Life on the Edge:

Iain Crawford's Udal, North Uist

The Neolithic and Bronze Age of RUX6

Edited by
Beverley Ballin Smith

with

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In memory of Iain A Crawford 1928-2016

For Imogen and Rebecca Crawford

For everyone who worked on the RUX6 Project in 1974 and 1980 to 1984

And

for the people of North Uist.

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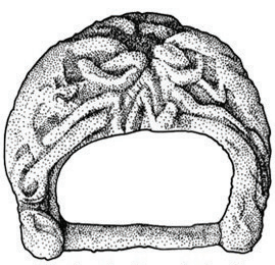

Hunter Archaeological & Historical Trust

GUARD archaeology

Iain A Crawford

2005

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Cover illustration: Looking towards Rubha Huilis from the site of RUX6. (Original image © Chris Stewart-Moffitt).

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The Excavation

The first acknowledgment is from Iain Crawford who expressed it in the following manner, "It follows that the SDD (Scottish Development Department), in the persons of Patrick Ashmore and Noel Fojut, are to be congratulated on their prescience in supporting this diversion to salvage RUX6 in 1980, 1981 and 1983". In addition, he also thanked crofters and Lord Granville for access to the peninsula.

The Post-excavation

Historic Scotland, with Dr Noel Fojut as head of archaeological funding, provided an initial grant for a full assessment of the finds and samples from the whole of the Udal project. Work on RUX6 continued with funding from Historic Scotland, later Historic Environment Scotland. Roderick McCullagh took over from Dr Fojut till his retirement, Dr Lisa Brown patiently saw the project through to completion and Dr Rebecca Jones provided advice and guidance. I have also had considerable help from Peter McKeague, Dr Iain Fraser and Leslie Ferguson, formerly of the RCAHMS, now HES, on technical matters and archiving.

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The Hunter Trust has supported the post-excavation project by specifically funding the digitisation of the 32,000 finds and samples records into a database. Without the creation of this computerised list our work would have been much more difficult.

During the assessment period considerable help was provided by National Museums Scotland, not least by Dr's Alison Sheridan and David Caldwell who visited the collection and gave expert advice on it. Drs Gemma Cruickshanks and Fraser Hunter, also NMS, gave their specialist advice on specific parts of the collections. Others consulted during this period were Dr Daniel Sahlen, Historical Museum, Sweden, Dr Dale Serjeantson, University of Southampton, Dr Jennifer Harland, University of the Highlands and Islands, Orkney, John Stewart, University of York, and Drs Colleen Batley and Richard Jones of the University of Glasgow. To all of them, my grateful thanks.

Dr Euan Mackie re-introduced me to Iain Crawford when he came one day to the University of Glasgow. That was the start of our friendship and the first steps in helping Iain with RUX6. The initial work in 2002 that developed from this meeting was the scanning and digitisation of some of the drawn record from the site, which was funded by Historic Scotland. Kylie Seratis took the lead on the digitisation and she is to be thanked for initiating a high standard of work that we were able to build on later on in the

project. Alastair Becket assisted in digitising some of the plans and sections.

None of the post-excavation assessment between 2011 and 2013, or the specialist work since, would have been possible without the kindness and support of my colleagues at GUARD Archaeology Ltd. All have helped me in so many ways to overcome the various problems that affected this project, but special mention must be made of Dr John Atkinson (Director), Pauline MacShannon (Director), Aileen Maule and Bob Will (who are first class problem solvers), and Jen Cochrane and Joan O'Donnell for their invaluable help. Fiona Jackson started the site figures for publication, Dermuid O'Connor carried them on and did wonders with the site grid and 3D modelling, Dave McNicol completed them with the utmost patience and skill, and Gillian Sneddon and Jennifer Simonson provided the final touches. Without them all this book would not have been possible to complete. Gillian took the manuscripts, figures and tables and made them into this book. I cannot adequately express the admiration I have for her as a designer.

I am very appreciative of the very fine drawings produced by Jo Bacon of some of the finds and by Leeanne Whitelaw who skilfully drew the rest. Leeanne also digitised and organised all the finds drawings for inclusion in this publication.

A number of gifted specialists have provided the information at the heart of this project. They are my team and my friends. Some of them I have known a long time and have worked with often. They are Catherine Smith, zooarchaeologist at Alder Archaeology; Dr Susan Ramsay, archaeobotanist, Dr Judith Finlay Aird, zooarchaeologist, Dr Ruby Ceron-Carrasco (zooachaeologist), and Dr Torben Ballin (husband and lithic specialist). During the course of this project a number of others joined us and the team expanded to include Dr Anthony Newton, Department of Geology and Geophysics, Edinburgh University (pumice) and Caroline Wickham-Jones, University of Aberdeen (flint). Both of whom must be relieved to see their work in print after so many years. The team also included for the first time Dr's Jo Buckberry and Julia Beaumont, PhD student Solange Bohling and Cassandra Hall (MSc) all at the Biological Anthropology Research Centre, Archaeological Sciences, University of Bradford; Dr Derek Hamilton and colleagues at the Radiocarbon Dating Laboratory, and Professor David Sanderson, at SUERC, University of Glasgow, East Kilbride. Dr Jim Hansom, Professor of Geography (adjunct) University of Canterbury New Zealand, and University of Glasgow provided much useful information on machair, its development and movement.

Cassie Hall deserves special mention as her original MSc project fell through and Dr Jo Buckberry asked if we could do anything to help her. Jo and Solange were already studying the human skeletal material for RUX6 and it was a delight to provide Cassie with the opportunity to do scientific analysis of it. Not only did the RUX6 material provide Cassie with her degree but we received back a specialist report from her and Dr Julia Beaumont. It informs part of this publication that otherwise would not have been realised. I thank Cassie for her enthusiasm and input into the project.

In addition to the above, a number of others, including friends, have been kind enough to share their thoughts, experiences and their work. They include Robert Squair who undertook his PhD on RUX6 pottery and Ann Clarke who initially examined some of the stone artefacts from the site, Dr Jean Archer, North Uist provided specialist information on the geology of the island, Dr Margaret MacKie, School of Scottish Studies, Edinburgh has provided me with much useful information on Iain Crawford and his work at the School, and Dr Mary MacLeod Rivett from the Isle of Lewis also contributed her memories of Iain Crawford. I have also benefited considerably from discussions with Dr Barbara Crawford, the Strathmartine Trust and University of St. Andrews,

Many people on North Uist have provided valuable information for me on their memories of Crawford's excavations and the impact they had on the island at the time. I am very conscious I that I have forgotten the names of many that have given assistance to this project. Some of them have asked to remain anonymous, others have simply provided good will, information and hospitality, and to all of them I am extremely grateful. However there is one person who deserves special mention.

The exact details are lost in time past, but a couple of emails arrived during the course of a week early on in the post-excavation process. They were followed by telephone calls, which eventually persuaded me that I had better agree to meet Chris Stewart-Moffitt. I did not think I needed help, but Chris persuaded me I did, and he was right. He came to Govan, where some of the Udal collection was stored at that time, and

spent the greater part of the next three to four years helping me excavate the samples and artefacts out of their 20 to 40 year old packaging, checking them off the database, re-bagging and boxing them, and moving them about. He is tremendously dedicated, enthusiastic and an inspiration. It was a pleasurable learning experience for both of us to work together on the project and not only is he now a good friend, but the archaeological experience gained him a good undergraduate degree, motivated him to gain a Master's Degree, and he is now undertaking research for his PhD!

Imogen Crawford, Iain's wife, contacted me in 2008 at a difficult time in her life to take away the collection and archive from her house. Without Imogen's generosity, the collection would not have gone through the Treasure Trove system to be allocated to Museum nan Eilean, Western Isles Council. Imogen provided the opportunity for me and others to work on the collection and this book is the first result.

Judith Finlay Aird told me much about her experiences working on the RUX6 excavation and delighted me by putting them down in writing. She also willingly took on the thankless job of reading and commenting on the manuscript along with Dr John Raven, Historic Environment Scotland. I am deeply indebted to both of them. David Davidson and colleagues of Archaeopress are also to be thanked for their patience and for publishing this volume.

My friend Noel Fojut said at the beginning of this project that it was possibly going to be a double-edged sword or a poisoned chalice, or both. He was correct in his assumption. The project has not been an easy one and my life's partner, Torben Ballin, has not only shared the ups and downs of it with me but has supported and nurtured me through it to the end. He single-handedly took on the task to create and populate the database, which is the backbone of all our research on this project and has done much to assist me whenever help was needed. A simple thank you is not enough.

Beverley Ballin Smith
Banknock Cottage
Denny
November 2017

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Foreword

I am delighted and honoured to have been asked to provide a foreword to this monograph which reflects both my professional and personal interest in, and commitment to, deepening and making more publicly available the riches of the Western Isles historical and archaeological heritage. Having had personal experience and knowledge of the rewards of such work in the Orkney Islands, it is essential that the equally rich heritage of our own Outer Hebrides is nurtured and promoted in a similar way, for the benefit of all.

The truth is that while the archaeology of the Western Isles is as rich, diverse and intriguing as that of the rest of Scotland, it is less well known. Comhairle nan Eilean Siar and its partners are working hard to see this position change, and it is therefore a great pleasure to have available this account of the smallest of Iain Crawford's excavations at the Udal site in North Uist, mainly undertaken in the early 1980s, and supported then by the Scottish Development Department and latterly by Historic Environment Scotland. The main purpose of these excavations was preservation of that fragile evidence required to be safeguarded in the face of erosion by sea, storm and simply the ravages of time. The story told by these structures and artefacts, however, reflects the earliest centuries of communities' life experiences on the Udal headland from some six thousand years ago, one of the longest and most fascinating time lines in the archaeology of Scotland. The two Neolithic houses and Bronze Age burial cairns bear testimony to the antiquity and importance of this site.

I wish all readers a happy journey of exploration through this story of a shared past in the knowledge that there are many episodes yet to be told about the archaeology of the Udal peninsula.

Malcolm Burr
Chief Executive
Comhairiie nan Eilean Sair
Stornoway
Isle of Lewis

Preface

By Beverley Ballin Smith

The origin of the book title

The incidence of natural events on RUX6 and the effects they had on the people living there suggested to me that *marginal* and *edge* were words that described the site. Research showed that in 2014 Channel 5 broadcast three documentaries about living on the edge where they explored how people lived 'in the grip of nature at its most ferocious'. This description seemed very apt for people living in the northern part of North Uist during the later Neolithic and early Bronze Age periods. They were living in a landscape that became unstable, where the line between survival and death could have been a knife's edge. Sea inundations perpetuated the image of living on the edge of somewhere unpredictable and dangerous, and finally the site was found on a low cliff, the liminal edge between land and sea.

Iain A Crawford

I had known about the Udal project since the early 1980s, when one of the archaeologists from our excavation on Orkney went to the Western Isles to work for a few weeks. Crawford had advertised for volunteers in the memorable CBA yearly excavations list with its bright orange/red banner, and I must have seen the entry, but by then I was enjoying the archaeology of a different island group. Udal was already becoming an evocative place to dig and Crawford's name was on people's lips. Later, I learnt that not all the stories we heard were complimentary.

I first met Iain Crawford in Liverpool on 19 May 1990 when he was 62 years old at a Viking conference held by the Merseyside Museums in Liverpool. I remember clearly that his lecture did not tell us anything important about the Udal, which was a great disappointment to me. After my experience of working on one multi-period site on Orkney, and having just starting the post-excavation process of another in Shetland with Dr Barbara Crawford from the University of St Andrews, I could see that Iain was in need of some help in sorting out his data. After the lecture I naively approached him to offer my help. I can't remember what he said, if he said anything, but the withering look from a great height said it all.

