

RESULTS OF THE FIRST TWO SEASONS OF UNDERWATER SURVEYS AT
EPISKOPI BAY AND AKROTIRI, CYPRUS

A Thesis

by

JUSTIN RYAN LEIDWANGER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

December 2005

Major Subject: Anthropology

RESULTS OF THE FIRST TWO SEASONS OF UNDERWATER SURVEYS AT
EPISKOPI BAY AND AKROTIRI, CYPRUS

A Thesis

by

JUSTIN RYAN LEIDWANGER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Approved by:

Chair of Committee,	Cemal Pulak
Committee Members,	Shelley Wachsmann
	Christoph Konrad
Head of Department,	David Carlson

December 2005

Major Subject: Anthropology

ABSTRACT

Results of the First Two Seasons of Underwater Surveys at Episkopi Bay and Akrotiri,
Cyprus. (December 2005)

Justin Ryan Leidwanger, B.A. Classics, Loyola University Chicago

Chair of Advisory Committee: Dr. Cemal Pulak

During the summers of 2003 and 2004, a small team of graduate students initiated an underwater archaeological survey off the coast of Cyprus as part of the University of Cincinnati excavations at Episkopi-*Bamboula*. With the support of the Institute of Nautical Archaeology (INA) at Texas A&M University and RPM Nautical Foundation, the project explored the seabed south and west of the Akrotiri Peninsula at Episkopi Bay. The overall aim of this ongoing diachronic survey is to determine the extent and nature of maritime contacts at Episkopi-*Bamboula* and its Greco-Roman successor, Kourion, from the Bronze Age through the Byzantine period.

Efforts during these first two seasons concentrated on simple visual inspection of several promising areas near dangerous cliffs, offshore rocks and shallow reefs, as well as potential harbors and anchorages. The team recorded substantial pottery and anchor assemblages at Dreamer's Bay, Cape Zevgari, and Avdimou Bay, including at least three shipwreck sites. Throughout the area, amphoras and anchors attest to varying levels of maritime activity over the past three millennia.

The underwater material record reveals a modest level of Classical trade, followed by a respectable increase during the Hellenistic era. While very little material thus far can be attributed to the earlier Imperial centuries, the greatest quantities in terms of both individual sherds and coherent assemblages speaks strongly to intense trade during the Late Roman (Early Byzantine) period, from the fourth through the seventh century. Not surprisingly, this rapid flourish in maritime trade parallels the expansion of settlement throughout the island, including its eventual collapse in the middle of the seventh century.

optimis parentibus
(qui mihi semper adfuerunt)

ACKNOWLEDGEMENTS

Any project such as this could hardly have been completed without the dedicated assistance of dozens of individuals. First and foremost, I wish to express my thanks to Dr. Gisela Walberg, director of the University of Cincinnati excavations at Episkopi-*Bamboula*, for her unwavering support and trust. The Department of Antiquities of Cyprus, under the direction of Dr. Sophocles Hadjisavvas in 2003 and Dr. Pavlos Flourentzos in 2004, kindly granted permission for the survey, while others in the Department greatly facilitated the effort, including Dr. Maria Hadjicosti (now Curator of Museums and Surveys) and Ms. Eleni Procopiou (Archaeological Officer for Limassol). In addition, Dr. Flourentzos graciously offered access to the Department's survey archives, which proved quite beneficial.

Funding was generously provided for both the 2003 and 2004 seasons by RPM Nautical Foundation of Florida, and I thank Dr. Jeffrey Royal and the Executive Committee, including Mr. George Robb and Mr. Jim Goold, for their faith and interest in seeing this project grow. Major support for the 2005 season has been granted by the Cyprus Society for the Protection of Cultural Heritage (CYSUCH) in Limassol, an exciting and upcoming organization. My thanks go out to Mr. Adonis Papadopoulos and Ms. Kiara Tsokkou, with whom I look forward to working for seasons to come.

On Cyprus, I owe debts of gratitude to the many individuals and organizations that have made the project infinitely more successful and wholly enjoyable. Ret. Maj. Frank and Mrs. Anthea Garrod have always been ready to lend a hand, getting me out of

some would-be sticky situations and providing friendly advice and assistance in all areas. Dr. Danielle Parks (Brock University) kindly shared years of experience digging and living in area. The Cyprus American Archaeological Research Institute (CAARI) in Nicosia has been a consistently useful resource, and I thank Dr. Tom Davis (Director) and Diana Constantinides (Librarian) for their support. The *mukhtar* and people of Episkopi absorbed us into their kind community, and provided a home for the 2004 season. We have been lucky to work without interruption from start to finish in large part due to the Security Office, Media Operations, and Health Safety and Environment at the Western Sovereign Base Area, where I thank in particular the energetic Capt. Leon Thompson, along with Maj. Tony Brumwell, Maj. Peter Thacker, and André Leverton.

Back in the United States, I wish to express my gratitude to Dr. Donny Hamilton, President of the Institute of Nautical Archaeology (INA), for his advice, encouragement and support. Thanks to the Archaeological Committee of INA for its adoption of and continuing interest in the project. The diligent INA staff kept everything running remarkably smoothly, and I owe much to their efficiency. I am of course grateful to my committee, Dr. Cemal Pulak (Chair), Dr. Shelley Wachsmann, and Dr. Christoph Konrad, for their assistance and care with the present work. The indefatigable staff of Interlibrary Services at Evans Library went far out of its way to make sure that I had every resource necessary for my research.

The survey itself was conceived by Dan Davis (University of Texas at Austin), without whose vision, talent and energies this and many other projects never would have seen the light of day. Other archaeologists have graciously shared information and

advice, including Duncan Howitt-Marshall (University of Cambridge), Frank Haggerty (WSBA ret.), Dr. John Leonard (American School of Classical Studies at Athens), Dr. Stella Demesticha (Piraeus Bank Group Cultural Foundation), Dr. Demetrios Michaelides (University of Cyprus), Dr. Lucy Blue (University of Southampton), Dr. Nic Flemming (Southampton Oceanography Centre), Dr. Uzi Baram (New College Florida), Peta Knott (Flinders University), Bjørn Lovén (Zea Harbour Project), and Dr. Stuart Swiny (State University of New York at Albany). Outside the Cypriot “vortex,” Dr. Deborah Carlson and Dr. Suzanne Eckert (both of Texas A&M University) have each broadened my horizons across the field.

I consider myself quite lucky to have had such a consistently remarkable crew. Former Texas A&M University students and lasting friends Toby Jones and Troy Nowak worked countless hours on every aspect of the survey in 2003, teaching me much and making it a truly collaborative effort. In 2004, Josh Daniel (Texas A&M University) and Kelcy Sagstetter (Boston University) each did several shares of work, bringing much to the project and learning whatever else was necessary. Emilia Vassiliou and Elena Stylianou (State University of New York at Albany) assisted with the work in 2003 while instructing me in the pleasant pastimes of Cyprus. Other dedicated volunteers contributed their energy and good spirits, including Marios Avgousti and Michael West (Texas A&M University) in 2004. The artifact drawings included in this thesis and many others were completed by Troy Nowak (2003), Joshua Daniel and Kelcy Sagstetter (2004). Artifact photography was undertaken primarily by Toby Jones and Chris Parks in 2003, and Joshua Daniel in 2004.

The congenial atmosphere on Cyprus has a fine way of turning contacts into friends. I would like to thank Savvas Palamas, Kyriakos Petrombeas, and Paraskevas Yiakoumi, who, always true to Cypriot hospitality, invited us into their homes and livelihoods. Hayden and Martine Falloon (Black Rock Dive in Pissouri) and Michael Tsirponouris (Blue Thunder/ProDive in Limassol) each run a fantastic dive shop, and have been persistently helpful to this newcomer. Many at the Western Sovereign Base Area have been of great help, including Andy Weeks. Sqn. Ldr. Tony Triccas generously provided storage space at the Akrotiri British Sub-Aqua Club. Likewise, Marjorie Young and Chuck Koziol of Houston Scuba Academy took an interest in the survey and worked hard to make sure we had the skills and equipment we needed. I should also like to thank Alexis Catsambis for assistance with Modern Greek accents, and Sarah Kampbell for acting as courier during the final stages of preparation and submission.

Finally, my family has been a remarkable support throughout the entirety of fieldwork and research, including providing a welcome distraction from the tedium. My parents' steadfast commitment to education has allowed me to discover and pursue my interests. I cannot hope to express sufficiently to them the appreciation and admiration I feel for their patience, understanding and encouragement, but I hope they will accept the present work as a start.

NOMENCLATURE

A standard series of abbreviations is unique to the chronology and ceramics of Cypriot archaeology. Used extensively in Chapter II and occasionally thereafter, they are given in parentheses below alongside generally accepted dates for all major periods of Cypriot prehistory and history. The pre-Roman periods, for which dates are based on ceramics and therefore naturally approximate, and derived primarily from the work of the Swedish Cyprus Expedition (especially Gjerstad 1960), with revisions from later publications by V. Karageorghis (especially Karageorghis 1982 and Karageorghis 1998).

Neolithic	c. 7500 - 3900/3800 B.C.
Chalcolithic	c. 3900 - 2500 B.C.
Bronze Age	
Early Cypriot (EC)	c. 2500 - 1900 B.C.
Middle Cypriot (MC)	c. 1900 - 1650 B.C.
Late Cypriot (LC)	c. 1650 - 1050 B.C.
Geometric (CG)	c. 1050 - 750 B.C.
Archaic	c. 750 - 475 B.C.
Classical	c. 475 - 325 B.C.
Hellenistic	c. 325 - 30 B.C.
Roman	30 B.C. - A.D. 395
Byzantine	A.D. 395 - 1191

Lusignan	A.D. 1191 - 1489
Venetian	A.D. 1489 - 1571
Ottoman	A.D. 1571 - 1878
Modern	from A.D. 1878

With regard to the artifact catalogs, colors and descriptions are given in accordance with the Munsell Soil Color Charts (2000 Revised Edition). All measurements are expressed in meters unless otherwise specified. The following abbreviations are used in catalog entries.

