

Once in the cave, the bodies were not forgotten. People often made the journey to this isolated coastline, across Loch Spynie, to tend to the dead, perhaps at particular, predetermined times of the year. Once the flesh had gone, some bones were polished clean and white; moved, grouped and rearranged. These visits were neither brief nor mournful. Visitors brought food to prepare and cook in the entrance passages and under the entrance canopy; perhaps these were special foods given to the ancestors (cf Hastorf 2003; Reddy 2015) or perhaps they were meals for the living visitors to the cave. Debris from the preparation of meals and fuel waste from fires began to accumulate, sometimes encasing and preserving stray bones fallen from the desiccated corpses. Rites were conducted to ensure the health, fertility and success of the community and to ensure the cooperation (or at least prevent the enmity) of potentially dangerous underworld beings. Between each visit, the cave lay cold and silent, while the coastal winds blew in thin lenses of sand to lightly cover the debris left behind.

Nearby caves were similarly used. At one site, a few hundred metres to the west, stake-built structures were erected, meals were prepared and consumed, and the bodies of the dead (again, many of them children) were laid out. Perhaps each cave was the preserve of a separate community or kin-group, or perhaps bodies were moved from one cave to the next as the protracted funerary rites progressed.

By around 900 BC, it was no longer the custom to bring the dead to the Sculptor's Cave, or indeed to other caves along the Covesea coast. Nonetheless, people continued to visit: cooking, eating and drinking around the entrance area and within the passages. Memories of the cave's earlier funerary role remained: in the bones that lay scattered on the floor; in the rotting structures whose timbers decayed slowly in the cold, salty atmosphere; and in oral traditions retold in this ancient place.

Despite the social and economic changes that accompanied the end of the Bronze Age, the Sculptor's Cave remained a significant place for Iron Age communities. Between around 800 and 500 BC, a stone and turf structure was built under the entrance canopy, obstructing entry into the East Passage. At the outer end of the West Passage, a timber gate was erected to control access; an attempt perhaps to separate the living from the dead. At some point these structures were destroyed in a conflagration: a deliberate cleansing of the site or the accidental outcome of a cooking fire left to burn out of control? Following this episode of destruction, the gate at the outer end of the West Passage was rebuilt and a similar one established halfway along the East Passage. Now and again, informal paving was laid along the passages as they continued to accumulate debris from cooking fires and food preparation. As the centuries passed, however, visits to the cave declined in frequency and intensity, although occasional events (such as the burial of a dog in the West Passage) continued to mark the cave as a special place lying outside the realm of everyday life.

As in the Bronze Age, the Iron Age people who visited the Sculptor's Cave belonged to small-scale, autonomous communities. This changed markedly, however, during the early centuries AD. The first news of the Roman invasion of southern Britain would have reached the north-east through the movement of travellers, traders and perhaps even refugees. As the conquest progressed through the AD 40s–70s, Roman presence in the far south became an established reality, demonstrating a model of power and military strength on a scale not previously witnessed. It was with the Agricolan invasion in AD 79, however, that Iron Age communities in Scotland were forced to engage directly with the seemingly inexorable advance of the Roman army.

Although never part of the Roman province, the presence of such a powerful and threatening neighbour was a catalyst for social and political change in the region. Previously disparate Iron Age communities came together in significant numbers in AD 83 to oppose Agricola's army at Mons Graupius; the exact location of this encounter is not known but is thought to lie somewhere in north-east Scotland. War leaders were elected and alliances made between groups that previously had limited direct contact. In the centuries that followed, intermittent conflicts and contacts with Rome (and the ever-present threat of conquest) created a new political and ethnic consciousness that led to the formation of larger, more hierarchical polities.

During these turbulent centuries, activity at the Sculptor's Cave intensified once more, with the renewal of votive and funerary activity. It may be that the cave, as an ancestral place for the dead, provided comfort to those seeking tangible links with the past in the face of this changing social landscape. Unlike before, however, the bodies brought to the cave were now primarily those of adults, though they still represented only a minority of the community's dead. These bodies had not been subject to previous mortuary rites, as the Late Bronze Age children had been, but were brought to the cave soon after death (wrapped or dressed), with small personal objects such as pins, necklaces and 'toilet instruments' of bone, bronze and silver. By now, the pool that had previously filled the cave had finally dried up, and the interior, rather than the entrance passages, became the focus of activity. As before, visitors came to the cave: cooking, eating and drinking among the remains of the dead, who were preserved for many years by the cold, salty sea air.

The unstable political conditions of this period led to extreme acts of violence between those groups competing for power. During the third century AD, six or more people – most of them adults – were led along the tortuous route to the cave. They entered the cave alive, where they were forced to their knees and, heads flexed onto their chests, systematically beheaded. Their decapitated corpses were left where they lay; the brutality of their fate legitimised by the sanctity of the cave and the presence of the ancestors.

Although visits were now sparse and irregular, this extraordinary event did not mark the end of the cave's use. A few generations later, a hoard of around 200 coins was placed in the cave interior: a mix of Roman originals and indigenous copies, left perhaps as an offering to the dead or to the underworld spirits. Then, as a final act of closure, a series of symbols was carved around the outer part of the entrance passages. Rather than any physical barrier, these images – redolent with meaning to those who saw them – sealed the cave off from the world of the living and marked its passage into memory; an epitaph perhaps to those who had been executed and whose stories lived on in oral tradition.

In the centuries that followed, the cave lay mostly undisturbed, though it was not entirely forgotten. Occasional visitors carved crosses around the entrance walls, perhaps as a warning to a newly Christian society to stay away from this dangerous pagan place. Of course, people did continue to visit, sometimes to hide contraband (if we believe the author of the 'curse' engraved on the east wall of the cave interior in the seventeenth century) and, in later centuries, to add their own names to the fabric and history of this enigmatic place.

8.3 Worlds apart: caves as liminal places

From the creation stories of the Aztecs to the epic poems of Ancient Greece, caves have always been associated with worlds apart: realms of the dead, the ancestors, the supernatural, the 'other'. Dowd (2015: 6) notes that the Irish word for cave, *uath*, can also mean fear, horror or terror, and that it is still sometimes used in reference to a grave. Although each cave represents a unique environment, there appear to be certain recurrent features among those associated with ritual or religious activity. Many such caves contain underground rivers or pools, forming the foci for votive deposition or sacrifice. Ritualised activity seems often to occur in particular 'threshold' areas, such as entrances, and in 'twilight zones' where light gives way to darkness. Some caves contain stone or timber structures associated with acts of ritual performance, including the control of movement and the ordering of space. Many yield human remains, often disarticulated and apparently processed in complex ways in the course of transformative secondary mortuary rites. These patterns hint at commonalities of cosmology and belief across wide areas and deep time.

It would be tempting to propose direct links between some of the more unusual finds from Scottish caves and the broader body of Eurasian mythology associated with the subterranean realm. Could the dog buried in the West Passage of the Sculptor's Cave, for example, have been regarded as a guardian of the entrance to the underworld, similar to the multi-headed Cerberus who features in Greek myth from at least as early as the eighth century BC (Evelyn-White 1964)? Does the extraordinary find of a wooden lyre bridge, dating to around the fourth century BC at High Pasture Cave in Skye (Birch and Wildgoose 2013: 82–4), reflect some northern avatar of Orpheus, who journeyed into the underworld to retrieve his wife Eurydice and whose Greek origins extend to at least the sixth century BC (Lee 1996: 3–4)? There is of course no way to substantiate such specific links but, given the cross-cultural similarities in attitudes to caves and the underworld across Europe in later prehistory, it would perhaps not be too surprising if deep-rooted myths and cosmological ideas underlay similar practices across wide regions.

As we have seen in chapter 1, the recurrent association of caves with other realms owes much to their physical characteristics. Caves are voids in the earth, forming a tangible link between the above-ground world of the living and the below-ground world of chthonic spirits and deities. Coastal caves, like the Sculptor's Cave, embody a further layer of liminality, occupying a hinterland between land and sea. As such, they represent nodal points where worlds come together and break apart. This physical position, betwixt and between, makes them inherently liminal places (Turner 1969: 95), suitable for a range of activities involving communion with spirits and ancestors and transformation, for example, from one physical or spiritual state to another.

Just as caves are ruptures in the physical landscape, so death is a rupture in the social lives of communities. The dead body too is a liminal entity, undergoing the most fundamental of transformations from fleshed corpse to dry bone or ashes. Like any other rite of passage, death rituals across the world mark out this process as spiritually dangerous and requiring careful control (cf van Gennep 1960). This extends not only to the manner in which funerary rites should be conducted, but also to the places in which they might best be carried out. The liminality of caves makes them eminently appropriate places for the transformation of bodies and the journeying of spirits from one world to the next (cf Brück 1995: 260–1).

8.4 Experiencing the Sculptor's Cave

8.4.1 The Sculptor's Cave as a physical space

Although a product of entirely natural processes, the Sculptor's Cave is a dramatic, almost architectural, space with near-straight-sided walls and a monumental double entrance passage. Unlike the other caves along the Covesea coast, which are long, narrow and tunnel-like or else large, open and irregular, the Sculptor's Cave gives an erroneous but nonetheless compelling sense of having been intentionally hewn out of the rock; for the prehistoric communities who used it, it may well have been considered to have been fashioned by supernatural or mythical beings, who so often appear to inhabit such places in myth and folklore. All caves affect us, through their darkness, stillness and coolness, but the seeming artificiality of the Sculptor's Cave would have marked it out as special: as a dwelling, tomb or temple of ancestors, gods or spirits. It remains an eerie and powerful place.

8.4.2 Space and movement

Entering the Sculptor's Cave today is straightforward, at least once one has negotiated the tortuous journey along the coast. The entrance passages are tall enough to walk through unimpeded and the interior is open and relatively airy. The same would have been true in the Late Bronze Age, when the cave was first used for funerary rites. During the Roman Iron Age, access would have involved crossing over a mound of deposits which had accumulated under the entrance canopy, although there would still have been no need to crouch or crawl at any point. Despite this, the presence of stake-built structures in the Late Bronze Age and a combination of timber gateways and turf/stone structures in the Roman Iron Age would have served to control and restrict movement.

Activity in the cave interior during the Late Bronze Age and Pre-Roman Iron Age would have been heavily conditioned by the presence of the shallow internal pool. This would have greatly restricted access to the main body of the cave and resulted in a focus on the twin entrance passages. By the early centuries AD, however, the pool had gone and the cave interior would have appeared much more as it does today. Access to the interior would have made the cave amenable to larger gatherings of people, in contrast to earlier periods, though the need to traverse the narrow entrance passages would always have afforded the opportunity to arrange visitors, perhaps in order of precedence or seniority.

8.4.3 Light

Despite Sylvia Benton's declaration that 'the sun never touches it' (1931: 178), the Sculptor's Cave is not entirely dark. At certain times of day, the sun does penetrate into the entrance passages and, once one's eyes have adjusted to the gloom, it is possible to examine the interior without the need for artificial light. The nature of the entrance passages, however, is such that they are easily blocked, cutting off all light from the cave. The decrepit wooden door that currently blocks the West Passage, probably put in place at the end of Benton's excavations, effectively (despite several holes) blocks light from the West Passage, giving some impression of the impact that even flimsy screens would have created. In fact, the structures erected across the entrance passages at various points in the cave's use are likely to have rendered the interior entirely dark and would have made visitors wholly dependent on artificial light. We can thus envisage the cave during the Late Bronze and Pre-Roman Iron Ages as illuminated by flickering torches reflecting off the shimmering surface of the internal pool and creating shifting shadows on the uneven walls.

