



HAL
open science

Funerary practices within Mortuary Complex F, New insights from recent excavations on Marawah Island

Noura Al Hameli, Richard Thorburn Cuttler, Mark Jonathan Beech, Peter Magee, Kevin Lidour, Baptiste Pradier, Rémy Crassard, Howell Magnus Roberts And Áurea Izquierdo Zamora

► To cite this version:

Noura Al Hameli, Richard Thorburn Cuttler, Mark Jonathan Beech, Peter Magee, Kevin Lidour, et al.. Funerary practices within Mortuary Complex F, New insights from recent excavations on Marawah Island. *Advances in UAE Archaeology Proceedings of Abu Dhabi's Archaeology Conference 2022*, Dec 2022, Abu Dhabi, United Arab Emirates. pp.73-102. hal-04372826

HAL Id: hal-04372826

<https://cnrs.hal.science/hal-04372826>

Submitted on 9 Jan 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

Advances in UAE Archaeology

Proceedings of Abu Dhabi's
Archaeology Conference 2022





Advances in UAE Archaeology details the results of new excavations conducted across the United Arab Emirates over the last few years. These excavations have revealed a wealth of new data on all periods of UAE archaeology from the Palaeolithic to the recent past. Some of these discoveries have filled in important gaps in our knowledge, while others have fundamentally revised what we thought we knew already. For example, the Marawah Island excavations have added a new facet to our understanding of the Neolithic period by revealing intriguing and hitherto unknown funerary rituals.

Excavations in Al Ain in the emirate of Abu Dhabi continue to reveal extraordinary evidence of *falaj* irrigation, stretching back 3000 years. The ubiquity of this system across this oasis city further validates its status as a UNESCO World Heritage Site. Of particular importance is the discovery of extensive remains from the Late Pre-Islamic period, a significant time in history that has been best revealed in the excavations at Mleiha in the emirate of Sharjah.

The research presented here was conducted by specialists from across the world working alongside an ever-growing cadre of Emirati archaeologists who will take the lead in the coming years in revealing more of this country's extraordinary archaeology and history.



متحف زايد الوطني
ZAYED NATIONAL
المتحف الوطني
MUSEUM

دائرة الثقافة والسياحة
DEPARTMENT OF CULTURE
AND TOURISM



Advances in UAE Archaeology

Proceedings of Abu Dhabi's
Archaeology Conference 2022



متحف زايد الوطني
ZAYED NATIONAL
MUSEUM

دائرة الثقافة والسياحة
DEPARTMENT OF CULTURE
AND TOURISM





ARCHAEOPRESS PUBLISHING LTD
Summertown Pavilion
18-24 Middle Way
Summertown
Oxford OX2 7LG
www.archaeopress.com

ISBN 978-1-80327-673-1 (hardback)
ISBN 978-1-80327-716-5 (paperback)
ISBN 978-1-80327-674-8 (e-Pdf)

© Department of Culture and Tourism - Abu Dhabi and Archaeopress 2023

متحف
الوطنية
موزه
الوطنية
ZAYED
MUSEUM
NATIONAL

دائرة الثقافة والسياحة
DEPARTMENT OF CULTURE
AND TOURISM



Cover: Marawah Island. Photos by Noura Al Hameli

Design and layout: Robin Yule and Khajag Apelian

Editorial: Pascale El Fadi, Maureen Gannon, Kinan Al Shohof and Tareq Al Ghoul



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

This book is available direct from Archaeopress or from our website www.archaeopress.com

Contents

- 7 **Authors**
- 11 **Foreword**
HE Mohamed Khalifa Al Mubarak
- 13 **Stones in the landscape: Recent discoveries of Palaeolithic sites in the Eastern Region of Abu Dhabi emirate**
Marc Händel, Norbert Buchinger, Ali Abdul Rahman Al Meqbali and Peter Magee
- 41 **Filling in the gaps: New evidence for Middle and Upper Palaeolithic occupations in the central region of Sharjah**
Knut Bretzke and Sabah Jasim
- 51 **Understanding the late-stage Flandrian Transgression and palaeo-geographic evolution of the Abu Dhabi islands using remote sensing and marine geophysics**
Richard Thorburn Howard Cuttler, Noura Al Hameli and Peter Magee
- 73 **Funerary practices within Mortuary Complex F: New insights from recent excavations on Marawah Island**
Noura Al Hameli, Richard Thorburn Cuttler, Mark Jonathan Beech, Peter Magee, Kevin Lidour, Baptiste Pradier, Rémy Crassard, Howell Magnus Roberts and Áurea Izquierdo Zamora
- 103 **Preliminary comparative lithic analyses from the Neolithic sites of Marawah and Ghagha islands (emirate of Abu Dhabi, UAE)**
Rémy Crassard, Noura Hamad Al Hameli, Mark Jonathan Beech and Richard Thorburn Howard Cuttler
- 115 **Recent archaeological investigations at Umm an-Nar Island (Sas Al Nakhl)**
Ali Abdul Rahman Al Meqbali and Daniel Eddisford with Michel de Vreeze, Diaeddin Tawalbeh, Hamad Fadel, Abdulla Al Yammahi, Hager Hasan Almenhali and Sam Botan
- 147 **Kalba: Main results of the renewed fieldwork during the campaigns of 2019-2022**
Christoph Schwall and Michael Brandl
- 157 **Insights on the Late Bronze Age economy in south-eastern Arabia: Self-sufficiency and exchanges in Masafi-5**
Maria Paola Pellegrino, Julien Charbonnier, Anne Benoist, Delphine Decruyenaere, Kevin Lidour, Michele Degli Esposti and Aurélien Hamel
- 183 **Another side to the story: Preliminary results from the renewed excavations on the eastern flank of Tell Abraç (2021-2022)**
Michele Degli Esposti, Federico Borgi, Maria Paola Pellegrino, Rania Hussein Kannouma with Camille Abric and Francesca Barchiesi

- 209 'We should build with the stones we have': An assessment of the Al Ain Oasis during the Iron Age based on the soft-stone vessels from the Oman Border Fence
Eric Olijdam
- 239 Iron Age copper production and the 'ritual economy' of Saruq al-Hadid (Dubai, UAE)
Lloyd Weeks, Tatiana Valente, Kristina Franke, Fernando Contreras, Mansour Boraik Radwan and Hassan Zein
- 271 Cultures, technologies and environment on the Oman Peninsula: Recent discoveries and some hypotheses about the *falaj* system in Al Madam, Sharjah, UAE
Carlos Fernández and Carmen del Cerro
- 293 Secrets of the shaabiyat: Recent developments in the archaeology of the (urban) oasis landscape of Al Ain
Peter Sheehan, Mohammed Khalifa, Malak Al Ajou and Nour Nasser Al Marzooqi
- 307 The discovery of a Late Antique and Early Islamic monastery on Siniya Island, Umm Al Quwain
Timothy Power, Michele Degli Esposti, Robert Hoyland and Rania Hussein Kannouma
- 331 The Early Islamic period in Al Ain in light of recent archaeological discoveries
Diaeddin Tawalbeh
- 353 Conserving and protecting the Early Islamic Site at Ūd al-Tawba in Al Ain
Ola Shaker, Felipe Gutierrez, Diaeddin Tawalbeh and Amel Chabbi
- 377 New evidence for the Early Islamic landscape of Al Ain: Fieldwalking and surface ceramics from Slemi, Jimi Region
Nour Nasser Al Marzooqi, Peter Sheehan, Timothy Power, Malak Al Ajou with Afnan Zayed Al Zeyoudi, Asma Humaid Al Badi, Aysha Awad Al Neyadi, Hessa Said Al Shamsi, Khuloud Juma Al Nuaimi, Sarah Salem Al Yammahi, Suhaila Salem Al Mansoori, Zainab Sulayman Nehis and Thamer Al Sayah
- 393 The UNESCO World Heritage Site of Al Ain: Management approaches
Abdulrahman Al Nuaimi
- 429 Developing a Historic Environment Record system for the management of heritage resources in the emirate of Abu Dhabi
Tariq Yousif Alhammadi, Richard Thorburn Howard Cuttler, Mark Jonathan Beech and Ahmed Abdalla El Faki
- 447 Historic mosque architecture in Abu Dhabi
Hamdan Rashed Al Rashedi

Authors

Malak Al Ajou Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. MAjou@dctabudhabi.ae

Mark Jonathan Beech Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. mark.beech@dctabudhabi.ae

Anne Benoist French National Centre for Scientific Research (CNRS), Archéorient, Maison de l'Orient et de la Méditerranée, 7 rue Raulin, 69365 Lyon Cedex 9, France. anne.benoist@mom.fr

Mansour Boraik Radwan Dubai Municipality – Architectural Heritage and Antiquities Department, Restoration House, Al-Shindagha, Dubai, United Arab Emirates. mbkarim@dm.gov.ae

Federico Borgi Italian Archaeological Mission in Umm Al Quwain, Via Orfeo 16, 40124 Bologna, Italy. federico.borgi@gmail.com

Michael Brandl Department of Prehistory and Western Asian/Northeast African Archaeology, Austrian Archaeological Institute (OeAI), Austrian Academy of Sciences (AAS), Georg-Coch-Platz 2, A-1010 Vienna, Austria. michael.brandl@oeaw.ac.at

Knut Bretzke German Mission to Sharjah, University of Tübingen, Dept. Early Prehistory and Quaternary Ecology, Burgsteige 11, 72070 Tübingen, Germany. University of Jena, Dept. Pre- and Protohistoric Archaeology, Löbdergraben 24a, 07743 Jena, Germany. knut.bretzke@uni-tuebingen.de

Norbert Buchinger Austrian Archaeological Institute, Austrian Academy of Sciences, Georg Coch-Platz 2, 1010 Vienna, Austria. norbert.buchinger@oeaw.ac.at

Amel Chabbi Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. amel.chabbi@dctabudhabi.ae

Julien Charbonnier Archaïos, 20 rue des Gravilliers, 75003 Paris, France. julcharbonnier@gmail.com

Fernando Contreras Sanisera Archaeology Institute, P.O. Box 68, 07740, Mercadal (Menorca), Balearic Islands, Spain. info@archaeology.institute

Rémy Crassard CNRS, Archéorient UMR 5133, 7 rue Raulin, 69007 Lyon, France. remy.crassard@cnrs.fr

Richard Thorburn Howard Cuttler Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. rcuttler@dctabudhabi.ae

Delphine Decruyenaere CNRS et MNHN, Archéozoologie, Archéobotanique: Sociétés, Pratiques et Environnements (AASPE/ UMR 7209), 55 Rue Buffon, Paris, France. decruyenaere.d@gmail.com