H. height

L. length

W. width

D. diameter

T. thickness

P. piercing dimensions (height x width) for stone anchors (hawser and secondary holes) and lead block

pres. preserved

TABLE OF CONTENTS

	Page
ABSTRACT	iii
DEDICATION	v
ACKNOWLEDGEMENTS	vi
NOMENCLATURE.....	x
TABLE OF CONTENTS	xii
LIST OF FIGURES.....	xiv
LIST OF TABLES	xx
CHAPTER	
I INTRODUCTION.....	1
Cyprus in the Eastern Mediterranean	1
Episkopi Bay in Cyprus.....	2
Previous Scholarship and Underwater Research.....	9
The Survey at Episkopi Bay	12
Objectives.....	12
The 2003 Field Season	12
The 2004 Field Season	20
II A BRIEF HISTORY OF THE EPISKOPI BAY AND AKROTIRI REGIONS AND THEIR ARCHAEOLOGICAL SITES.....	23
From the Pre-Neolithic to the Chalcolithic	23
The Bronze Age	27
The Greco-Roman Era	33
Byzantine and Medieval History.....	43
III DREAMER'S BAY	47
Overview	47
Stone Anchors	51
Catalog of Stone Anchors	54
Ceramic Evidence	67

CHAPTER	Page
	Hellenistic through Mid-Roman..... 67
	Late Roman 72
	Undated Finds 97
	Catalog of Ceramics 97
	A Possible Harbor at Dreamer’s Bay 120
	The Dreamer’s Bay Harbor and Anchorage in Context..... 124
IV	CAPE ZEVGARI AREA 129
	Overview 129
	Ceramic Evidence 134
	Classical through Mid-Roman 135
	Late Roman 147
	Later Finds..... 152
	Undated Finds 153
	Catalog of Ceramics 154
	A Lead Block from Site AK-S3 181
	The Cape Zevgari Area and Wrecks in Context..... 183
V	AVDIMOU BAY 189
	Overview 189
	Stone Anchors 193
	Catalog of Stone Anchors 196
	Ceramic Evidence 208
	Catalog of Ceramics 216
	A Possible Mole at Avdimou Bay 220
	The Avdimou Anchorage and Wreck in Context..... 223
VI	SUMMARY AND CONCLUSIONS..... 230
	Early Maritime Activity at Episkopi Bay and Akrotiri 230
	The Ancient Commerce of Kourion and Akrotiri 236
	The Late Roman Commercial Boom 240
	Considerations for Future Work..... 251
	WORKS CITED..... 254
	VITA 292

LIST OF FIGURES

FIGURE	Page
1.1 Map of Cyprus with important sites and capes mentioned in text	3
1.2 Map of the Episkopi Bay and Akrotiri regions with important sites and capes mentioned in text	5
1.3 Lowlands of central Akrotiri looking east.....	6
1.4 Map of the Episkopi Bay and Akrotiri regions with areas surveyed in 2003 and 2004	14
1.5 <i>Maria</i> , the fishing boat utilized for diving in 2003 and 2004	16
1.6 Number Three Bay, just west of Kourion, looking west.....	18
1.7 Mouth of the Kouris River	19
2.1 Akrotiri- <i>Aetokremnos</i> from the cliff above	24
2.2 Kourion looking north.....	36
2.3 Coastal plain below Kourion looking east	36
2.4 Tunnel at Number Three Bay looking southwest.....	39
2.5 <i>Vounari tou Kambiou</i> and Dreamer's Bay looking northeast	40
3.1 Dreamer's Bay facing northeast	48
3.2 Western Dreamer's Bay looking southwest	48
3.3 Western edge of Dreamer's Bay looking north.....	49
3.4 Warehouses onshore at <i>Vounari tou Kambiou</i>	50
3.5 Plan of Dreamer's Bay with stone anchors and pottery concentrations.....	52
3.6 Stone anchor A10 from Dreamer's Bay	55
3.7 Stone anchors A11 through A14 from Dreamer's Bay	57

FIGURE	Page
3.8 Stone anchors A15 through A18 from Dreamer's Bay	62
3.9 Pinched-handle amphora from Dreamer's Bay	70
3.10 Early LR1 from Kellian in Egypt and later, typical LR1 from Carthage	73
3.11 EBS-04-008 from the western shallows at Dreamer's Bay	98
3.12 EBS-04-009 from the western shallows at Dreamer's Bay	99
3.13 EBS-04-011 from site DR-A	99
3.14 EBS-04-013 from site DR-B	101
3.15 EBS-04-014 and EBS-04-015 from site DR-B	103
3.16 EBS-04-018 from site DR-C	106
3.17 EBS-04-019 from site DR-C	106
3.18 EBS-04-020 from between sites DR-C and DR-D	107
3.19 EBS-04-022 from site DR-D	109
3.20 EBS-04-023 from site DR-D	109
3.21 EBS-04-024 from site DR-D	111
3.22 EBS-04-025 from site DR-D	111
3.23 EBS-04-026 from site DR-D	113
3.24 EBS-04-027 from site DR-G	113
3.25 EBS-04-028 from site DR-G	115
3.26 EBS-04-029 from site DR-G	115
3.27 EBS-04-030 from site DR-G	116
3.28 EBS-04-031 from site DR-E	117

FIGURE	Page
3.29 EBS-04-032 from site DR-E	118
3.30 EBS-04-033 from site DR-F	119
3.31 Dreamer's Bay construction.....	121
4.1 Cape Zevgari facing north.....	130
4.2 Rock and reef at Cape Zevgari looking west	131
4.3 Modern wreck along the west coast of Akrotiri	131
4.4 Plan of the Cape Zevgari area with pottery concentrations	132
4.5 West Akrotiri Bays.....	134
4.6 Concreted mushroom-rim jars at site AK-S4.....	140
4.7 Concreted Rhodian amphoras from the wreck site at AK-S4	142
4.8 Buoys marking LR1 amphoras buried throughout the ledges at site AK-S3 ...	149
4.9 LR1 amphora from the wreck assemblage at site AK-S3	150
4.10 Sinopean carrot amphora from site AK-S4.....	151
4.11 EBS-03-001 from site AK-N1.....	155
4.12 EBS-03-002 from site AK-N1.....	155
4.13 EBS-03-005 from site AK-N1.....	157
4.14 EBS-03-013 from site AK-N1.....	157
4.15 EBS-03-024 from site AK-N1.....	158
4.16 EBS-03-027 from site AK-N1.....	158
4.17 EBS-03-028 from site AK-N1.....	160
4.18 EBS-03-030 from site AK-N1.....	160

FIGURE	Page
4.19 EBS-03-044 from site AK-N2.....	162
4.20 EBS-03-045 from site AK-N2.....	162
4.21 EBS-03-046 from site AK-N1.....	163
4.22 EBS-03-047 from site AK-N3.....	165
4.23 EBS-03-048 from site AK-N3.....	165
4.24 EBS-03-049 from site AK-N3.....	167
4.25 EBS-03-050 from site AK-S2	167
4.26 EBS-03-051 from site AK-S2	169
4.27 EBS-03-052 from site AK-S2	169
4.28 EBS-03-058 from site AK-S2	170
4.29 EBS-03-059 from site AK-S2	170
4.30 EBS-03-061 from site AK-S2	171
4.31 EBS-03-063 from site AK-S2	173
4.32 EBS-03-065 from site AK-S2	173
4.33 EBS-03-066 from site AK-S2	174
4.34 EBS-03-067 from site AK-S3	175
4.35 EBS-03-068 from site AK-S2	176
4.36 EBS-03-069 from site AK-S2	177
4.37 Profile of EBS-03-069 from site AK-S2.....	178
4.38 EBS-04-004 from site AK-S4	179
4.39 EBS-04-006 from site AK-S3	180

FIGURE	Page
4.40 EBS-04-010 from site AK-S4	181
4.41 EBS-03-070 from site AK-S3	182
4.42 North shore of Cape Zevgari at site AK-S4 looking east.....	185
5.1 Avdimou Bay looking east.....	190
5.2 Plan of Avdimou Bay with stone anchors and pottery site	191
5.3 Shrine at Avdimou Bay	192
5.4 Avdimou Bay looking west.....	194
5.5 Raising A01 (EBS-04-005) from Avdimou Bay.....	195
5.6 Stone anchor assemblage 1 (A01-A04, A08) from Avdimou Bay	197
5.7 Stone anchor assemblage 2 (A05-A05) from Avdimou Bay	203
5.8 Stone anchor A09 from Avdimou Bay.....	208
5.9 Amphora top in situ at site AV-A	209
5.10 Amphora body sherd in situ at site AV-A.....	209
5.11 LR4 jars from the seabed off Israel.....	210
5.12 Detailed view of EBS-04-001 from site AV-A.....	211
5.13 Interior of EBS-04-003 from site AV-A	213
5.14 EBS-04-001 from site AV-A.....	217
5.15 EBS-04-002 from site AV-A.....	217
5.16 EBS-04-003 from site AV-A.....	219
5.17 Avdimou mole looking east	221
5.18 Preliminary plan of the possible mole at Avdimou Bay	222

FIGURE	Page
5.19 LR1 amphora neck from Gaza assemblage at site AV-A	227

LIST OF TABLES

TABLE	Page
3.1 Dreamer's Bay anchor dimensions	53
5.1 Avdimou Bay anchor dimensions	196

CHAPTER I

INTRODUCTION

Cyprus in the Eastern Mediterranean

Little justification is necessary for exploring the waters off Cyprus. Ideally situated in the eastern Mediterranean to engage in both the Aegean and Near Eastern world, the island is a geographical windfall, and its diverse contacts are manifest in its archaeological record. Hardly a culture to have touched the eastern Mediterranean and the Near East failed to leave its mark on the island. Cyprus has been defined both politically and culturally by its geography. For, while the water's edge delineated its boundary on the most fundamental and tangible level, its coastal expanses and many wide rivers destined the population to establish an affinity for ships and the sea. This role the islanders quickly and intensively exploited, becoming traders, sailors and shipbuilders *par excellence*.

The third-largest island in the Mediterranean grew to prominence in the region not only because of its size, but also on account of the variety of quality natural resources and manufactured products. For instance, Cyprus was so bountifully endowed with copper that the Romans named the metal *cyprium* after the island.¹ The mines that ring the Troodos range, situated in the western half of the island, supplied the ancient world for millennia. The large cedar timbers of Cyprus were also eagerly sought, particularly for ship construction. Strabo, during the era of the Roman emperor

This thesis follows the style of *American Journal of Archaeology*.

¹ *A Latin Dictionary* (C.T. Lewis and C. Short), "cyprium."

Augustus, stated that “Cyprus is not inferior in fertility to any of the islands, since it produces both good wine and good oil, and also enough grain for its own use” (14.6.5). Over the next two millennia, sugar, cotton, and carobs became the island’s vital exports. Beyond nature’s gifts, however, Cypriots industriously manufactured fine pottery for export. During the Roman period, Cypriot Sigillata and its simpler Red Slip successor enjoyed wide circulation as preferred wares of the eastern Mediterranean.

Today, the archaeological record testifies to both the successes and failures of Cypriot maritime culture. For just as the sherds of foreign imports on Cypriot soil and scatters of native exports abroad recall the vibrancy of day-to-day exchange, the lost cargoes littering these coasts bear grim witness to inevitable merchant disasters. A substantial number of those ships that set out to or from Cyprus never made it to their destinations, with many crashing against reefs or cliffs near shore. But whether by mistake or accident or even aggression, these events have preserved for archaeologists troves of information as wealthy as those excavated in the necropoleis that cover the island. With much of the Cypriot coast being quite shallow and sandy, the distinct likelihood remains that a good proportion of these wrecks may remain well preserved and within reasonable diving depths, as in the case of the famous early Hellenistic merchant vessel recovered near Kyrenia on the northern coast.