8.4.4 Temperature

Caves generally maintain a cool, stable temperature relative to the outside world; the Sculptor's Cave today feels generally cooler than the outside in summer and rather less cold in winter. During digitisation work on the Pictish carvings in 2014 (box section 1), it became necessary to screen off the entrance passages with a black plastic sheet in order to create sufficiently dark conditions for the structured light scanner to operate at a reasonable level of efficiency. This was, albeit accidentally, highly instructive in relation to understanding the experiential qualities of temperature within the cave. Despite the thinness of the plastic membrane, blocking the entrance in this way substantially reduced the temperature inside the cave such that one's breath crystallised in the air, even on a mild and sunny spring day. Since the entrance passages seem to have been repeatedly blocked during prehistoric use of the cave, it is likely that similarly cold conditions would have pertained, elevating the perception of journeying between worlds.

8.4.5 Fire and smoke

The use of fire would have radically affected the experiential quantities of the cave. Hearths appear to have been common in all periods: numerous areas of burning were found in both entrance passages during the Shepherds' excavations and at least one well-built hearth of probable Roman Iron Age date was recorded within the cave interior by Benton (illus 2.4). Experimental work at Robin Hood's Cave, Creswell Crags, has shown (as we might expect) that lighting fires in caves can quickly choke their interiors with smoke, rendering them effectively unusable (or at the very least uncomfortable) for many hours (Gentles and Smithson 1986). Only when the fire has reduced to embers does this problem alleviate. No specific experimental work has been conducted at the Sculptor's Cave (a Scheduled Monument), and it might be suggested that the air flow between and around the distinctive twin entrance passages would have made smoke less of a problem here than in more cramped single-entrance caves. The situation would, however, have been very different when one or both entrance passages were closed off, in which case fires inside the cave may well have produced dense, choking smoke. One solution may have been to feed an internal hearth with embers drawn from a fire outside the cave; unless of course there were specific reasons for wanting a smoke-filled interior (see section 8.5.3). Whatever activities were happening inside, the control of air flow, manipulation of temperature and the management of fire must always have played an important role in the way in which the Sculptor's Cave was experienced and used.

8.4.6 Sound

The acoustic properties of caves can distort, accentuate or amplify sounds. Indeed, this phenomenon was recognised and exploited as early as the Upper Palaeolithic, where the resonant areas of certain caves were preferentially chosen over non-resonant areas for the creation of parietal art (eg Bahn 1997; Fazenda et al 2017). Although the interior of the Sculptor's Cave today acts to deaden sound (Rupert Till pers comm), the former presence of water in the interior would have created a very different acoustic environment. This suggests that the experience of sound within the cave, including any chanting, music, singing and dancing forming part of ritual performances, would have been very different for visitors in the Late Bronze Age and Roman Iron Age.

8.4.7 Smell

Caves serve to contain and amplify odours, and some underground activities may have been strongly associated with particular olfactory experiences. Indeed, they would have been an intrinsic aspect of certain ritual activities in caves, including funerary rites. Smells ranging from the nauseating odour of decomposing animal carcasses or human corpses to the dankness of damp earth and stagnant water, the pungency of animal faeces and the choking effect of thick smoke are all likely to have been experienced at various times by visitors to the Sculptor's Cave. These would have had the potential to evoke powerful memories and emotions, especially if visits to the cave involved communion with the spirit world or tending to the remains of the dead.

8.4.8 The cave through time

Drawing on this consideration of the experiential qualities of the Sculptor's Cave, it is possible to characterise two distinct and chronologically separate sets of physical conditions that visitors to the site would have encountered. In the earlier period (the Late Bronze Age and the Pre-Roman Iron Age), the cave would have been cold, dark and damp, with heat and light excluded by the timber structures at the entrance and the acoustics heightened by the presence of the internal pool. Activity would have mostly been constrained within the entrance passages, restricting the numbers of visitors entering the cave at any one time and necessitating that any large gatherings of people remained outside, under the entrance canopy. Fires appear to have been laid in the entrance area and passages, though smoke penetration to the cave interior may have been limited by the presence of the stake-built structures.

In the Roman Iron Age, the cave would have been dry, with an internal space capable of accommodating large numbers of people. Sound inside would have been deadened by the cave walls, as it is today, and the continued blocking of the entrance passages would have made for a dark, gloomy interior. During this period, fires were laid inside the main body of the cave. We cannot know whether these were lit with logs and branches, filling the cave with acrid smoke, or whether embers were taken from fires outside in order to mitigate against this; either case would have altered the way in which the cave was experienced and would potentially have facilitated different forms of activity.

8.5 Caves and the dead

8.5.1 Late Bronze Age funerary rites

The elusive dead

Funerary activity in later prehistoric Britain, from the Middle Bronze Age onwards, is generally elusive. Neither inhumation nor cremation seems to have been the dominant rite, although both were practised at certain times and places (Harding 2016). Even where inhumation is observed, however, it often takes unusual forms, as at Cliffs End Farm, Kent, where evidence for peri-mortem trauma, post-mortem manipulation and an atypical demographic pattern suggest this was not a normative rite (McKinley et al 2015). In the majority of cases, human remains are found as stray bones on domestic sites (eg Brück 1995; Armit and Ginn 2007; Armit 2017). These disarticulated fragments (often crania and long bones) were, in many cases, most likely recovered from bodies undergoing excarnation (ie defleshing either by natural or artificial means), whether through exposure to the elements or within a protected environment.

Like cremation, excarnation involves a very visible transformation of the body from one physical state to another; in this case, from fleshed articulated corpse to dry, white bones. If excarnation was widely practised during the second and first millennia BC, then the great majority of human remains would have been dispersed naturally (or perhaps deliberately) and would thus be invisible to us today. Despite the likely importance of this form of disposal of the dead at this time, primary (and likely ephemeral) excarnation sites have yet to be found, and the nature of these rites is almost entirely based on inference from the analysis of isolated bones found in secondary locations (cf Carr and Knüsel 1997; Armit 2012: 204–8).

A strong case has recently been made for other forms of mortuary practice in later prehistoric Britain. In particular, mummification seems to have played a much more important role than was previously understood. Although achievable naturally within certain favourable environments (eg desiccating or anaerobic conditions), mummification may also be promoted through interventions such as drying or smoking or through more invasive techniques such as the intentional removal of internal organs. In all cases, natural decay of the soft tissues is arrested, retaining the integrity of the body for an indefinite period. The first evidence of deliberate mummification in prehistoric Britain comes from the Late Bronze Age settlement of Cladh Hallan in South Uist, where several tightly contracted burials with evidence for post-mortem manipulation were placed beneath house floors (Parker Pearson et al 2005). One articulated 'individual' was demonstrated by radiocarbon dating and osteological analysis to be a composite of at least three people, who had probably died several centuries before being buried (ibid) at a period broadly contemporary with initial funerary activity at the Sculptor's Cave. Broader studies involving the histological analysis of bone from other Bronze Age 'burials' echo these findings (Booth et al 2015), suggesting a more widespread practice of depositing mummy bundles at this time.

Funerary rites at the Sculptor's Cave

It is within this broader context that we must consider the first floruit of funerary activity at the Sculptor's Cave, between around *990–935 cal* BC to *955–920 cal* BC. This activity, according to Bayesian modelling, may have lasted for only *1–35 years* (*68% probability*) (section 4.5.2); in other words, a generation or less. Such a short chronology of mortuary activity presents a remarkable opportunity to examine funerary practices and beliefs that have left little archaeological trace elsewhere.

We have seen in chapter 6 that it is possible to disentangle the paper records of the now-vanished human remains from Sylvia Benton's work with at least a degree of confidence, made possible in part by the survival of the smaller assemblage from the Shepherds' excavations. Detailed analysis has shown that the Late Bronze Age bodies deposited in the cave were overwhelmingly (88%) those of children and infants. This is an unusual demographic for any prehistoric funerary assemblage; together, children and infants make up only 25% of unburnt human bones from settlement sites across Late Bronze Age Britain (Brück 1995: 249). These bodies seem to have been incomplete when they entered the cave, since some parts (notably the small bones of the hands and feet) were absent, perhaps the result of primary but incomplete excarnation in protected environments off-site (illus 8.1). Nonetheless, the presence of gold-covered hair rings and other personal objects suggests that they were elaborately clothed or wrapped. The most likely interpretation is that they were brought to the cave as mummy bundles, which had been curated above ground for some time and had begun to disintegrate.

Once inside the cave, bodies appear to have been kept above ground (since there is no evidence for inhumation), perhaps stored or displayed on wooden racks represented by the stake-built structures in the West Passage. The location of the sub-adult mandibles and hair rings, for example, led Ian Shepherd to suggest that the heads of children were displayed in the entrance passages (2007: 199), decaying in situ as the soft tissue broke down and becoming incorporated into the floor deposits. Although subsequent recovery of numerous human post-cranial bones from the faunal assemblage casts doubt on this specific interpretation, it remains possible that some form of display in the entrance passages was practised.

Given that the few formal burials dated to the Late Bronze Age in Britain contain more than a few sherds of pottery (Brück 1995: 249, 260), the presence of valuable objects associated with the dead at the Sculptor's Cave is highly unusual. Late Bronze Age metalwork is frequently recovered from rivers and bogs, and occasionally also from caves, particularly those (as at Heathery Burn Cave, Co. Durham) which feature underground streams; as such, the internal pool within the Sculptor's Cave may have tied it into wider Late Bronze Age traditions of depositing votive objects in watery places. Significantly, however, the Late Bronze Age metalwork from the Sculptor's Cave comprises exclusively personal ornaments (penannular bracelets, pins and gold-covered hair rings); the weaponry and tools that are frequently included in other contemporary cave hoards (eg Heathery Burn Cave (noted above); and at Kilgreany Cave and Brother's Cave, Co. Waterford and Kilmurry Cave, Co. Kerry, Ireland) are absent. Rather than representing a conventional 'hoard' then, the Late Bronze Age metalwork at the Sculptor's Cave appears more likely to have accompanied and adorned the dead. The fact that such valuable items were left, apparently undisturbed, is testament to the taboos that must have surrounded removal of the ritually charged material that entered these enigmatic places (cf Dowd 2015: 147).