Michele Degli Esposti Italian Archaeological Mission in Umm Al Quwain and Institute for Mediterranean and Oriental Cultures – Polish Academy of Sciences, Poland. mdegliesposti@iksio.pan.pl

Carmen Del Cerro Linares Autonomous University of Madrid, Office 3.06-II, Faculty of Fine Arts, Autonomous University of Madrid. carmen.delcerro@uam.es

Daniel Eddisford Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. DEddisford@dctabudhabi.ae
Durham University, Dept of Archaeology, Durham University, South Road, Durham, DH1 3LE, United Kingdom. d.m.eddisford@durham.ac.uk

Ahmed Abdalla El Faki Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. ahmed.elfaki@dctabudhabi.ae

Carlos Fernández Rodríguez Autonomous University of Madrid, Office 3.09-VII, Faculty of Fine Arts, Autonomous University of Madrid, Spain. *carlos.fernandez01@uam.es*

Kristina A. Franke Institute of Archaeological Studies, Ruhr-Universität Bochum, Germany. *kristina.franke@ruhr-uni-bochum.de*

Felipe Gutierrez Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *fgutierrez@dctabudhabi.ae*

Aurélien Hamel Service du Patrimoine et de l'Archéologie, Département de la Vendée, France. *aurelien.hamel@loiret.fr*

Noura Hamad Al Hameli Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *nhalhameli@dctabudhabi.ae*

Tariq Yousif Alhammadi Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *thammadi@dctabudhabi.ae*

Marc Händel Austrian Archaeological Institute, Austrian Academy of Sciences, Georg Coch-Platz 2, 1010 Vienna, Austria. *marc.haendel@oeaw.ac.at*

Robert Hoyland Institute for the Study of the Ancient World, New York University, 15 East 84th St., New York, NY 10028. *rgh2@nyu.edu*

Rania Hussein Kannouma Tourism and Archaeology Department, Government of Umm Al Quwain, P.O. Box 1500, Umm Al Quwain, United Arab Emirates. *rania.kannouma@tad.uaqgov.ae*

Áurea Izquierdo Zamora University of Alcalá de Henares, Calle de Gonzalo de Berceo, 25 3ª, 28017 Madrid, Spain. *aureaizquierdo@gmail.com*

Sabah A. Jasim Sharjah Archaeology Authority, Sheikh Rashid Bin Saqr Al Qasimi St – S115, Sharjah, United Arab Emirates. *sabah.jasim@gmail.com*

Mohammed Khalifa Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *Mohamed.khalifa@dctabudhabi.ae*

Kevin Lidour Instituto Internacional de Investigaciones Prehistóricas (IIIPC) de Cantabria, Universidad de Cantabria. Avenida de los Castros, 52, 39005 Santander, Spain. *Lidouro1@gmail.com*

Peter Magee Director, Zayed National Museum, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *PMagee@zayednationalmuseum.ae*

Nour Nasser Al Marzooqi Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *NMarzooqi@dctabudhabi.ae*

Ali Abdul Rahman Al Meqbali Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *ali.almeqbali@dctabudhabi.ae*

Abdulrahman Al Nuaimi Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates. *abdulrahman.alnuaimi@dctabudhabi.ae*

Eric Olijdam Leiden University, Adriaan Butijnweg 1, 4411 BT Rilland, The Netherlands. *olijdam@zeelandnet.nl*

Maria Paola Pellegrino Archaïos, 20 rue des Gravilliers, 75003 Paris, France. *maria.pellegrino9@studio.unibo.it*

Timothy Power College of Humanities and Social Science, United Arab Emirates University, Al Ain, Abu Dhabi, United Arab Emirates. *timothy.power@uaeu.ac.ae*

Baptiste Pradier UMR 8068, TEMPS Maison de l'Archéologie et de l'Ethnologie, 21 allée de l'Université, 92023, Nanterre cedex, France. *baptiste.pradier@gmail.com*

Hamdan Rashed Al Rashedi Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates.
hamdan.alrashedi@dctabudhabi.ae

Howell Magnus Roberts Universitetsmuseet i Bergen, Postboks 7800, NO-5020 Bergen, Norway.
How-ell.Roberts@gmail.com

Christoph Schwall Leibniz-Zentrum für Archäologie (LEIZA), Ludwig-Lindenschmit-Forum 1, D-55116 Mainz, Germany.
christoph.schwall@leiza.de

Ola Shaker Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates.
OShaker@dctabudhabi.ae

Peter Sheehan Historic Environment Department, Department of Culture and Tourism – Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates.
peter.sheehan@dctabudhabi.ae

Diaeddin Tawalbeh Historic Environment Department, Department of Culture and Tourism - Abu Dhabi, P.O. Box 94000, Abu Dhabi, United Arab Emirates.
diaeddin.altawallbeh@dctabudhabi.ae

Tatiana Valente Department of Heritage Studies, Faculty of Arts and Humanities of Porto University, Porto, Portugal. *tatival@msn.com*

Lloyd Weeks Department of Archaeology, Classics and History, School of Humanities, Arts and Social Sciences, University of New England, Armidale NSW 2351, Australia. *lweeks2@une.edu.au*

Hassan Zein Dubai Municipality – Architectural Heritage and Antiquities Department, Restoration House, Al-Shindagha, Dubai, United Arab Emirates.
hmzein@dm.gov.ae

Funerary practices within Mortuary Complex F

New insights from recent excavations on Marawah Island

Noura Al Hameli, Richard Thorburn Cuttler, Mark Jonathan Beech,
Peter Magee, Kevin Lidour, Baptiste Pradier, Rémy Crassard,
Howell Magnus Roberts and Áurea Izquierdo Zamora

Abstract: The most recent seasons of excavation on MR11 – Area F have led to the discovery of several interments inside the cells of the main structure. This season uncovered the UAE's oldest example of a primary Neolithic interment within a central cell of the building. Several other individuals have been buried in the neighbouring cell of the structure, with a minimum count of at least five individuals in one single cell. Radiocarbon dates have placed the associated deposits of two of these burials at around 5700 cal BCE, which also provides more earlier dates for the MR11 site. This paper will focus on the possible mortuary rituals observed from Area F along with some key finds from the excavations and place these burials within the broader context of the Neolithic burials in the region.

Keywords: Neolithic, burial practice, plaster vessels, lithics, architecture, Abu Dhabi, Marawah, United Arab Emirates

Introduction

The site of MR11 is located on Marawah Island in the Al Dhafra Region of Abu Dhabi. The island is made up of rocky cores of Pleistocene limestone linked by areas of Holocene carbonates (Evans *et al.* 2002). Initial surveys of the island found 13 sites, among which MR11 was recorded as a series of large mounds thought to date to the Neolithic period (King 1998). While Areas A to C have been thoroughly excavated and well published (Beech *et al.* 2005; 2019; 2022), the excavations on Area F were only completed in December 2022. Area F has revealed several inhumations in its main structure complex, and evidence for an established mortuary tradition dating back to at least 5700 BCE on MR11. This contribution reports on the latest findings from the excavations, as well as providing interpretations from the preliminary study of the skeletal remains, artefacts, architecture and observed mortuary practices.

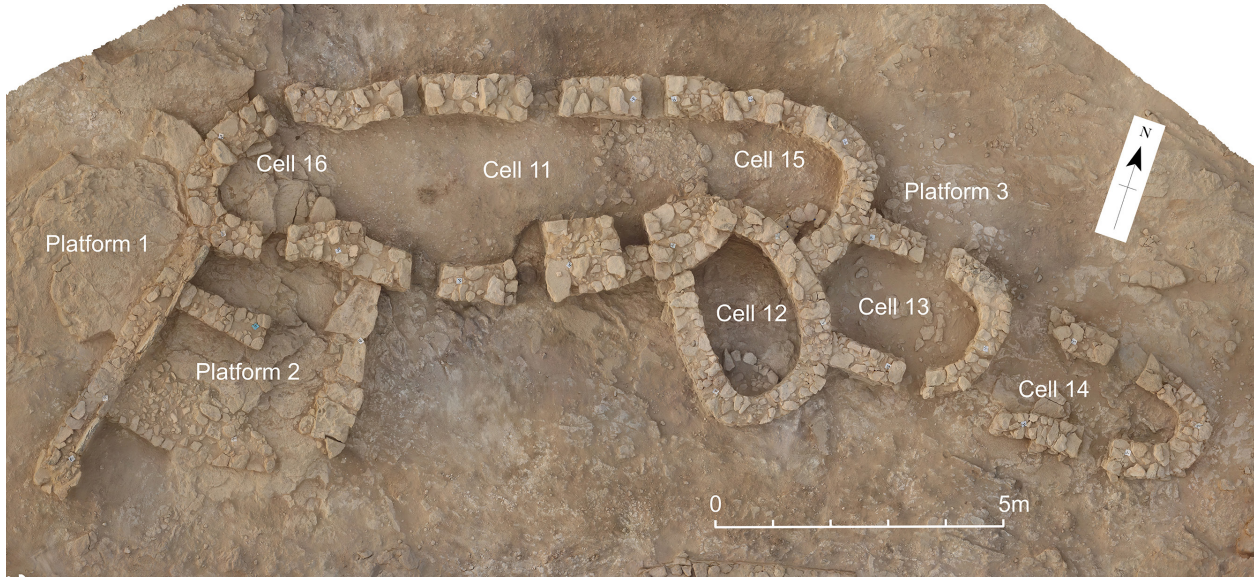
Overview

The main structure in Area F is the best surviving set of stone-built architecture at MR11. The building is constructed using several courses of medium-large limestone blocks and has traces of several postholes and physical alterations on the surface of the bedrock. The structure is made up of four cells in the latest identifiable phase of construction. The cells are oval and clustered, with most of the access points being external. Two internal openings were made in Cell 11: one leads into Cell 12 to the south-western extent of Cell 11 and one into Cell 13, towards the western extent of the Cell. A further external passage is made externally in the north-western extent of circular wall [1041] of Cell 12.

All the walls within Area F were constructed using limestone with occasional fragments of beach rock. These slabs appear to have sheared between sedimentary faces to form larger, irregular slabs that could have been easily collected from areas immediate to the site. Most of the walls are constructed with at least two lines of coursing, one on the inner and one on the outer face, that are then bonded with larger slabs lain across the wall. The width of the walls varies between 0.54 and 0.65 m and most survive several courses, to a height of 0.50 m. Each cell usually has multiple doorways, which are generally located within the northern or southern walls, and rarely more than 0.50 m in width.

The level of survival of archaeological deposits in general is better towards the centre of the mound, where the walls survive up to 1.10 m in height. Here the density of deposits and overburden has preserved not only the height of the walls but also both of the lintels' passages in situ, which has added further to our understanding of the construction techniques associated with this complex. While the construction methodology is generally similar between walls of different phases, there are marked differences in the quality of construction. This not only differs between various cells, but also within different phases and realignments of the same walls, emphasising the extent of change and rebuild over an extended period.