Episkopi Bay in Cyprus

Episkopi Bay, west of the Akrotiri Peninsula on the island’s southern coast, is one such promising area (Fig. 1.1). It lies along a stretch of coast traversed by mariners

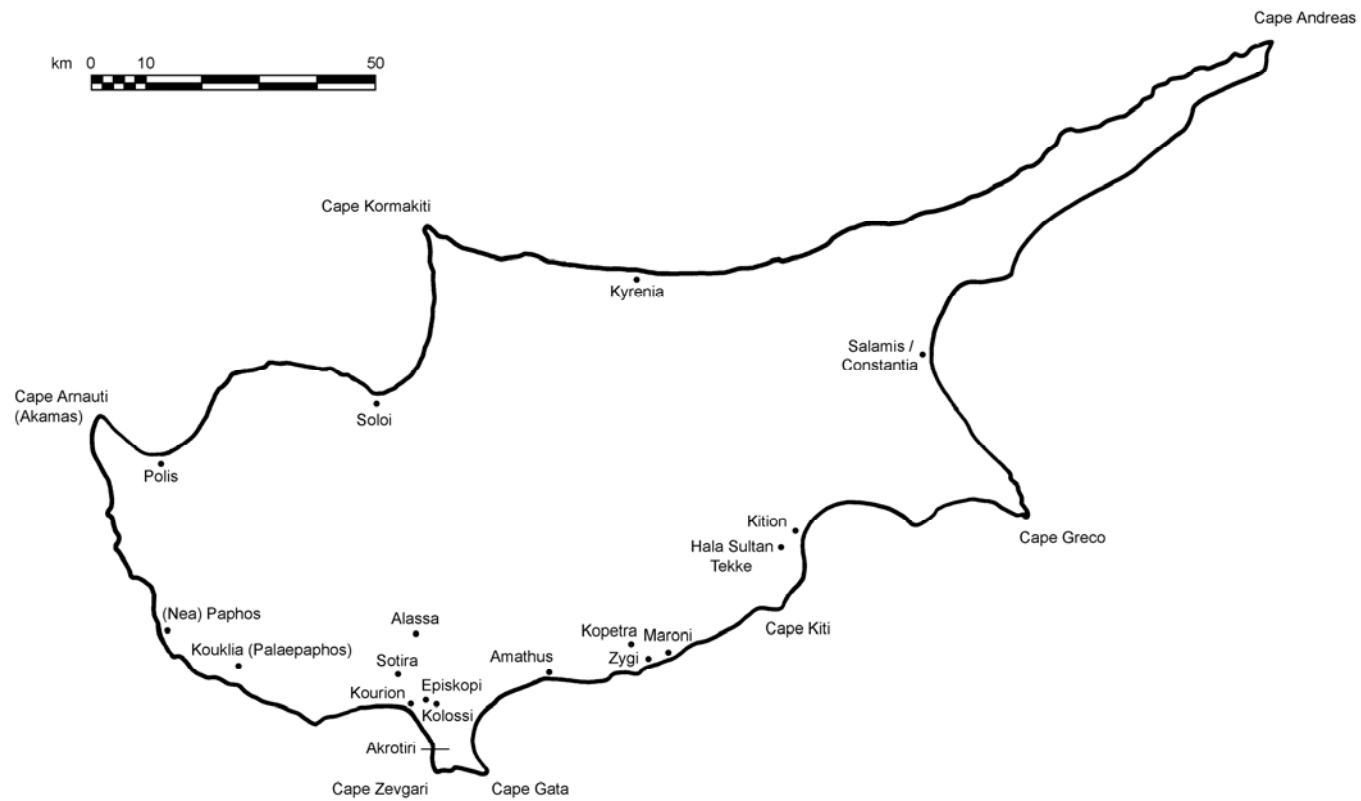


Fig. 1.1 Map of Cyprus with important sites and capes mentioned in text.

sailing some of the most common routes of antiquity, including that between the Aegean and the eastern Mediterranean coast. Ships bound for Egypt would likely have coasted along southwestern Cyprus to Akrotiri, perhaps even stopping off to load or unload goods before running into the open sea ahead of the winds to Egypt. Those mariners destined for the Syro-Palestinian coast could have continued onward as far as Amathus or Kition before crossing the 100 km of deeper water.² In a world when exchange networks were significantly governed by geography and seafaring capabilities, Akrotiri and its western bay would have been key considerations in regional commerce.

Aside from mere transit trade, however, the Bronze Age site of *Bamboula* and its Greco-Roman successor Kourion would themselves have originated and demanded a certain level of exchange, drawing heavy traffic deep into the bay toward the mouth of the Kouris River and the narrow coastal plain below the Kourion cliffs (Fig. 1.2). While the passage into the bay would have been relatively easy, especially when approaching from the west, mariners must have shown great skill in leaving its waters. Winds and currents from the west and southwest predominate during the summer sailing months. Thus, if merchants were to proceed westward, they would have been forced to tack against these westerlies in most conditions.

On the other hand, in an eastward passage, these same winds would have pushed them toward Akrotiri, which then had a markedly different appearance than it does today. During the Bronze Age, the southern edge of the Akrotiri peninsula had been an

² Sherratt and Sherratt 1993, 372-3 fig. 1a-c.

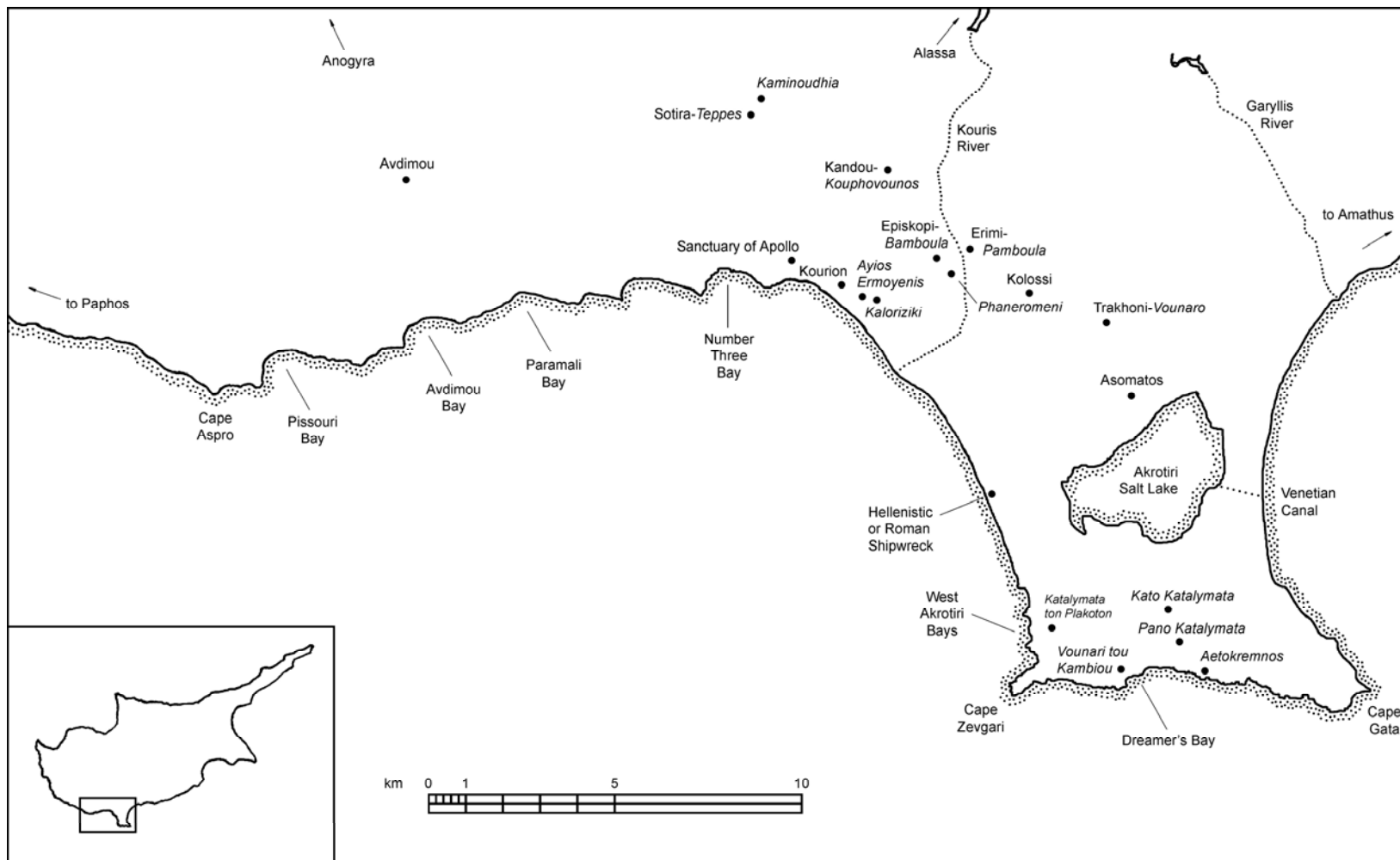


Fig. 1.2 Map of the Episkopi Bay and Akrotiri regions with important sites and capes mentioned in text.



Fig. 1.3 Lowlands of central Akrotiri looking east.

island separated from shore by what was probably a navigable channel.³ Millennia of alluvium from the Kouris and Garyllis Rivers eventually cut off the marine passage with low-lying land-bridges on either side of Akrotiri (Fig. 1.3).⁴ Deposition from the Kouris River, however, was more rapid due to the prominent eastward longshore drift in Episkopi Bay; in fact, the eastern shore of Akrotiri is thought to have remained an open,

³ Bear and Morel 1960, 55; Collombier 1987, 167-8; Blue 1995, 167-8; Leonard and Demesticha 2004, 191. Thanks to L. Blue for sharing with the author her dissertation.

⁴ Stanley Price 1979, 8. On sediment flows from the Kouris and Garyllis Rivers, see also references in Swiny 1981, 52 and Michaelides 1988, 1601.

eastern facing bay until more recent times.⁵ Jouannes Oliua's map of 1638 indicates a "Venetian Canal" running from the Salt Lake southeast to Akrotiri Bay,⁶ of which a short, 8 m-wide stretch can still be seen today.⁷ This passage seems to be paralleled by another in the western half of Akrotiri, where the remains of an 8 m-wide Venetian-era bridge crosses an in-filled canal leading from the northern edge of the peninsula (probably Kolossi) into the western edge of the lake.⁸

Cores taken in 2002 more than 100 m west of the present limit of the Salt Lake revealed layers of fine to medium gravel over 0.80 m below the surface. These results, which corroborate those of an earlier geological coring program from 1998, indicate high energy beach deposits along this ancient straight that originally passed through Akrotiri.⁹ Late Roman pottery sherds recorded at a depth of 9 m below the surface of the sands reveal how much buildup has occurred on Akrotiri's western edge since antiquity.¹⁰ During quarrying efforts in the 1970s, bulldozers uncovered the remains of a possible Hellenistic or Roman shipwreck some 150 m inside the present coastline. Only a scant few details were published on its apparent cargo of Pergamene-stamped amphoras and a marble statuette of Aphrodite.¹¹ This discovery, if it is indeed a

⁵ Blue 1995, 167.

⁶ Stylianos and Stylianos 1980, 95 and 313 fig. 121 (entry 119).

⁷ Heywood 1982, 164-5; Collombier 1987, 168.

⁸ Wessex Archaeology 2002, 11-2.

⁹ Wessex Archaeology 2002, 18. The earlier results by Earthmetrix describe beach deposits 1.2 meters below the surface: Earthmetrix Geotechnical and Materials Engineers of Nicosia 1998.

¹⁰ Bear and Morel 1960, 55. Aeolian deposition is also probably responsible for the buildup of dunes on Akrotiri: Blue 1995, 168.

¹¹ Karageorghis 1978, 884 and 887 fig. 19a-b.

shipwreck,¹² verifies that the area between what is now southern Akrotiri and the mainland was then at least a swampy environment if not a navigable channel.