Ten years later he was brought into my office at the University of Glasgow by Dr Euan MacKie. Iain spilt the papers of his briefcase all over mine on the desk and from that moment we began an interesting working relationship. I visited him at his home in Castle Douglas, Dumfries and Galloway, met his family and the dogs, and was introduced to the basement of archives – an unforgettable experience. The finds and samples were tucked away in three bays between the brick supports in the lower sloping level of the house. They were crammed tightly from floor to ceiling in all manner of containers, from wooden fish boxes, the ubiquitous Haig's red and white cardboard whisky boxes, tea chests by the score, a large wooden chest (including woodworm), wooden apple racks, black plastic bags, and orange carrot or onion sacks. The site records were ordered in his work room on shelves and between tables of various sorts and included an old computer. By 2000 he seemed to have mellowed as a person, but the stories of him falling out with every respected

archaeologist in Scotland seemed legion, and what was interesting was that most were true. I have always liked a challenge and difficult personalities seemed to be a speciality, so visiting Iain Crawford at home in his lion's den, was a remarkable experience.

Iain did not fall out with me, perhaps because in some way I was offering him a small step forward in his enormous predicament - the Udal albatross that was forever hanging round his neck. He had obligations to Historic Scotland to write up RUX6 and had presented them with site data that was not in a conventional format. Having worked closely with HS staff for many years might have been in my favour and a communication barrier became unblocked. We began to undertake the digitisation of the sections for RUX6 with HS's hesitant blessing. What was more remarkable was that Iain allowed us to take away his site records, after of course, the signing of papers.

Later, I and a colleague asked a number of researchers to write papers for a festschrift for Dr Euan MacKie who was retiring from the Hunterian Museum in Glasgow, and I invited Iain to contribute too. His paper is an extraordinary contribution, and as we later found out some of the information was inaccurate, but nevertheless we kept it. It had been a long time since he had written anything and his piece on wheelhouses proved to be his last. Many people had warned me that he had threatened them with litigation for one reason or another. He only threatened me once, and that was because I edited his wheelhouse paper and changed some words. His writing style, including his choice of words, was somewhat unusual and like him, was unique and eccentric. With hindsight, I was glad that we published his paper.

Our cooperation on RUX6 ceased when Iain became ill, but the rest of this volume takes up the story from 2010.

Summary

By Beverley Ballin Smith

Iain Crawford began his work on the *Ard a' Mhorrain* peninsula in North Uist in 1963 but it was not until 1974 that the site of RUX6 came to his attention through severe coastal erosion. He and a team excavated the site that year to reveal a kerbed cairn complex with a large cist burial beneath it.

Crawford did not return to the site until 1980 when the rescue excavation was funded by the Scottish Development Department. He completed his excavation there in 1984. One of the main issues for Crawford was to understand the build-up of natural sand layers across the site and the interpretation of erosion events that had also affected it. He was assisted to some extent by a nineteenth century saw-pit, which cut across the site almost down to subsoil. Its sides, together with the eroding section cut through the cairn down to bedrock, revealing the complex stratigraphy of natural and man-made events in this area.

He gradually extended the site to the east to take in archaeological features that were also threatened by continuing coastal erosion, and to build up knowledge of natural events which interweaved with the archaeological remains. The beginnings of human activity on the site started with the contamination of the upper levels of natural deposits with domestic debris and artefacts. This was followed by some evidence of settlement; the fragmentary remains of a possible domestic structure and a large fire pit; but more importantly the conversion of a large slab of protruding bedrock into the side of a formalised shaft within a stone platform. This took place during the late Neolithic, sometime between c. 3000 - c. 2500 BC. The shaft was enlarged for what is assumed to have been the natural collection of ground water flowing off the peninsula. However, its function probably changed over time, and it became a centre of ritual significance. A whale vertebra was positioned besides the shaft to allow access to it and a stone of zoomorphic shape, thought by Crawford to represent a Great Auk, was erected to its west. Two curving rows of stones set on edge, with wooden posts towards their ends, are all that remained of an intentional construction that radiated out from the platform.

Slightly later in date than the creation of the ritual area was the construction and use of a circular domestic dwelling that had been erected towards the west, using driftwood posts to support its roof. Turf walls with stone faces enclosed a space that had a central hearth with a screen in front of a door positioned in the northern circumference of the wall, as well as one or two partitions and a stone platform. Sometime later, a slightly larger structure was built to almost the same plan, which abutted it to the west, and a connecting doorway may have been created between the two. This new building was well-preserved and may have replaced the earlier structure as the main dwelling, with the latter becoming a workshop. Activities recorded from both buildings included the preparation of meat and fish, the collection of shell fish, cooking, as well as bone and stone tool manufacture. The evidence from the older structure was more detailed and included the use of both plain and Grooved Ware vessels and the digging out of the clay subsoil beside the hearth for the making of pots. The building may also have been extended to the east to include a cell or enclosure, perhaps for the stalling of sheep or cattle. Evidence from terrestrial snails recovered from the floors of the buildings indicated that conditions

inside them were damp, with drains needed to take seeping groundwater away from the floors. There is no direct evidence for cereal crops being grown or processed at the site at this time, with the economy being based on various strategies, including herding, gathering and possibly some fishing and hunting.

Between the two buildings to the south was a burnt area with ash containing sherds of pottery. This has been interpreted as the remains of a pit used for the firing of pottery. Occupation deposits were noted to the north of the buildings and it is thought that these buildings were all that remained of a larger settlement that had been removed by coastal erosion.

During the occupation of these two structures and the ritual remains to the east, there was a noticeable increase in sand accumulation across the site. The ritual monument of the platform and shaft was covered over with a mound of stone to protect it, but the two buildings had to be abandoned. Strong winds brought sand from coastal dune systems to the west to cover not only the settlement but also its fields to sufficient depths, and to such an extent, that they became unusable. Cattle and sheep would have had to be moved to grazing areas inland, and it is quite likely that people followed to established new dwellings away from the sand accumulation. This event would have been seen by the local community dwelling there as a catastrophe, with notable changes to the landscape and significant changes to their way of life.

The area of the old dwellings was not entirely abandoned, as it still formed part of the community's territory. Once the sand had consolidated and vegetation started to grow, there was an attempt to bring the land under cultivation, firstly by the use of a mattock and secondly by ploughing, as scars of both survived in the sand surface. However, the landscape was fragile and soil development thin. On the eastern side of the site, a linear boundary was constructed of at least three driftwood poles erected in deep pits that were packed with stone, separating the old ritual area from an activity area to the north and west. The activity was the gradual digging of pits in rows that covered an area destined to be a field or fields. The evidence suggests that these pits were likely to be for animal dung or human waste, as a form of structured manuring of the area. They were quickly dug and backfilled before the next pit was dug. Together with the earlier ploughing, these pits indicated that people lived close by and that their land extended further north and west, with the coastline of the time located further out to the west.

The sand accumulation was only one event of a series of natural disasters, including rising sea levels, which quickly followed on from each other and affected the area of the excavation. In the west, a tidal scour reached far inland and removed any archaeological evidence that existed in its path down to near the base of the pits. It deposited in its wake a substantial beach of shingle and rolled stone. Some of the stone was also considered by Crawford to have come from other late Neolithic buildings that had been washed out of the sand and destroyed by the sea. The event would have changed the landscape north of the site beyond all recognition, and a previously marshy area may have been scoured out, leaving the beginnings of the A'Croig Bheag inlet separating the Rubra Huilis from the excavated area. The coastline probably also retreated inland.

We have now moved away from the late Neolithic and into the early Bronze Age with a change not just in architecture but in material culture too. This period on this site is dated roughly to 2100 - 1900 BC. People still lived close by, but away from the coast and the direct influence of sea and shifting sands, and considered the new beach to be part of their ownership, as they used it for the burial of an individual and the construction of a kerbed cairn, of which only an arc of stone survived until 1974. A new burial place was subsequently needed for a young adult male who had died. A rectangular stone cist was built into the ground, close to the kerbed cairn, for the burial of the deceased. However, it took time for a suitable stone for its lid to be found, and the cist remained open to be gradually filled in with sand and other debris. Eventually, a heavy stone was brought to the site and positioned over the cist so that the building of a cairn could commence. The first part to be constructed was a tall core, comprising vertically positioned stones around its edges and flatter stone in the middle that rose like a solid dome of masonry over the cist and abutting the old cairn. The final construction phase of the cairn involved the building of a wide kerb of stone filled in with turf and stone behind, which encircled not just its core but also the remains of the older cairn as well. The new kerbed cairn formed a large mound that made a significant statement in the landscape and would have been the largest man-made structure in the area. Only part of this monument survived subsequent coastal erosion. There were probably activities associated

with the cist burial, as fragments of Beaker pottery, typical of the period, were found beneath the cairn.

The story of the activities on the eastern side of the site was different from that on the west. The late Neolithic ritual monuments had not been ploughed or entirely robbed away, and their location was still recognised in the landscape. One post of the early Bronze Age wooden boundary settings was replaced by a standing stone with an earthen and stone plinth. Between this and the old mound of the ritual shaft and platform was a slight dip in the ground and into it a temporary structure was erected, possibly tent-like in appearance, using driftwood posts and probably animal skins, turf and heather in its construction. It may not have been occupied all the time, but the evidence suggests it was well used. Its interior included a number of fire pits, with a significant amount of ash on its floors. The evidence of its used includes the survival of a number of pottery vessels, pits with marine molluscs, knapping waste and raw materials for lithic artefact manufacture, as well as rare carbonised barley grains indicating evidence of the cultivation of cereals close to the site.

This structure seems to have been abandoned prior to the construction of a cist inside its perimeter but against its northern perimeter for the burial of another individual. This older male, who may have been wrapped in an extremely flexed position, was accompanied in the cist by a pottery vessel, a few bone points and a body of a calf. Unusually, there is a disparity of 250-350 years between the age of death of the calf and the individual, suggesting that the human remains could have been curated, possibly mummified, before the burial took place. After the cist lid was placed in position, a small stone and turf kerbed cairn was constructed around it, taking in the remains of the late Neolithic ritual shaft and platform within its circumference. The orientation and position of the standing stone was presumably part of the reason for the location of the kerbed cairn and cist burial, as it marked the position of the latter. As with the ritual monuments on the west side of the site, these too suffered from recent coastal erosion.

This construction was the last of the prehistoric human activities recorded on the site. A further marine incursion on the west took away deposits around the cairn complex and redeposited them without destroying the burial monument. This seemed to be the last major natural event to have affected the site. However, rising sea levels have moved the coastline inland with periods of stability in between erosion events. During the nineteenth century, stone-robbing of the cairn took place for the construction of kelp-drying dykes, a kelp burning kiln and possibly for the building of crofts at Grenitote. The story of the occupation of the site and its structures, from the late Neolithic and through the early and middle Bronze Ages, remained relatively untouched under further sand and turf accumulation until the late twentieth century AD.

Gaelic Summary

Thòisich Iain Crawford obair air ceann-tìre Ard a' Mhorrain an Uibhist a Tuath ann an 1963 ach cha b' ann gu 1974 a thàinig làrach RUX6 gu aire tro bleith-thalmhainn na mara. Chladh e fhèin agus an sgioba an làrach a bhliadhna sin agus lorg iad càrn le ciste mòr fodha.

Cha do thill Crawford chun làrach gu 1980 nuair a chaidh an cladhach a mhaoineachadh le Roinn Leasachadh na h-Alba. Chrìochnaich e a' cladhach an sin ann an 1984. B' e aon de na duilgheadasan bu mhotha a bh' aig Crawford, tuigse fhaighinn air an doimhneachd de ghainmheach air feadh na làraich agus tuigse fhaighinn air an bleith-thalmhainn a thug buaidh air. Fhuair e taic aige gu ìre bho sloc-sàbhaidh a gheàrr tarsainn sìos an làraich, cha mhòr chun fo-ùir. Gheàrr na cliathaichean, an cois an roinn bleith-thalmhainn, sìos tron chàrn chun na clachan, a' dèanamh structairean iol-fhillte de thachartasan nàdarra agus togte san sgìre follaiseach.