The unusual treatment of the dead at the Sculptor's Cave and their atypical demographic composition raise the question of whether we should really understand the cave as a funerary site at all. Perhaps, instead, we should regard these bodies as offerings to the underworld gods or spirits? Children are often regarded as especially appropriate for

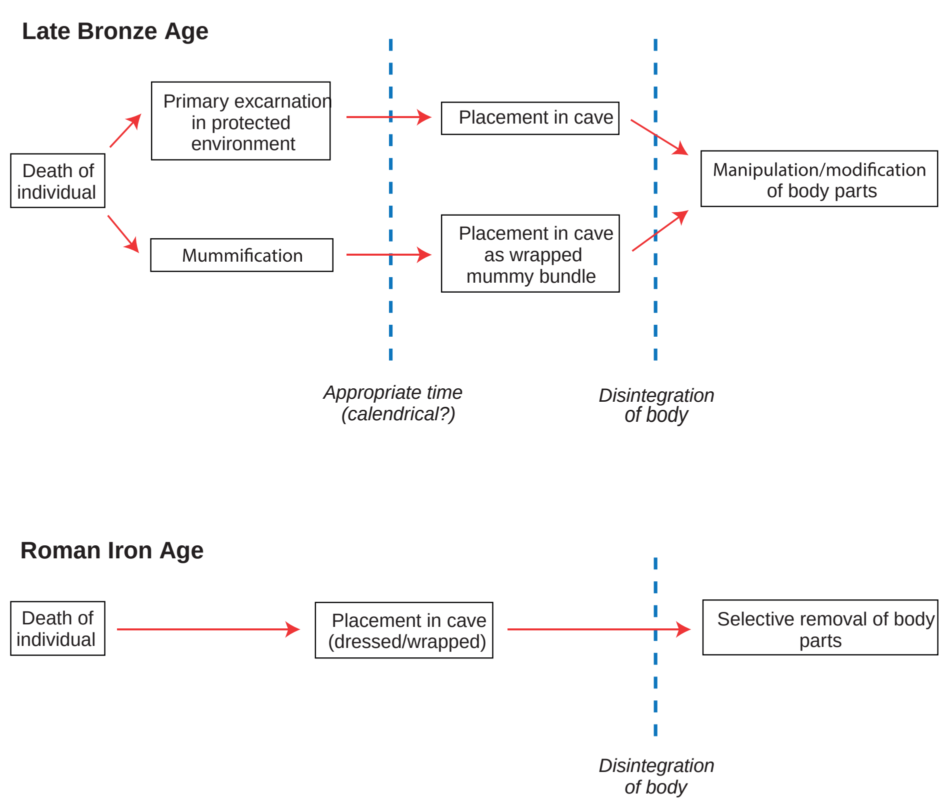

Illustration 8.1
Possible mortuary pathways for the Late Bronze Age and Roman Iron Age human bone assemblages at the Sculptor's Cave

sacrifice (eg Wilson et al 2013) and it may be that the Late Bronze Age communities of north-east Scotland were prepared to offer up their own offspring to appease their deities. Despite some limited evidence for peri-mortem trauma (see section 6.8.2), however, there is little to suggest that these individuals had been deliberately killed (although numerous modes of execution, such as strangling, poisoning etc, would of course be impossible to detect in most archaeological contexts). Nonetheless, it may be that children who had died of natural causes were still regarded as socially liminal and thus appropriate mediators with the spirit world.

Preservation or dissolution: a question of intent?

Excarnation and mummification would appear to represent polar opposites in the treatment of the dead. The first aims to achieve complete disintegration of the body, while the second promotes its preservation. It is difficult from the evidence available here, however, to distinguish the intent behind the placing of bodies into the Sculptor's Cave.

Given the under-representation of small bones of the hands and feet, it seems unlikely that the Sculptor's Cave was a *primary* excarnation site during the Late Bronze Age. It is, however, possible that the bones belonged to individuals who had been transported – while the body was still substantially intact – from a primary excarnation site located elsewhere for *secondary* excarnation in the cave. The lack of evidence for gnawing or weathering suggests that, if this were the case, the period of primary excarnation must have been conducted in a protected environment, such as mortuary house or container of some kind. Indeed, given that the AMS dates for the human remains are not significantly different from those of the animal bones in the same contexts, the period of primary excarnation (ie between the death of these individuals and their secondary deposition in the cave) is unlikely to have been more than a few years.

Equally, if the bodies had been mummified, either naturally or artificially, then they must also have been curated at some other location for an extended period (illus 8.1), where they fell into a degree of disrepair before being brought to the cave. In neither case (mummification or excarnation) can the cave be seen in isolation: the complex and protracted funerary rites of these Late Bronze Age individuals must have involved multiple locations.

Certain aspects of the environment within the Sculptor's Cave might lend weight to the idea that bodies were brought here to be preserved as wrapped or dressed mummy bundles. The salty atmosphere and cool, stable temperature of the cave interior, for example, generates preservative qualities that cannot have gone unnoticed in prehistory. These are perhaps best demonstrated by Benton's recovery of plaited human hair (1931: 207) and the survival of uncarbonised wood in some of the Late Bronze Age stakeholes excavated by the Shepherds (see section 2.3.3). This phenomenon is even more evident in Covesea Cave 2, 100m to the west, which yielded human soft tissue dating to the Late Bronze Age (Büster and Armit 2016). In the case of the Sculptor's Cave, organic preservation may have been further enhanced (intentionally or unintentionally) in the colder temperatures created by the timber screens or racks that blocked the entrance passages and on which bodies may have been placed.

Against this, however, we should remember that the presence of standing water in the cave during the Late Bronze Age would have created a much damper environment than is the case today, which may have counteracted the preservative qualities discussed above. There are also some indications that human remains may have been processed in such a way as to hasten their transition from fleshed bodies to clean, white bone, perhaps suggesting that excarnation was the primary intent. The clearest evidence for this comes from the multiple striations on a sub-adult frontal (SF231; see section 6.8.2), which seem to result from the vigorous cleaning or polishing of the cranium, perhaps to remove the last vestiges of the flesh. It may be, as has been suggested for Neolithic chambered tombs in Orkney, that the manual disarticulation of bodies within this sacred space reflected the need for the living to impose control and order over the transformative process of death in those individuals 'for whom the decay process had not concluded within a prescribed timeframe' (Crozier 2016: 732–3). The breakage patterns of some of the copper alloy bracelets (eg SF731a–c/SF796; illus 5.33) likewise suggest deliberate fragmentation.

On balance, and particularly given the likelihood that the dead were wrapped or clothed, the deposition of mummies or mummy bundles (with the intention of continued preservation) seems the most likely explanation for the human remains found in the Sculptor's Cave during the Late Bronze Age. Nonetheless, we cannot completely rule out the idea that the cave was used for secondary excarnation rites. The micro-environment of the cave during this period was not apparently ideal for either practice, and it appears that practical considerations were most likely over-ridden by the religious and/or symbolic significance of the cave itself: its liminal status and its facilitation of communication with the ancestors and the otherworld.

Parallels in Britain and beyond

Late Bronze Age human remains have been recovered from several other Scottish caves. The most striking parallel is Covesea Cave 2 in the bay immediately west of the Sculptor's Cave (illus 1.1, 1.3; Büster and Armit 2016). While the nature of activity has yet to be fully explored and much of the extant material was collected during amateur excavations in the 1960s without any stratigraphic control (ibid), Late Bronze Age human remains from this cave are broadly contemporary with those from the Sculptor's Cave and, likewise, appear to be associated with curving, stake-built structures, hearth debris and faunal remains. More remarkably, the cave also yielded human bones dating to the Early Bronze Age (ie substantially pre-dating the evidence from the Sculptor's Cave), as did Cave 1 immediately to the east (illus 1.1, 1.3). Unfortunately, nothing is known of the original depositional context of these remains, since they are represented by unstratified material at Cave 1 and material redeposited in Late Bronze Age contexts in Cave 2. Further work in these (and other) caves along this stretch of coastline will undoubtedly help us to understand the place of the Sculptor's Cave within this broader funerary landscape.

Outside the immediate area, another potential parallel comes from Borness Cave in Kirkcudbrightshire, south-west Scotland (Corrie et al 1874; Clarke 1875; 1878). Although the bulk of the antiquarian finds from this site date to the Roman Iron Age, one of two infant crania found in the cave has recently yielded an AMS date of 1006–844 cal BC at 95.4% probability (SUERC-61320; Sheridan et al 2015), making it more or less directly contemporary with human remains from the Sculptor's Cave. Late Bronze Age activity is also known from Croig Cave, Mull, where an amber bead and a bracelet similar to those found at the Sculptor's Cave have recently been excavated (Mithen and Wicks 2012). As yet, however, there is no indication of human remains at this site.

Another potential parallel comes from the small, east-facing sea cave known as St Baldred's Cave in East Lothian, which was cleared out during the course of 'ornamental improvements' in 1831 (Sligo 1857: 353). Within the cave were deposits (some two feet thick) containing 'quantities of charcoal and the bones of animals, mixed with marine shell' overlying a carefully laid area of paving 'where it is supposed that the Priests offered up their prayers during the sacrifice' (ibid: 355–6, 361; illus 8.2). The focal point of activity was a large natural stone 'altar', artificially propped up in the entrance area, under and adjacent to which were the remains of two infants. Other unspecified human remains are also mentioned in relation to general deposits above the paving (ibid: 355–6). Associated pottery is poorly described but may suggest a later prehistoric date.

Further afield, Raven Scar Cave in the Yorkshire Dales has produced evidence for 15 individuals, including 10 juveniles (Leach 2006a: 103). The prevalence of mandibles and isolated teeth has led Leach (2006b: 415) to suggest that heads may have been placed within the cave and subsequently removed following a period of decomposition. Two radiocarbon dates suggest deposition of these remains in the tenth century BC (Leach 2006a: 113), contemporary with the period of Late Bronze Age funerary activity at the Sculptor's Cave.

Other English cave sites have also yielded human remains. The large cave at Heathery Burn, for example, included at least one articulated individual (Greenwell 1894: 96) and was associated (as noted above) with a rich assemblage of Late Bronze Age metalwork dating to around 900 BC (Britton and Longworth 1968; Britton 1971), together with animal bones, pottery, spreads of charcoal and fire-reddened hearths (Greenwell 1894). Meanwhile, Late Bronze and/or Early Iron Age material from Merlin's Cave, Herefordshire, included at least five adults and a child (Phillips 1931: 14), though it is not possible to ascertain from the original report whether or not these bones represented articulated skeletons or disarticulated elements. Finally, at Guy's Rift, Wiltshire, the remains of at least four adults and three children are reported in association with Early Iron Age pottery (Hewer 1925: 231). Though these assemblages offer interesting parallels, the frequent uncertainty of stratigraphy and chronology deriving from their antiquarian, amateur or otherwise problematic excavation histories makes any detailed comparisons with the evidence from the Sculptor's Cave difficult.

Recent syntheses of the archaeological evidence from Irish caves provide further evidence for Late Bronze Age activity, including the deposition of human remains (Dowd 2015; 2016). Dowd notes that, in contrast to the prevalence of cremation as the normative funerary rite in Bronze Age Ireland, human bones from caves are almost always unburnt (2015: 160). This might suggest a more complex role for the individuals deposited in these locations: perhaps they were mediators with the underworld, who, preserved in the liminal zone between life and death, were not permitted the transformative rites of cremation necessary to transport their souls fully to the next world. Among the closest parallels for the Sculptor's Cave is Glencurran Cave, Co. Clare, where Middle/Late Bronze Age disarticulated human bones and the (probable) articulated remains of a young child were associated with slight, stone-built structures (ibid: 149).