How long after the Hellenistic or Roman era this tombolo formed and left behind the Salt Lake remains open to debate, though the enormous increase evident in Late Roman traffic at Dreamer's Bay (see Chapter III), combined with the deeply buried Late Roman pottery cited above, raises the intriguing possibility that the rapid growth of this settlement on Akrotiri's southern coast may have been facilitated by a shift in maritime traffic. Note, however, the presence of late Archaic or early Classical amphoras at Cape Zevgari and possible Bronze Age anchors at Dreamer's Bay, showing that the passage around (rather than through) Akrotiri was in use from a much earlier date.

Finally, it is necessary to address shifts in sea-level when investigating any stretch of coastline. Mean sea-level throughout the Mediterranean has been generally stable throughout the period in question, having risen only about one meter during the last five millennia. Previous to this stability, however, the sea had risen rapidly in the early Holocene, from about -35 m around 7000 B.C. to nearly its present level at the dawn of the Bronze Age, c. 3000 B.C.¹³ Gomez and Pease have suggested that, although the Early Bronze Age coastline would have been roughly similar, the shore c. 7000 B.C. would have been about 1.5-2.5 km further out to sea along much of southern Cyprus, including Episkopi Bay and Akrotiri.¹⁴ These adjustments have little relevance for the present study, though, since it is concerned primarily with the Bronze Age and later. For

¹² Parker 1992, 49. No timbers or other ship remains per se have been reported.

¹³ Gomez and Pease 1992, 2.

¹⁴ Gomez and Pease 1992, 4.

the period around A.D. 500, Flemming et al. have suggested a sea level of about 0.30 m below present.¹⁵

Previous Scholarship and Underwater Research

Excavations and surveys have continued at an impressive pace on land, and, to a certain extent, underwater as well. The most famous marine endeavor must be the Kyrenia vessel, raised off the northern coast during the late 1960s.¹⁶ About the same time, two years of technologically ground-breaking surveys were conducted around Cape Andreas, at the northeast corner of the island.¹⁷ The 1970s saw the Cape Kiti Survey, in conjunction with the excavations at Hala Sultan Tekke, explore the seabed just south of Larnaca over the course of several seasons.¹⁸ At Amathus¹⁹ and Paphos,²⁰ major efforts focused on the underwater remains of ancient harbors during the mid- to late 1980s and early 1990s, respectively. The inland harbor of Kition has been the subject of multidisciplinary investigations for some time.²¹ A series of smaller investigations were undertaken at Salamis,²² and along the western coast between Maa and Lara,²³ as well as at Kioni on the Akamas Peninsula.²⁴ Over the past decade, the Cyprus Coastal Survey has taken a more comprehensive look at the many ports of

¹⁵ Flemming et al. 1973, 1.

¹⁶ Swiny and Katzev 1973; Steffy 1985; Steffy 1994, 42-58.

¹⁷ Green 1971 and 1973.

¹⁸ Engvig and Åström 1975; McCaslin 1978.

¹⁹ Empereur and Verlinden 1986, 1987; Empereur 1995.

²⁰ Leonard and Hohlfelder 1993; Hohlfelder and Leonard 1994; Hohlfelder 1995a. See also Daszewski 1981. Additional limited investigations were undertaken near Moulia Rocks: Hohlfelder 1995b.

²¹ Nicolaou 1976; Gifford 1985; Morhange et al. 2000.

²² Flemming 1974.

²³ Giangrande and Richards 1985; Giangrande et al. 1987; Morris and Peatfield 1987.

²⁴ Leonard 1996.

Roman Cyprus,²⁵ while a season of detailed survey explored the seabed for Bronze Age remains off Maroni-*Tsaroukkas*.²⁶ Recently, the Cyprus Underwater Project has continued investigations off the southwest coast,²⁷ including remote sensing along a stretch near the dangerous Moulia Rocks, which will no doubt add yet more to the corpus of known shipwrecks.²⁸ While certainly not comprehensive, this preliminary sketch reflects the range of important, though scattered projects off the island's many coasts.

In the area of Episkopi Bay and Akrotiri, only a handful of scholars have ventured into the maritime realm. J. Leonard, as part of his Cyprus Coastal Survey, has scrutinized the ancient literary testimonia, comparing them to the extant archaeological record to synthesize a more comprehensive view of Roman maritime Cyprus. In doing so, Leonard has looked at the possible layout of the ancient harbor of Kourion, with its single preserved wall jutting underwater from the narrow coastal plain.²⁹ Casting the net more widely to the smaller and less explored corners of the island, Leonard and Demesticha have reanalyzed the pottery and other remains at the unexcavated site of Dreamer's Bay (*Akrotiri-Vounari tou Kambiou*) on the southern tip of the Akrotiri Peninsula.³⁰ Their results are particularly enlightening with regard to the assemblages recorded offshore in the bay.

²⁵ Leonard 1995, 1997; Leonard and Demesticha 2004; see also Leonard 2005.

²⁶ Manning et al. 2002.

²⁷ Howitt-Marshall 2003.

²⁸ Thanks to Duncan Howitt-Marshall for sharing information from his most recent survey.

²⁹ Leonard 1995, 236 and 238.

³⁰ Leonard and Demesticha 2004.

Leonard's observations of the features underwater, both at Kourion and Dreamer's Bay, owe much to the earlier preliminary work of F. Haggerty, an amateur archaeologist and retired officer of the Western Sovereign Base Area. Haggerty's unpublished reports present maps of the submerged structures along with details of the ceramic finds in the areas, and will be considered alongside the recent finds here in Chapter III.³¹

N. Flemming provides cursory geoarchaeological survey of Dreamer's Bay, which determines the level of localized subsidence that has taken place along this coast since antiquity.³² Furthermore, Flemming inspected and located underwater remains here of what may be a portion of the ancient harbor of Akrotiri-*Vounari tou Kambiou*.³³

L. Blue, in her dissertation on harbors and anchorages of the second millennium B.C. in the eastern Mediterranean, discusses a variety of sites in the area that may have served early mariners. She considers shelters at Dreamer's Bay and in the ancient passage through Akrotiri likely to have been used as early as the Bronze Age.³⁴ Within Episkopi Bay itself, Blue proposes that ships in the Bronze Age may have sought shelter upstream in the Kouris River near *Bamboula* and *Phaneromeni*.³⁵ Further west, she notes that the shallow inlets at Pissouri and near the mouths of the Avdimou and Paramali Rivers may have afforded some protection.³⁶

³¹ Thanks to F. Haggerty for graciously sharing his unpublished work with the author.

³² Flemming 1978, 415 tbl. 1 no. 172.

³³ Thanks to N. Flemming for discussions and access to his unpublished investigations at Akrotiri.

³⁴ Blue 1995, 139 no. 238.

³⁵ Blue 1995, 140-1 no. 241.

³⁶ Blue 1995, 141-2 nos. 242-4.

The Survey at Episkopi Bay

Objectives

Notwithstanding the excellent underwater work of past decades, the material record of Cyprus' maritime history warrants still greater resources than have yet been dedicated to exploring it. This holds true in particular for the Episkopi Bay and Akrotiri regions, where, despite considerable potential, explorations have been severely limited not only in number, but also in scale, scope, and technology. The Episkopi Bay Survey was therefore designed to provide more comprehensive coverage of a single large area through a detailed and multi-faceted recording of both shallow and deep sites over the course of multiple seasons. In sum, the survey aimed to explore and document as fully as possible the maritime history of this corner of the island, with particular emphasis on the roles played by *Bamboula*, Kourion and Akrotiri.

For two seasons now, the Episkopi Bay Survey team has utilized simple shallow dive searches at harbors and anchorages as well as around treacherous rocks and reefs. These operations are complementary to, and in anticipation of, a larger scale remote sensing survey over the entire region. Though originally scheduled for summer 2004, unanticipated equipment difficulties necessitated suspension of this portion of the survey until summer 2005.

*The 2003 Field Season*³⁷

By permission of the Department of Antiquities in Nicosia, the inaugural season

³⁷ A preliminary report is provided in Leidwanger 2004.

of the Episkopi Bay Marine Survey took place during the summer of 2003 (Fig. 1.4). Operating out of the modern village of Episkopi, 15 km west of Limassol, the crew worked underwater for a total of six weeks from June 30 through August 8, with an additional week and a half thereafter dedicated to finishing the catalog and other documentation that had built up during the busy season. RPM Nautical Foundation of Florida kindly provided substantial funding for this first season, to which was added financial and logistical support from the Nautical Archaeology Program at Texas A&M University. Helpful donations of time and services were offered by individuals and organizations from the British Forces Cyprus Western Sovereign Base Area (WSBA), including the local Akrotiri British Sub Aqua Club (BSAC) and the Archaeological Society.

Thanks to a preliminary grant from RPM Nautical Foundation, the author was able to visit the island in March, a few months ahead of the summer. Much reconnaissance was undertaken along the entire coastline in order to prioritize the most promising areas. It was during this visit that the southern stretch of Akrotiri, in particular the inlet of Dreamers Bay, was identified as an area of much promise, though the permit for 2003 did not extend this far east.

The summer team consisted of three students from Texas A&M University: the present author as survey director, Toby Jones as diving officer, and Troy Nowak. To these were added two archaeology students from Cyprus who assisted in the diving: Emilia Vassiliou and Elena Stylianou (State University of New York at Albany).