Three open-air platforms were installed around the structure. Platform 1, a raised bedrock surface with a stepped profile encompassing the easternmost extent of Cell 16, was the first to be excavated. Platform 2 is separated from Platform 1 by a short wall (maximum of two courses) that has five vertical orthostats pressed against the western-facing side of it. Platform 2 also has a very prominent paving around the slope of the bedrock to level the surface. Small pebbles are also used to level the undulations of the bedrock on these platforms. Lastly, Platform 3 is just north of Cell 13 and is visibly the smallest in size. Platform 3 seems to be the most worn down or least renovated. It was levelled crudely with small limestone slabs but seems to have had the stones robbed out and repurposed and had a minimum of two cells built on the southern and eastern extent of it.



Phasing the structure

A total of six phases of activity have been identified within Area F. These phases are largely based on changes to the main structures and the associated deposits. The phasing also accounts for the addition of new structures such as a platform or cell. It should be noted that this phasing is preliminary, as it is based only on the stratigraphic relationships and may be subject to revision once the radiocarbon samples and the finds are subject to analysis. In the absence of radiocarbon dates, the chronological relationship of Area F to the structures in Areas A to C is unclear. The main six periods of activity within Area F have been preliminarily phased as follows:

Phase 1: Layers predating later construction and early buildings. This phase groups together postholes under the walls and other early architectural fragments where associated structures have been removed or repurposed by later phases of activity. This phase also includes the construction of a small platform associated with the raised bedrock at the western end of Area F.

Phase 2: This is the earliest phase where the walls of extant structures can be defined as cells. This phase sees the earliest phases of construction and occupation within Cell 11 and its later extension westwards towards the platform, which continued to be extant.

Phase 3: Occupation continues in Cell 11, and further cells are added to the east (Cells 12 and 15) and to the west (Cell 16). This phase also sees the addition of a larger platform to the south of Cell 16.

Phase 4: The apsidal eastern end of Cell 11 is removed, creating one larger room with Cell 15. Cells 13 and 14 are added to the east of the main structures. This represents the last phases of building and occupation within Area F.

Figure 1: Plan of Area F at MR11.

Phase 5: This phase is associated with the skeletal remains interred in Cells 12 and 13. The main activity in these cells are funerary practices where internal structures are built to reinforce the buried individuals, and the existing inhumations are reorganised around the cell with the introduction of newer ones.

Phase 6: General collapse and abandonment of the complex. The final phase, one last skeleton is secured under a collapsed entrance (Cell 14).

Excavation of the Neolithic burials

Cell 13 – Burial cluster 1077/1078

Excavation of this layer revealed a cluster of bone (1077) and a dense concentration of artefacts including, *inter alia*, many plaster vessel fragments and turtle bone carapace fragments. The artefacts and human remains might represent a single burial event. The human remains were not articulated, and preservation was variable, ranging from well-preserved bone to very poorly preserved fragmentary elements.

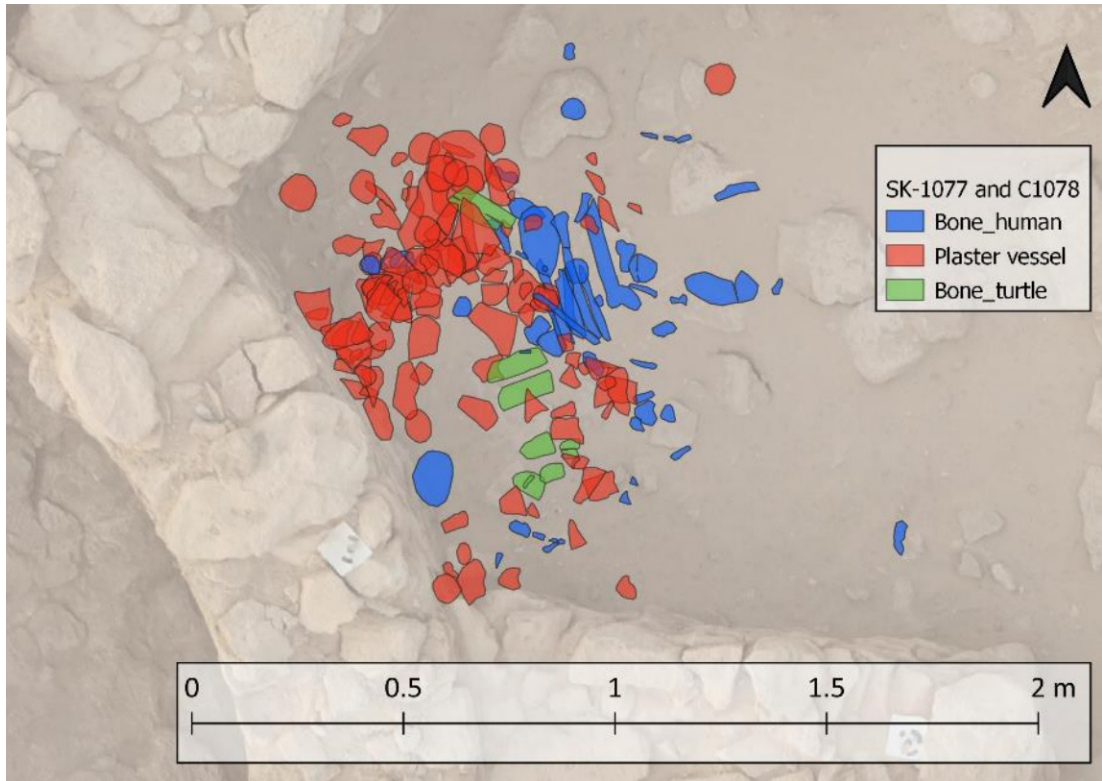
The long bones were placed in a bundle, accompanied by other skeletal elements including ribs, cranial fragments, a small number of vertebrae and other bones. No facial elements or teeth were recovered. Several loose foot bones were recovered 60 cm south from the femoral heads, a location that is anatomically incorrect. This suggests post-depositional disturbance, re-opening or possible manipulation of remains.

The disarticulated remains of this burial were overlain by several irregular angular stones (1078) that do not appear to form any deliberate structure. However, the burial may have been disturbed or deflated by post-depositional processes. In addition, human bones were recovered away from the main group, which indicates that the remains may represent more than one individual. The nature of deposition suggests that the bones may have been recovered from elsewhere before being bound and deposited within Cell 13 as a secondary burial.

During the excavation of Layer 1078, around 140 fragments of plaster vessels were collected. It was noted that the fragments predominantly lay with their concave surfaces facing upwards. In some places, as many as five layers of vessel fragments were apparent.

Grave goods above the main plaster vessel cluster, and to the west of the burial, were several turtle carapace fragments. Other artefacts recovered within and below the human bone include a worked gypsum plate (SF2284) and fragments of a dark grey/black imported stone (SF2281-2).

Items recovered from the side of the femur (SF2248) include a *Codakia tigerina* shell (SF2245, possibly a container), a flint 'dagger' (SF2246), and a possible flint core (SF2247). The flint dagger measures approximately 10 cm



in length and is somewhat coarse in production, with no apparently functional sharp edges.

Figure 2: Plan of Burial 1077, Cell 13.

Cell 12 – Burial 1115

A primary burial of an older female adult (1115) with her neck and skull missing was uncovered on top of a stone platform (1143). The individual is interred with the stones beneath her, keeping her in place during the funerary process. In her hands were two foreshafts made of human bone, with a third underneath where her head would have been, and a fourth where the top of her humerus would be.

No cut was apparent for the burial, and the sediment associated with burial was similar to the main infill of Cell 12 (1094). Notably, the head (cranium and mandibula) were missing, along what was originally thought to be a cut (1117) in the northern extent of Cell 12. The second thoracic vertebra (T2) was collected during the excavation of the fill (1095) of the later ‘cut’ (1117). Most of the bones from the neck are missing. Conversely, the leg bones survived quite well, and most of the bones remained completely intact.

The lumbar (L1-L5) and thoracic vertebrae (T3-T12) were all intact and well articulated. The ulna and the radius from both arms were fragmented on the right side possibly by post-abandonment collapse. Both humeri were heavily damaged and recovered in pieces. The ribs on the right side were partially

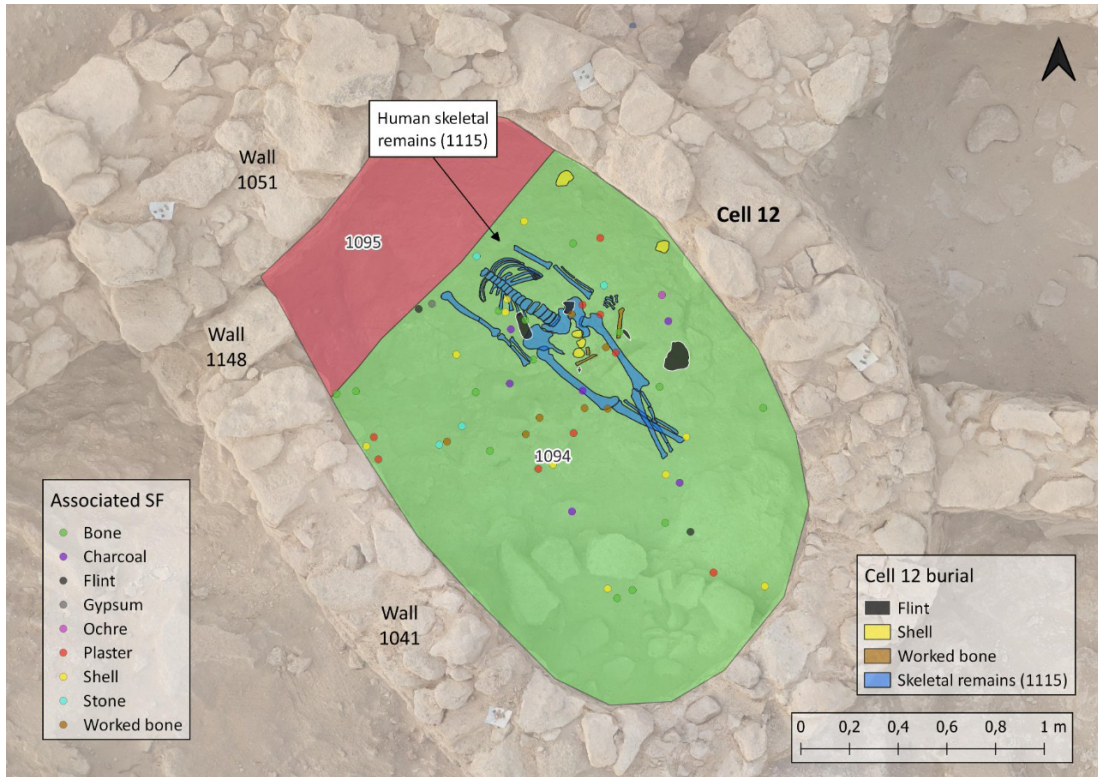


Figure 3: Plan of Burial 1115, Cell 12.

crushed by a heavy flint dagger that was placed on top of the body. The ribs on the left side of her body survived in a better condition but were still quite fragmented. Most of the phalanges and metatarsals of the right hand and both feet were dispersed in the sediments of Context [1115] and the stone setting (1143 and 1144). The fingers of the left hand were the best articulated, with most phalanges easily identified and recovered. This is a result of the entire left limb being held in place by the row of stones installed before her interment, and most of the collapse being centred in the western extent of the cell over her right side.