The association of human remains with caves in this period is by no means solely an insular phenomenon. Harding's synthesis of the European Bronze Age

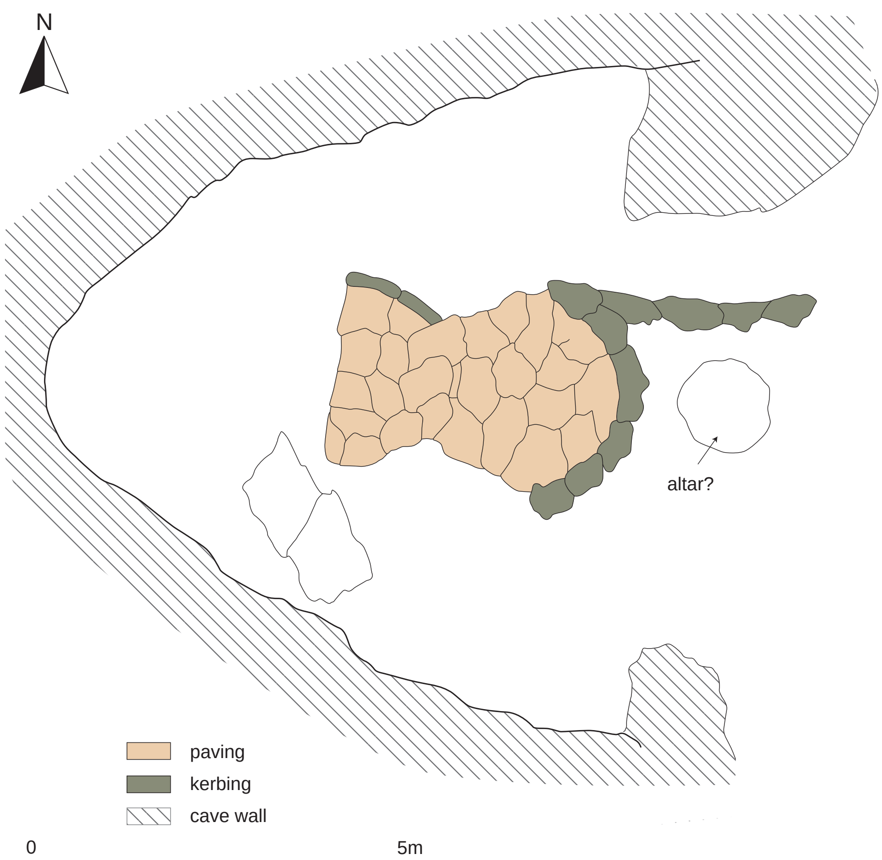

Illustration 8.2
Plan of the excavated structures at St Baldred's Cave, East Lothian, based on antiquarian excavations (after Sligo 1857: 361). Despite the inevitably crude nature of the excavation, George Sligo's detailed ground plan and verbal description gives us some confidence that the remains shown relate to prehistoric use of the cave

Illustration 8.3
Possible cairn on the cliff top around 600m west of the Sculptor's Cave (Canmore ID 16281)

proposes 'a special role for caves and rock-clefts in Bronze Age religion' (2000: 320; although he also notes what he believes to be evidence for domestic occupation in many caves). Notable concentrations of Late Bronze Age cave deposits in Greece, Italy, Germany, southern France and in the karstic regions of Slovenia and Croatia (ibid: 317–20) often include both funerary activity and the deposition of votive objects. The specific characteristics of such cave use across Europe are of course highly variable, but broad parallels with activity at the Sculptor's Cave are nonetheless evident. Bezdanjača Cave, in the Lika region of Croatia, for example, is accessible only by scaling a cliff face, yet it contained the remains of around 200 individuals laid out singly and in groups in natural niches formed by limestone concretions on the cave floor (Malinar 1998). These individuals, dating to the Middle/Late Bronze Age, had apparently been deposited as intact bodies and had been decorated with red ochre. Around them were the remains of numerous hearths, broken pottery and animal bones (ibid), suggesting, as at the Sculptor's Cave, repeated visits by the living to the dead.

Other striking parallels are found at the Trou de Han in the Belgian Ardennes, memorably described by its excavator, Eugène Warmenbol (1996), as 'La Bouche des Enfers' ('the Mouth of Hell'). During the Late Bronze Age, the underground River Lesse, which flows through the cave, seems to have been a focus for the deposition of fine metalwork (including weaponry which, as we have seen, is absent from the Sculptor's Cave) and other objects, including human remains (Warmenbol 2007). In an area known as La Galerie de la Grande Fontaine, the bones of four children and an adolescent were found commingled with pot sherds and food remains, while an unstratified human cranium from La Galerie Belgo-Romaine was also found to date to the Late Bronze Age or Early Iron Age (ibid).

The wider Late Bronze Age landscape

Little is known of Late Bronze Age activity in the landscape surrounding the Sculptor's Cave. Aside from the broadly contemporary funerary activity recently identified at nearby Covesea Cave 2 (Büster and Armit 2016), there are records of two possible cairns on the cliff tops close by (Canmore ID 16281 and 16282; illus 8.3), although their date is unknown. There are a few other examples on the north side of the former Loch Spynie, including poorly understood and undated examples excavated in the nineteenth century at Iverugie (Canmore ID 16142) and Hopeman (Canmore ID 16154), c 2.5km and 3.5km respectively from the Sculptor's Cave. Although conventionally dated to the Early Bronze Age, recent excavations of burial mounds in north-east Scotland have shown that their chronologies can extend much later than originally supposed, even into the early centuries of the first millennium BC (eg Bradley 2000; 2005). It is not impossible, therefore, that these nearby monuments were associated in some way with the mortuary rites practised at the Covesea Caves, though they may of course represent earlier burial monuments with no formal connection to funerary activity at the Sculptor's Cave.

It is similarly impossible at present to determine where the communities using the Sculptor's Cave might have lived. A gold-covered hair ring from Clarkly Hill (see section 5.7.1) and a bronze spearhead from Burghead (Anon 1890), around 5km and 6km from the Sculptor's Cave respectively (illus 1.8), suggest that these two long-lived sites may have been occupied at this time. Late Bronze Age clay moulds have also been recovered from the settlement of Birnie (Hunter in prep), some 12km south of the Sculptor's Cave. Otherwise, the settlement landscape of the period is largely unknown.

8.5.2 The decapitation 'event'

Despite ongoing activity at the Sculptor's Cave during the Iron Age, more than a millennium passed before it resumed its role as a place for deposition of the dead. The nature of this renewed mortuary activity – most likely centred on the second and third centuries AD – differed markedly however from the mortuary rites practised during the Late Bronze Age.

The human bones dating to the Roman Iron Age divide broadly into two groups: the first suggests renewed use of the cave for complex post-mortem funerary rites, while the second appears to represent a specific decapitation 'event'. This latter assemblage comprises seven cervical vertebrae (the only human bones retained by Sylvia Benton), six of which show evidence for decapitation in the form of cut marks from a heavy bladed weapon, most likely an iron sword. Taking additional archive records into account, as many as nine individuals (including two sub-adults) may have been put to death in this way. Some of the vertebrae were cut clean through with a single stroke, while one (CV5) bears evidence of at least 11 blows. Based on both Bayesian modelling of the AMS dates and the remarkable consistency of the injuries, these bones can be taken to suggest a single violent episode dating to *AD 220–335*.

It seems unlikely that the cervical vertebrae were derived from trophy heads obtained through warfare or raiding (cf Armit 2012): blade injuries are found on both the upper and lower portions of the vertebrae (section 6.8.3), indicating the presence both of bones that would have remained attached to the victim's body (eg CV3 and CV6) and others that would have stayed with the severed head (eg CV1 and CV2). If these individuals had been beheaded on the battlefield, it seems highly improbable that their entire (headless) bodies would have been transported to the cave together with their severed heads. Instead, it seems much more likely that these individuals were killed in the cave itself. As we have seen, the cave interior had dried out by this period and would have been able to accommodate a substantial gathering; the victims themselves, their executioners, guards and, potentially, a crowd of onlookers.

Simply transporting six or more (presumably unwilling) individuals to the cave would have been a significant undertaking. They must presumably have been incapacitated by ropes or chains, or else closely monitored by armed guards. Arriving by land would have required marching them along the rocky shore at low tide, while arriving by sea in light boats at high tide would have been a hazardous venture even in fine weather. The angle and location of the cut marks on the vertebrae suggest that, once inside the cave, each victim was killed in a similar and systematic way: by an assailant standing behind them, most likely while they knelt with their heads flexed onto their chests. As such, they were almost certainly restrained, suggesting that multiple individuals were implicated in their death and that the victims were executed – perhaps ritualistically – as part of a premeditated, carefully staged event.

Who were the victims?

Given the long association of the Sculptor's Cave with the dead (and the difficulties of access), it is probable that the decapitations were conducted in this specific location so as to be sanctioned in some way by underworld gods, spirits or ancestors. If we work on the assumption that the decapitations relate to a single event, then it is unlikely that the individuals were criminals, outcasts or sacrificial victims; if this were the case, we might expect them to have been deposited in the cave over a more protracted period of time. The stable isotope evidence (section 6.9) suggests that the decapitated individuals form a homogenous group with a similar dietary signal to the Late Bronze Age individuals from the cave. This would seem to exclude certain potential interpretations; they were evidently not, for example, Roman soldiers, who would be expected to provide a more diverse set of isotopic results. Although it cannot be proven, the isotope evidence currently available is certainly consistent with a group of relatively local individuals. Given the scale of the decapitation event and the turbulent social conditions at this time, a political motivation for the killings is worth considering.

This period saw the coalescence of Iron Age tribes north of the frontier into increasingly large-scale confederacies in the face of Roman expansionism (Armit 2016: 151) and, as their military strength and confidence grew, it became possible for these groups to take the initiative against their southern neighbours. Ultimately, the conflict and instability of this period led to the emergence of the Picts, first mentioned in a panegyric (or eulogy) written by Eumenius in AD 297 (Wainwright 1955: 2). While a unified Pictish kingdom may not have arisen until several centuries later

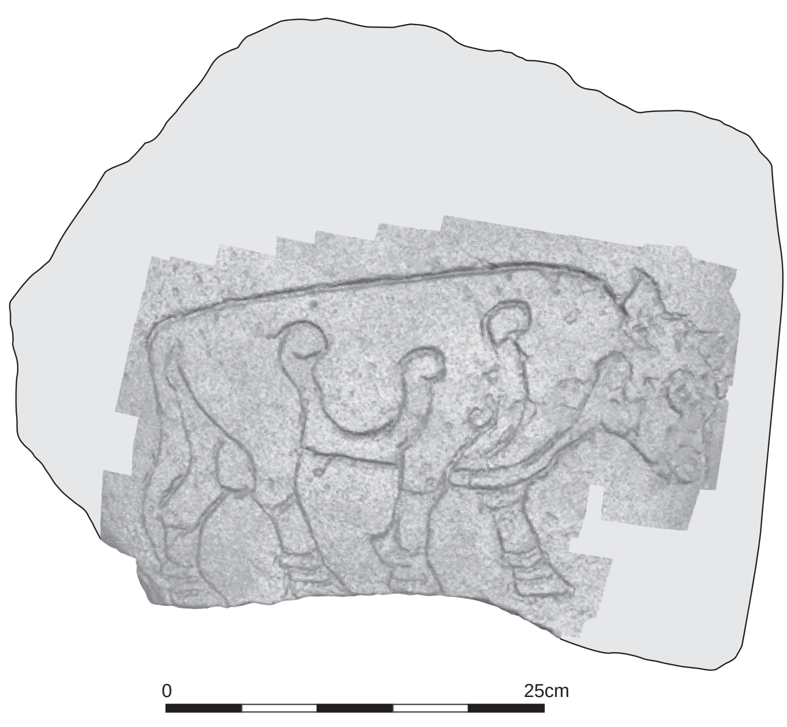

Illustration 8.4
Structured light scan of a bull symbol from the Pictish stronghold at Burghead, now held in Elgin Museum (courtesy Fragmented Heritage, University of Bradford)

(Fraser 2009), the Late Roman Iron Age is nonetheless likely to have seen competition between emerging elites.