Beag air bheag, leudaich e an làrach chun an ear gus pìosan arc-eòlais eile, air an robh cunnart bho bleith-thalmhainn, a ghabhail a-steach agus stòras fiosrachaidh fhaighinn air tachartasan nàdarra air an robh buaidh air làraichean arc-eòlais. Thòisich obair daonna air an làrach le truailleadh air na h-àrd-ìrean le sgudail is innleachdas. Bha an uairsin fianais ann gun do shuidhich daoine an seo; bha pìosan ann a dh'fhaodadh a bhith bho structair leithid taigh agus teine mòr; ach nas cudromaiche pìos chrann air fhighe a-steach. Gheibh seo àite aig deireadh Linn na Cloiche, uaireigin eadar c. 3000 - c. 2500 RC.

Bha a' chrann air a leudachadh, le cuid den bheachd gur ann airson bùrn èirigh a' tighinn bhon a' cheann-tire a shàbhaladh a bha e. Ach dh'atharraich fheum nuair a thuit ìrean bùirn, agus bha e an uairsin na àite airson comharrachadh cleachdadh. Chaidh cnàimh droma a chur ri taobh a' chrann gus am biodh slighe ann, agus chaidh clach le cruth ainmh-chruthach, a bha Crawford den bheachd a bha a' riochdachadh Great Auk, a thogail chun an iar. Cha robh air fhàgail den dealbhadh cearcall bhon leac, ach dà sreath lùbadh de clachan, le puist fiodh aig am bàrr.

Nas fhadalaiche ann an cruthachadh an àite cleachdaidh, bha togalach ann an cruth cearcall a chaidh a thogail chun an iar, le bhith a' cleachdadh puist airson taic a chumail ris a mhullach. Bha ballaichean monadh le clachan a dìon beàrn san robh teine sa mheadhan le sgàilean air beulaibh doras chun a' bhalla a tuath, an cois pàirteachadh no dhà agus leac àrd. Uaireigin an dèidh sin, chaidh structair beagan na bu mhotha a thogail chun an aon phlana, chun an iar, agus doras a dh'fhaodadh a bhith a ceangal na dhà. Bha an togalach ùr seo air a chumail gu math agus dh'fhaodadh gun do ghabh e àite an togalach na bu thràithe mar a' phrìomh àite-fuirich, leis an togalach eile ga chleachdadh na bhùth-obrach. Bha ag ullachadh iasg agus feòil, cruinneachadh maorach, còcaireachd, is cruthachadh stuthan le cnàmhan is clachan, am measg na nithean a chaidh an dèanamh san dà thogalach. Bha barrachd doimhneachd san fhianais bhon togalach as sine, a' gabhail a-steach innealan Grooved Ware agus cladhach crèadh airson poitean a dhèanamh ri taobh an teine. Dh'fhaodadh gun deach an togalach a leudachadh chun an ear, `s docha airson caoraich no crodh a chumail. Bha fianais a fhuaireadh bho sheilcheagan air làraichean nan togalach a' sealltainn gu robh iad fliuch, le feum air drèanaichean airson a' bhùrn a ghluasad a-mach. Chan eil fianais dìreach ann airson fàs arbhar air an làrach aig an àm, leis an eaconamaidh stèidhichte air grunn ro-innleachdan, a' gabhail a-steach cruinneachadh bheathaichean, iasgach agus sealg.

Eadar an dà thogalach gu deas tha làrach loisgte le uinnseann le criomagan crèadhadaireachd. Tha cuid den bheachd gur e sloc airson crèadhadaireachd a bh' ann. Bha dùnain gu ceann a tuath nan togalach agus `s iad sin an aon rud a bha air fhàgail bhon t-suidheachaidh a chaidh a ghluasad tro chrìonadh an oirthir.

Fhad 's a bha daoine anns an dà thogalach seo agus na tobhtaichean chun ear, bha e faicsinneach gu robh meudachadh anns na bha de ghainmhich a cruinneachadh air an làraich. Bha tom chlachan air uachdair an ùrlar agus an crann, ach b' fheudar an dà thogalach a bhith air an leigeil seachad. Thug gaoth làidir gainmheach bho shiostaman dhùin air a' chosta an iar is chan e a-mhàin gun deach an tuineachadh a chòmhdach ach cuideachd na h-achaidhean chun ìre `s gu robh iad fo fheum. B' fheudar crodh is chaoraich a ghluasad gu àitean ionaltraidh nas fhaide bhon oirthir, agus tha e glè choltach gun lean na daoine a' stèidheachadh dhachaighean ùra air falbh bho na dùin ghainmhich. Bhiodh a' choimhearsnachd ionadail dha fhaicinn mar chall mòr, le atharrachaidhean bunaiteach air an tìr agus gu sònraichte air an dòigh-beatha.

Cha deach làrach nan seann thoglaichean a thrèigsinn gu buileach, oir bha e fhathast mar phàirt de thalamh na coimhearsnachd. Aon uair `s gun shocraich a' ghainmheach agus gun thoisich planntrais a' fàs, chaidh oidhirp a dhèanamh air an talamh àiteach, an toiseach le caibe agus a rithist le treabhadh, tha làraich iad seo rim faicinn air uachdar na gainmhich. Ach, bha cruth na tìre frionasach agus `s ann tana a bha leasachadh na talmhainn. Air taobh an ear na làraich, bha loidhne chrìoch stèidhichte le co-dhiù trì pòlaichean fiodh-cladaich ann an toill dhomhainn air am bruthadh timcheall le clachan, a' dèanamh sgaradh bhon t-seann àite-cleachdaidh bho na raointean gnìomh gu tuath `s an iar. Beag air bheag bhathas a' cladhach slocan ann an sreathan thairis air àite a bhiodh na achadh no achaidhean. Tha an fhianais sin a' toirt oirnn beachdachadh gur ann airson salchar chon no salchar mac an duine a bha na slocan, mar dhòigh dealbhaichte air an àite a mhathachadh. Tha iad air an cladhach gu sgiobalta agus air an lìonadh air ais mus tèid an ath shloc a chladhach. Còmhla ris an treabhadh, tha na slocan seo a' foillseachadh gu robh daoine a' fuireach faisg air làimh agus gu robh am fearann a' sgaoileadh nas fhaide gu tuath is an iar, agus bhiodh an oirthir aig an àm suidhichte nas fhaide chun iar.

Cha robh ann an càrnadh a' ghainmhich ach aon thachartas ann an sreath de chall nàdarra, nam measg ìre na mara a bhith ag èirigh, a' leantainn fear an dèidh fear agus a thug buaidh air an àite far a bheileas a chladhach. Chun iar, raining am muir fada a-steach dhan fhearann agus sguab e leis fianais arc-eòlais sam bith a choinnich ris sìos gu faisg air bonn na slocan. Dh'fhàg e às a dhèidh tràigh mhòr de mhol is clachan-muile. Bha Crawford den bheachd gun tàinig cuid den chloich bho thoglaichean Neolithic eile a chaidh an sguabadh a-mach às a' ghainmhich agus a chaidh am milleadh leis a' mhuir. Bhiodh an tachartas air cruth na tìre tuath air an làraich atharrachadh gu tur, agus far an robh boglach sgùr am muir e, a' fàgail toiseach tòiseachaidh sàilean A' Chroig Bheag a' sgaradh Rubra Huilis bhon sgìre air a chladhach. Bhiodh e coltach cuideachd gum biodh an oirthir air gluasad a-steach an tìr.

Tha sinn a-nis air gluasad air falbh bho dheireadh àm Neolithic agus a-steach don àm thràth anns an Linn an Umha agus chan e a-mhàin gu bheil atharrachadh san ailtireachd ach anns na stuthan a bhathas a cleachdadh. Air an làrach seo, thatar a' tuairmse a bhith eadar 2100 - 1900 ro àm Chrìosd. Bha daoine fhathast a' fuireach faisg air làimh, ach air falbh bhon chosta agus buaidh dhìreach na mara agus gluasad na gainmhich, agus bha iad a' gabhail ris an tràigh ùr mar phàirt den fhearann aca, our chleachd iad e mat àite-adhlaicidh do dh'aon neach le càrn oireach a thogail, agus suas gu 1974 chithear bogha den chloich. Bha àite-adhlaicidh ùr a dhìth do dh'fhir òg a bhàsaich. Chaidh ciste cloiche a dhèanamh san talamh, faisg air a' chàrn oireach, far an deach a chorp a chàireadh. Thug e ùine mus deach clach freagarrach a lorg airson a' mhullaich, agus leis a' chiste fosgailte lìon i le gainmheach agus sprùilleach eile. Mu dheireadh, chaidh clach throm a lorg agus a' cur air uachdar na ciste gus an deidheadh càrn a thogail air a mhuin. Chaidh crann àrd dìreach a thogail an toiseach, le clachan suidhichte inghearach mu na h-oirean agus leac sa mheadhan ag èirigh mar cuach-mhullach chloiche air uachdar na ciste agus ri taobh an t-sean chàrn. Mu dheireadh bhiodh an cabhsair leathann cloiche air a thogail is air a lìonadh le ceapan agus clachan, a' gabhail a-steach tobhtaichean an t-sean chàrn còmhla ris a' chòrr. Bha tom mòr timcheall air a' chàrn ùr a bhiodh na shealladh cudromach san sgìre agus an rud as motha air a thogail le mac an duine anns an sgìre. Ri linn crìonadh an oirthir cha do mhair ach pàirt den charragh seo. `S iongantach mur an robh gnathasan co-cheangailte ri adhlacadh na ciste, oir chaidh bloighean de chrèadha Beaker, nòsach dhan àm, an lorg fon chàrn.

Bha sgeulachd nan gnìomhan air taobh an ear nan togalach eadar-dhealaichte. Cha deach falbh leis, no cladhach, a dhèanamh air càrnan cleachdaidh nua-chreagach agus bha an làrach fhathast ri fhaicinn. Chaidh carragh a chur an àite aon de na crìochan fiodha bho Linn an Umha le bonn chloiche. Eadar seo agus an t-seann chnoc den chrann chleachdaidh, bha sloc beag san talamh far an deach togalach eadar-amail a thogail, rudeigin coltach ri teanta, le bhith a' cleachdadh puist fhiodha agus craiceann bheathaichean, pìosan talamh agus fraoch. Dh'fhaodadh nach robh daoine ann fad ùine, ach tha fianais ann a' sealltainn gu robh e air a chleachdadh tric. Bha grunn slocan teine na bhroinn, is tòrr uinnseann air an làr. Tha fianais ann air cleachdadh an togalaich, le grunn phìosan chrèadha fhathast rim faicinn, slocan le maorach na mara, bun-stuth airson innleachdas nàdarra a chruthachadh, an cois gràinnean eòrna mar fhianais air fàs gràn air an làraich.

Tha e coltach gun deach an structar seo a leigeil seachad mus deach ciste a thogail am broinn a chrìochan, ach ris a' bhogha a tuath tha àite-adhlacaidh neach eile. `S e fireannach nas sine a tha seo, agus chaidh a phasgadh ann an cruth fior lùibeach, na chois bha soitheach crèadha, cinn chnàimhean agus closach laoigh. Gu h-annasach, tha suas ri 250-350 bliadhnaichean eadar bàs an laoigh agus an neach, a' cur an aire gur dòcha gun deach an duine air a thasgadh mus deach adhlacadh. An dèidh do leac na ciste a bhith na h-àite, chaidh càrn ceap is chlachan a thogail mu thimcheall, a' gabhail a-steach tobhta an crann is ùrlar bho anmoch san linn Neolithic. Tha e a' coimhead coltach gu robh taobhadh agus suidheachadh an tursa mar phàirt den adhbhar airson làrach a' chàrn agus adhlacadh na ciste, oir tha an tursa a' tomhadh chun chàrn. Coltach ri na carraighean cleachdaidh air taobh siar na làraich, bha iad seo cuideachd air fulang bho bhuaidh crìonadh oirthir.