From various measurements of the pelvic bones, the individual is likely to be a female, with a 98 per cent probability. The sciatic notch is very wide and almost forms a right angle, typical of a female's skeletal anatomy. Although the iliac crest is not very obviously rounded, postcranial variations make it more difficult to interpret the morphology of the human bones. Furthermore, the pelvis was projected in a more upright and vertical manner, which caused some initial confusion and was easier to identify in retrospect. This individual had a minimum age of 40 years and seems to have suffered from *spina bifida* and an injury to her lower back, observed on the lumbar and the sacral vertebrae. In the post-excavation study of the skeletal assemblage, another individual was represented by a set of talus and calcaneus bones.



Figure 4: Photograph of finds in situ, Burial 1115.

The burial included a large number of grave goods and a considerable number of worked Socotra cormorant (*Phalacrocorax nigrogularis*) ulnae dispersed on top, under and around the skeletal remains. Shell beads, shell scrapers, flint implements, painted/incised plaster vessel sherds and raw materials were common finds around the burial. The left hand of the skeleton was secured on a row of stones in order to place a worked human bone foreshaft (SF2858) within the fingers of the deceased, which held an associated flint projectile point (SF2857). A second smaller human bone foreshaft (SF2862) and a barbed and tanged arrowhead (SF2863) were collected from near where her right-hand bones have slid down towards the pelvis.

A flint tool (SF2733), typologically identified as a ‘dagger’, was placed on top of the chest and later dropped into the rib cage. A large tabular flint piece (SF2719) was found by the left femur. A large *Codakia tigerina* shell (SF2860),

which was potentially used as a container and a bone spatula (SF2861), were located directly south of the sacrum. Other grave goods included a number of shark-tooth pendants, two Violet asaphis (*Asaphis violascens*) scrapers (SF2901 and SF3047), a *Ficus gracilis* shell adornment (SF2965), flint projectile points (SF2995 and SF3090), a pebble tool (SF3004), a plaster vessel bowl fragment with incised patterns (SF3005), two elongated polished stones (SF3018 and SF3029), a gypsum crystal plaque (SF3019) and a large tile knife (SF3020).

Cell 13 – Burial 1116

In the easternmost corner of Cell 13, a secondary burial was uncovered in the form of disarticulated skeletal remains interred against an apsidal wall [1042]. The bones were not in a good state of preservation as they seem to have been moved and rearranged post-internment, and the weight of the structure [1121] placed atop has caused further damage. The skull seems to have been manipulated, and various skull fragments were rearranged on different sides of the individual. The mandible was removed from the individual and placed atop the burial cluster, on a tibia in the middle of the torso. The facial bones (maxilla up to the frontal bone) were found at the northern extent of the cluster of remains, while the posterior and inferior cranial bones were located at the southern extent. The atlas and axis were still intact and in close proximity to the cervical vertebrae and separated maxilla, which is not anatomically correct.

The main individual interred seems to be an adult female. The sex of the main articulated skeleton was estimated from the wide sciatic notch and the very well-rounded iliac crest. In general, the bones looked very gracile. The initial sex estimation was carried out on-site, as the bones would break apart upon lifting. In a post-excavation study of the skeleton, a secondary sex estimation was carried out using the postcranial morphology of the bones from Jebel Buhais as a reference. The measurements of this skeleton fit well in the range for female measurements. It must be noted that this method is not the most reliable and is subject to variability. This individual is at least 50 years of age, as indicated by the coxal measurements and late fusions of the bone.

The grave goods associated with this burial are significantly less than burial (1115) in Cell 12. A very sharp worked/polished sheep/goat metapodial (SF3337) was recovered from between a cluster of long bones and some toes. A shark-tooth pendant was found right under the disarticulated mandible (SF3203).

Clusters of painted and incised sherds of plaster vessels were collected from around the extent of the burial. Shell tools and adornments were also found: shell scrapers (SF3187, 3291), a perforated and polished *Conus sp.* shell bead (SF3290), numerous shell beads (SF3277, 3278, 3391, 3402) and a plastered *Vasticardium lacunosum* shell (SF3297). There were two flint finds as well: a finger scraper (SF3185) and a tile knife (SF3294). Many charcoal samples were collected from all throughout the excavation of these bones. These will later

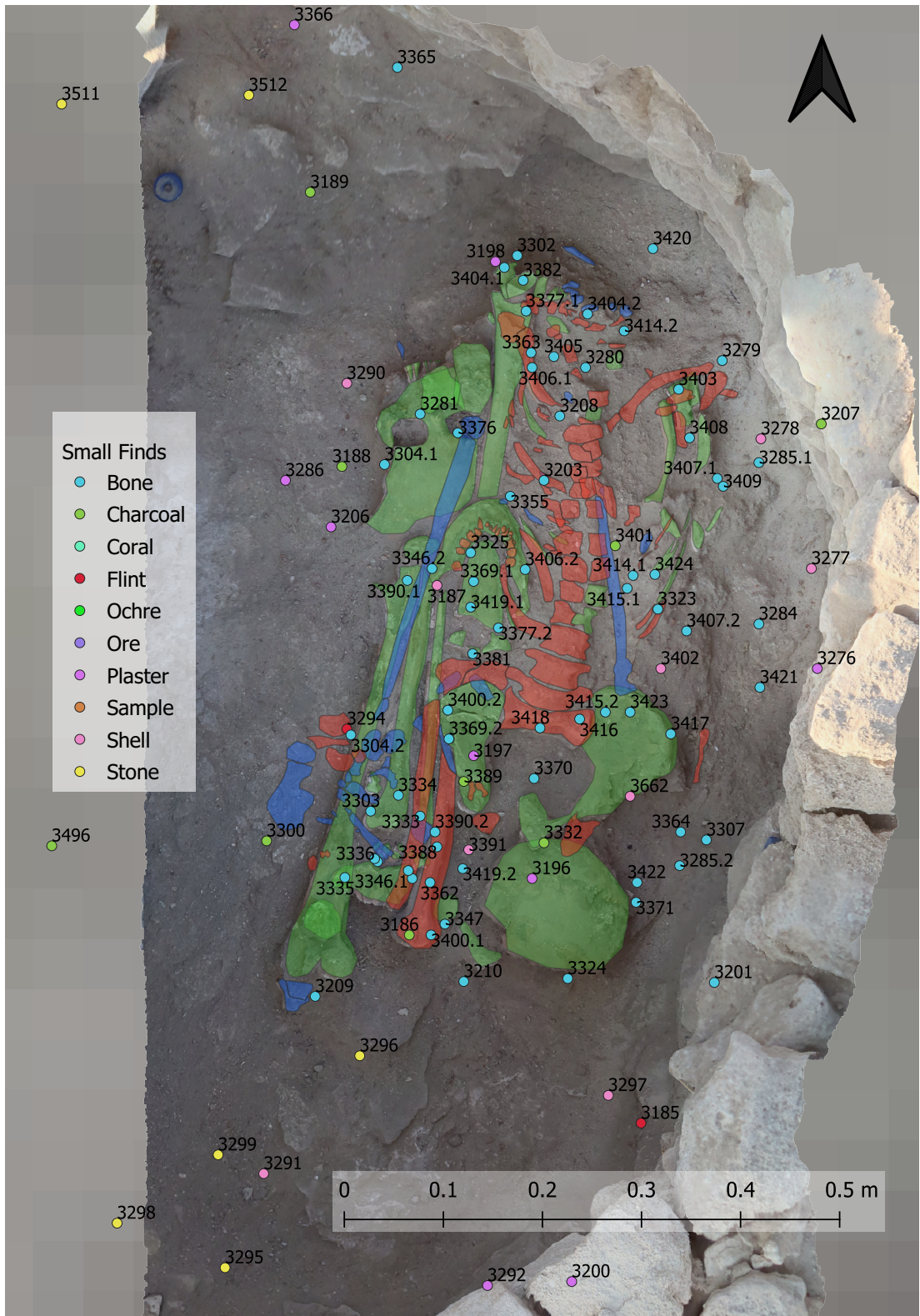


Figure 5: Plan of Burial 1116, Cell 13.

be processed to provide an approximate date; the teeth from this burial have been sampled and will be sent for apatite dating.

Overlaying the skeletal remains was a stone structure or surface [1121], to the east of the northern and southern entrances and enclosed by the apsidal wall [1042]. Layer 1121 was formed of small- to medium-sized horizontal slabs each measuring ~0.20 m. These stones were loose in the sand; however, two stones separating the burial were placed on their side on top of a plastered portion of the bedrock and defined the limit of the burial.