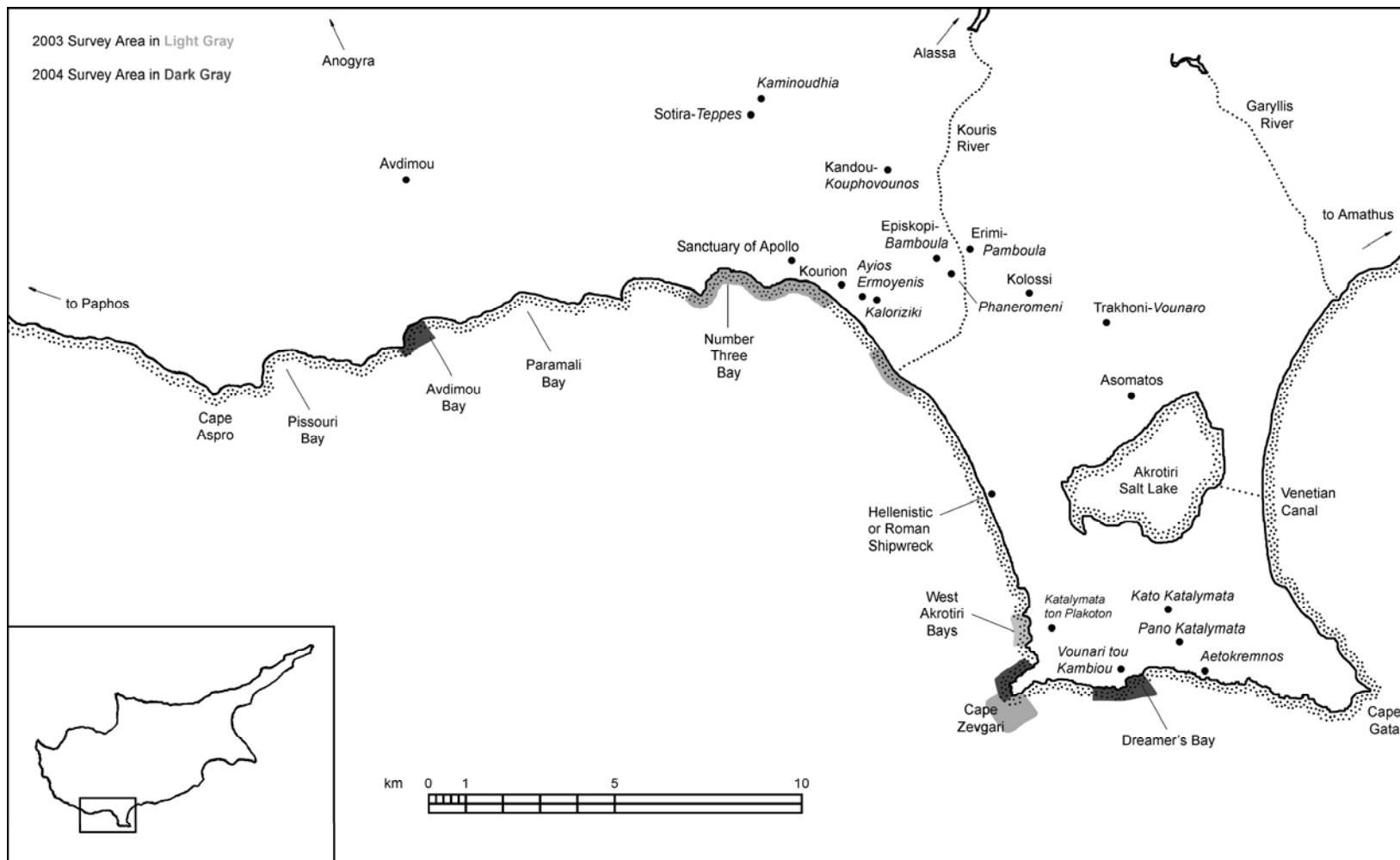


Fig. 1.4 Map of the Episkopi Bay and Akrotiri regions with areas surveyed in 2003 (light) and 2004 (dark).

Chris Parks (Indiana University) aided in the photography, and Anthea Garrod (WSBA Archaeological Society) volunteered for the diving.

With a schedule of approximately six diving days per week, the team accomplished nearly 200 dives during the course of the six-week season. Since the deepest sites explored were only 25 m, with most being 10 m or shallower, all diving was undertaken with regular air. The minimal depth also allowed greater productivity through longer working times for each dive. In many cases, operations could be carried out directly from shore. The *Maria*, a 9-m fishing boat based at the makeshift harbor of Number Three Bay just west of Kourion, was chartered for deeper areas and less hospitable coasts (Fig. 1.5). Important local knowledge of the marine conditions was gathered from fishermen, sport divers, and archaeologists. On invitation by Dr. Pavlos Flourentzos, then Curator of Museums and Surveys, the author was able to examine the Department of Antiquities' archive of survey notebooks. Donation of flight time in a Cessna by a local pilot instructor from the Western Sovereign Base Area Flight Club facilitated aerial inspection and photography of the entire permit area.

Important finds were photographed on the seabed, and a selection of representative artifacts was removed for more thorough documentation. Of course, like nearly all underwater survey work, this survey was not systematic in the sense of collecting every sherd and calculating statistical relationships among vessel types and periods. On the other hand, an attempt was made to gather as representative and thorough a sampling as possible in the areas comprehensively studied. Substantial assemblages were also marked with a handheld GPS, which was sufficiently accurate to



Fig. 1.5 *Maria*, the fishing boat utilized for diving in 2003 and 2004.

allow their relocation. Some 74 artifacts were raised, catalogued and photographed. An identification system was devised that incorporates the survey acronym plus a two-digit year and three-digit artifact number (e.g. “EBS-03-001”). In addition to measurements and descriptions, a few general observations and Munsell values of the clays were recorded. Following completion of the fieldwork, artifacts were kept wet at the Kourion Museum storerooms in a series of freshwater baths until all soluble salts were removed.

The permit granted by the Department of Antiquities allowed for exploration along a substantial stretch from Cape Aspro in the west to the eastern edge of Cape

Zevgari, at the southwest tip of the Akrotiri Peninsula. The designated zone included well over 150 sq km up to a depth of 200 m, with a coastline of over 20 km. Of course, with a small crew, just a few of the more promising areas could be explored in the six weeks.

A few days at the beginning of the season were spent inspecting a notable feature jutting out from the coastal plain below the Greco-Roman city of Kourion. This harbor construction and the general layout of the port are also the subject of inquiry by Leonard's Cyprus Coastal Survey.³⁸ The Episkopi Bay Survey's efforts here included both preliminary surveying of the underwater construction and reconnaissance in the low-lying coastal plain. From here, the team continued along the precipices west of Kourion. The makeshift fishing shelter at Number Three Bay, where the project's chartered boat ties up, was the subject of a cursory, single-dive search, since fishermen operating here reported "lead anchors" dredged up over the past decades (Fig. 1.6).

The final thrust of explorations in the Kourion area was at the mouth of the Kouris River (Fig. 1.7). The importance of this waterway for the livelihood of *Bamboula*, and later Kourion and Episkopi, prompted the crew to walk the last couple of kilometers of dry riverbed to get a better idea of its course and to look for evidence of ancient utilization of the river, including footings for shoreline installations or other remains. The team then ran divelines parallel to the coast in an effort to gain a better understanding of the underwater environment. It was immediately obvious that, over the last millennia, the Kouris, along with the longshore currents, deposited much sediment

³⁸ See Leonard 2005.



Fig. 1.6 Number Three Bay, just west of Kourion, looking west.



Fig. 1.7 Mouth of the Kouris River.

that has collectively obscured its delta and buried anything lying reasonably close to shore.

Explorations at Cape Zevgari and the West Akrotiri Bays in the southeast corner of the permit zone accounted for the majority of the 2003 field season. The team dived various searches and swimlines along a number of treacherous reefs and rocks that claimed ancient mariners rounding Zevgari. Several important concentrations were noted at AK-S1 through AK-S4. Further north, the crew combed four shallow inlets, labeled from north to south AK-N1 through AK-N3, which lie at the exposed western foot of the peninsula. Results for the West Akrotiri Bays and Zevgari can be found in Chapter IV.

*The 2004 Field Season*³⁹

The second season of underwater surveys again lasted six weeks, commencing on 28 June 2004 and continuing until 6 August. Two additional weeks were necessary to complete the documentation and conservation of artifacts. The project was once more undertaken through the generous support of RPM Nautical Foundation, and accommodation was provided by the *mukhtar* and village of Episkopi at the local school. Yet again, the Akrotiri BSAC loaned equipment and provided storage space.

Aside from the present author as survey director, the new team included Joshua Daniel (Texas A&M University) as diving officer and Kelcy Sagstetter (Boston University). Volunteers Emilia Vassiliou, Marios Avgousti and Anthea Garrod (WSBA

³⁹ Preliminary reports are provided in Leidwanger 2005 and (forthcoming b).

Archaeological Society) assisted in diving, while Michael West (Texas A&M University) provided conservation expertise.

An important early thrust of the 2004 survey was finishing the documentation and lingering conservation of artifacts raised during 2003. Additional questions had arisen during the intervening winter, and the first days of the 2004 season were therefore given over to addressing issues of artifacts, coastal geography and site characteristics.

Though the plans for 2004 had originally entailed remote sensing over a larger area of Episkopi Bay and Akrotiri, unfortunate logistical complications at the last moment delayed indefinitely any such explorations during this season. It is now hoped that the upcoming 2005 season will fill this important gap. In the meantime, however, operations during 2004 focused on low-tech, but more detailed investigation of some of the harbor and anchorage sites that could not be explored in 2003, as well as a new area added through the permit extension. Lengthy shallow dives on regular air were the norm, with the deepest being only 12 m. For dives that could not be conducted directly from shore, the fishing boat *Maria* was again chartered.

By permission of the Department of Antiquities, an additional stretch of coastline was included for this second season along southern Akrotiri, east of Cape Zevgari, which had been the original boundary of the 2003 permit. Now included in the survey mandate were an additional 10 km, with the promising new inlet of Dreamers Bay in the middle.

The team returned to several sites from the 2003 survey to address new concerns. Several days were spent north and south of the three West Akrotiri Bays that had been investigated the previous year. A single dive was undertaken in the next bay north to see

if the masses of pottery that characterized AK-N1 through AK-N3 continued here, or if the concentration was solely in the vicinity of the Early Byzantine site of *Katalymata ton Plakoton*. The group also spent several dives at Cape Zevgari and in the cove immediately to the north. At Zevgari, the crew endeavored to fill several gaps in the coverage of this important area, and returned to a wreck of the Late Roman period to address further questions about its amphora forms and possible contents.

The two principal efforts of the 2004 season, however, took place further west and east of the area covered in 2003 (Fig. 1.4). The first new project commenced in the quiet cove of Avdimou Bay, 11 km west of Kourion. Here, the team recorded cultural remains, including anchors and a pottery assemblage, the results of which are presented in Chapter V. The second site of great potential was Dreamer's Bay, a target which the crew had in mind since it was first seen from shore during the reconnaissance trip in March of the previous year. Very limited professional and amateur work had already been undertaken here both on land and underwater, though the 2004 effort aimed to initiate a more comprehensive treatment of the area as a whole. The anchors, pottery, and other finds documented thus far from Dreamer's Bay are examined in Chapter III.

CHAPTER II
A BRIEF HISTORY OF THE EPISKOPI BAY AND AKROTIRI REGIONS
AND THEIR ARCHAEOLOGICAL SITES

From the Pre-Neolithic to the Chalcolithic

The area around Episkopi Bay and Akrotiri has witnessed some of the longest history on the island, stretching back nearly 12 millennia (Fig. 1.2). In fact, a cave along the southern coast of Akrotiri, known as *Aetokremnos* (“Vulture Cliff”), is the site of the earliest human exploitation of the island’s resources (Fig. 2.1). Given the rise in sea-level during the early Holocene (see Chapter I), however, this coastal site would originally have been over 1.5 km from the sea.⁴⁰ Here, nearly 300,000 faunal remains have led the excavators to identify the shelter as a processing station.⁴¹ Most notable are the burnt remains of over 500 pygmy hippopotami, a Pleistocene species long thought extinct before the arrival of humans. Despite criticisms that assert a discrepancy between the deposition of remains and occupation by humans, A. Simmons maintains that the direct association can be soundly established on the basis of stratigraphy, bone disarticulation and charring.⁴² The deposit also included pygmy elephants, deer and pigs, as well as a number of smaller fauna such as birds, snakes and tortoises.⁴³ Over 20,000 marine invertebrates, composing the largest assemblage found on Cyprus, supplemented

⁴⁰ Gomez and Pease 1992, 4.

⁴¹ Simmons 1999, 153 and 310.

⁴² Simmons 2001, 13.

⁴³ Simmons 1999, 156-77.



Fig. 2.1 Akrotiri-*Aetokremnos* from the cliff above.

the diet of this group of hunters.⁴⁴ Radiocarbon dates from two different strata, calibrated to 9825 B.C., demonstrate that the cave's utilization was short-lived, perhaps only a few centuries.⁴⁵ Additional investigations along the cliff revealed scatterings of chipped stone, but little else.⁴⁶

Unfortunately, it is unknown whether these were merely seasonal visitors or permanent settlers who crossed over from the mainland.⁴⁷ A substantial gap of a

⁴⁴ Simmons 1999, 188-91.