`S e seo an togalach mu dheireadh de ghnìomhan a' chinne-daoine ro-eachdraidh air an clàradh air an làraich seo. Bhris am muir a-steach a rithist bhon iar a' toirt air falbh an sprùilleach morghain timcheall na carraigh adhlacaidh agus ga thilleadh gun call a dhèanamh air, agus tha e coltach gur e sin mòr thachartas nàdarra mu dheireadh a thug buaidh air an làraich. Ach, tha ìrean na mara ag èirigh agus a' gluasad an costa a-steach dhan tìr le amannan socraichte eatarra. Rè an naoidheamh linn deug, chaidh falbh le na clachan a' chàirn gu togail ballaichean tiormachaidh a' cheilp, àth losgaidh a' cheilp agus `s dòcha airson na croitean aig Greinetobht. Bha sgeul tuineachaidh na làraich agus na tobhtaichean bho linn Neolithic agus tro thràth is meadhan Linn an Umha air fhalach bho thuilleadh gainmhich is cheapan gu deireadh an fhicheadamh linn AD.

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PART 1 Introduction

By Beverley Ballin Smith

Location, topography, vegetation and place-names

The *Ard a' Mhorrain* peninsula, the area where Iain A Crawford spent part of at least 31 years researching, surveying and undertaking archaeological excavation, is situated in the middle of the northern coastline of North Uist. The modern road courses its way north-west from Lochmaddy on the east coast of the island, to follow the line of settlement which divides the predominant fragile and lower lying machair and sands in the northernmost part of the island from the rough grazing and higher land to the south (Figures 1.1 and 1.2). At the township of Grenetote, a track leads north onto the 5 km-long Udal peninsula with its prominent dune hillocks aligned SW/NE, that points towards the small island of Boreray, to which it may have once been attached when sea levels were lower. The geology of the Udal peninsula is predominantly gneiss from the Lewisian Complex, which has been altered by regional metamporphism. Stones derived from igneous granites, rhyolite and other metamorphic rocks, and those of sedimentary origin, would naturally end up as waterworn boulders, cobbles and pebbles on the Udal peninsula, brought by currents from the surrounding coastal outcrops of South Harris, Berneray, other parts of North Uist, and further afield (Geological Survey of Great Britain 2017).

The eastern side of the peninsula merges with the extensive sand beaches that form the coastline leading north-east to Berneray. The exposed western or Atlantic side of this long narrow peninsula is punctuated half way up by the rocky headland of *Rubha Bheilis*, and less than 1 km north-east of the site is the smaller *Rubha Huilis*, which is still attached by a sand beach to Udal. This headland forms the northern limits of Crawford's main project area. The western and southern edges of *Rubha Huilis* are currently under attack from rising sea levels, and it is separated from a larger expanse of solid gneiss bedrock, sand and turf to the immediate south by *A' Croig Bheag*, an ever widening rocky bay. It was on the southern edge of this bay, due south of *Rubha Huilis*, that the rescue excavation of *Rubha an Udail* X6, known as RUX6, was situated at NGR: NF 824 785 (Figure 1.3).

The subsoil layers beneath RUX6 (see PART 2) were complex, acidic, damp, dark and contained low amounts of shell sand and little organic matter (see PART 4 pollen). Members of the Cambridge Quaternary Research Group who visited the excavations in October 1991 (see site archive) examined specimens of what they called *aeolianite,* or *frit* as Crawford termed it. The occurrence of this material indicated that there may have been a freshwater lochan, pond or spring available to the inhabitants of RUX6 in the late Neolithic that calcified the early deposits of blown sand, which then became compressed and lithified during the further accumulation of sand. It is an example of the changing conditions experienced in the landscape and how the past topography was very different to what it is now.

The present day peninsula is impressive, with prominent sand hills covered with machair vegetation, typified by Marram, Bent and beach grasses, with other species such as Red Fescue, Atriplex sp, plantains, Buttercup, Daisy, Galium, Poa sp and Bird's Foot Trefoil forming colourful

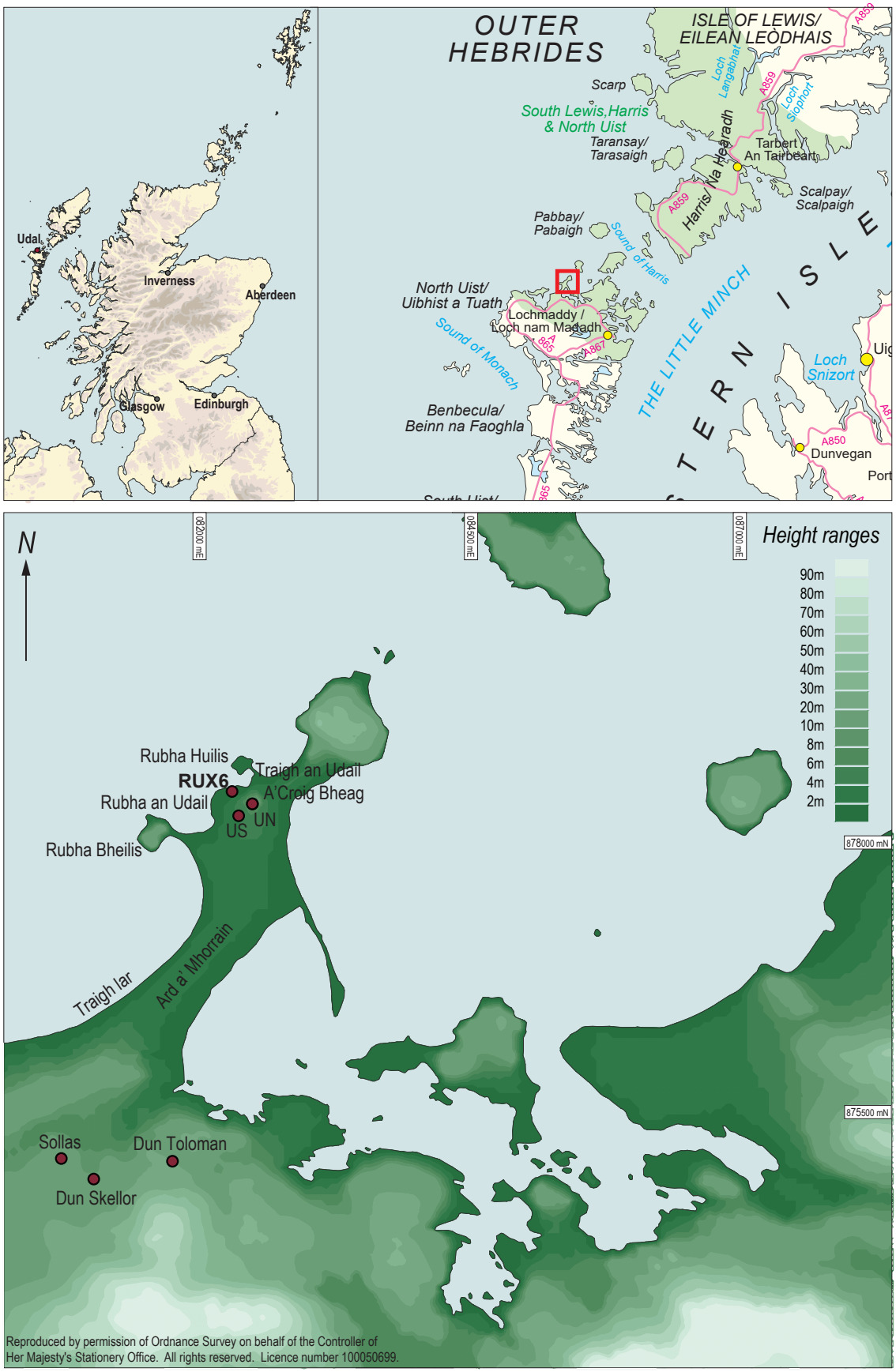

FIGURE 1.1:
Geographical location of Udal

FIGURE 1.2:
Aerial view of Udal - Map data © 2017 Google.

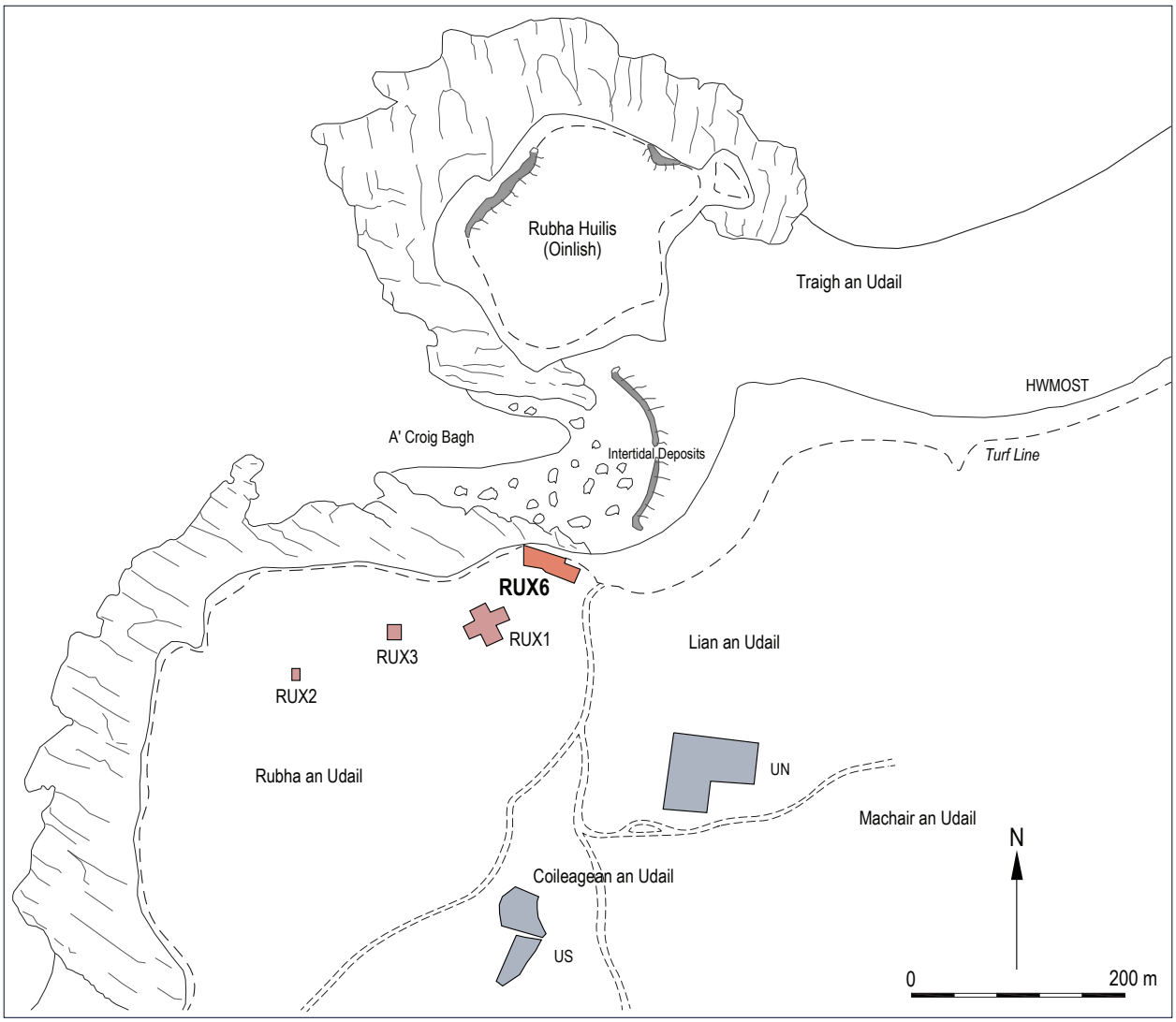

FIGURE 1.3:
Location of the site

meadows on other areas (Figure 1.4). The machair can be both wet and dry, and the flatter parts of the grassland areas have been ploughed and grazed since prehistory (Dickinson and Randal 1979: 271, table 2).

FIGURE 1.4:
The machair vegetation in bloom - © BBS.