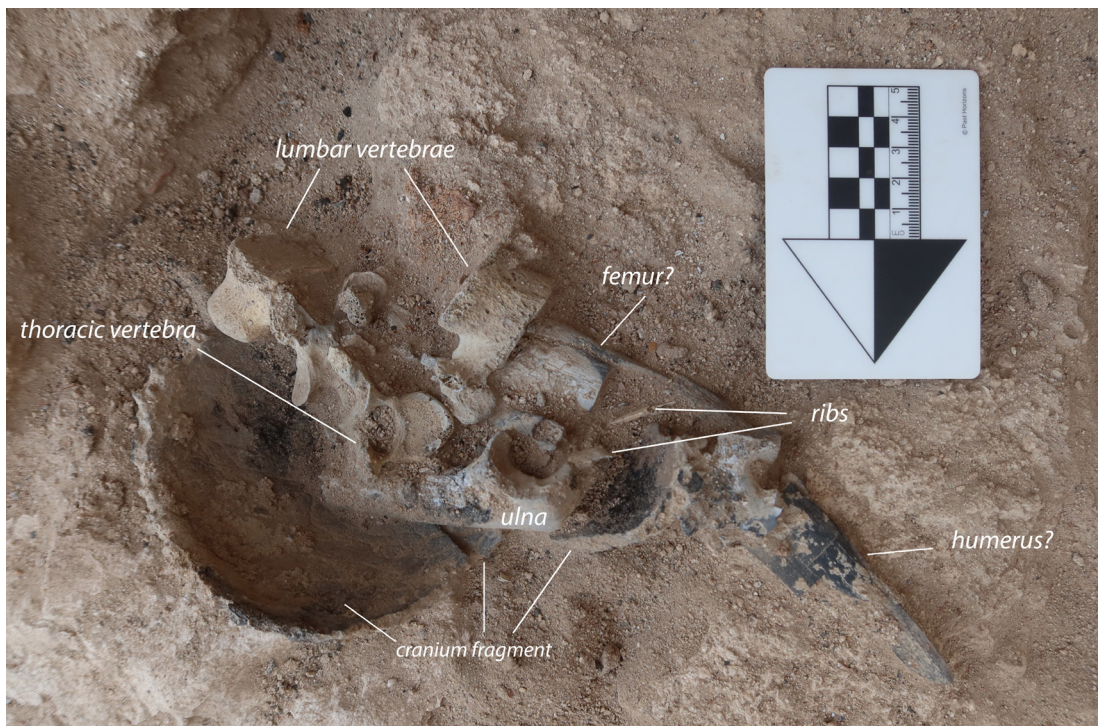
Cell 13 – Cremated remains 1183

1183 is the ashy soft deposit in the southern extent of Cell 13, with human bone remains frequently found throughout its extent. In the south-western corner of the cell, a cluster of charred human remains was uncovered. What remained of the long bones, ribs, vertebrae and other bones was gathered and placed into a burned cranium. The ‘cranium container’ was largely the parietal bone, with some other parts of the cranium loosely intact. These bones are mostly scorched white/black on the cortical bone and charred black in the cancellous bone.

Due to the state of these remains, it was very difficult to identify most of what was left of them. The identifiable bones are as follows:

1. Rib fragments (SF3568, 3569, 3570, 3579, 3605, 3616, 3621)
2. Thoracic vertebra (SF3607, 3618)
3. Lumbar vertebra (SF3619, 3622)
4. Cervical vertebra (SF3562)

Figure 6: Labelled photograph of cremated remains 1183, Cell 13.



5. Ulna (SF3566, 3617)
6. Femur (SF3595, 3608, 3612, 3613, 3625)
7. Cranial fragments (SF3558, 3601, 3614, 3615, 3624, 3626)
8. Humerus (SF3623)
9. Coxal (SF3556, 3571)

There were several other phalanges, tarsals and carpals that were also recovered from this context. A large number of grave goods were associated with this context; a very large volume of plaster vessel sherd clusters, with exterior painted layers and interior plain layers, dispersed from the southern entrance to the 13/15 lintel passage. In addition to this, shell beads were also retrieved directly from the skeletal remains and around the deposit.

A stone plate with scorch marks was retrieved from this layer. This plate was broken into four identifiable parts, smoothed down on one face to make a flat surface and rounded on the other side. A translucent gypsum plaque was also recovered directly beside the charred skull; it has a small suspension hole carved into the side of it.

Underneath the lintel – Burial 1127

A secondary burial of human remains (1127) was interred in an internal passage below a lintel between Cells 15 and 13. The individual is likely an adult female, above the age of 50 years, as suggested by the measurements and fusions noted from the coxal. The interment (1127) was not articulated and



Figure 7: Orthophoto of Burial 1127, underneath the lintel between Cells 13 and 15.

included mostly the long bones (radius, ulna, femur, tibia and fibula), some vertebrae, ribs, a partial mandible and part of the pelvis. Much of the body had probably been disarticulated or decomposed, before being bound and interred in the doorway. The upper half of the doorway was later sealed by a layer of sediment (1125) approximately 0.30 m in depth.

Radiocarbon dates

Two radiocarbon samples from the site were submitted for analysis. One sample (Beta-624287) from the Cell 12 primary burial (1115) was calibrated to 5676–5563 BCE (7625–7512 BP). The second sample (Beta-624288) collected from the interment underneath the lintel (1127) was calibrated to 5736–5636 cal BCE (7685–7585 cal BP).

Both samples were submitted to Beta Analytic and calibrations were carried out at 95.4 per cent probability using IntCal20 (Bronk Ramsey 2009; Reimer *et al.* 2020).

Discussion

The use of Area F as a mortuary complex appears to be intentional, and one of the building's primary functions. It is clear that when these individuals were interred, there was no rubble collapse within the interior of the cells. All of the burials are stratigraphically below the level of abandonment and collapse, and there is no evidence of any cuts through these layers that might suggest they are later. Large orthostats from the tops of the walls cover the burials, which suggests that the roof was still in place when the burials were interred, and collapse took place afterwards.

Burial 1077/78

Although the skeletal remains (1077) are in extremely poor condition, the burial itself is quite substantial. The burial comprises the largest assemblage of large painted plaster sherds of different bowls and turtle carapace fragments. The flint implements are also homogenous with the primary interment in Cell 12, specifically the barbed and tanged arrowhead and the flint dagger. Flint daggers were only found in these two burials and nowhere else on the site.

There are far too many smaller bones and cranial parts that are missing, and the surviving bones are in total disarticulation. This suggests the transport of the bones and their redeposition into the cell. This interment is the highest of all the burials in stratigraphy and was possibly the most exposed to post-abandonment collapse. While this might provide grounds for argument that the funerary process is not as linear or straightforward as we think, there are still plenty of commonalities to suggest a tradition from an older shared

culture. Much like funerary proceedings today, there will be variability due to numerous factors associated with the circumstances of the individual's death, as well as possibly their sex, age and stature. These variabilities in turn affect the overall implementation of mortuary traditions that we can identify or observe. The fact of the matter is that there is no one streamlined procedure, but rather a number of different indications that allude to a common practice.

Burial 1127

The interment (1127) was probably carried out by the transfer of the bones in a perishable material bag, perhaps made of leather or vegetal fibres, that has subsequently disintegrated, leaving just the bone cluster. Although it would have been entirely possible for the occupants of the structure to physically distribute the bones in a certain arrangement, the long bones look too deliberately placed within the area under the lintel for it to have been haphazardly spilled from a decomposing bag. Rodent teeth marks on the bones from (1127) were identified. These bite marks will be studied by a specialist to determine the species of the animal and additionally help us to understand different facets of the occupation such as the climate, local vegetation, etc.

Burial 1183

Similar to the secondary interment under the lintel (1127), the cremation in the corner of 1183 (Cell 13) seems to be another case of deliberate redistribution. Firstly, the bones were processed away from the structure and then redeposited into the cell. There were no signs of burning from within any of the cells associated with the burials, and in Cell 11 where there was some burning activity, there was no evidence for cremation. After the treatment of the bones, they were collected and placed into the cranium of the individual. There are many bones missing from this individual, most notably finger and toe bones. The entire face, most of the ribs and most of the pelvis were also missing. It seems that collecting all the remains after the individual was burned was not possible.

Burial 1115

The individual interred in Cell 12 has provided us with the most substantial evidence for indications of an established funerary tradition taking place at MR11. Just this one burial has been key to furthering our understanding of the mortuary practice upheld during the occupation of the site. From this individual, we have observed tailored architectural features, curated selections of remarkable grave goods, manipulation of skeletal remains and a possible tradition of skull removal.

There were no cranial fragments or cervical vertebrae remaining in the interment to indicate that the removal of the head and neck was an accident.

If it was stumbled upon accidentally during a clearing of the passages, then the skull and neck would be redeposited in pieces either with the rest of the body or at least on the site. The cervical vertebrae are mostly lost altogether, which suggests they were removed with the skull while some forms of fleshy remains were still intact. Further to this, clearing the stones and the bones down to bedrock, but leaving the grave goods makes very little sense. A plausible explanation is that there was no cut, it was always left empty and gradually filled in over time. Leaving this space empty would provide access from either opening in the walls into the burial/cell. In addition to this, it would leave room for the skull to gradually decompose off the shoulders of the deceased, as it is not supported.

Burial 1116

Burial 1116 in Cell 13 is interpreted as a very premeditated rearrangement of skeletal remains. The anterior cranium is buried north, the posterior cranium and inferior skull to the south and an unhinged mandible central on the top of a tibia sitting on the articulated vertebrae of the body. Furthermore, the long bones of the skeleton are all aligned north/south and mainly bundled together to the west of the central articulated body. The upper torso down to the left femur are also aligned north/south.

The deliberate placements of the skeletal parts make human intervention a lot more transparent in this instance. From what is observed in the stratigraphy, we can tell that at least one femur and posterior cranium were the last elements to be moved, as they sat higher up in the stratigraphy and made very little sense even in placement with the rest of the redeposited skeletal remains.

The interred remains seem to suggest that the placement of these bones was premeditated. The process of arrangement and the significance behind the distribution of the bones is yet to be fully understood. The long bones placed to the west of the torso were intact, with proximal and distal epiphyses surviving in most cases. This could mean that the collection of these bones happened after the individual had skeletonised.

There are no fragmented cranial pieces collected anywhere from this interment; this could mean that the skull was not fractured naturally. This makes sense, as there is a very straight clean chop on the anterior skull, near the cranial fusion of the forehead, that starts from the left zygomatic process and curves diagonally into the natural right cranial fusion, which looks to have been worked smooth. The preparation of the skull had to have been done out of the structure prior to the interment of the individual. There are missing pieces of the inferior skeleton that are not found in the associated sediments, and there is no indication of the preparation of bones within Cell 13.

Funerary practices

Evidence from the site depicting various features of mortuary rituals was observed throughout the excavation of all the interments mentioned above. The following section will attempt to identify and synthesise the evidence associated to funerary practices.

The seven main identifiable burial features are:

1. Architectural elements
2. Alignments of the articulated/semi-articulated skeletons
3. Manipulation of the skeleton remains
4. Missing or worked skulls
5. Cremation
6. Grave goods
7. Post-burial offerings?

There is variability evident in the funerary practices seen with the interments of these skeletons. This could be due to several factors, which will become clearer after a more thorough inspection of the skeletons. Some of these factors include, but are not limited to, age, sex, social stature, tribal traditions, time or place of death, and causes of death.

1. Associated architecture

The architecture in Area F is very monumental, with several features of architectural innovation that are substantially different to what we have seen so far in the other Neolithic sites in Abu Dhabi. The inclusion of and tailoring of some of the construction of the structure to be in line with differing mortuary practices is also interesting.

Burial 1116 is associated with structural remains of a stone barrier [1121], internal to Cell 13 to isolate it from the room. The burial is placed directly on the bedrock, which was also semi-coated in white plaster-like material under the stone barrier and around the burial itself. The very lowest course of stones, placed on their side, were almost adhered to the bedrock and were rather difficult to remove. They were very firmly held in place, with a white substance visible underneath them after their removal. The architecture in this instance seems to seal off this one individual, with the intention to leave them undisturbed.