⁴⁵ Wigand and Simmons 1999, 208-9.

⁴⁶ Simmons et al. 1999, 239-58.

⁴⁷ Simmons 1999, 319.

millennium and a half exists between the late Pleistocene activity at *Aetokremnos* and the first phase of occupation at *Parekklisha-Shillourokambos*, an early Neolithic I (Aceramic Neolithic) settlement located just east of Limassol and dated from the late ninth millennium B.C.⁴⁸ What is most important for the present survey, however, has been astutely summarized by Simmons: “that it is such an early site has intrinsic interest for understanding ancient seafaring technology.”⁴⁹ Scholars can now safely assert that, in the northeast Mediterranean, seafaring technology sufficient for a substantial open-sea voyage was available from at least the early 10th millennium B.C.

Scattered Neolithic I finds from the seventh millennium have been reported in the area of *Trakhoni-Vounaro*, along the northern edge of *Akrotiri*.⁵⁰ Thus far, this is the only site recorded on the peninsula that is contemporaneous with the prominent settlements east of Limassol at *Kalavastos-Tenta* and *Khirokitia-Vouni*. Otherwise, a few unprovenanced finds hint at a Neolithic presence in this region of the island. A single stone axe-head has also been found in the south of the peninsula, near the Monastery of *Ayios Nikolaos ton Gatou* (St. Nicholas of the Cats).⁵¹ Toward the west of Episkopi Bay, seven additional stone axe-heads were found in the areas of *Pissouri* and *Anoyira*.⁵²

Aside from scanty local vestiges of the so-called “*Khirokitia culture*,” the earliest settlement thus far intensively excavated is situated about six kilometers northwest of *Kourion* at *Sotira-Teppes*. Indeed, it was the first Neolithic II (Ceramic Neolithic)

⁴⁸ Guilaine and Briois 2001, 52.

⁴⁹ Simmons 2001, 14.

⁵⁰ Heywood 1982, 167.

⁵¹ Nicolaou 1967, 51 no. 68.

⁵² Nicolaou 1967, 52 nos. 71 and 72.

excavation and, therefore, came to serve as the type site for a period marked by dramatic population increase and expansion of settlement.⁵³ Established on a prominent hillock overlooking a valley of farmland at the foot of the Troodos Range, the town flourished during the second half of the fifth millennium B.C. with a population of about 150 before it was destroyed, possibly by an earthquake, around 3900 B.C.⁵⁴ Most diagnostic of Sotira are the quantities of combed wares, which are rather sophisticated despite being some of the earliest pottery found on the island.⁵⁵ Although ostensibly a prominent successor to Khirokitia, the absence of stone bowls and the practice of extramural burial point to a remarkably different society at Sotira.⁵⁶ The so-called “Sotira Culture” not only shows substantial uniformity throughout the southwest region, but cultural similarities abound as far away as the island’s northern coast.⁵⁷

The Neolithic II is also represented at *Kandou-Kouphovounos*, another slightly inland hill settlement east of Sotira. Five phases were distinguished with houses in various plans, usually square with rounded corners.⁵⁸ Some ceramics were recovered, as well as nearly 1000 stone tools.⁵⁹ A single picrolite fertility figurine, on which the artist has attempted to show both male and female genitalia, was found here. It is the forerunner to an industry of picrolite figurines, many anthropomorphic and ambiguous

⁵³ Peltenburg 1978, 71-4.

⁵⁴ Dikaios 1961, 214; Peltenburg 1978, 62; Swiny 1982c, 15.

⁵⁵ Dikaios 1961, 172-9.

⁵⁶ Dikaios 1961, 211-2.

⁵⁷ Peltenburg 1978, 66-70.

⁵⁸ Μαντζουράνη 1996, 1.

⁵⁹ Μαντζουράνη 1996, 20-2.

with regard to gender, that characterized the Chalcolithic.⁶⁰ This soft bluish steatite was gathered locally from the Kouris River.⁶¹

Development of the Chalcolithic period has received much attention over the past decades, and indeed the Episkopi Bay area is fortunate in possessing yet another type site at *Erimi-Pamboula*. The settlement that lent its name to the “Erimi Culture” was established on a hillock on the east bank of the Kouris around the middle of the fourth millennium B.C. Thirteen layers were excavated, in the middle of which was recovered a copper chisel fragment, one of the earliest copper pieces found on the island to date.⁶² A substantial gap exists, however, between the abandonment of Sotira, a period marked by general dislocation, and occupation of Erimi.⁶³ Its material culture, including a new ceramic decorative style and architectural layout, are to be distinguished from that of its predecessor.⁶⁴ Noteworthy is the presence of large numbers of cruciform anthropomorphic figurines in clay and stone, especially picrolite.⁶⁵

The Bronze Age

Excavations at *Sotira-Kaminoudhia*, just north of the Neolithic site of *Teppes*, have been instrumental in understanding the Early Bronze Age on the south of the island. Although the site shows almost no depth or stratification, two general periods of

⁶⁰ Μαντζουράνη 1994; Steel 2004, 76; the figurine might rather date to the subsequent Chalcolithic: see Knapp and Meskell 1997, 193-4.

⁶¹ Xenophontos 1991, 136.

⁶² Dikaïos 1962, 123.

⁶³ Peltenburg 1990, 7.

⁶⁴ Bolger 1988, 123; Peltenburg 1982, 52.

⁶⁵ Dikaïos 1962, 127; Bolger 1988, 103-22.

occupation spanning from the late “Philia Phase” into EC III have provided radiocarbon dates of around 2200 B.C.⁶⁶ A change from circular to rectilinear architecture and the common use of metal characterize this site.⁶⁷ A Red Polished III black-topped bottle in the north coast style provides a clear EC III date for the final occupation, a period of decreasing isolation on the island.⁶⁸ Evidence of roof collapse and the presence of human remains, ash and burnt chipped stone suggest a violent end, probably at the hands of one of the many earthquakes that have plagued the island.⁶⁹ The dissonance between ceramics from the settlement and cemetery has led the excavators to discuss the possibility that the village was occupied at a slightly later date than the cemetery.⁷⁰ It is clear that the earliest tombs in the cemetery are not much later than the final Chalcolithic.⁷¹

On the sloping west bank of the Kouris River lie the settlements and cemetery of Episkopi-Phaneromeni. Originally, the remains were thought to date to the EC period, although excavations in the 1970s have shown that the cemetery and settlements were all later in date than EC and not entirely contemporaneous. A settlement dating to the MC period, though very limited, yielded a stone post support and mortars as well as a bifacial gaming piece.⁷² Some of the burials in the vicinity are indeed believed to be contemporary with this site. The LC IA settlement nearby, however, is more extensively

⁶⁶ Manning and Swiny 1994, 160-2.

⁶⁷ Swiny 2003b, 64; 2003a, 369.

⁶⁸ Herscher 2003, 179-81; Herscher and Swiny 2003, 502.

⁶⁹ Swiny 2003b, 53.

⁷⁰ Herscher and Swiny 2003, 497.

⁷¹ Swiny and Herscher 2003, 105-7.

⁷² Carpenter 1981, 60.

preserved, and is characterized by “irregularly shaped rooms and meandering walls.”⁷³ Despite the full maturity of bronze-working technology in this period, excavations yielded many stone implements but only a few metal pieces, and these latter are completely devoid of tin, containing only small amounts of arsenic in some blades.⁷⁴ Additional gaming stones related to the Egyptian pastimes of Senet and Mehen hint at important overseas cultural contacts.⁷⁵ *Phaneromeni* seems to have lasted only a few generations in LC IA before it was looted and destroyed. J. Carpenter suggests that the survivors may have moved to nearby *Episkopi-Bamboula*.⁷⁶

Some Late Bronze Age presence has also been detected in the Akrotiri Peninsula, on the north edge of the present Salt Lake. Although a series of LC burials was originally noted at *Asomatos-Phasouri* by the Swedish Cyprus Expedition, they remain only preliminarily explored.⁷⁷ The cemetery likely had a settlement nearby, though it is not yet clear where this was located. Since the open passage through Akrotiri during this period would have rendered *Asomatos* a coastal site, Blue has justifiably suggested the possibility of a sheltered anchorage here.⁷⁸

Further up the Kouris River, 12 km from the coast, at its junction with the Limnatis River, lies the settlement of *Alassa*, composed of the twin sites of *Pano Mandilaris* and *Paliotaverna* only 250 m apart. *Alassa* seems to have risen to prominence during the LC IIC – IIIA periods. Slag and copper ores as well as bellows

⁷³ Carpenter 1981, 63.

⁷⁴ Carpenter 1981, 64.

⁷⁵ Swiny 1980.

⁷⁶ Carpenter 1981, 65.

⁷⁷ Catling 1963, 161 no. 15.

⁷⁸ Blue 1995, 170.

have been recovered from *Pano Mandilaris*, and two structures there have been tentatively identified as sanctuaries,⁷⁹ a suggestion strongly supported by the presence of numerous votive bull figurines.⁸⁰ At *Paliotaverna* were found two of the island's largest ashlar buildings, the only ones thus far recorded in the Kouris River valley.⁸¹ Dating to LC IIIA, a clay bathtub and large central hearth with flanking pilasters hint at influence of immigrant Aegeans.⁸² Unlike many contemporary settlements throughout the island, there are no indications here of fire or other violent destruction.⁸³

The settlement's proximity to the rich copper deposits at the foothills of the Troodos has suggested to Hadjisavvas that Alassa played a key role in the trafficking of ore downriver to Episkopi-*Bamboula*.⁸⁴ Given the size of the structures, especially at *Paliotaverna*, the likelihood remains that the residents of Alassa not only transported, but controlled the copper industry, including mining and smelting. Knapp discusses the complexities of regional influence and administration, raising the issue of where the political and commercial functions might have been centered, either at Alassa, as Hadjisavvas favors, or downriver at *Bamboula*.⁸⁵ What seems certain, though, is that a close relationship based on the copper trade existed between *Bamboula* and Alassa. Interestingly, while the enigmatic *Alashiya* of the Amarna tablets has often been connected to Cyprus and usually presumed to have been Enkomi, only recently have

⁷⁹ Hadjisavvas 1989, 36-7, 39.

⁸⁰ Hadjisavvas 2001, 210.

⁸¹ Hadjisavvas 1994, 113.

⁸² Hadjisavvas 1994, 110, 112.

⁸³ Hadjisavvas 1991b, 173.

⁸⁴ Hadjisavvas 1989, 40; 1994, 113.