The area around the Sculptor's Cave was central to these social changes. Indeed, the region centred on the Moray Firth has been identified with Fortriu, which was to become dominant in the early medieval Pictish kingdom (Woolf 2006). The coastal promontory (and later royal centre) at Burghead, *c* 6km west of the Sculptor's Cave (illus 1.8), was fortified between the fourth and sixth centuries AD (Harding 2004: 248; illus 8.4), making it a strong candidate for the major power centre of the early Pictish kingdom. It seems quite likely, therefore, that the area around the Sculptor's Cave saw factional conflicts during the third century AD and later, as competing groups jostled for power.

Is it possible then that the decapitations at the Sculptor's Cave represent politically motivated killings: the removal of a defeated lineage perhaps? In such a context, the perceived sanctity of the cave – and its association with the ancestors – may have been highly attractive to victors seeking to legitimise their rise to power.

Parallels in Scotland and beyond

Decapitation was not uncommon in Iron Age Europe. Indeed, the 'ancient Celts' have often been thought to have venerated the human head: both those of their ancestors and trophy heads taken from enemies (eg Lambrechts 1954; Ross 1967). Although the primary evidence for this idea was derived from the classical literature, severed human heads are depicted widely in Iron Age iconography and osteological evidence for decapitation can be found on innumerable archaeological sites across the Continent (see Armit 2012). One particularly well known deposit from the Gaulish sanctuary of Ribemont-sur-Ancre in Picardy, for example, yielded the decapitated remains of around 500 adult males, thought to have been executed war prisoners displayed as part of a grisly post-battle trophy (Brunaux 2006: 107).

While the idea of a Europe-wide 'Celtic cult of the head' can no longer be supported by the available evidence, it is nonetheless clear that Iron Age communities in many parts of Europe regarded the human head as cosmologically significant and manifested this belief in a range of different ways (Armit 2012). In relation to caves specifically, a group of seven human mandibles, with characteristic cut marks on the ascending rami (indicative of decapitation from behind with a heavy bladed weapon), were deposited under a hearth at the Trou de Han in Belgium (Mariën 1975: 257–9; Warmenbol 2013: 93–5); a site that, as we have seen (section 8.5.1), also yielded evidence for the deposition of Late Bronze Age human remains. These mandibles appear to represent the remains of curated heads dating from the second century BC to the first century AD, at which point they seem to have been deposited en masse (Armit 2012: 127).

In Iron Age Britain, decapitated human heads seem also to have been displayed at the entrances to hillforts, as at Stanwick in North Yorkshire (Haselgrove 2016) and Broxmouth in East Lothian (Armit 2017: 166), while the deposition of human remains – particularly crania and long bones – is a recurrent feature of settlement sites more generally (eg Armit and Ginn 2007; Armit 2012). A specific interest in heads in Iron Age cave contexts is reflected by the occurrence of perforated cranial fragments at a range of sites. Scottish examples include a cranial fragment, dating to cal AD 70–240, found close to a hearth at the inaccessible rock shelter of Fiskavaig on Skye (Birch 2010) and a modified cranium at MacArthur Cave, Oban (Shapland and Armit 2012).

Within the Roman province, the early centuries AD saw the appearance of decapitated individuals in what appear to be otherwise normative inhumation graves. More than 500 such burials have been documented from more than 200 Romano-British sites, representing males, females and a small proportion of sub-adults (Tucker 2013: 213–15). In most cases, the head (cranium, mandible and upper cervical vertebrae) appears to have been removed post-mortem, often from the front (eg Boylston et al 2000), and placed in the grave along with the body and any accompanying grave goods. More relevant to the Sculptor's Cave material, however, are 45 predominantly young adult males from Driffield Terrace, York, dating from the late second to early third centuries AD, all of whom had been decapitated from behind (Montgomery et al 2011). Their prominent burial location, on a main road leading into the Roman town, has led to the suggestion that they might represent high-status individuals, executed perhaps during one of the 'pogrom-like killings' documented under the Severan dynasty (ibid: 169). Indeed, beheading appears to have been employed in the Roman world more generally as a form of execution for those of high status (eg Hope 2000: 112). It is not inconceivable, given the demonstrable contacts between the communities of north-east Scotland and the Roman province at this time, that the decapitations at the Sculptor's Cave were influenced by Roman practice; as at Driffield Terrace, they may have represented the violent and ritualised removal of a problematic elite group.

Although not involving decapitation, it is also worth drawing attention to the young adult male found in Learnie Cave 2B, across the Moray Firth from Covesea, near Rosemarkie, on the south shore of the Black Isle. This individual, who displayed substantial peri-mortem cranial trauma, suggestive of deliberate overkill, appears to have been buried under boulders and a thin layer of sand in a recess of the cave associated with iron-working debris (Birch et al 2018). Although he met his death during the early medieval period, around cal AD 430–630, the violent treatment meted out (and the idiosyncrasies of his deposition) suggests a ritualised execution evocative of the earlier killings at the Sculptor's Cave.

8.5.3 Roman Iron Age funerary activity

Was there Roman Iron Age funerary activity in the cave?

Given Benton's interest in the cut-marked vertebrae from the Sculptor's Cave, it seems likely that any other human bones with obvious evidence for peri-mortem trauma would also have been retained or at least noted in the bone lists compiled by the osteologists at the time. Since widespread peri-mortem trauma is absent in the archival records, we might thus assume that the bulk of the assemblage did not display such evidence. We should note, however, that a Roman Iron Age tibia fragment (SF1100; recovered in 2006 from Benton's spoil heap) displays a possible peri-mortem spiral fracture (see section 6.8.3) and that subtle evidence for traumatic injury would most likely not have been recognised during cursory examination in the 1920s and 1930s. It is impossible, therefore, to determine the extent to which violence played a part in the deaths of other individuals deposited in the cave during this period.

This raises an important question concerning the relationship between the decapitated individuals and the remainder of the Roman Iron Age human bone assemblage. Assuming that the decapitations relate to a single event – based on the similarities in the nature of the injuries and the consistency of the AMS dates – there are two main possibilities:

1. That all of the Roman Iron Age human remains from the Sculptor's Cave derive from a single violent event, of which the decapitations are the most obvious indicators.
2. That the decapitation event is distinct from ongoing use of the cave for mortuary activities over an extended period of the Roman Iron Age.

Although the first scenario is not impossible, there are two principal reasons for rejecting it. First, the MNI for the Roman Iron Age human remains assemblages (see section 6.10.3) is 22; even allowing for numerous caveats, this is significantly in excess of the six individuals represented by the surviving cut-marked vertebrae. If we were to suggest that the Roman Iron Age remains derive entirely from a single violent episode, we would thus have to invoke a massacre on a truly grand scale. Second, the artefacts deposited in the cave during the Roman Iron Age cover an extended chronological period (from at least the second to the fourth centuries AD). Although the deposition of these small personal items may be unconnected with the deposition of human bodies in the cave, it seems more parsimonious to assume that the two go together. While we cannot definitively resolve the issue, therefore, it seems more likely that the decapitation event was distinct from a broader Roman Iron Age tradition of funerary activity in the cave.

Funerary activity at the Sculptor's Cave during the Roman Iron Age

In contrast to the Late Bronze Age, deposition of the dead at the Sculptor's Cave during the Roman Iron Age no longer favoured juveniles. Indeed, most of the individuals from this period appear to have been adults (based on extrapolation from the AMS dated elements; see section 6.5), though it is impossible, in the absence of the majority of the bone assemblage, to give any more detailed assessment of the age categories present or the balance between males and females. Again, in contrast to the Late Bronze Age, the proportions of various skeletal elements among the Roman Iron Age assemblage – including a high preponderance of the small bones of the hands and feet – suggest that bodies entered the cave intact (illus 8.1); that is, they had not been subject to any previous mortuary rite (eg excarnation off-site). Indeed, individuals may have been placed in the cave soon after death.

The apparent association of human remains with numerous items of personal jewellery and dress fasteners (including amber and glass beads, copper alloy projecting ring-headed pins, bracelets and belt fittings) suggests that the dead may have been laid out in their finest clothes; furthermore, some objects, including a silver projecting ring-headed pin, hint at the presence of high-status individuals. Other personal items, such as toilet instruments (including silver tweezers), also appear to have accompanied the dead. Whether these represent personal belongings of the deceased or objects used in post-mortem care, their close association with the bodies of the dead suggests that their reuse in the world of the living was inappropriate.

The specific characteristics of the cave environment appear to have promoted preservation of the bodies, with elements such as vertebrae, sterna and clavicles being proportionately better represented than bodies in conventional Roman-period inhumation cemeteries (see section 6.10.3). Exposed within the enclosed cave interior, the gated entrances offered the bodies protection from scavengers and from the damaging effects of the elements. The cool, dry, salty environment created would have helped arrest bacterial activity and desiccate the bodies, while smoke from the fires may have promoted mummification, particularly when the entrance passages were blocked. Indeed, exposure to smoke has been suggested as one of the primary methods by which the mummification of human remains was achieved in later prehistoric Britain (Booth et al 2015: 1165–6), and the naturally enclosed spaces provided by caves (particularly those with narrow entrances which could be easily sealed) would have made them ideal funerary 'smokehouses'.

While the conditions inside the cave would have led to the preservation of bodies, it is again unclear whether this was the explicit intention or simply an unintended consequence of depositing the dead in this specific subterranean environment. Whichever was the case, it appears that bodies ultimately disarticulated to the point where certain elements – notably crania and long bones (which are substantially under-represented in the documented assemblage; section 6.10.3) – could be retrieved and removed from the cave (illus 8.1). These are precisely the elements most frequently encountered as disarticulated bones on later prehistoric settlements (eg Brück 1995; Armit and Ginn 2007; Armit 2017), where they were presumably used in ritual activities prior to their ultimate deposition or disintegration. If this was the case, then body parts recovered from the cave may have been regarded as particularly spiritually charged.

One further possible factor in the preservation of the bodies is worth noting here. Among the most unusual finds from the Sculptor's Cave were two fragments of orpiment (literally 'gold paint'), a distinctive yellow mineral (Schafer 1955: 73; section 5.12); these derive from Sylvia Benton's excavations and are thus effectively unstratified. While this material may have been used as pigment, perhaps to colour the Pictish carvings, it is equally possible that it derives from the bodies themselves. Orpiment contains arsenic trioxide and was known in the ancient world for its toxicity, with some accounts suggesting, for example, that it was Nero's preferred method for eliminating political rivals (Parascandola 2012: 5). Although the nearest documented sources of orpiment are in Powys, Wales and Co. Galway, Ireland (Hudson Institute of Mineralogy nd), the substance was imported from Asia Minor for use as pigment during the medieval period (Schafer 1955: 75) and may thus have arrived at the Sculptor's Cave through trade links with the Roman world.