In the very lowest layers of stratigraphy in Cell 13 are the cremated skeletal remains (1183), nestled in a very odd square-shaped undulation in the bedrock. This undulation, whether natural or intentional, preserved the secondary position bones placed in situ, in addition to containing the associated burial goods.

Skeleton 1115 was secured on a stone bed to hold the skeletal remains in place, whilst they then placed the goods on top or against some of the stones and bones. Evidence from the site, such as the elongated stones that lined the underneath of the left arm, preserving the articulation of the fingers around the bone foreshaft tool, support the idea that the layout and curation of stones were all conscious decisions. We see the shapes and sizes of the stones changing to better fit certain body parts. The stones end towards the north, at the interface between the torso and the skull. A single slanted stone might have been used to sustain the integrity of the post-cranial skeleton, whilst letting the head and neck decompose and drop off.

This is only one of several theories regarding the burial in Cell 12, but there are parallels to the practice in other PPN Pre-Pottery Neolithic burials in the Levant, where the architecture is arranged to facilitate the eventual removal of the skull, and the individual is interred with that intention (Mithen *et al.* 2015). Viewing Cell 12 as an antechamber that allows for the gradual decomposition of the body provides us with a plausible explanation for the architecture, stratigraphy, distribution of goods and presence of charcoal in the deposits. The second individual represented by another set of ankle bones also suggests a possible clearing and reuse of this cell as an antechamber, rather than a setting for a burial.

Burial 1127 is underneath the lintel of an opening in the eastern apsidal wall of Cell 15. It connects Cell 15 to Cell 13, where various other bodies were interred. There is a semicircular stone threshold in Cell 15 that marks the extent

Figure 8: Profile of stone setting (1143) underneath skeleton 1115, Cell 12.



of the interment (1127). The long bones placed in this passage are limited by the span of this structure, acting as a threshold, so the bones themselves are not completely in either cell. This might be due to the gradual filling of Cell 13 with other individuals, or it could be that the architecture is suggesting something more intentional. There is the possibility that the funerary ceremony or proceedings for this individual were not over, and therefore they could not yet be fully interred into a room. We view Cell 11 as the main ceremonial area where there are several layers of activity abandoned, paved over and repurposed. The lintel passage gives a full view of these skeletal remains from Cell 11. The structure by the lintel provides a small, elevated surface, putting the skeletal remains on full display in Cell 13 and Cell 15. These might be the last set of bones on full display for the inhabitants to easily access. Around and underneath the interred bones (1127) are various forms of offerings. These included several net sinkers, large amounts of plaster vessel sherds, articulated fish bones and shell tools. These are just some of the current ideas about these burials; further studies of this material will undoubtedly enhance our knowledge of the specificities of the cultural practices on Marawah at this time.

2. North/south alignments of the articulated/semi-articulated skeletons

The length of the skeletons evident in two of the main burials are aligned north to south. In Cell 12, the skeletal remains indicate that the skull was positioned in the north portion of the cell and the feet to the south. A similar orientation of skeletal remains can be observed with Burial 1116 in Cell 13.

Although it can be argued that this is coincidental, both the semi-articulated neolithic burials in Area A were also aligned head north and feet south (Beech *et al.* 2022). This alignment occurs too regularly to be dismissed as an arbitrary occurrence. While the orientation of the rooms seems to change and the structures vary, the orientation of the skeletal remains themselves seems to be consistent. This could be a strictly local tradition, as alignments seem to be inconsistent in the literature, or it could just be a mere coincidence.

3. Manipulation of skeletal remains

Manipulation of skeletal remains is very common in prehistory, especially during the Neolithic. The entire skeletal assemblage from Area F has been manipulated post-mortem to varying extents. The excavation of burial 1077 uncovered a skeletal assemblage that was interred as a cluster in complete disarticulation and missing body parts. The better-articulated individual interred in the eastern extent (1116) had her skull completely removed, with the face worked and reinterred with different parts also deliberately positioned in disarticulation. The cremated individual (1183) was completely burned out of the structure and reinterred, using their cranium as a bowl to hold the rest of their charred skeletal remains.

Burial 1115 was made to hold objects in their hands whilst suspended over a bed of stones, without support for the neck or head. The head and neck are also collected at some point and have not been found anywhere in Area F, even after the complete excavation of both interior and exterior deposits. What makes this specific burial intriguing is the idea that the foreshafts in their hands are made of human bone, and the intentionality behind the act of making the deceased hold them must carry some significance that we currently cannot fully understand.

Burial 1127 was collected and reinterred in pieces, with an odd selection of fragmented bones being made. None of the bones of this burial were intact upon interment; the lintel passage was filled with an aeolian sand that preserved the bones in situ.

In the Neolithic settlement of UAQ₂, a multiple burial was discovered in which several men were interred in a tomb and rearranged on their sides facing the same direction, with their arms and legs overlapping each other slightly. This was done upon interment and was interpreted by the archaeologists as being “united in death”. This burial dates to around 5500–5300 BCE and overlaps with the dates of occupation in MR11 (Méry *et al.* 2016).

4. Missing or altered skulls

While the procedure of skull removal could be grouped with the funerary process mentioned previously, there is substantial evidence to demonstrate that while they are similar in nature, they are different in both significance and procedure. While torsos, long bones and smaller bones survive in better states, the recovered cranial remains do not seem to survive in good articulation for the most part.

The crania from the skeletal assemblages of MR11F are either missing, physically altered or in fragmentary pieces that are not very obviously attributable to any singular set of remains. In the case of 1077, 1127 and 1183, the latter seems to be the case. Albeit it is easier to match (1183) charred cranial pieces with the other charred bones, there is a record of burned bones in Area A (Department of Culture and Tourism 2022a; 2022b) and other pieces of charred bones higher in the stratigraphy in the walls of Cell 13.

Although a fragment of a mandible was identified in the lintel burial (1127), the rest of the cranium is missing. The skull, more specifically the face, is what is believed to be the most important identifier of a person. This is notably missing from the interred cluster of bones.

The cranial remains interred in Burial 1116 is a demonstration of how significant a skull is in the funerary process. The main articulated remains (the torso, pelvis and left femur) most likely belong to a female. While it is not yet certain if the mandible, anterior cranium, posterior cranium and inferior cranium are all from the same individual, it is likely to be the case. The mandible



Figure 9: Photographs of worked cranium from Burial 1116, Cell 13.

is very rounded and smooth, which leads us to believe that it belongs to a female. The sexual dimorphism in a male mandible appears to be a lot more angular and robust. Similarly, the anterior skull tapers very gently near the forehead and the angle of the frontal bone slope is a lot more vertical, typical of a female's face. A male's face has a more pronounced glabella, as opposed to a female (Nikita 2017).

Even if the cranium does not belong to the individual, the fact that the cranium was removed and repurposed before reinterment remains. The face seems to have been separated or sawed with a tool and smoothed down to make a regular curving diagonal cut across the top of the forehead from beneath each temple. The posterior and inferior cranium were placed south of the pelvis. While the face was redeposited near the neck bones, the rest of the skull was reinterred below the pelvis. Assuming these are deliberate distributions, these choices might bear a larger significance just by these conscious placements.

The interment in Cell 12 (1115) demonstrates the intentionality behind the burials. Our best assumption is that the individual was interred with the intention of eventual re-entry and skull recovery. Whether or not we view Cell 12 as an antechamber and the stone setting deliberately constructed for this purpose, this still provides evidence to imply a possible pseudo-systematic processing of the inhumations. An odd patella, a loose incisor, a cervical vertebra and what seemed to be an extra ankle bone were found in this grave. The possibility that they used Cell 12 for processing and thoroughly cleaned it out is valid.

Burial practices observed in PPNB sites provide evidence for funerary practices that alter the skeletons by way of skull removal. This tradition is not anomalous to earlier Neolithic cultures and is well documented in the

literature (Mithen *et al.* 2015). One recently documented example would be records of graves comprising the skeletons of two adults (with neither crania nor mandibles) near a circular stone structure documented in Beisamoun in the Upper Jordan Valley. The site is dated to the late PPNB-PPNC between 7200–6400 BCE. There is also mention of clustered bone deposits in front of the entrances in the structure, placed directly onto floors in organised bone bundles. No crania or mandibles are present in these bone piles (Bocquentin and Nous 2022).

It has been previously noted in the literature that PPNB period burials traditions have been summarised into three interrelated systems, the third of which mentions the secondary removal of adult skulls from graves with their eventual reburial in a cache. It is also noted that these burials are premeditated and require a certain level of involvement from the community (Kuijt and Gorin-Morris 2002). While there is no question behind the explicit expressions of intentionality and community involvement in the Area F interments, these systematic interpretations of mortuary traditions are not completely adopted in totality and do not perfectly align with what is observed at MR11. The fact is Area F is devoid of pottery; the only wares recovered from the occupation layers are plaster vessels, made exclusively of lime and gypsum aggregates. This places the site in a more complex context. The earliest dates from the site place it roughly around 5800 BCE (Beech *et al.* 2022); however, not all radiocarbon samples of the earlier layers have been processed, and almost all the contexts from Area F (except for the two burials) have not yet been dated.

5. Cremation

Cremated skeletal remains 1183 are not common within the skeletal assemblage at MR11. Trying to understand their presence is very difficult and poses a plethora of questions about the conditions by which inhabitants feel inclined to cremate an individual. In the case of this cremation, the individual's corpse was burned external to the structures and placed back inside Cell 13. It is more likely that his or her remains were processed near the site, as they are somewhat articulated with smaller bits of bone that typically are not recovered in secondary burials.

Table 1: Table of estimated burning temperatures based on discolouration of selection of bones, 1183, Cell 13.