⁸⁵ Knapp 1997a, 61-2; Hadjisavvas 1996a, 36.

chemical analyses of the clay tablets positively identified Cyprus as the source. Goren et al. indicate an inland origin at the southeast edge of the Troodos Mountains, precisely in the area of Alassa, where the modern toponym may conceivably be connected to the ancient name.⁸⁶

Synchronous with the floruit of Alassa was Episkopi-*Bamboula*, located two and a half kilometers inland across the Kouris from Erimi-*Pamboula* and just 500 m northwest of *Phaneromeni*. Once again established on a hillock, the first architectural remains at the site date to the LC IA phase,⁸⁷ though the area was used as a cemetery from the EC period.⁸⁸ Occupation continued into LC IIIA with houses predominantly of “rectangular-tripartite” layout, though “L-shaped” are known as well.⁸⁹ During this later period, the site was surrounded by Cyclopean fortification walls,⁹⁰ which, alongside ceramics, are sometimes connected by scholars to the arrival of Mycenaeans from the Greek mainland around the turn of the 12th century.⁹¹ It is clear from the presence of many imported ceramics, including Mycenaean and Syrian wares⁹² as well as a recently found piece from Egypt,⁹³ that the residents of *Bamboula* had extensive overseas contacts during the Late Bronze Age. J. Benson had originally noted a decline at *Bamboula* during LC IIIB and CG IA, following a prosperous LC II.⁹⁴ However, revision of the White Painted typology used to date burials ascribed to these periods now

⁸⁶ Goren et al. 2003, 250-1; Goren et al. 2004, 70-5.

⁸⁷ Weinberg 1983, 4.

⁸⁸ Benson 1972, 4.

⁸⁹ Weinberg 1983, 52-3.

⁹⁰ Walberg, personal communication 2003.

⁹¹ Karageorghis 1984, 22; Karageorghis and Demas 1988, 63-4.

⁹² Benson 1972, 105-124.

⁹³ Walberg, personal communication 2004.

⁹⁴ Benson 1972, 5-6.

shows no evidence for LC IIIB inhabitation. Rather, *Bamboula* seems to have been abandoned after LC IIIA, only to have its tombs reused during the CG IB.⁹⁵

The complete picture of Bronze Age settlement in the area of Episkopi Bay, however, is more complicated than simply these large, well excavated sites concentrated primarily around the Kouris River. A series of large EC and MC settlements with nearby cemeteries has been recorded in the area of Paramali village, just inland from Paramali Bay nearly 10 km northwest of Episkopi.⁹⁶ Stretching even further west, into the areas of Avdimou and Anoyira, is a series of settlements, almost universally associated with cemeteries, including the very large MC site of Avdimou-*Beyouk Tarla*.⁹⁷ As would be expected, these are often clustered around the Avdimou River valley, through which a perennial river once flowed south to Avdimou Bay.

Scholars studying the end of the Bronze Age and transition to the Iron Age in the south of Cyprus have devoted much attention to Episkopi-*Kaloriziki*, an unassuming cemetery on the coastal plain 500 m east of Kourion. One must note that the actual settlement corresponding to this cemetery has yet to be found, although the suggestion that it may have been located on the acropolis at Kourion is not improbable.⁹⁸ L. Steel suggests that the absence of visible early Iron Age remains is not only due to the lack of monumental building during this period, but also because “centuries of continuous habitation have largely obliterated their traces.”⁹⁹ Benson asserted an “unbroken and

⁹⁵ Steel 1996, 291-2.

⁹⁶ Swiny 1981, 67-8; Herscher and Swiny 1992, 70-7.

⁹⁷ Swiny 1981, 68-78; for *Beyouk Tarla*, see 73-4.

⁹⁸ Young and Young 1955, 224; commented on by Iacovou 1994, 157 and Steel 1996, 290.

⁹⁹ Steel 1996, 287.

fairly constant use of the necropolis from approximately the twelfth to the fifth centuries B.C.”¹⁰⁰ However, only Tomb 40 at *Kaloriziki*, most famous for having yielded the enameled gold “Kourion Sceptre” possibly dates to the end of LC IIIB,¹⁰¹ after which period the cemetery was used steadily throughout the CG period.¹⁰² The ceramic typology revisions noted above and reanalysis of Benson’s use of this ware for dating the *Kaloriziki* burials have now revealed that a substantial gap or cultural disruption does exist between the final occupation at *Bamboula* and the initial exploitation of *Kaloriziki*.¹⁰³

The Greco-Roman Era

According to legend, Kourion was founded by Argive settlers shortly after the Trojan War. Herodotus (5.113) and Strabo (14.6.3) both mention in passing the Argive colonization. Indeed, the introduction of a new chamber tomb with dromos entrance at *Kaloriziki* may support the idea of an infusion from the Aegean during LC IIIB.¹⁰⁴ Benson suggested a migration to Kourion via Rhodes based tenuously on the regular orientation of the tombs and presence of an amphora of Rhodian fabric.¹⁰⁵ Possible epigraphic evidence for an early foundation for the city comes from the early 12th century Great Temple of Ramesses III at Medinet Habu, where the hieroglyph *Kir* has

¹⁰⁰ Benson 1973, 18.

¹⁰¹ McFadden 1954; Goring 1995.

¹⁰² Iacovou 1988, 7; Steel 1996, 297-8.

¹⁰³ Adelman 1976, 283; Åström 1975, 263; Steel 1996.

¹⁰⁴ Christou 1994, 183-4; Buitron-Oliver 1999, 72.

¹⁰⁵ Benson 1973, 24.

been tentatively identified as Kourion.¹⁰⁶ The city and its King Damasu appear for certain in a tribute list of the Assyrian King Sargon II, probably dating to 673/2.¹⁰⁷ The earliest archaeological evidence for settlement on the bluff at Kourion is reported by Daniel, who recovered in the deepest trenches some sherds he deemed Protogeometric.¹⁰⁸ Unfortunately, if any remains exist to corroborate an early CG foundation, they have been so obscured by classical building that they will await excavation for some time. At any rate, the literary evidence does attest that, by the start of the Archaic period, the kingdom of Kourion was well established. Rescue excavations from the mid 1980s brought to light large CA I cemeteries in the areas of Alassa and Kandou, revealing the extent of Archaic settlement further up the Kouris River valley.¹⁰⁹

Excavations at the Sanctuary of Apollo, 2 km west of Kourion, have revealed a late eighth- or early seventh-century circular altar. Probably as an attempt to invoke continuity with the Bronze Age, an MC jar, likely looted from a tomb at *Phaneromeni*, was deposited below the altar.¹¹⁰ From his association with trees, this particular incarnation of Apollo gained the appellation *Hylates* (“of the woodlands”). An additional structure was added to the complex during the sixth century, and, around the late third or early second century, installations were set up to accommodate the visitors with food and drink.¹¹¹ The first centuries B.C. and A.D. seem to have been some of the busiest for the sanctuary. A deposit of about 2000 votives dating from the Archaic and Classical

¹⁰⁶ Hill 1949 vol. 1, 49 n.4.

¹⁰⁷ Mitford 1971, 4.

¹⁰⁸ Young and Young (1955, 224) report this identification of Daniel.

¹⁰⁹ Flourentzos 1991, 64.

¹¹⁰ Buitron-Oliver 1996, 3.

¹¹¹ Buitron-Oliver 1996, 14-5.

periods contained large numbers of early bull figurines, but horse riders and chariots from the later period.¹¹² Buitron-Oliver suggests that “this change in fashion of votive dedication, from bulls and other animals to equestrians, signals a move toward a more social and political idea of prosperity in contrast to the simpler, agrarian approach of the earlier votives.”¹¹³ Certainly the city of Kourion had by the Classical period grown affluent no doubt in part due to the influx of pilgrims to Apollo’s shrine.

While the prominence of Kourion is apparent from the literary evidence, archaeological material from the Classical period is unfortunately elusive, and probably for the most part buried (Fig. 2.2). The earliest traces come from fourth-century B.C. levels of what was a millennium-long building program in the city center.¹¹⁴ Remains of the Hellenistic period are scattered across the site, including the earliest (second century) levels at the theater and a possibly contemporaneous black and white pebble mosaic.¹¹⁵ Additional public works included a defensive circuit wall, and a reservoir and other waterworks.¹¹⁶ Tombs of the Hellenistic era can be found in the cemeteries north of Kourion (*Yerakarka*) and at the city’s Amathus Gate.¹¹⁷ Ten burials from the fourth through the second century B.C. were uncovered by G. McFadden in 1940-1941 in the locality of *Ayios Ermoyenis*, outside the Amathus Gate.¹¹⁸

The Early and Late Roman remains tell of a tremendously prosperous, albeit

¹¹² Winter 1996, 100.

¹¹³ Buitron-Oliver 1996, 15.

¹¹⁴ Christou 1983, 267-9 and 275-80 (by J.B. Connelly).

¹¹⁵ Rupp 1978, Whittingham 1982b, 127.

¹¹⁶ Christou 1983, 269-71; Parks et al. 2001, 236.

¹¹⁷ Swiny 1982a, 147; Leonard Jr. 1987, 98-9; Parks and Chapman 1999; Parks et al. 2000.

¹¹⁸ McFadden 1946; Oliver, Jr. 1982, 141.



Fig. 2.2 Kourion looking north.



Fig. 2.3 Coastal plain below Kourion looking east.

quiet, community. The House of Eustolios, in particular, with its intricate mosaics and bath complex, betrays the luxury enjoyed by an urban elite that must have used part of its resources in service of the church.¹¹⁹ An early stronghold of Christianity, the city built a series of elaborate basilicas both on the acropolis itself and outside the walls.¹²⁰ The principal church on the acropolis was evidently founded on the old civic basilica, to judge from its unorthodox layout.¹²¹ At the same time, the decline of paganism is attested in the corresponding lack of building activity detected from the second century onward at the Sanctuary of Apollo.¹²² In 1994, a third basilica was discovered below the sand of the narrow coastal plain at the foot of the Kourion cliff (Fig. 2.3).¹²³ Embellished with fine wall mosaics and tesserae capped in gold and mother-of-pearl, the building has been dated to the early sixth century.¹²⁴ Its excavator, D. Christou, has probably rightly suggested that it functioned as a “protector” of the harbor, much like similar facilities at Salamis, Amathus, and Paphos.¹²⁵ At present, the extent and layout of this port are unclear.

The mosaic inscriptions of Eustolios also recall a time when Kourion’s prospects were not so bright. Three elegiac couplets on the floor of the east portico record his public munificence as a remedy for the previously wealthy citizens’ “abject misery,” evidently a reference to the widespread devastation caused by earthquakes. The worst of

¹¹⁹ Soren and James 1988, 16-23.

¹²⁰ Megaw 1979; Whittingham 1982a.

¹²¹ Megaw 1993, 54-5.

¹²² Buitron-Oliver 1996, 16.

¹²³ Christou and Nicolaïdes 1998.

¹²⁴ Swiny and Mavromatis observed Late Roman pottery in this area as well: Swiny and Mavromatis 2000, 438.

¹²⁵ Christou 1997.

a series of harsh tremors afflicted the Kourians during the middle decades of the fourth century, a massive quake which struck toward A.D. 370 with such force that it was recorded by Ammianus Marcellinus (26.10.16-9) and various other Byzantine authors.¹²⁶ It is not entirely clear how affluent Kourion was during the fourth century before this devastation, and to what extent the general economic turmoil endemic to the third and fourth centuries had already afflicted this well integrated Roman province. While D. Soren's characterization of its mid fourth-century inhabitants as "itinerant squatters" may be too pessimistic, it does seem clear that late fourth- and fifth-century Kourion was an outwardly prosperous town and rather different in nature from its predecessor.¹²⁷ Even further inland, the remains of a fine basilica constructed for a sizable sixth- and seventh-century community not far from Alassa were uncovered during rescue excavations in the mid 1980s at the locality of *Ayia Mavri*.¹²⁸

Leonard has raised the intriguing possibility that devastation caused to Kourion's harbor may have inadvertently led to the growth of another apparently extensive but unexcavated port at the tip of the Akrotiri Peninsula.¹²⁹ Originating almost 20 km out to sea, this earthquake severely struck Paphos as well as Kourion and would therefore certainly have been felt at Akrotiri.¹³⁰ Of course, if the beach basilica cited above did serve as spiritual guardian of the city's port, as seems probable, its construction in the sixth century would have made little sense unless Kourion's harbor were functioning by

¹²⁶ Soren 1981.