Despite its toxicity, orpiment has been ingested for various purposes in many different cultures. In traditional Indian medicine the substance was 'regarded as having apotropaic qualities', being prescribed to thwart 'the unwholesome influences of ghosts and demons' (Schafer 1955: 75). Small regular doses were consumed in parts of central Europe from the late medieval period into the early twentieth century 'to improve skin quality, promote sexual vigour, bestow energy and endurance, and facilitate breathing at high altitude' (Walton 2016). In early Taoist tradition, the ingestion of orpiment was believed to generate 'a notable increase in sexual energy and in aesthetic sensitivity, which might even lead to the point of hallucination' (Schipper 1994: 180). As a relatively rare and prized mineral, orpiment also features among grave goods in the Early Formative period (*c* 800–200 BC) cemetery of Chorrillos, Chile (Ogalde et al 2014). Remarkably, perhaps, it can still be purchased online through certain New Age websites as a drug for 'igniting your inner power' (Sage Goddess nd).

In the funerary context of the Sculptor's Cave, it is worth noting that ingesting orpiment before death appears to have a preservative effect on the body. As Schipper (1994: 180) notes in relation to Taoist tradition, 'the lifelike appearance of the corpse, with its supple skin and ruddy complexion, created an illusion of physical immortality'. While we cannot know the precise reasons why this unusual, exotic and highly toxic mineral was brought to the cave, it is certainly possible that it had been consumed by those subsequently interred there.

Votive deposition

Even at the height of the Empire, Moray lay well beyond the limits of direct Roman military control. Nonetheless, the occurrence of Roman material in the region suggests that elite groups may have received periodic bribes to help keep the peace (Hunter 2007b: 24). A prime example comes from the settlement of Birnie, some 14km distant from the Sculptor's Cave, where two Roman coin hoards were deposited towards the end of the second century AD (ibid: 30). Some of the objects that ended up as votive deposits within the Sculptor's Cave may likewise have entered the region in this way, as part of Roman 'bribe-wealth', or else as items obtained by individuals through trade or raiding in the Roman province.

What is particularly remarkable about the Sculptor's Cave, however, is the occurrence of so many objects dating to the late third and fourth centuries AD; indeed, the cave is the only site in north-east Scotland to contain appreciable quantities of Late Roman material (Hunter 2007b: 32–4). Most notable among these is a hoard of around 240 coins comprising mainly native copies of Roman originals, deposited sometime after AD 364 (see section 5.7.3). This is a remarkable find, many miles north of any comparable examples. In the absence of a monetary economy in the region at this time, the coins would have been perceived rather differently here than they were in the Roman province. Several were pierced, possibly having been worn as charms or marks of status. The occurrence of so many coins in the cave is highly redolent of votive deposition, associated perhaps with funerary rites or commemorating those who had been decapitated in the cave a few generations earlier (an event that may even have taken place within living memory).

Although all of the coins date to AD 320–64, not all need relate to the hoard itself; indeed, some of the genuine Roman issues (as opposed to indigenous copies) appear to have been deposited separately (see section 5.14.4), perhaps as part of the ongoing funerary and/or votive use of the cave. It is tempting, for example, to invoke the tradition (common in the ancient Mediterranean world) of placing a single coin in the mouth of the corpse in order to pay the ferryman Charon for the soul's journey across the River Styx to the underworld (Morris 1992: 105). Alternatively, as noted above, the pierced coins may represent items of personal adornment, and may even – together with copper alloy objects and glass and amber beads – have formed part of a putative necklace (see section 5.14.3). An apparent preference among these pierced examples towards coins bearing 'falling horseman' and 'wolf and twin' motifs may be symbolically significant.

The survival of this material, seemingly unburied and unhidden and including precious materials such as silver, would seem to suggest a strong taboo against its disturbance or removal. This is particularly striking since it appears that people repeatedly visited the cave: lighting fires, cooking food and retrieving certain human bones for use or deposition elsewhere. As such, the Sculptor's Cave appears to have retained its sacred status for more than a millennium.

Parallels from Britain and beyond

Mortuary rites in Scotland during the first few centuries AD are almost as fugitive as in the Late Bronze Age. Funerary activity in the immediate area around Covesea is limited to 'quantities of human bones' including 'entire skeletons' reported to have been found in and around the fabric of the ramparts of Burghead (Macdonald 1863: 358), though nothing more is known of these antiquarian discoveries. Compilation of the available data for Scotland as a whole suggests a diverse range of practices (Wallace nd), none of which are likely to account for a significant proportion of the population. While rites of inhumation burial came to dominate parts of southern Britain at this time, there is no consistent funerary tradition in north-east Scotland until the emergence of square barrow cemeteries, which appear to have their floruit in the fifth and sixth centuries AD (eg Alexander 2005; Mitchell and Noble 2017: 22). There are two such cemeteries in the vicinity of the Sculptor's Cave: at Wester Buthill, some 7km to the south-west (adjacent to one of the likely routes across the marsh to the west of the former Loch Spynie; illus 7.3), and at Pitgaveny, some 8km south-east of the Sculptor's Cave on the south side of the former loch (Mitchell and Noble 2017). Both, however, are likely to significantly post-date funerary activity at the Sculptor's Cave. As before, therefore, the majority of the dead in Roman Iron Age Scotland must have been disposed of in ways that have left little or no archaeological trace, with much of our evidence for mortuary practices deriving from stray, disarticulated bones on settlements and other non-funerary sites (Armit 2017).

We have already noted that the dry, salty environment of the Sculptor's Cave, together with the periodic lighting of fires, appears to have promoted the preservation, and perhaps mummification, of Roman Iron Age bodies. One possible parallel for this practice comes from Crosskirk in Caithness, where excavation of a small figure-of-eight building revealed the skeleton of an elderly man, buried in a seated position with his head and upper torso projecting above the floor of the building. To maintain this position, the body must have retained a degree of integrity, suggesting some form of mummification (Fairhurst

1984; Armit 2017). Recent AMS dating places this individual's death in the period cal AD 330–540 (Tucker and Armit 2009). Although rather later than the funerary activity at the Sculptor's Cave, it serves to demonstrate the possibility of mummification as a mortuary practice in Roman Iron Age Scotland.

Despite this general paucity of funerary evidence, there are some instances of human bones dating to the first few centuries AD from caves in various parts of Scotland. Aside from the perforated cranial fragment from Fiskavaig rock shelter (see section 8.5.2), a further, recently identified example comprises the remains of an adult female, dating to 108 cal BC–cal AD 55, found during antiquarian investigations at one of the Oban Caves, most likely Distillery Cave (Armit et al 2016), and apparently associated with a Roman Iron Age fibula (Alison Sheridan pers comm).

There are further potential parallels at three caves in East Lothian. At Archerfield, for example, two caves are recorded as yielding human remains associated with Roman Iron Age pottery and glass bangle fragments (Cree 1909), while juvenile human remains and a Roman Iron Age bronze pin were recovered from Rhodes Links Cave, North Berwick (Richardson 1907). It is by no means certain, of course, that these human remains date to the same period as the Roman objects found with them; the AMS dated Late Bronze Age infant cranium from Borness Cave, Kirkcudbrightshire (section 8.5.1), for example, was apparently recovered with Roman Iron Age objects (Corrie et al 1874; Clarke 1875; 1878). It is also worth noting that St Baldred's Cave, in East Lothian, has been discussed above in relation to possible Late Bronze Age activity (Sligo 1857), but the dating evidence is insufficiently precise to confine mortuary activity in the cave to this period.

Other Scottish caves have produced evidence for Roman Iron Age activity but without the presence of human remains (cf Robertson 1970; and updates in Hunter 2001). In the same broad region as the Sculptor's Cave, for example, Caird's Cave, on the north coast of the Moray Firth, has produced AMS dates suggestive of Pre-Roman and Roman Iron Age activity (Anderson-Whymark 2010). A series of caves in Fife – Wemyss Caves, Constantine's Cave and Kinkell Cave – have also produced a scatter of Roman material (eg Wace and Jehu 1915; Gibson and Stevens 2007).

Looking beyond Scotland, activity in this period is documented from caves across the British Isles, though only a minority have yielded human remains (Branigan and Dearne 1992: 6). Among the latter, it is worth noting the assemblage from Wookey Hole, Somerset, where at least 28 individuals dating to the fourth century AD were found (Hawkes et al 1978; Branigan and Dearne 1990). Even in the absence of human remains, however, the quantity, quality and variety of Roman Iron Age metalwork found in caves (often dominated by personal ornaments and toilet instruments) suggests votive deposition rather than the more functional interpretations advanced in previous studies (eg Branigan and Dearne 1992).

The wider Roman Iron Age landscape

As with the Late Bronze Age, settlement evidence for the area around the Sculptor's Cave in the Roman Iron Age is relatively poorly known. Although the radiocarbon dates currently available for Burghead do not suggest rampart construction before the fourth–sixth centuries AD (Harding 2004: 248), a Late Bronze Age spearhead found in the nineteenth century (Anon 1890; see section 8.5.1) and a radiocarbon date of AD 240–430 from beneath the rampart (Edwards and Ralston 1980) hint at earlier occupation. Recent excavations have also identified an important settlement site dating to the first few centuries AD at Clarkly Hill (Hunter 2012), around 1.5km east of Burghead and 5km to the west of the Sculptor's Cave (illus 1.8). A radiocarbon date of AD 80–340 for one of the roundhouses suggests that settlement here was contemporary with funerary activity at the cave. The extensive roundhouse settlement at Birnie, some 12km to the south of the Sculptor's Cave across the former Loch Spynie, was also occupied at this time (Hunter in prep). Both Birnie and Clarkly Hill have yielded Roman coin hoards, suggesting that their inhabitants had access to the sorts of material found at the Sculptor's Cave.

Across the Moray Firth, there is some limited evidence for activity broadly contemporary with the Sculptor's Cave from Caird's Cave, which has produced AMS dates indicating a human presence in the Pre-Roman and Roman Iron Age (Anderson-Whymark 2010), although the nature of this activity is presently unknown.

8.6 The question of continuity

8.6.1 An Iron Age lacuna?

The discussion so far has centred on the two most archaeologically visible periods at the Sculptor's Cave: the Late Bronze Age and the Roman Iron Age, for which we have evidence for the deposition of both human remains and various typologically diagnostic objects. During the intervening centuries, however, both human remains and obvious votive deposits appear to be absent. This apparent absence reflects a wider pattern across the British Isles of a reduction in the levels of human activity in caves at this time. The relative lack of evidence for Iron Age activity has been observed, for example, in the numerous caves of the Yorkshire Dales (Lord and Howard 2013: 246), and a similar situation has been noted by Dowd (2015: 160) for Irish caves. Of course, not all human activity in caves need have left a material trace. The Roman geographer Pomponius Mela, for example, writes in the middle of the first century AD that the druids 'in secret, and for a long time (twenty years), . . . teach many things to the noblest males among their people, and they do it in a cave, or in a hidden mountain defile' (Romer 1998: 107). Such ascetic activities will always be hard to document archaeologically but might in some cases explain the persistence of certain caves in local consciousness and memory.