Find	Context	Description	Discolouration	Estimated temperature
3556	1183	Burned pelvic fragments	Black	500-600 °C
3558	1183	Charred cranial fragments	Black - white	Over 700 °C
3566	1183	Burned radius	Black	500-600 °C
3568	1183	Burned rib	Black	500-600 °C
3570	1183	Burned rib fragments	Black - white	Over 700 °C
3573	1183	Burned long bone fragments	Black	500-600 °C
3595	1183	Charred femur	Black	500-600 °C
3596	1183	Charred vertebrae	Black	500-600 °C
3597	1183	Burned ribs	Black - white	Over 700 °C
3598	1183	Long bone fragments	Black- white	Over 700 °C
3599	1183	Burned vertebrae	Black - brown - white	400-500°C
3601	1183	Cranial fragments	Black - white	Over 700 °C
3605	1183	Charred rib	Black - brown	400-500°C
3607	1183	Burned thoracic vertebrae	Black - white - brown	Over 500°C
3612	1183	Burned femoral head	Black - brown	400-500°C
3613	1183	Burned femur fragment	Black - grey	Over 500°C
3614	1183	Cranial fragments	Black - white	Over 700 °C
3616	1183	Rib fragments	Black - white	Over 700 °C
3617	1183	Ulna fragments	Black - white	Over 700 °C
3618	1183	Thoracic vertebrae	Grey	Over 500°C
3619	1183	Lumbar vertebrae	Grey - brown	Over 500°C
3621	1183	Rib fragments	Black - white	Over 700 °C
3622	1183	Lumbar vertebrae	Black - grey	Over 500°C
3623	1183	Humerus	Black - white	Over 700 °C
3624	1183	Cranial fragments	Black	500-600 °C
3625	1183	Femur	Black - white	Over 700 °C
3626	1183	Posterior cranium	Black - white	Over 700 °C

Most of the bones have been charred black, deep into the cancellous bone, and some have been burned white on the cortical bone. For a primary cremation to take place, defleshing rather than burning of dry bones at temperatures of over 500 degrees Celsius are required. An open air bonfire will be too difficult to maintain at these temperatures and will roughly sit around 320 to 400 degrees Celsius (Imaizumi 2015). This, in turn, would suggest the use of a kiln or pit, where heat is contained and easily fuelled. Plenty of fuel is required to begin the cremation process, as body fats will only aid the flames later in the process rather than at the start (Bocquentin *et al.* 2020). No such kiln or pit has been found at this point in time on MR11, as excavations so far have been limited to the structures within the area, with the exception of some test pitting between

the mounds. The articulation of the bones suggests that the burning of this individual could not have been far from the site.

At the site *FAY10-NE*, in the emirate of Sharjah, fragments of cremated bone of different individuals were recovered from a small cave. The radiocarbon dates from the associated context indicate that the activity periods in *FAY10-NE* of 6500–5800 BCE (Kutterer *et al.* 2012) overlaps with *MR11* (Beech *et al.* 2022).

The emergence of cremation during the transition from *PPNB* to *PPNC* has been documented in the Neolithic site of Beisamoun in the Upper Jordan Valley. The in-situ cremated remains of a young adult were excavated from within a pyre pit, where their remains were processed. This example is the earliest occurrence of intentional primary cremation in the Near East and gives us a chronology of the regional funerary practice (Bocquentin *et al.* 2020).

Another parallel to this would be the cremated human remains found in *Kharaysin*, a *PPN* site in Jordan where a secondary burial with burnt human bones was uncovered, Burial *SU-815* dated to the Late *PPNB* (7058–6825 BCE); this contained a clustered burial with burnt and unburnt skeletons of at least three adults. Results from the analysis provided evidence that the bones were almost dry upon burning. They were then gathered and transported for a final interment (Santana *et al.* 2020).

6. Grave goods and manufacture

Manufacture of goods and tools seems to be largely associated with Cells 11, 15 and 16, and this is reflected in the finds. Large shells that have not yet been worked, plaster manufacture tools, hammerstone/possible pestles, borers to make ornaments and sharpened bone points are some of the frequent finds of Cell 11, 15 and 16. Consistent with the rest of the site, artefacts from Area F depict geometric patterns in etchings and paintings on bone and gypsum/plaster. Many of these manufactured goods are then placed along with the interred individuals in the burial cells.

The interred individuals usually had a few unique finds or personalised items interred with them that are not found in other spaces of the structure (gypsum crystal plaques, human bone foreshafts, bone beads, etc.). A great amount of plaster vessel sherds was found in Area F during the latest excavations in *MR11*. Many specimens are decorated by monochrome and bichrome crude painting or incisions following geometric patterns. A few examples showing finger imprints are also recorded. At least two types of distinct fabrics are observed at Area F: (1) a chalky white plaster ware with a gritty texture; (2) a harder greyish plaster ware with a fine-grained texture. Generally, plaster vessel sherds of different wares and qualities were found throughout the site, but they were very concentrated in close proximity to the burials.

MR11-F - SF 3005

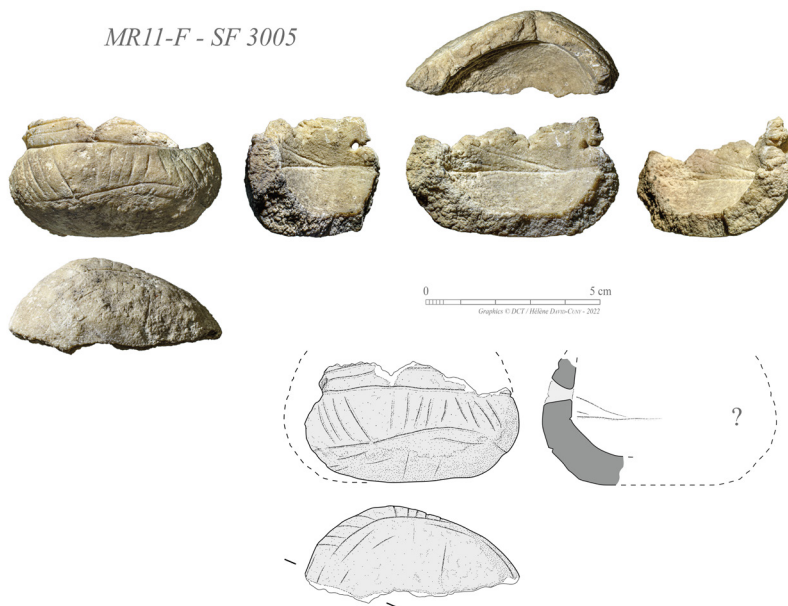


Figure 10: Incised plaster vessel from Burial 1115, Cell 13.

Several complete plates associated to B1077 in Cell 13 were recovered, as well as a fragment of a small globular plaster vessel fragment (SF3005) with incised patterns depicting various alternating lines, as well as a mending hole associated to B1115 in Cell 12. The curvature of most plaster vessel sherds suggests that the bowls are mostly open vessels. A few plaster nodules were found in Area F (SF2278 and 2462). Similar finds have been made in Area C during the previous seasons. It suggests that production of plaster vessels

MR11-F - SF 2428



Figure 11: Painted plaster vessel recovered from burial 1077, Cell 13.

took place directly on site, and in some rooms of the buildings in Area C and Area F. Furthermore, this possibility is strengthened by the recent discovery of a stone mortar showing residual layering of plaster on its concave surface (SF2788 from 1118). One can assume that plaster was heated, crushed and mixed with water in the mortar.

Shell valves (a specimen of *Anadara ehrenbergi* and at least two others of *Asaphis violascens*) containing residues of plaster have been found. Preliminary observations of the latter shell have revealed the presence of micro-polish on their ventral margins, confirming their use as scraping tools involved in the production of plaster vessels, and that they were not only used as simple containers. The regular discovery of ochre and haematite fragments at different locations of the site seems linked with the preparation of pigment powder used for the decoration of plaster vessels.

When considering an interment like 1115, the number of finds associated with the skeleton is quite substantial. The artefacts placed along with the skeleton were pristine in some cases, while some seemed to be more weathered and used. It appears that while some of the objects were created specifically for the burial, a couple of objects were curated from what they had already owned and used. Shell and bone beads from pendants, anklets and bracelets were also collected from near the chest, arms and neck. These accessories are mostly different varieties of smaller gastropod beads and shark teeth.

Four human forearm foreshafts were recovered from Burial 1115 in Cell 12. Three of the bone foreshafts are repurposed radii, and one has been identified as an ulna. Two of the radii were collected from the right (SF2862) and left (SF2858) hands of the individual, with a third radius (SF3063) recovered from underneath where the skull would have been. A fourth bone foreshaft made from a repurposed ulna (SF2763) was discovered above the left humerus and only identified in the post-excavation analysis of the human bones. The foreshafts are heavily polished, worked and hollowed to secure flint projectiles into the shafts. Evident around the circumference of the ends of each foreshaft are strong worked indents where some kind of organic material can be tied to secure a flint projectile point. Both epiphyses on the forearms are sawed/cut off and filed down to create a smoother surface. SF2858 is a robust right radius placed in the left hand, SF2862 is a gracile right radius, SF3063 is a gracile left radius and SF2763 is a right ulna. These indicate a minimum number of at least two individuals' arm bones that have been repurposed to create these artefacts.

Understanding the artefacts associated with the dead and the connotation of their existence is pivotal to grasping the abstract concept of death and the beliefs associated with death at the time. Why is it important that an individual is buried with a familiar object, and similarly, why is it important that

MR11-F - SF 2858



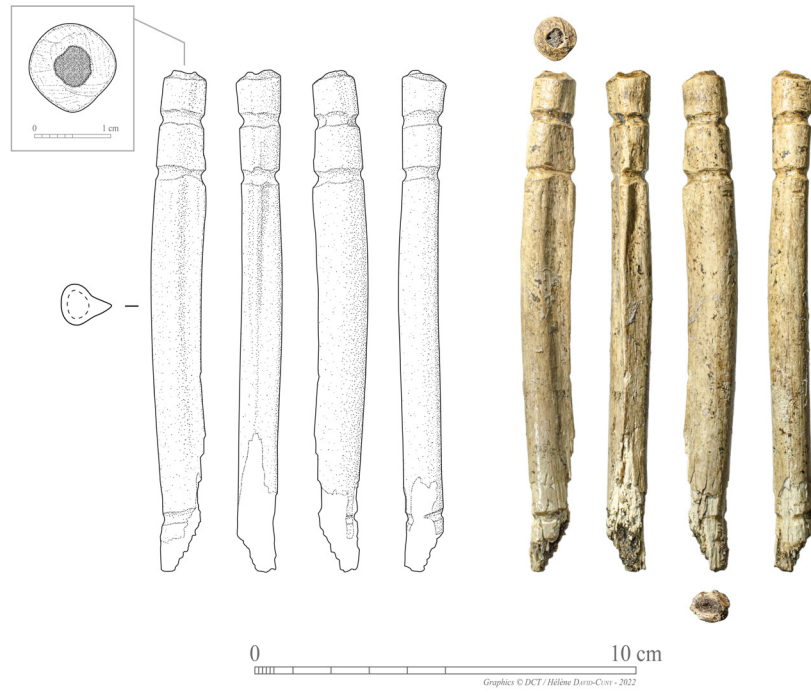
MR11-F - SF 2857



Figure 12: Human bone foreshaft (SF2858), Cell 12.

Figure 13: Flint point associated with foreshaft (SF2858), Cell 12.

MR11-F - SF 2862



MR11-F - SF 2863



Figure 14: Human bone foreshaft (SF2862), Cell 12.

Figure 15: Barbed and tanged arrowhead (SF2863) associated with foreshaft (SF2862), Cell 12.