Place names

The place name *Udal* is a bit of a conundrum and there is considerable doubt over its meaning. Beveridge (1911, reprint 2001: 95-96) considered the following explanation:

> 'UDAL, close to Oilish at Ard a' Bhorain, is certainly Norse, whatever its meaning. After rejecting several alternatives, *út-dalur* or 'outer valley' appears to be the most suitable, even if this promontory is rather to be described as a plain than a dale. There seems indeed to remain a trace of a 't' in the present local population.'

High sand hills were already present before the appearance of the Norse, as late Iron Age occupation was certainly present on one (the north), and vestiges of occupation might have persisted on the other (south), of the two main settlement mounds of the Udal project (Figures 1.1 and 1.2). The large valley between might be the dale or valley referred to, or another one in the vicinity. The shifting sands of the peninsula make it very difficult to determine the topography of the landscape 1100 to 1200 years ago.[1]

An alternative explanation has been put forward by Graham-Campbell and Batey (2005: 25), 'The term '*udal*' survives in Scandinavian Scotland from the Old Norse óðal as a technical term for inherited land bound by complex rules.' Odal or Udal Law still survives on Orkney and in Shetland, mainly in connection with property and foreshore rights, and it is still the dominant form of farm landholding in Norway (Linklater 2002: 22 and 25). However, The Treaty of Perth 1266 resolved conflict between the kings of Norway and Scotland by transferring the Outer Hebrides to Scots Law (Beveridge 1911, reprint 2001: 21) thereby removing any connection it had to Udal Law.

Other place names on the peninsula are:

Coileagan an Udail - knoll or dune(s) of the Udal, where Crawford's main sites of Udal North (UN) and Udal South (US) were situated.

Rubha an Udail - Udal headland or promontory, where the sample excavations of RUX1-6 were carried out.

A' Croig Bhàgh / Bheag - Croig Bay (seaweed bay)

Traigh an Udail - Udal beach

Lian an Udail - Udal (wet) meadow

Ard a' Mhorrain - The main or big moraine, east of the large sand dunes, forms the spine of the peninsula, which is cultivated

Rubha an Udail X6 - RUX6 was the 6th sample excavation or exploration on the area north-west of the main sites Udal South and Udal North.

Background to the project and its origins

A short introduction is required to explain Iain A Crawford's interest in the West of Scotland in general and in the Udal, North Uist in particular. He was born in Glasgow, and after military service he studied history at Christ's College, Cambridge, where he gained his BA (Hons) and post-graduate diploma. Between 1952 and 1960, when he became a Research Fellow at the School of Scottish Studies, University of Edinburgh, the details of his life are unclear. It is believed he went to live on the West Coast of Scotland for part of the time where he learnt Gaelic, fished and presumably travelled extensively around the Inner and Outer Hebrides and the West Highlands. It is quite likely that his interest in landscape, archaeology and the settlement

1 I am grateful to Dr Barbara Crawford for further discussion on this matter.

origins of the islands developed then. He must have already been familiar with the Udal peninsula and targeted that area from Edinburgh, when he undertook a parish survey of North Uist, producing in 1965 *Contributions to a History of Domestic Settlement in North Uist*. By that time he had already researched the documentary evidence for Udal and his excavations had been in progress for two years.

The following narrative is mainly the words of Iain A. Crawford, with additional input from Imogen Crawford. The account has been edited from his various interim reports and other unpublished accounts to bring the text up to date. Some of Crawford's unusual words and phrases have been altered to make the text and his meaning clearer.

In general, the work on the *Ard a' Mhorrain* peninsula was based on the background of a general research project into the history of the settlement economy and environment of the north-west highlands of Scotland between Kintyre and Sutherland, an area for which detailed historical information is almost totally lacking prior to the eighteenth century. This is especially true of the approximately 1,500 years which may lie between the many presumed Iron Age sites of the area (few of which were investigated adequately prior to the beginnings of this project) and the end of the medieval period *c.* 500 AD to 1500 AD. After the collation of the documentary evidence for later periods (Crawford 1965), a collection of oral tradition in the Gaelic of the area was made and more general linguistic material gathered. After field survey, it became quite clear that further progress could only be made as a result of a successful archaeological excavation campaign, preferably beginning on a multi-phase site. The recovery of evidence by archaeological techniques was to be associated with documentary, linguistic and other historical sources for the period in this area. The project may have appeared somewhat ambitious, but as the outstanding problem was the extreme paucity of material, the scope was extensive in a nominal rather than a real sense.[2]

A close appraisal of the situation revealed that by 1968 (5th interim report) the only research of significant calibre had been linguistic. Documentary research had been mainly genealogical and not always of a sufficiently high standard in that field.

The archaeological evidence is insignificant to non-existent over protracted periods, and from the mass of evidence for the Iron Age itself, at the time still unassessed satisfactorily, and liable in some aspects to substantial redating.[3] Until the compilation of detailed estate records in the eighteenth to nineteenth century, the settlement evidence is negligible. Physically there exists only the major fortified medieval structures which are largely uninvestigated and in some cases even undocumented, many of the major church settlements are in a similar plight, and additionally, a large number of minor religious foundations are wholly unresearched. The crucial settlement unit, the *baile,*[4] the ancestor of the nineteenth century crofting-township, is virtually unknown in its pre-clearance form (late eighteenth to the nineteenth century), and this ignorance naturally becomes intensified viewed retrogressively backwards from the eighteenth century.

Crawford's immediate tactics were to examine the baile. This was done firstly by intensive field survey to assess surviving surface evidence, to sample particular areas in depth (Crawford 1965), and thereafter to select a series of suitable sites, preferably with at least one or more periods of occupation, especially occupation of the clearance period, or as close to it as possible. His intention was to elicit from these sites a chronology of settlement pattern and of artefacts, and to establish the whole archaeological criteria for the area, and further to build up a framework for economic and ecological studies. The Outer Hebrides were selected for this exercise as being less disturbed by later settlement than the mainland, but also because the machair areas of the Outer Hebrides clearly represent the most propitious settlement area in the West Highlands, especially as regards medieval or earlier settlement.

The Uists and Benbecula were selected as the most favourable settlement zone in the Outer Isles, containing elements of site preservation in the drifting sands of the west coast machair. Ideally, a site was required showing reasonably extensive settlement, covering the maximum possible range of period, and capable of producing evidence of

2 This was written in 1968 before the area of excavation and the number of finds and samples grew considerably (Crawford 1968).

3 Euan MacKie had completed his excavation at Dun Mor Vaul by 1964 but the results of his work were not published until 1974, but Crawford would have known of MacKie's work.

4 This is what Crawford considered he had encountered on the top of the Udal North sequence.

buildings and general economy, which could act as a yardstick for the whole area. In fact, the sort of type site of which Jarlshof in Shetland constitutes the classic example for Scotland, and which has hitherto been lacking for the West Coast. A crucial factor in the preservation of such sites is the presence of a natural insulating material. In Western Europe, apart from peat growth, blown sand accumulation is the only common phenomenon of this sort, and Jarlshof is the typical example of sand accretion over successive settlements. In the West Highlands, in particular where soil deposits are very shallow, it seems improbable that well stratified sites will be discovered except in areas of extensive sand deposit. These fertile, alkaline machair areas are most suitable for early agriculture and therefore settlement; and the accuracy of this observation needed to be tested.

The serious disadvantages of sand hills are that they can erode totally, redepositing their contents in disorder in their wake, and they may reform again upon this redeposition. This latter factor constitutes a serious archaeological hazard. Although, as elsewhere, unfortified early settlement sites are rare, there are instances of such in the Outer Hebridean machair, but generally they suffer from the handicaps outlined above.

An intensive field survey of this area (by Crawford prior to 1963) showed Udal to be the most promising candidate for a type site. No other site in the Uists visible to field survey showed small find evidence, surface remains, and the possibility of prolonged occupation similar to Udal. The only remotely comparable site, Sligeanach, Kildonnan (see Parker Pearson and Zvelebil 2014: 5-7) in South Uist, has been almost totally eroded by wind – the material there redeposited in an archaeologically meaningless jumble. Crawford intimated that this fate was gradually overtaking the *Ard a' Mhorrain* peninsula and many other smaller sites in the machair areas.

Previous considerations of the remains at Udal had placed it in the nebulous category of 'earth houses'. A limited excavation carried out by Erskine Beveridge (1911 reprinted 2001, illustrations between pages 128 and 129) at the beginning of the century had reached this conclusion. The RCAHMS on the Outer Hebrides, Skye and the Small Isles (1928, the site was investigated in 1914) comments on the site in some detail commencing as follows.

> 273. 'Earth houses (ruined) UDAL. Amongst the sand dunes on the western side of the peninsula extending North East from Sollas, at Udal about 2½ miles north of Sollas, are four large sand dunes, the slopes of which are covered with kitchen midden refuse, consisting of shells, animal bones and fragments of handmade pottery. At different places on the slopes are quantities of stones, dislodges by wind denudation, apparently the ruins of earth houses'.

Iain Crawford, with his wife Harriet Crawford, began fieldwork on the Udal peninsula in 1963. He called the area *Coileagan an Udail,* which he described as consisting of two large and two smaller sand dunes, rising to some 12.5 m above the surrounding *machair*[5] level and covering an area of some 11 acres. The following year a number of structures (RUX1-5) were plotted on the *Rubha an Udail* headland westwards of the dune area. It was intended to put trial trenches across many of these but excavations at RUX1 became so increasingly complex that work was confined to that site. He did not return to the area until 1970, when he established that a Beaker occupation phase with possible structures was present in RUX3. Although he was in close proximity to what later became RUX6 situated on the coast, Crawford did not admit until 1974 that a site had been noted among the shore sand hillocks as having a possible stone core.

Although Crawford did not know it at the time, he later indicated that the general area of *Coileagan an Udail* constituted a 'fossil' landscape containing occupation levels, structures and fields. These landscapes had been conserved by sand deposition, insulated and confined by wind, and possibly sea erosion, to the extent that 4,000 years of human occupation and old ground horizons extending much further back, existed undisturbed (1970, 7th interim report).

The environmental history of the area

Since 1963 when Crawford began his field work at Udal, there has been considerable research into the coastal changes of the Uists, the understanding and investigation of machair, and in particular those areas of the northern part of North Uist. It is to his

5 Described as low-lying arable or grazing land formed near the coast by the deposition of sand and shell fragments by the wind.

credit that he took great interest in the new study area of the 'environment', a word that only came into general usage from the mid to late 1950s. He may have got to know Professor William Richie at the Department of Geography, University of Aberdeen, who by the early 1960s had already begun to study the machair of South Uist for his PhD. There may well have been an exchange of ideas and points of view that influenced the thinking of both men.

For Crawford, the key to understanding the settlement of any of the Udal sites, but especially that of RUX6, was to understand the natural processes that interleaved with, or affected the survival, of archaeological remains. His new wife, Imogen Crawford, an ecologist, was also interested in the development of machair, and together they may well have developed a deep understanding of the natural processes that affected that site.

It is apparent, reading Crawford's summary reports for each phase at RUX6 that he produced for the Scottish Development Department, that he based his understanding of the cultural remains on a more developed knowledge of the natural process that had been at work on the site from prehistory to the present day. Although he was clearly aware of the different archaeological time periods of occupation on RUX6, his understanding of them was more clearly based on his 'reading' of the natural accumulations of sand, their removal and their redeposition. He must have had much discussion with geomorphological scientists that visited the site and applied the knowledge gained to his better understanding of the natural processes at work.

From an archaeological point of view, his detailed description of the site levels (the natural and anthropomorphic sands and soils) surpasses that of the cultural remains. They interleave in the archaeological story, and the development of the machair had a huge impact on the settlement and use of the site. The following section has been updated to bring in current work and new developments in the understanding of the machair environment and coastal change. Crawford's ideas and words are embedded in the text.