8.6.2 The nature of the Iron Age activity

It is clear from the AMS dating sequence that activity at the Sculptor's Cave persisted across the centuries that separate the two key episodes of mortuary activity in the Late Bronze Age and the Roman Iron Age (see chapter 4). In particular, we see a continuity of visits involving the cooking and preparation of food and the periodic construction and modification of structures around the entrance area. Relatively deep deposits that built up within the entrance passages during this time, including layers of paving and cobbling, hint at more than informal use of the cave for shelter (see section 2.4). What, then, was the nature of activity within the cave over this long period, from around 800 BC to the early centuries AD?

Given the demonstrably high levels of organic preservation, it seems improbable that mortuary rites could have continued within the cave over this period without leaving any evidence of human remains. There are, nonetheless, hints that some forms of ritualised activity continued. The deposition of a dog in the West Passage, for example, appears to represent a formal and deliberate act (section 2.4.4). This is unsurprising, since the isolation of the cave and the difficulties of access make it unlikely that it was ever used for any mundane, day-to-day activities. Yet, positive evidence for ritualistic use is hard to trace.

In some ways, the absence of obvious Iron Age votive deposition is not unexpected. The material culture of the Early and Middle Iron Age in Scotland is notoriously impoverished, as demonstrated even at long-lived, continuously occupied sites like Broxmouth hillfort (Armit and McKenzie 2013). Those objects that do occur are often conservative types that are not generally amenable to fine-grained typological dating. The paucity of unambiguously Pre-Roman Iron Age material culture at the Sculptor's Cave, therefore, need not be particularly significant. Furthermore, votive offerings might have been made within the cave in the form, for example, of perishable foodstuffs, textiles, furs etc. At present, however, we can say little more than the fact that the cave remained sufficiently important in the lives of local communities that they made regular and repeated visits over many generations; visits which would undoubtedly have involved encounters (deliberate or not) with the Late Bronze Age dead.

8.6.3 The Iron Age underground

The absence of human remains from the Early and Middle Iron Age deposits at the Sculptor's Cave is particularly striking, however, since this is a period when we see funerary activity at a number of other Scottish caves. Human remains recovered from antiquarian excavations at MacArthur Cave, Oban, represent at least four adults dating to the Early and Middle Iron Age (Saville and Hallén 1994). Although the context of these bones is unknown, evidence of gnaw marks suggests that they were exposed rather than buried, either within the cave or in some other location (Tucker 2010). A large section of bone removed post-mortem from one cranium may represent a 'blank' for the production of a perforated cranial fragment, of which several examples are known from Scotland (Shapland and Armit 2012). Several other caves around Oban have also yielded human remains, including the tantalisingly named 'Cave of the Skulls' (RCAHMS 1975: 60), but in most cases the chronology is uncertain and could range from the Early Neolithic to the post-medieval period.

More recently, excavations at High Pasture Cave on Skye have produced evidence for mortuary activity dating to the Early and Middle Iron Age, including the deposition of disarticulated remains as well as the complete body of an adult woman and several neonates (Birch et al forthcoming). In general, however, the character of human activity at High Pasture Cave is markedly different from what we see at the Sculptor's Cave. As well as the chronological differences (all of the human remains at High Pasture Cave fall within the period during which mortuary activity at the Sculptor's Cave is absent), the character of the material assemblage is very different: while the Late Bronze Age and Roman Iron Age assemblages at the Sculptor's Cave are characterised by the deposition of small personal items, including valuable materials such as gold and silver, the assemblage from High Pasture Cave is essentially mundane and dominated by coarse stone tools. Nonetheless, the occasional deposition of exotic items, notably the charred remains of a wooden lyre (Birch and Wildgoose 2013: 82–4), demonstrates the special character of the site.

As well as natural caves, the Iron Age in Scotland sees the increasing use of artificial subterranean environments. Souterrains, for example, found in a variety of forms across much of Scotland, created underground spaces which were often entered directly from above-ground structures (eg Armit 1999). Most striking, however, are the artificial 'wells' found below some northern broch towers, such as Gurness in Orkney, where the difficulties and intricacies of construction seem to far outweigh any practical benefit (Armit 2003). At Mine Howe, also in Orkney, a similar structure – set within an apparently natural mound and accessed by a series of steep narrow steps – formed the focal point of an Iron Age enclosure (Card and Downes 2003). Clearly, access to the subterranean world remained important in Iron Age cosmology, whether through visits to natural caves or by the creation of artificial underground structures.

8.6.4 Underworld encounters

Whatever the precise nature of the rituals enacted at the Sculptor's Cave across the *longue durée* of its use, it seems to have been a place where religious practice was formalised and controlled. The timber structures of the Late Bronze Age suggest the restriction of access and the choreographing of movement into and around the cave. Access continued to be controlled in the Early and Middle Iron Age through the construction and maintenance of stone and turf structures (with associated gateways) in the entrance passages. The apparent continuation (or perhaps reinvention) of the cave's religious importance almost 1000 years later certainly hints at some form of conceptual continuity from the Late Bronze Age to the Roman Iron Age. Indeed, it may be that we should not see the human remains of those two periods as especially significant in themselves; perhaps the bodies, rather than being the focus of mortuary activity, simply comprised the more visible elements of a broader repertoire of votive offerings to the cave and its supernatural occupants over the course of a millennium and more.

8.7 Closure and commemoration

8.7.1 Sealing a spiritually dangerous place?

Anglo-Saxon and Scandinavian sources attest to the continued perception of caves as liminal places closely connected with the otherworld well into the early medieval period (eg Gummere 2001; Semple 2013: 72) and we have little reason to doubt that similar perceptions would have existed among the Picts of north-east Scotland. As we have seen, however, finds potentially associated with early medieval activity are limited to three bone pins and a glass bead (section 5.14.3); these may well be votive offerings (since they fit the general profile of objects deposited in earlier periods) but there is little other evidence for ongoing use of the cave at this time.

As might be supposed for the carving of Christian crosses onto the cave walls (section 3.5.5), the Pictish symbols around the entrance passages of the Sculptor's Cave may have been intended as a means of ritually sealing this conduit to the underworld, preventing the egress of malignant supernatural beings. A similar interpretation might indeed be forwarded for the early medieval knotwork-style serpents on the entrance walls at the King's Cave, Arran (Thomas 1961), a motif which occurs frequently at entrances and boundaries for the purposes of confusing evil spirits and 'to keep demons at bay' (Gell 1998: 84). As we shall see, however, it may be that the Pictish symbols at the Sculptor's Cave had a more specific meaning that related to the history of the cave itself.

8.7.2 Memorialising the dead

The traditional dating of Pictish symbols to between the sixth and eighth centuries AD suggested that the carvings that gave the Sculptor's Cave its name were several centuries removed from the period of Roman Iron Age mortuary activity. As we have seen in chapter 3, however, recent reassessment of the chronology of Pictish symbols, based primarily on evidence from Dunnicaer in Aberdeenshire (Noble et al 2018), indicates that they may have appeared as early as the fourth century AD (even if the classic corpus of motifs familiar from Class I stones was not formalised until rather later).

The latest datable 'event' relating to the Roman Iron Age use of the Sculptor's Cave is the deposition of the coin hoard sometime after AD 364. Given the new, extended chronology for Pictish symbols, it is possible that the carvings were created at around the same time or perhaps within a few generations, when memories of the cave's funerary and votive role would have been relatively fresh. Indeed, it may be that we should seek to understand the carvings as an act of closure; the final episode in the long sequence of mortuary activity at the cave.

If we accept the suggestion by Samson (1992) and others that pairs of symbols denote personal names, then certain of the symbol pairs at the Sculptor's Cave could be interpreted as commemorating specific individuals, eg the fish and crescent and V-rod, and the flower and triple oval (see section 3.5.2). If this is so, then these names are not otherwise represented in the Pictish corpus, perhaps supporting the suggestion that they relate to an earlier period (and are, for example, referencing archaic names). Other symbols, however, occur singly or in scattered groups, breaking the semantic conventions elucidated by Samson (1992: 40–1). This is not necessarily surprising, since Samson's interpretation deals essentially with symbol stones; we need not assume that Pictish symbols were used in the same way in other, perhaps earlier, contexts. Nonetheless, it is not impossible that at least some of the symbols carved around the entrance to the Sculptor's Cave represent named individuals.

In this respect, the earlier use of the cave cannot be overlooked. The human bones seen on the cave floor by Benton (1931: 176) would presumably have been far more obvious at the time when the symbols were carved. Indeed, given the preservative qualities of the cave, it is not inconceivable that recognisable mummy bundles and/or discrete piles of bones or body parts were still visible. The decapitations, and the names of those killed, would almost certainly have been remembered through stories, or directly through genealogy. If the Roman Iron Age decapitations do indeed represent a single event of political and/or religious significance, then the circumstances of this group's demise would

Illustration 8.5
Sueno's Stone, Forres, with inset showing detail of the decapitation scene (© Historic Environment Scotland, Tom and Sybil Gray Collection, SC 1409220)

presumably have been well known. Indeed, it may be that those who now occupied positions of power in the region wished to commemorate their fallen ancestors. In this sense, the Sculptor's Cave could have been transformed, through the deployment of the symbols, from a place of communal religious and funerary practice to a memorial for a particular group of individuals.

As a coda to this, it is interesting to speculate on a potential link between the Sculptor's Cave and a nearby Pictish monument at Forres: the iconic cross slab known as Sueno's Stone, erected during the ninth or tenth centuries AD (McCullagh 1995; illus 8.5). Indeed, the sandstone slab itself was most probably brought from the coast near Covesea, some 15km distant (Shepherd 1986: 122–3). On the reverse of the cross slab is a complex narrative scene depicting a battle and its aftermath (Henderson and Henderson 2004: 135). It is unclear who the two sides might be; it has been suggested that the stone commemorates a victory by the men of Moray over the Vikings (Shepherd 1986: 122–3) or by the Scots over the Picts (Sellar 1993: 108). Amid the battle scenes, however, one remarkable panel shows the decapitation of seven prisoners next to an unusually shaped object that has been variously described as a broch or a bell (see Sellar 1993 for discussion of the various hypotheses). The broch interpretation seems unlikely, since not only were these structures entirely absent from this region, but they had been out of use in their primary tower-like form for around a millennium by the time the stone was carved. The shape of the object is also rather unconvincing as a bell; however, it does bear an intriguing resemblance to the mouth of a cave set into a cliff face. Given the proximity of Covesea, it may be worth considering the possibility that this scene in fact alludes to the violent events at the Sculptor's Cave some centuries earlier: the same events that may have been commemorated by the carving of the symbols into the fabric of the cave itself.