MR11-F - SF 3063



Figure 16: Human bone foreshaft (SF3063), Cell 12.

an individual is buried with freshly created objects? Classifications of these objects also help us understand what type of afterlife the Neolithic population might have envisioned.

7. Continued offerings

If Marawah 11 is viewed as a centre place for various tribes in the surrounding coastal settlements to meet and participate in communal activity, then the offerings in the form of grave goods and food remains around the skeletons make a bit more sense. In the case of the two main burials and the lintel burial, there are articulated fish bones, sea mammal bones and plaster vessel fragments distributed with other spreads of finds. While this could be entirely domestic, and the fills of the burials could have come from domestic layers, the fact that there is evidence to suggest they could be associated with the burials cannot be negated. Ultimately, more analysis on the faunal assemblage, the plaster vessels, and more dating evidence would greatly help clarify whether there is any association.

Conclusions

Early research on MR11 focused on the feasibility of a community of fishermen to establish a more sedentary settlement that could be occupied all year round. An examination of their subsistence strategies through the analysis

of the faunal assemblages indicated that this was possible. The emergence of local artisans and the expansion of the architectural structures indicates that the populations could have expanded the settlement. The evidence for a domestic sedentary life based on marine resources is available; however, it is also possible that there may have been seasonal habitation or at least intermittent communal visits.

The latest excavations in Mortuary Complex F provide evidence for some funerary practices that somewhat conflict with previous studies from other Neolithic burial sites in the United Arab Emirates (Phillips 2002; Kiesewetter 2003; Kutterer 2010; Kutterer *et al.* 2012). During the Neolithic, and especially in the Near East, there is little to no regard for spatial distribution between the deceased and the living. More often, the inhabitants would share the same spaces during the Pre-Pottery Neolithic (Haddow 2017). As we see it, the dead have been spatially and culturally integrated into the settlement of MR11 and are regarded as a fundamental aspect of the local culture.

Acknowledgments

The authors would like to thank HE Mohamed Khalifa Al Mubarak and HE Saood Al Hosani for their enthusiasm and interest in local archaeology and all their efforts in enabling and supporting the archaeology team in pursuit of discovery. We would also like to thank the Culture Sector Executive Director Rita Aoun-Abdo for her continuous support of our excavations on Marawah.

The authors would like to thank Abdulla bin-Kaddas al-Rumaithi and Mohammad Muftah Al Mansoori for their pivotal role in facilitating all our fieldwork, as well as the permanent staff on Marawah who have fed us and towed us out of the sabkha: Ali, Noor and Adam.

Our thanks also go to the members of our brilliant MR11F team: Muhammad Hilal Mullantevida Mahamood Chalatti, Muhammad Saleem Abdul Hameed, Swaibu Mutyaba, Abu Baker Arif Muhammed and Rashed Ali Akram. They worked tirelessly with us, meeting and exceeding our energies and excitement to uncover some of the most amazing archaeology.

The authors would like to thank the Historic Environment Director Jaber al-Merri, as well as Abdullah al-Kaabi, Ahmed al-Haj al-Faki and Ali al-Meqbali for their unconditional support from across the Khor.

Lastly, the main author would like to thank Helene David-Cuny, Fanny Bocquentin, Marc Händel and Elizabeth Angela Vanegas for their support and helpful insights on the site and artefacts.

Bibliography

- Beech, M.J., N.H. Al Hameli, R. Cuttler, K. Lidour, H. Roberts, R. Crassard, N. Yalman, and T. Davies 2022. Neolithic settlement patterns and subsistence strategies on Marawah Island, Abu Dhabi Emirate, United Arab Emirates. *Proceedings of the Seminar for Arabian Studies* 51: 7-24. Oxford: Archaeopress.
- Beech, M.J., R.T.H. Cuttler, A.K. Al Kaabi, A.A. El Faki, J. Martin, N.H. Al Hameli, H.M. Roberts, P. Spencer, D. Tomasi, O. Brunet and R. Crassard 2019. Excavations at MR11 on Marawah Island (Abu Dhabi, UAE): new insight into the architecture and planning of Arabian Neolithic settlements and early evidence for pearling. *Arabian Archaeology and Epigraphy* 31(1): 19-31. DOI: doi.org/10.1111/aae.12148
- Beech, M., R. Cuttler, D. Moscrop, H. Kallweit and J. Martin 2005. New evidence for the Neolithic settlement of Marawah Island, Abu Dhabi, United Arab Emirates. *Proceedings of the Seminar for Arabian Studies* 35: 37-56. Oxford: Archaeopress.
- Bocquentin, F., M. Anton, F. Berna, A. Rosen, H. Khalaily, H. Greenberg, T.C. Hart, O. Lernau and L. Horwitz 2020. Emergence of corpse cremation during the Pre-Pottery Neolithic of the Southern Levant: A multidisciplinary study of a pyre-pit burial. *PLOS ONE* 16(1): e0246488.
- Bocquentin, F. and C. Nous 2022. Dealing with the Dead at Beisamoun During the Middle PPNB: Revisiting Lechevallier's Field Archives, in D. Ackerfeld and A. Gopher (eds) *Studies on Burial Practices in the Pre-pottery Neolithic Levant* (Studies in Early Near Eastern Production, Subsistence and Environment 23): 197-213. Berlin: ex oriente.
- Bronk Ramsey, C. 2009. Bayesian analysis of radiocarbon dates. *Radiocarbon* 51(1): 337-360.
- Department of Culture and Tourism - Abu Dhabi (DCT) 2022a. MR11F Final Report: March 2022 Abu Dhabi. Department of Culture and Tourism. Unpublished report.
- Department of Culture and Tourism - Abu Dhabi (DCT) 2022b. MR11F Final Report Q4: November 2022. Unpublished report.
- Evans, G., A. Kirkham and R.A. Carter 2002. Quaternary Development of the United Arab Emirates Coast: New Evidence from Marawah Island, Abu Dhabi. *GeoArabia* 7(3): 441-458.
- Haddow, S.D. and C.J. Knüsel 2017. Skull Retrieval and Secondary Burial Practices in the Neolithic Near East: Recent Insights from Çatalhöyük, Turkey. *Bioarchaeology International* 1(1-2): 52-71. DOI: 10.5744/bi.2017.1002
- Imaizumi, K. 2015. Forensic investigation of burnt human remains. *Research and Reports in Forensic Medical Science* 5: 67-74. <https://doi.org/10.2147/RRFMS.S75141>
- King, G.R.D. 1998. *Abu Dhabi Islands Archaeological Survey*. London: Trident Press.
- Kiesewetter, H. 2003. The Neolithic Population at Jebel Buhais 18: Remarks on Funerary Practices, Palaeodemography and Palaeopathology, in D.T. Potts, H. Naboodah and P. Hellyer (eds) *Proceedings of the First International Conference on the Archaeology of the United Arab Emirates (Abu Dhabi, 15-18 April 2001)*: 35-44. London: Trident Press.
- Kuijt, I. and A.N. Goring-Morris 2002. Foraging, Farming and Social Complexity in the Pre-Pottery Neolithic of the South-Central Levant: A Review and Synthesis. *Journal of World Prehistory* 16(4): 361-440.
- Kutterer, A. 2010. Remarks on Neolithic burial customs in South East Arabia, in L. Weeks (ed.) *Death and Burial in Arabia and Beyond: Multidisciplinary Perspectives* (Society for Arabian Studies Monographs 10 - BAR International Series 2107): 1-10. Oxford: Archaeopress.

- Kutterer, A., S. Doppler, M. Uerpmann and H.-P. Uerpmann 2012. Neolithic cremation in south-east Arabia: archaeological and anthropological observations at FAY-NE10 in the Emirate of Sharjah (UAE). *Proceedings of the Seminar for Arabian Studies* 23: 125-144. Oxford: Archaeopress.
- Lidour, K., M.J. Beech and N.H. Al Hameli 2023 (in press). Fishing strategies and adaptation to maritime environments during the Neolithic on Marawah Island, United Arab Emirates, in M.S. Segui, C.T. Dacasa and R. Alcantara (eds) *Papers presented at the 14th International Archaeozoologists of Southwest Asia (ASWA) Conference, 3-7 June 2019, Barcelona, Spain* (British Archaeological Reports). Oxford: BAR Publishing.
- Mays, S. 2021. *The Archaeology of Human Bones*. Third Edition. Abingdon, Oxon: Routledge.
- Méry, S., D. Gasparini, G. Basset, J.-F. Berger, A. Berthelot, F. Borgi, K. Mcsweeney, K. Lidour, A. Parker, G.W. Preston 2016. Mort violente en Arabie: la sépulture multiple d'Umm al Quwain UAQ2 (Émirats arabes unis), VIe millénaire BC, in C. Dupont et G. Marchand (eds) *Archéologie des chasseurs-cueilleurs maritimes. De la fonction des habitats à l'organisation de l'espace littoral / Archaeology of maritime hunter-gatherers. From settlement function to the organization of the coastal zone*, Actes de la séance de la Société préhistorique française de Rennes, 10-11 avril 2014 (Séances de la Société préhistorique française 6): 323-343.
- Mithen, S., B. Finlayson, D. Maricevic, S. Smith, E. Jenkins and M. Najjar 2015. Death and Architecture: The Pre-Pottery Neolithic A Burials at WF16, Wadi Faynan, Southern Jordan, in C. Renfrew, M.J. Boyd and I. Morley (eds) *Death, Rituals, Social Order and the Archaeology of Immortality in the Ancient World: 'Death Shall Have No Dominion'*: 82-110. Cambridge: Cambridge University Press.
- Nikita, E. 2017. *Osteoarchaeology: A Guide to the Macroscopic Study of Human Skeletal Remains*. Cambridge, MA: Academic Press.
- Phillips, C.S. 2002. Prehistoric Middens and a Cemetery from the Southern Arabian Gulf, in S. Cleuzou, M. Tosi and J. Zarins (eds) *Essays on the Late Prehistory of the Arabian Peninsula* (Serie Orientale Roma 93): 169-186. Rome: Istituto Italiano per l'Africa e l'Oriente.
- Reimer, P. et al. 2020. The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0-55 cal kBP), *Radiocarbon* 62(4): 725-757.
- Santana, J., E. Iriarte, Teira, L.C. Teira, J. Garcia-Tojal, J. Muñiz and J.J. Ibáñez 2020. Transforming the ancestors: early evidence of fire-induced manipulation on human bones in the Near East from the Pre-Pottery Neolithic B of Kharaysin (Jordan). *Archaeological and Anthropological Science* 12, 112. <https://doi.org/10.1007/s12520-020-01065-7>
- Uerpmann, H.-P., M. Uerpmann and S.A. Jasim (eds) 2006. *Funeral Monuments and Human Remains from Jebel al-Buhais*. Tübingen: Kerns.