The Outer Hebridean machair, with smaller deposits found elsewhere in Western Scotland, is a 160 km long, mainly calcareous shell sand build-up forming the west littoral of the Outer Isles. It is a light coloured material with a high lime content that produces a fertile soil when covered in vegetation. The fluvio-glacial sands and marine shell that came inland with rising sea levels and stronger winds is a finite resource derived from a marine platform or the continental shelf off the west coast of the Hebrides (Hansom and Angus 2006: 404). It probably started to be brought onto the land from approximately 3750 BC (Ritchie 1979: 117), Phase E at RUX6, but the major primary deposition took place somewhere after 2400 but before *c.* 2200 cal BC from the evidence from RUX6 (see PART3, Table 3.1). This indicates the event was a little later than the 2500 BC date proposed by Ritchie. He suggests there was stabilisation *c.* 1750-1500 BC, but episodes of movement, disturbance and redeposition would continue to occur (ibid).

The stabilisation was probably an indication that the marine deposits were exhausted as there is now no further additional marine resource to add to the dune system. The movement inland of the sand system leaves the coastline exposed to erosion from rising sea levels (Jim Hansom pers. comm. and see also NCCA 2017 for monitoring and mapping of coastal change).

Despite considerable fluctuations in its extent in prehistoric and historic times, machair constituted a crucial and valuable environment for early settlement in the Western Isles, as the many sites of all periods situated there would indicate. It was Crawford's central hypothesis of his Udal research project that the region and the machair were underestimated and undervalued in the history of settlement development when he began work there in 1962. The agricultural use of machair and its link with settlement was part of the cultural context mentioned by Hansom as part of his definition of it (2003: 473). At Udal, a rock escarpment with thick clay deposits and developed soil attracted the earliest settlement discovered at RUX6 – the late Neolithic. Subsequently, massive drifts of shell sand accumulated that covered the settlement and into which later prehistoric settlement developed, only to be subject to the cyclical events of sand envelopment and later deflation.

On the east side of the *Ard a' Mhorrain* escarpment a massive sand plateau or plain, up to 16 metres high built up, which sloped gradually to sea level. This would have been part of the natural cycle of the 'beach-dune-machair' system (see Hansom 2003: figure 9.2). The focus of Bronze Age and later settlement moved into this area, but subsequent erosion only left surviving remnants as isolated

hillocks. Extreme sand blow in the seventeenth century AD caused evacuation of the contemporary settlement, and further erosion in 1905 and 1962 continued to threaten the prehistoric and later sites, and created an island from the headland of *Huilis* (*Uilish* or *Oinlish*), or as it was when named in ninth/tenth centuries (see maps generated for National Coastal Change Assessment (NCCA) 2017, using the 1880s first edition OS maps as a base).

Early research by Crawford showed that the extent of the machair plain on the west and north-west coast of North Uist makes the island one of the most suitable of the Outer Hebrides for early agriculture and settlement. In addition, the irregular shore line as compared with the relatively unindented west coasts of South Uist and Benbecula, for example, has made for unusual conditions of sand movement, with important effects on settlement preservation (Figure 1.5).

FIGURE 1.5:
The dune system and vegetation - © BBS.

Crawford's documentary research, together with place-name indications and surviving oral tradition, indicates periodic and considerable mobility of machair sand in the Uists, and whilst in the adjacent islands this has tended to be a steady wind and sea erosion, the more broken coastline of the north-west of North Uist has encouraged redeposition on rocky promontories. In fact, it is clear that on the machair areas of the Sound of Harris, and to a limited extent in the sound between Benbecula and South Uist, the shell sand has spread almost to the east coast before the prevailing westerly winds, and in the process islands have been made and unmade and substantial stretches of arable plains deposited and removed (see processes in Hansom 2003: figure 9.2). It is almost certain that the *Ard a' Mhorrain* peninsula has been much affected by these coastal fluctuations, which have been prominent factors in the disturbance of occupation continuity in the area and in the preservation of evidence. In spite of these issues, Crawford wrote in 1970 that the archaeological investigations at Udal presented an excellent chance of dating the deposition of the machair in that immediate area (7th interim report).

The whole area of north-west machair between Griminish and Port nan Long, some 16 km across, contains a very large number of early historic and prehistoric sites of all kinds. The *Ard a' Mhorrain* peninsula itself (see Figure 1.3) contains on present knowledge (1965) two undated forts (Dun Toloman and Dun Skellor) and three early chapel sites at its landward base, the large wheelhouse at Sollas on the *Machair Leathann* re-excavated by Atkinson in 1957 (Campbell 1991), the *Coileagan an Udail* complex with a nearby Bronze Age cemetery complex partly investigated in 1964[6] (1st interim report), and a fifteenth century cemetery near the tip. Reliable oral tradition states that until the end of the nineteenth century two tidal channels intersected just below the *Ard a' Mhorrain* headland and nineteenth century sailing directions for the west coast of Scotland confirm this. Furthermore, there is strong evidence that people born about 1800 recalled a time when the whole machair plain (the outfield), but in fact the main cultivation area of the Grenetote township on the east side, was a great sweep of sterile sand. Crawford also noted that the same plain had started to diminish again since the mid-1930s. It seems very likely that this peninsula was chosen for medieval settlement, probably for its strong strategic situation across the west end of the Sound of Harris and as the only permanently navigable east-west route between the Butt of Lewis and the Sound of Eriskay, some 240 km to the south, and for defensive isolation which would be accentuated if tidal channels existed at the time.

It seems that there may have been gradual erosion even by 1469, as a ½ pennyland, perhaps as little as 4-8 hectares (10-20 acres) arable at which the charter evidence (SRO C2/13/1) rates the *Ard a' Mhorrain* area, seems very small for the purlieus of a ruling family like the *Siolachadh Ghroaidh* who probably held Vallay as well. The apparent cessation of permanent occupation c. 1666 (SRO CC3/9/30 and GD221/105, Crawford and Switsur 1977: 133)

6 Crawford thought he had investigated three cists, but there is no surviving site record or material cultural evidence to suggest burial urns, human remains or a cemetery complex.

may well indicate the destruction by sea and wind of an arable machair which did not reappear until the nineteenth century. Sixteenth century Exchequer rolls state that Uist generally had been diminished by erosion, and there are many minor references to these events.

The prospects for preservation were uniquely favourable for the site, as the two catastrophes (*c.* 1468 and *c*. 1666) created major interruptions to its occupation, and insulated it by sand, isolated it by tidal erosion, and rendered it undesirable for later occupation and disturbance by the disappearance of the arable land. When the township of Grenetote was resettled in 1889, despite the distance involved, many houses and walls were raised with tumbled material from the south Udal dune (US) occupation, probably the outward scatter of the Iron Age structures' walls. Otherwise, circumstances have combined to protect this area from the hazards which have destroyed the bulk of West Highland medieval sites. It is improbable that such a fortunate combination of circumstances will be found again in the Outer Hebrides.

During the first excavation of the RUX6 site in 1974 (11th Interim report), Crawford noted that there had been substantial erosion of the surface of the area probably for the most part in the eighteenth and nineteenth centuries – a period of optimum machair destruction generally, and which led to final desertion noted at the Udal North (UN) (see Crawford and Switsur 1977: 133). The narrow line of machair has also been under erosion by wind and sea in the past, especially as a result of rising sea levels, and also currently in exceptional conditions. The effect has been to destroy the machair sand shore-face along most of the Udal headland frontage. Fortunately, the natural rock has just sufficient elevation (up to 5 m OD) to prevent inundation of the hinterland. Only near the head of the relatively sheltered bay, *A' Croig Bheag*, which forms the northern face of the *Rubha an Udail*, has there been the survival of a short length of machair shore face. This remnant of turf shore line appeared to cling to the lee of a small hillock (*c.* 5 m high), which Crawford identified in the 1960s as a probable cairn. The exceptionally high spring tide of January 1974 (a perihelion event[7] with the moon also in alignment and a following wind) cut open this short face, as most other west-facing coastal sand frontings in the Western Isles, and confirmed the identification of the mound.

Crawford reported in the 17th interim report 1980 that despite a visit of the Machair Research Group in 1978 and the initial doubts expressed by the geomorphologists on the limited exposure of the shingle bed on which the cairn complex stood (level VIII), it was felt that the indications were that it was tidal wash or redeposition of eroded material. The material graded out in size away from the sea, and its surface immediately below was clearly puddled. Other details pointed to this shingle deposit as a tidal wash probably produced by exceptionally high tides, indeed one comparable to that of 1974 but dating between *c.* 2200 and 1900 BC (see PART 3). Crawford thought that astronomical calculation may possibly date the precise tide in question. During the winter of 1980/81, high tides entered the site area, but the new stone revetment constructed in 1980 prevented any damage as on previous occasions this would have caused severe scour of the shore face (18th interim report 1981).

In spite of the high tide events, the processes of accretion, removal and redeposition of the machair are seen by Hansom and Angus as 'a continuum of essentially similar processes that have operated with only minor variation since at least the middle Holocene' (2006: 407).

The original research aims 1963

When Crawford started his research at Udal, the purposes of the project were diverse, as described above. The primary and over-arching aim was to find the right site, and he had probably considered Udal as a likely candidate in the very early 1960s. His choice was most probably confirmed during his fieldwork for his North Uist parish survey of settlement published in 1965. He possibly knew the area well and had certainly done copious research into the historical background of local settlements, land ownership and investigated unpublished estate records. He also collected copies of pertinent charters and land records going back to the medieval period from the Scottish Record Office (now the National Archives of Scotland). Crawford also researched the published documentation on relevant clans and searched through the map collections of the National Library of Scotland, as well as relevant documents held by the University of Edinburgh. He had also read and digested the 1911 publication of *North Uist* by Erskine Beveridge, which probably helped pinpoint

7 The definition of perihelion is the point in the orbit of a planet, asteroid or comet at which it is closest to the sun.

North Uist in general and Udal in particular as a starting point for further work. The implication of all his historical investigation is that Crawford may well have already begun this research before he joined the School of Scottish Studies, University of Edinburgh, but his appointment gave him the opportunity to continue his work, and especially to test his hypotheses through archaeological survey and excavation.

His 1965 publication demonstrates his enthusiasm for this research, which played to his strengths as a historian. It could have also been a period where he was at his most confident. He had completed a post-graduate diploma in archaeology some years previously, and in 1963 he was only 35 years old and at the beginning of what he probably hoped was an exciting future working in the Uist machair.

The purpose of undertaking a trial excavation in 1963 at Udal was for the following reasons:

- the necessity for establishing a type site for the area and period by means of a well-defined stratigraphy with dateable small finds and a pottery sequence
- to establish whether the site fulfilled its surface promise
- to establish whether intact structural plans (building outlines) existed
- to establish whether wind erosion had not proceeded so far as to make more intensive excavation unrewarding
- and to rescue the evidence before wind, sheep and rabbit activity combined to cause complete shifting of the massive dunes containing the site.

These intentions became more specific over time and in 1980 they included for RUX6 the salvaging of further information from the areas damaged by erosion since the emergency rescue operation of 1974, as well as the aim to establish the quality and extent of any further Bronze Age or earlier levels, and to protect them.

Crawford's intention in 1981 was to complete the work of 1980 and 1974, which was to salvage the substantial Neolithic and Bronze Age monuments being eroded at every exceptional high spring tide. In addition, he wanted to secure the excavation area from the severely damaged shore face erosion initiated by the perihelion tide of 1974, extending along the south-east corner of the bay *A' Croig Bheag*. By doing this he would have been better equipped to protect the Bronze Age settlement deposits (RUX1-3) sampled in 1964 and 1970. Further noted in the interim report of that year was the aim to expose the complete Beaker horizon first, and after recording it, to strip it to recover the complete plan of Neolithic Building 2 (DH) (18th interim report).

At the beginning of 1983, only a small area at the eastern side of the site measuring 9 by 9 m of Beaker and Neolithic deposits remained unexcavated. Crawford hoped to excavate this completely down to sterile (natural) levels throughout, but despite good weather conditions this was not achieved, principally due to the complexity of stratigraphy in that area (20th interim report).

By 1984 Crawford had realised that 'it was essential to set up a computer terminal with adequate facilities and a modem connection direct to a mainframe' as 'it was the only way to overcome the associated problems of large quantities of material and shortages of staff and resources' (21th interim report).