8.8 Conclusion and prospect

The Sculptor's Cave has much to teach us about what it meant to live and die on the Moray Firth in the first millennia BC and AD, and the longevity of memory associated with special places in the physical and mental landscapes of the time. The dead of later prehistoric Britain have long seemed elusive, with most interpretations, such as the likely ubiquity of excarnation, being based more on the absence than the presence of evidence. The Sculptor's Cave has offered us a unique window into the diversity and complexity of funerary rites in the Late Bronze Age and Roman Iron Age, and has highlighted the role of caves as places for the dead. No other archaeological site in Britain has provided primary evidence on this scale for the protracted mortuary rituals of the Late Bronze Age, involving the deposition of richly adorned mummy bundles; indeed, the Sculptor's Cave contains the largest assemblage of hair rings in the British Isles, and other items of personal ornament which are usually found in hoards rather than in association with the dead. In this sense, the Sculptor's Cave bears comparison with other exceptionally well preserved cave sites across Europe, such as the Trou de Han in Belgium and Bezdanjača Cave in Croatia, suggesting the existence of widespread cosmological beliefs surrounding caves and the dead. The distinct but equally complex mortuary practices of the Roman Iron Age have also revealed entirely new insights into the treatment of the dead in this period, while the decapitations represent the product of a violent and seemingly politically motivated 'event' of a kind rarely witnessed in the archaeological record.

Although caves are often associated with the earliest periods of prehistory, they remained central to the beliefs and practices of later, more complex societies, not just across Europe but worldwide. The long sequence of human activity at the Sculptor's Cave has highlighted the role of caves as enduring places in the landscape, where the material remains of one generation moulded the thoughts and actions of the next. Caves were places of permanence, where social memory was formed and enacted: conduits between past and present, framing and shaping human activity through the centuries. The extraordinary locational, morphological and experiential qualities of the Sculptor's Cave made it an ideal locus for communal gathering over many generations, while the Pictish, and later Christian, symbols marked it out as a dangerous reminder of a pagan past whose forces needed to be contained. This long sequence of activity characterises not just interaction of individuals with the Sculptor's Cave, but echoes the central role of caves in prehistoric cosmologies across Europe and beyond.

This publication does not mark the end of work on the Covesea Caves. Recent excavations at a number of the caves, although conducted so far on a relatively small scale, have already begun to show that the Sculptor's Cave belonged to a complex coastal landscape utilised by communities from the Middle Neolithic onwards, and perhaps even earlier (Büster and Armit 2014; 2016). While funerary activity was underway at the Sculptor's Cave during the Late Bronze Age, bodies were also being deposited in Covesea Cave 2, some 500m to the west, and possibly elsewhere along the coast; indeed, the Early Bronze Age dates returned for some of these bones suggest that this stretch of coast was already revered as a place of the dead long before activity at the Sculptor's Cave began. When funerary activity resumed at the Sculptor's Cave during the Roman Iron Age, people were also apparently visiting a cave known as the Laird's Stable, to the east, where small-scale votive deposition has been identified. So far, none of these other caves has provided evidence for the continuity of use seen at the Sculptor's Cave, or for the wealth of archaeological deposits spanning the Late Bronze Age to the Roman Iron Age; but enough survives to demonstrate that this difficult and inaccessible coastline was a place to which people returned over many centuries, leaving their familiar world of farmscapes and fields to commune with the spirits of the underworld.

Appendix 1
Concordance of small finds cited in this volume (excluding coins) for which museum accession numbers differ
(HM.X1997: NMS; ELGNM: Elgin Museum)

SF no.	Accession/SF no.	SF no.	Accession/SF no.	SF no.	Accession/SF no.
372	X.1997.1161	767	HM 101	839	HM 149
372	X.1997.1162	768	HM 102	840	HM 150
733	HM 67	769	HM 103	841	HM 151
734	HM 68	770	HM 104	842	HM 152
735	HM 69	771	HM 105	843	HM 153
713	ELGNM 1931.2	772	HM 106	844	HM 154
714	ELGNM 1931.2	773	HM 107	845	HM 155
715	ELGNM 1931.6.2	774	HM 108	846	HM 156
716	ELGNM 1931.6.1	775	HM 109	847	HM 157
717	ELGNM 1931.7	776	HM 110	848	HM 158
718	Elgin (missing)	777	HM 111	849	HM 163
719	Elgin (missing)	778	HM 112	860	Büster and Armit CCP14 SF1
720	Elgin (missing)	782	HM 183	864	HM 209
721	Elgin (missing)	783	HM 222	865	HM 210
722	HM 56	784	HM 223	866	HM 211
723	HM 57	785	HM 224	867	HM 212
724	HM 58	786	HM 225	868	HM 213
725	HM 59	787	HM 226	869	HM 214
726	HM 60	788	HM 227	870	HM 215
727	HM 61	789	HM 228	871	HM 216
728	HM 62	790	HM 229	872	HM 217
729	HM 63	791	HM 230	878	HM 172
730	HM 64	792	Elgin	880	HM 169
731	HM 65	793	Shepherd SF110	881	HM 170
732	HM 66a-c	794	Shepherd SF111	912	HM 218
779	HM 113	799	HM 230	913	HM 219
780	HM 114	800	(NMS) 'bone 1'	914	HM 220
781	HM 115	801	(NMS) 'bone 2'	915	HM186
736	HM 70	802	(NMS) 'bone 3'	916	HM187
737	HM 71	804	ELGNM 1931.10	917	HM188
738	HM 72	805	ELGNM 1931.11	918	HM189
739	HM 73	806	ELGNM 1931.12	919	HM190
740	HM 74	807	HM 116	920	HM 204
741	HM 75	808	HM 117	921	HM 205
742	HM 76	809	HM 118	922	HM 206
743	HM 77	810	HM 119 and 123	923	HM 207
744	HM 78	811	HM 120	924	HM 208
745	HM 79	812	HM 121	925	ELGNM 1931.5.1
746	HM 80	813	HM 122	926	ELGNM 1931.5.2
747	HM 81	814	HM 124	927	ELGNM 1931.5.3
748	HM 82	815	HM 125	930	HM 173
749	HM 83	816	HM 126	931	HM 174
750	HM 84	817	HM 127	932	HM 175
751	HM 85	818	HM 128	933	HM 176
752	HM 86	820	HM 130	934	HM 177
753	HM 87	821	HM 131	935	ELGNM 1931.8 (1 of 3)
754	HM 88	822	HM 132	936	ELGNM 1931.8 (2 of 3)
755	HM 89	823	HM 133	937	ELGNM 1931.8 (3 of 3)
756	HM 90	824	HM 134	945	HM 231
757	HM 91	825	HM 135	946	HM 232
758	HM 92	826	HM 136	947	HM 233
759	HM 93	827	HM 137	948	HM 171
760	HM 94	829	HM 139	949	HM 178
761	HM 95	833	HM 143	950	HM 179
762	HM 96	834	HM 144	951	HM 180
763	HM 97	835	HM 145	952	HM 181
764	HM 98	836	HM 146	953	HM 182
765	HM 99	837	HM 147	954	HM 221
766	HM 100	838	HM 148	955	HM 184

Appendix 2
Concordance of pottery sherds by vessel with museum accession numbers (all NMS) listed where they differ (*denotes illustrated sherds)

Vessel	SF no.	Accession no.
1/2	40, 41, 43, 45, 46, 48, 49, 50, 51, 52, 53, 147, 148, 149, 150, 155, 156, 157a*, 157b*, 158, 159, 160, 161, 162, 163, 165*, 166, 167, 168, 169, 170, 171, 172, 173, 175*, 176, 177, 179, 181, 184, 185a, 185b, 185c, 185d, 186, 187a, 187b, 187c, 188, 190, 197, 201a, 201b, 201c, 202a, 202b, 301, 302a, 302b, 303*, 306, 307, 308, 343, 366, 394a, 394b, 396a, 396b, 396c, 397a, 397b, 397c, 398, 399, 400, 503, 504, 513, 514, 554, 555, 557, 558, 591, 607, 610, 613, 620, 624, 631*, 666, 669, 707	503=NN5, 504=NN6, 513=NN15, 514=NN16, 554=NN56, 555=NN57, 557=NN59, 558=NN60, 591=NN93, 607=NN109, 610=NN112, 613=NN115, 620=NN122, 624=NN126, 631=HM191, 666=HM401, 669=HM404, 707=Choc Box E
3	54, 86*, 88, 89, 95, 96, 98, 123, 130, 131, 136, 137, 194, 195a, 198, 200, 249, 310, 311*, 314*, 317, 322, 323, 324, 326*, 327, 328, 331*, 332, 333, 334, 335, 337, 338, 339*, 340*, 341*, 344, 345*, 346*, 347, 348, 349, 350, 351, 353, 355, 357, 358, 363, 365, 511, 581, 623, 628, 629, 692, 695, 697, 705, 708, 709	511=NN13, 623=NN125, 628=ELGIN 1930.1 C, 629=ELGIN 1930.1 D, 692=HM427, 695=HM430, 697=X.HM423–3/A, 705=Choc Box C, 708=Choc Box F, 709=Choc Box G
4	191, 361a, 361b, 362, 367, 369, 375, 626, 627, 639, 640, 643*, 644, 661, 672, 673, 674, 687, 640, 694, 698, 702, 703	626=ELGIN 1930.1 A, 627=ELGIN 1930.1 B, 639=HM198A, 640=HM198B, 643=HM201A and B, 644=HM202, 661=HM396, 672=HM407, 673=HM408, 674=HM409, 687=HM422, 694=HM429, 698=X.HM432–3/B, 702=X.HM432–3/F
5	645*	HM203
6	146, 251, 254, 401, 632*, 633*, 664, 667, 699, 704	632=HM192b, 664=HM399, 667=HM402, 699=X.HM432-3/C, 704= Choc Box B
7	153*, 670	670=HM405
8	28*, 109, 112, 113, 115, 117, 120, 193*, 195b, 199, 220, 222, 226, 250, 252, 253, 356a, 368b, 390, 636, 637, 662, 663, 668, 671, 685, 700, 706	356a=356, 636=HM195a, 637=HM195b, 633=HM398, 668=HM403, 671=HM406, 685=HM420, 700=X.HM432–3/D, 706=Choc Box D
9	377, 380*	–
10	72, 237*, 238*, 659	659=HM394
11	2, 56, 83, 85, 92, 93,94, 99, 124, 126, 192, 236, 325, 329, 330, 334b, 336, 360, 361a, 373*, 378, 389, 392, 501, 505, 507, 509, 556, 590, 625, 665, 678, 679, 683, 689, 691, 696	501=NN7, 507=NN9, 509=NN11, 556=NN58, 590=NN92, 625=NN127, 665=HM400, 678=HM413, 679=HM414, 683=HM418, 689=HM424, 691=HM426, 696=HM431
12	356b*	356
13	359*	–
14	21, 57, 71, 76, 502, 506, 510*, 621, 635, 660*, 710	502=NN3, 506=NN8, 510=NN12, 621=NN123, 635=HM194, 660=HM395, 710=Choc Box H
15	634*	HM193
16	66, 103, 104, 105, 106*, 107*, 204	–
17	638*, 647, 648*, 650*, 656, 658, 690	638=HM197, 647=HM393, 648=HM384, 650=HM385, 656=HM391, 658=HM393
18	642*, 651*, 675*, 680, 682, 688*, 693, 711	642=HM200, 651=HM386, 675=HM410, 680=HM415, 682=HM417, 688=HM423, 693=HM428, 711=FB.YT.399
19	641*, 646, 649, 652, 654, 655, 657, 681, 684	641=HM199, 646=HM382, 649=HM348b, 652=HM387, 654=HM389, 655=HM390, 657=HM392, 681=HM416, 684=HM419
20	653, 676	653=HM388, 676=HM411

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