Introduction to the excavations

A low mound at RUX6 close to the main Udal complex of sites and adjacent to the coast had been under observation for some time and was thought to be a possible cairn (Figure 1.6). Crawford had examined it and realised that it comprised early deposits that related to a now vanished coastline. These deposits had been at severe risk of marine erosion for most of the 20th century, but the accelerated sea level rise during the last half of the 20th century rendered the situation crucial. The great perihelion tide of January 1974 not only caused severe, widespread and unpredicted damage to the soft coastlines of the Western Isles machairs, but it was probably the highest tide for over 2,000 years.

The 1974 coastal erosion cut through the face of the cairn mound and a fresh vertical section was still exposed in March of the same year (Figure 1.7). Crawford realised that in the now low cliff section, the complex stratigraphy showed elements of not only a damaged cairn, indicating that it was of Bronze Age date, but that it was stratified above earlier settlement horizons. An emergency excavation and improvised shore face conservation were carried out in the summer of 1974 as an addition to the adjacent research programme at *Coileagan*

FIGURE 1.6.
1964 archive photograph of trial excavations. The RUX6 cairn is under grass a
the right hand edge of the image below the beach - © Udal project archive.

an Udail. The results of this intervention were more substantial and more important than Crawford could have anticipated. After an interval of six years, the then Scottish Development Department (SDD) agreed to fund the exploration and rescue of the evidence from the exposed and eroding cairn and the associated structural material to its east. The excavation campaign was funded for 1980, 1981 and part of 1983 when the Neolithic dimension was identified. The work continued in 1983 and 1984, and was completed with funding from the Udal Research Project.[8] A stone and concrete shore face dyke was erected in 1980 to protect the immediate machair grazing and the contiguous prehistoric levels previously noted inland (RUX1-3), but this did not long survive the end of the excavation. By 2011 when the site was visited, there was no clear indication of where RUX6 had been as the stone and concrete dyke had been destroyed. By removal of the stone structures and the soft deposits, the excavation had aided the effects of coastal erosion, and all that was left was part of the eroded back section of the site, and an extended boulder-strewn and bedrock beach (Figure 1.8).

Over the five years of excavation of the site, 398 days were spent in the field. Table 1 indicates the amount of time spent on each year in North Uist. In some years, the field season was split into two, with a spring and a summer excavation period.

Year	Fieldwork periods	Days in the field
1974	2 days in the field 27-28 May	2
	the main excavation between 17 July to 5 September	50
1979	site was visited but not recorded or excavated	1
1980	preparation between 12 March - 3 April	23
	the main excavation between 8 June - 16 August	70
1982	spring excavation between 25 March - 14th April	21
	the main excavation between 4 July - 2nd September	60
1983	the excavation between 5 July - 9 September	66
1984	spring excavation between 4 May - 14 May	10
	the main excavation between 14 June – 17 September	95
	Total	398

TABLE 1.1:
Excavation dates and days in the field [9]

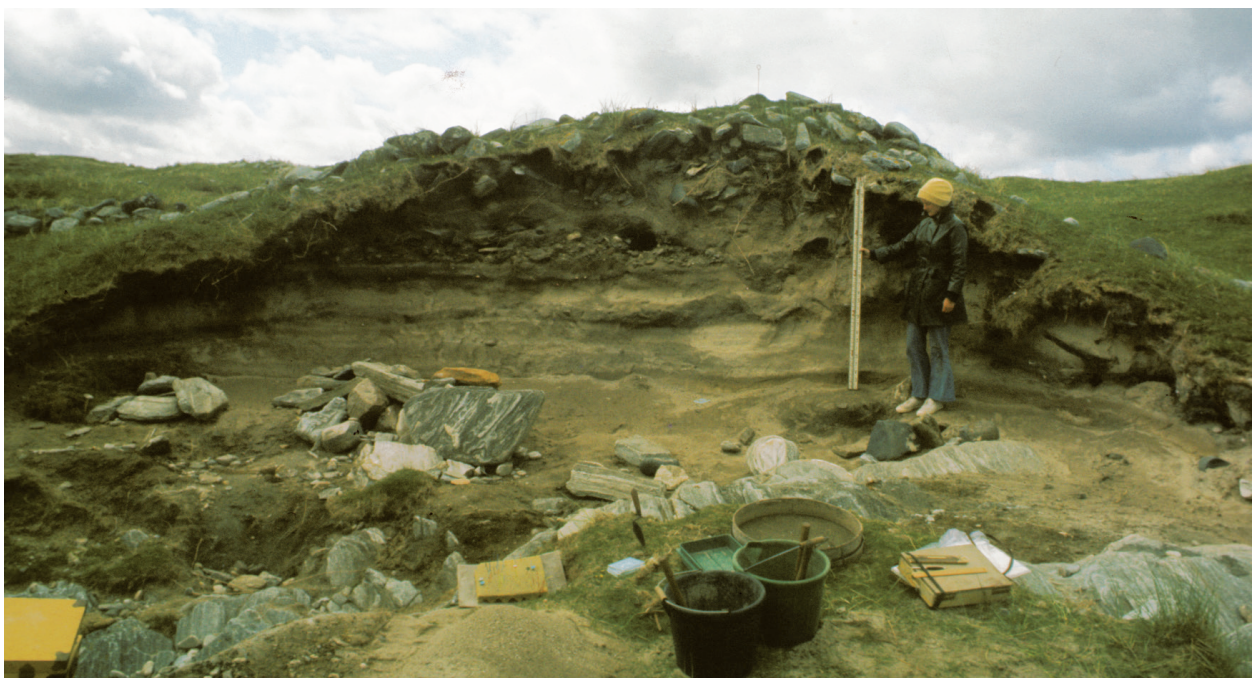

FIGURE 1.7:
The section through the cairn revealed in 1974 - © Udal project archive.

8 This was largely Crawford's own money.

9 Crawford calculated 378 days were actually worked in the field. The area excavated was 670 sq m.
The cost of excavation was equivalent in 1992 of £98,000

FIGURE 1.8:
The boulder beach in 1994 after the site had been excavated - © Udal project archive.

Site location

The perimeter of RUX6 – the sixth of the *Rubha an Udail* X complex of early prehistoric sites – was restricted to the north by the shore erosion face, to the west by a rock fissure, to the east by a gradual thinning of deposits and a final interruption from a nineteenth/twentieth century cart track. However, to the south deep occupation layers have been shown to run through to RUX1, which can now be seen clearly as part of the same site.[10] To define this salvage excavation an ad hoc boundary was drawn just south of the main structures creating a back section some 15 m behind the pre-existing shore line.

Within these confines extensive settlement and ritual levels were exposed, classified into five phases or periods (PART 2, Table 1).[11]

10 Crawford assumed this, although it has never been entirely proven. Occupation deposits were also found in the other RUXs, but we cannot prove they were the same as at RUX6.

11 It was found prudent to continue with Crawford's phasing and his nomenclature, but they are discussed further below.

Methodology

There is no clear or full account of how Crawford set about his excavation of RUX6. The following information has been brought together from investigation of plans and sections, interrogation of the photographic evidence, and his written account of the phases of the site that he wrote in the 1990s.

Site preparations and setting out of the grid

Crawford set out an accurate imperial grid aligned E/W and N/S in 1974 and surveyed in four 12 x 12 foot grid squares across the cairn mound and shore face. These were D, E, probably F, G and H but there is no record of exactly where they were. No sketch or drawing survives of the mound and coastline before the excavation started, and the section (Archive section No 1.) of the eroded face of the cairn has been lost, with again no record of it, apart from that it was included on a list of sections for the site. It may have been redrawn or superseded by another section, but that is not certain.

This early arrangement of excavation grid squares, a method Crawford had used on RUX1-3, did not come to light until the remains of another possible

burial had been detected among the disarticulated human remains which were being analysed in 2016 (see PART 3). The question that was asked was where were the human remains located? A copy of a sketch plan present in the 1974 interim report (11th interim report: 6) was found that had been highlighted by Crawford to indicate the likely position of a burial in a pit, situated on the cliff edge, and this was confirmed by photographs. However, there was no mention in his notebook of the finding of this feature, no detailed plan of the pit or its contents, and no detailed photographs.

In 1980, the site grid was maintained but changed to metric and all subsequent plans and sections were drawn using metric measurements. Before each excavation season general maintenance took place such as the repair of fencing, replacement of survey points, and minor excavational (sic) repairs.

The initial excavations in 1980 were confined to the original 1974 area, which was deturfed and stripped of its covering of plastic sheeting. The trench was also extended further east some 9 metres to enable the whole of Neolithic House 2 (DH) to be excavated. In 1981, the projected excavation area was extended probably to the east, deturfed and then machine excavated to the uppermost occupation levels. This produced a cutting 3 m wide by 18 m long and meant the removal of sterile sand deposits to a depth of 2-2.5m.

Plans, sections and photographs

Plans and sections were drawn in 1974 at imperial scales of 1:06, 1:12 and 1:24 and in pencil, ink and felt tip. In 1980 the recording had changed to the metric scales of 1:10, 1:20 and 1:50. The site plans and sections from 1980 onwards are intact, but a lot of reworking and overworking has taken place on the original pencil drawings. Crawford liked to use a variety of inks, felt tips and also Tippex whitener, to enhance or highlight important features or stratigraphy. Unfortunately, the original pencil drawing and details are often lost under layers of later colour and changes of interpretation.

As far as can be ascertained, the black and white photographic record appears to be fairly complete, apart from the beginning of 1974, where there are missing images of the storm damage to the site and the features found there, and 1983, where only half a film of images survives for the 66 days of work on site. It is more than likely that films were lost in the post, were under or over exposed, or destroyed in the processing. The colour transparencies show a fairly complete record, as described for the black and white images, but under exposure was a problem at times.

Written record

The main written record of the site is six of the collection of 31 interim reports produced annually after each year of excavation from across the whole of the Udal project area. Only the 11th, 16th, 17th, 19th, 20th and 21st interim reports are relevant to RUX6. These give a fairly comprehensive account of the features found and excavated, of the main artefacts retrieved, and of the site interpretation at the time.

Crawford used 12 school exercise books for all his day to day sketches and notes for all the work at RUX6. Their contents are largely incoherent and similar to a stream of consciousness, like a shopping list or an *Action Drill* as he termed it. His sketches are largely incomprehensible, as they are usually without context, direction, grid reference, measurements or scale, and in many instances it is difficult to know to what they refer. They could have been drawn to remind him of a detail or a location, but even that is unclear, and it is equally possible that after the passing of several years they made little sense to him.

His written notes are largely restricted to grid issues, what was completed or removed on a given day, and things that needed further attention or clarity. They demonstrate no overall understanding of excavation matters, there are no matrices or stratigraphic accounts of relationships between layers and features, and no measurements or descriptions of shape or depth. It is almost as if Crawford was lost in the minutiae of things but could not stand back and look at the bigger picture. His notes are extremely hard to read, even harder to interpret, and in the end they provide little understanding of what he actually thought about what he was finding. They reveal none of his thought processes or give any guidance to site interpretation.

Crawford's use of day books and their lack of context may explain why he spent a lot of time carefully going over the section drawings and plans, adding notes to them and highlighting details. They may have been his main tools of understanding some of the complex stratigraphy of the site (Figure

1.9). During the post-excavation process it became apparent that Crawford altered his labelling or numbering of some layers, either during fieldwork or afterwards (see PART 2, Tables 1 and 2). He did this as his understanding of the site stratigraphy became more confident, but it has left problems or confusion as to whether the relabelling of organic and sand layers was consistently applied to all records. His reworking of the site drawings gives us his last thoughts on matters of phasing, but there is some doubt concerning the boundaries between phases and whether they reflect reliable environmental and anthropogenic changes or simply Crawford's final interpretation of site data.

At the beginning of the 1974 season, Crawford's then wife Harriet wrote several good descriptions of the day's archaeological activities and what was found and their relationships and possible interpretations. After two weeks, her entries ended. From that point onwards, all the notes in the exercise books were written by Iain Crawford.

On site sieving and post-processing of site finds and samples

The general Udal methodology was that all spade or hand-dug sand and other soils were dry sieved on site. The sieving system at RUX6 was positioned just out of the excavation area and onto the foreshore (Figure 1.10). In addition, six soil flotation samples were processed: Phase B (2), Phase C (1), Phase D (2) and Phase E (1) and it is interesting to note that there were no seeds present in Phase E or the exterior of Phase D. However, Phases B, C and a Phase D floor all produced seeds as expected. In the specialist reporting (see PARTS 3 and 4), of samples and materials, some of which were sieved, it became clear that there were problems. It is suggested that either sieving of building floors was not a consistent operation or that some of the more significant sieved residues were lost, for example, seeds from the floors of the Phase D buildings and the lithic fine material that should have been present. This has resulted in a serious loss of information and interpretation.

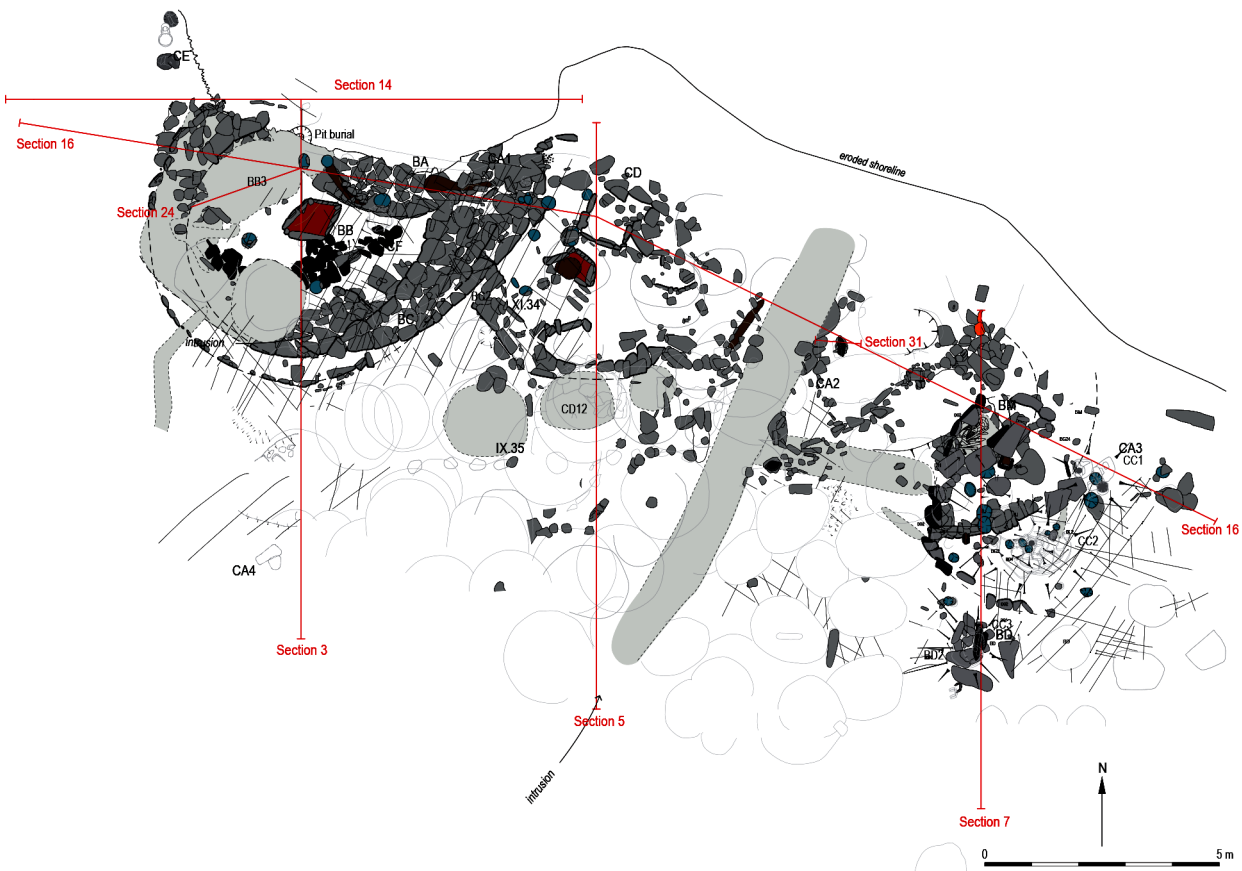

FIGURE 1.9:
The section drawing locations across all the features of the site.

FIGURE 1.10:
Sieving station on the shore just north of the excavation trench and beyond the protective wall - © Udal project archive.

Taken as a whole, the processing of materials and samples from RUX6, accounts for c.10% of the whole Udal project. Greenhouses and sheds with plenty of light were bolted together to create what became known as Crawford's *Chrystal Palace* (Figure 1.11), for the sorting, labelling, registering of finds and writing of finds cards. Usually there was one person on each excavation season that took responsibility for the recording of finds and samples.

FIGURE 1.11:
Crawford's Chrystal Palace - © Judith Finlay Aird and Graham Aird.

Monitoring and protecting the site during the excavation

In 1974, after excavating to the shingle level below the cairn, the site was covered with polythene sheeting and turfed over, and the excavated cairn material used to build a protective wall along the shore face. It is not clear if the site was monitored for continuing erosion in the intervening years, but in 1979 severe sea erosion was noted as having continued at the site, and damage to the underlying 'Food Vessel and Beaker levels had ensued'. The Scottish Development Department agreed to support a limited project to secure the shore face by walling and to excavate the more immediately threatened deposits in 1980. In May 1980 prior to the excavation season, a low cemented stone wall was constructed for c. 10 m along the shore face above the HWMOST.[12] During the excavation that year, the area behind the wall was backfilled and a turf covering placed on the revetted bank. At the end of the excavation the site was stabilised with plastic sheeting, returfed and the totally excavated western area completely back-filled behind the revetment wall.

Further trial trenching took place in 1981 to determine the extent of shore line deposits, which extend along the full extent of the damaged shore face (some 30 m) to the angle it made with the beach of the adjacent bay *A' Croig Bheag* at the point where the main trackway into the area reached the shore. The trenching left a 1 m wide 'tidal' baulk to seaward, and spoil was deposited against it on the shore face and later turfed, forming a grass levee to conserve the junction between the shore and the excavation. Additional spoil was added to it on the seaward face by soil sieving during the excavation. In spite of the attempts to protect the site, the backfill material, the walling defence and the shore face were completely removed in January 1993. The entire area of the excavation to the back section is now beach (Figure 1.8).

Nomenclature of features

The naming of structures and features during excavation was always intended to be informal, descriptive and, most important, relevant to the circumstances of its uncovering. However, what has evolved as on-site communication was not appropriate for formal identification and publication.

12 High Water Mark at Ordinary Spring Tides

At RUX6, a parallel system was established which described features using their level (Phase) number and their site grid 6 figure reference number.[13] The 6 figure reference number is derived from 'squaring' the feature and taking the co-ordinates from the bottom left-hand corner. This combination produced unique codes embodying both period and location information.

However, it was felt that a feature code should be used in the reports and lists that was shorter but hierarchically structured to enable easy database manipulation and cross referencing.

1st field - a letter denoting the phase in RUX6 - A, B, C, D or E

2nd field - a letter allocated sequentially A-Z denoting a major, functional unit, a building or a collective group of contexts.

3rd field - a number denoting a sub-feature belonging to the unit of the 2nd field, such as a hearth, floors and pits.

4th field - a number occasionally used to denote plural, collectives, resettings and other minor fine details.

Post-excavation activities prior to 2008

After the final excavation season in 1994, Crawford had an obligation to the SDD to write up the site, as RUX6 had been excavated with their funding. He was required to prepare the site records, write a site narrative, and have specialist analysis undertaken on the finds and samples in order to publish the site. Crawford set about contacting colleagues and others to undertake some of the specialist work, and this is explained in the introduction to PART 5.

Between 1994 and 1995 he produced five documents, the accounts of the levels and features found in the five different phases (A to E) of the site that he considered Data Structure Reports, and a sixth document, *Information and Notes for Specialists: the Udal Collection, with special reference to RUX6,* was compiled in 1996. Each of the phased accounts consisted of a background to the project with a brief site description and a commentary on the levels involved in that phase, with details of the individual levels and the features they contained, with reference to some images, plans and sections, grid references and finds. They included some photographs, interpretive drawings, plan lists, a diagram locating the sections, and lists of sections, features, photographs and a summary finds list. But Crawford had a problem due to his difficulty in separating straight facts from supposition. His descriptive accounts are interesting, but although he provided data, these reports did not include a narrative account of events.

In 2002 Crawford agreed, after a personal approach from the author, to some help in allowing a trial digitisation of the RUX6 plans and sections by GUARD, University of Glasgow, with funding from Historic Scotland (previously the SDD). The aim was to see if it was possible to build on a successful communication break-through to assist him in furthering the publication process. In spite of some hesitancy from Crawford in allowing primary records to leave his study, he may have reached the reluctant conclusion that he needed some external help in bringing his life's work towards publication. The work achieved by GUARD staff (the author as project manager and Kylie Seratis as technical help) was the first major step forward in eight years. The project ended when Crawford could no longer work with GUARD due to a family death which brought on a deep depression. Although communication continued with him over the next two or three years there was no further progress in the project. In 2008, after a long illness, he moved to a care home.

Post-excavation developments since 2008

The transfer of the archive and collection in 2008 from the Crawford family into the author's caretakership was a dramatic story told elsewhere (see online lectures Society of Antiquaries of London and Society of Antiquaries of Scotland). In 2010, the Comhairle nan Eilean Siar was updated on the availability of the collection for study, and together with Historic Scotland part-funded a two year assessment of the full Udal collection until 2013. This work resulted in the 're-excavation' and examination of the entire collection, the rebagging and boxing of all the artefacts, and the production of a detailed assessment report (Ballin Smith 2013). Running in tandem with this was the initiation and production of a database created by the digitisation

13 This is not a context number but is derived from the sand layers identified on Udal North and applied to RUX6. The level is identified by Roman numerals.

of over 32,000 record cards generated from the Udal project finds and samples. Most of the database work has been privately funded, but its maintenance and updating has also been funded through Historic Scotland (now Historic Environment Scotland).

In 2013 the collection was declared to the Treasure Trove Unit and the ownership of it was legally transferred to the Museum nan Eilean and the Comhairle nan Eilean Siar in 2014. The post-excavation programme for RUX6 funded by Historic Scotland, Historic Environment Scotland and the Comhairle nan Eilean Siar, was initiated in 2015, but was mostly carried out in 2016, ending on 31 March 2017. The results of that work are found in this volume.

Updated post-excavation research aims and objectives

The final research aims were written as an addendum to the 2013 Udal post-excavation research design (Ballin Smith 2015). They included the following:

Specific research aims and objectives

The aims of undertaking research at this site were to understand:

- the relevance of the site to the understanding of the earliest settlement in North Uist.
- the natural landscape around the site and the environmental and man-made changes that impacted on it, including the development of the machair.
- how sea level changes affected the landscape and the viability of settlement at this site.

The research objectives were:

- to undertake the collation and analysis of the stratigraphic evidence to produce the stratigraphic narrative and identify the sequence of events at the site.
- to undertake specialist analysis and research of all surviving artefacts in order to investigate their manufacture, and the exploitation and procurement of resources by the inhabitants of the site.
- to undertake specialist analysis and research of all surviving environmental samples in order to understand the nature of the natural environment, the exploitation and procurement of wild resources, the practice of agriculture and animal husbandry, the availability of food stuffs for the human diet, and changes in the landscape.
- to obtain taphonomically secure samples for radiocarbon dating specific structures and features across the sequence of events at the site, and to establish the date, type and function of structures and related deposits.
- to include recent research into sea level and coastal change using Lidar data and other techniques.