¹²⁷ Soren and James 1988, 167.

¹²⁸ Flourentzos 1996.

¹²⁹ Leonard and Demesticha 2004, 202 n.65.

¹³⁰ Soren 1981, 133 fig. 7.1.



Fig. 2.4 Tunnel at Number Three Bay looking southwest.



Fig. 2.5 *Vounari tou Kambiou* and Dreamer's Bay looking northeast.

at least this date. The advantage of a port directly below Kourion would have facilitated a more rapid recovery in the years following the quake. The presence of a wide and lengthy tunnel marked by “Byzantine graffiti” (though of undetermined date), descending along the cliff west of Kourion at Number Three Bay, may point to utilization of a different anchorage during the city's later history (Figs. 2.4 and 1.6).¹³¹ Still, however, some explanation must be sought for the notable Late Roman growth of the site of *Akrotiri-Vounari tou Kambiou*, known locally as Dreamer's Bay, and the idea

¹³¹ Thanks to F. Garrod for this information, and to J. Leonard for comments on its date and nature.

that at least a portion of Kourion's old traffic was diverted to Akrotiri in the latter fourth century fits well the ceramic evidence underwater and merits further attention (see Chapter III).

This settlement and harbor complex at the tip of Akrotiri has been dated by the local WSBA Archaeological Society to the Late Roman period (Fig. 2.5).¹³² While surface scatters of ceramics, mostly amphoras, are overwhelmingly late, recent investigations here by Leonard and Demesticha have provided solid ceramic evidence that the site flourished from at least the Early Roman period, and perhaps as early as the fourth century B.C.¹³³ Indeed, observations of surface sherds by the present author in 2003 lent support to a date from at least the Hellenistic period. Despite the lack of systematic exploration of the area, the presence of Hellenistic and Roman tombs, structures (possibly a villa), and a cart path nearby suggests that this was not merely a commercial harbor for Kourion, but a settlement in its own right.¹³⁴ Leonard has connected this settlement with the ancient "Kourias" to which the geographer Strabo refers (14.6.3).¹³⁵ Long galleries onshore are best identified as the warehouses common to Roman harbor facilities. A headland and offshore island shelter the location, though only from westerlies. The layout of the anchorage and possible harbor here, like that at Kourion, remains a subject of debate, and is discussed in detail in Chapter III. An

¹³² Heywood 1982, 171.

¹³³ Leonard and Demesticha 2004, 198.

¹³⁴ Heywood 1982, 168-71; Parks 1999, 55.

¹³⁵ Leonard and Demesticha 2004, 190.

enticing report of a second Roman harbor on the eastern coast of Akrotiri just north of Cape Gata at Tarratsos awaits verification.¹³⁶

Testifying to Roman and Early Byzantine prosperity throughout the rest of Akrotiri is a number of outlying settlements that have only rarely been investigated. Although they may date as early as the Hellenistic period, the twin sites of *Pano* and *Kato Katalymata*, just 1 km inland from Akrotiri's south coast, were certainly utilized during this period,¹³⁷ as were the rock-cut chambers and associated structures at nearby Lania.¹³⁸ The Monastery of St. Nicholas of the Cats, famous for its snake-battling felines, was reputed to have been founded on the order of Constantine the Great, even if the present remains were likely built in the late 14th century.¹³⁹

Just inland from the western coast of Akrotiri, north of Zevgari, lies the unexcavated Late Antique site of *Katalymata ton Plakoton*.¹⁴⁰ The WSBA Archaeological Society, which conducts rescue operations to save exposed and weathering remains, has proposed a date for the settlement in the Late Roman or Early Byzantine period. Although virtually no information is available on the site, it was apparently one of some stature, to judge from the impressive mosaic floors evident in its small basilica. Investigations underwater west of here are presented below in Chapter IV. In the future, additional survey and excavation work at *Katalymata* will no doubt shed more light on the site's role in the Late Antique economy and society in the area.

¹³⁶ Wessex Archaeology 2002, 8 ("WA 10").

¹³⁷ Wessex Archaeology 2002, 9 ("WA 12" and "WA 13").

¹³⁸ Heywood 1982, 168-9.

¹³⁹ Heywood 1982, 171; der Parthog 1995, 105.

¹⁴⁰ Heywood 1982, 174.

Byzantine and Medieval History

The abandonment of Kourion in the late seventh century is paralleled closely at other formerly prominent Greco-Roman sites.¹⁴¹ A general movement away from the exposed coastal acropoleis has often been interpreted as a fear of the growing Islamic maritime presence that evidenced itself most severely in the devastating assaults on Cyprus in the mid-seventh century. While a raid on Kourion evidently took its toll, an obvious objection is that the new settlement did not lie sufficiently far inland to avoid attack, but was actually more vulnerable than the more fortified coastal heights. The tumult apparently reached rather far inland, to judge from the late-seventh-century abandonment of the Early Byzantine settlement at Alassa.¹⁴²

A.H.S. Megaw points to the installation of a massive marble basin in the Kourion episcopal basilica's narthex as evidence for the eventual failure of the city to keep a reliable supply of water running to the *phiale* that originally served this purpose.¹⁴³ Originally, the city had drawn on an extensive hinterland to supply its needs through an elaborate series of gravity-driven conduits.¹⁴⁴ That the water resources may have dried up and necessitated such a move is strengthened by the fact that the later settlements to succeed Kourion were located slightly inland along the Kouris River near where several of the Late Bronze Age sites had originally been founded. In any event, a century of

¹⁴¹ Papageorgiou 1993.

¹⁴² Flourentzos 1996, 37.

¹⁴³ Megaw 1993, 59-60.

¹⁴⁴ Last 1975.

raids, plague, political contention and general economic turmoil effected abrupt changes in settlement and demography during the late seventh and eighth centuries.¹⁴⁵

The successor to Kourion seems to have been established close to where *Bamboula* stood nearly two millennia earlier. In fact, the name given to the village, Episkopi, indicates that the town was the seat of the local bishop (*episkopos*) transplanted from Kourion. Today, the visible portions of this site are known as *Serayia*, from the Turkish word for palace. This movement of the bishopric meant the construction of a new church, in this case with added architectural and decorative spolia from the old, ruined basilica of Kourion.¹⁴⁶ The medieval chapel at Episkopi almost certainly predates the 12th century, which marks the earliest architectural motifs recorded thus far.¹⁴⁷

Enlightening documents of the next century identify the Lusignan Crusader John d'Ibelin as the owner of a fief that encompassed large areas around Kourion, including the village of "Piscopie." The area west of the Kouris River passed into the hands of the Venetian Cornaro family in the 14th century.¹⁴⁸ Episkopi must have drawn some maritime traffic, to judge from the accounts left by travelers of the 15th century, who report anchoring in the area.¹⁴⁹ During the Crusader period, documentary and archaeological evidence first appears for the cultivation of sugar, a product imported from Arab lands and for which medieval Cyprus became most famous.¹⁵⁰ A processing

¹⁴⁵ Papageorghiou 1993, 51.

¹⁴⁶ Nicolaou 1980-1981, 72.

¹⁴⁷ Young 1982, 155.

¹⁴⁸ Young 1982, 156.

¹⁴⁹ Grivaud 1990, 23, 70-6.

¹⁵⁰ von Wartburg 2000, 383-5; 2001, 305-8; Luttrell 1996.

plant with boiling and milling facilities, as well as hundreds of clay pots, attests to the extent of the Cornaro family's production.¹⁵¹ Concentrated along this stretch of the island, the sugar processing plants of medieval Cyprus evidence a remarkable level of industrial sophistication in their facilities and operation.¹⁵²

The Cornaro operations, however, seem to have brought them into conflict with their neighbors to the east, the Knights of St. John (Hospitallers) at Kolossi, whose aqueduct depended on water rights to the Kouris.¹⁵³ One of the most recognizable sites on the island, the Hospitaller stronghold of Kolossi Castle provides an imposing reminder of Cyprus' status as a western medieval kingdom. Although the present three-storey keep is a product of 15th-century rebuilding, the crusader castle here dates back to the early 13th century.¹⁵⁴ After the fall of Acre in 1291, Kolossi and the 40 surrounding villages served as the Knights' headquarters (Commandery) until they relocated to Rhodes. The size and orientation of a pair of canals, one surmounted by a bridge dating to at least the Venetian period (1489-1571), suggest that they may have provided direct access to Kolossi from the sea at Akrotiri Bay (see Chapter I). Barges for transporting the profitable sugar likely utilized the Salt Lake as an anchorage, as depicted in Venetian maps.¹⁵⁵ Already during the Venetian period, the sugar industry was losing ground rapidly to production in the West Indies.¹⁵⁶ The island's economy turned to heavier dependence on cotton, and a Danish traveler who visited Episkopi in 1638 reported

¹⁵¹ Solomidou-Ieronymidou 1998, 69.

¹⁵² von Wartburg 1995.

¹⁵³ Luttrell 1996, 166.

¹⁵⁴ Megaw 1964; der Parthog 1995, 108-9.

¹⁵⁵ Wessex Archaeology 2002, 12.

¹⁵⁶ Luttrell 1996, 169-70.

seeing only cotton plantations in place of the formerly numerous sugar cane fields.¹⁵⁷ With regard to Akrotiri, even if the peninsula was notorious among medieval travelers for its swamps and snakes, the Venetians constructed a watchtower along the southern coast as part of a defensive network against the growing Ottoman threat, and left infill at a well at Lania.¹⁵⁸

A number of churches spread across the coast of Episkopi Bay have survived well and are worth noting with regard to the area's medieval landscape. Ayios Eustathios chapel served the knights in adjacent Kolossi castle, while St. Nicholas of the Cats on Akrotiri, mentioned above, was completely rebuilt.¹⁵⁹ Along the outskirts of Episkopi village were *Chrysanayiotissa* and *Ayios Mamas*, two churches surrounded by graves of the 11th or 12th through the 16th centuries.¹⁶⁰ Further west, the important *Panayia* monastery chapel stood at the sacred spring at Prastio, and should be dated earlier than the 14th century.¹⁶¹ The church marks the inconspicuous site of medieval Avdimou, which resided a short distance from its modern successor.¹⁶² Finally, although few traces remain in the archaeological record, a medieval feudal estate cultivated land in the area of Sotira at San Chitino, to judge from the map Ortelius of 1573, just two or three years after the fall of the island to the Ottoman Turks.¹⁶³

¹⁵⁷ Solomidou-Ieronymidou 1998, 67.

¹⁵⁸ WSBA Archaeological Society n.d., 9 and 14.

¹⁵⁹ der Parthog 1995, 105 and 110.

¹⁶⁰ du Plat Taylor 1934.

¹⁶¹ der Parthog 1995, 122-3.

¹⁶² Swiny 1982b, 161.

¹⁶³ Goodwin 1984, 477. On possible archaeological remains, see Swiny and Mavromatis 2000, 449 and Held 1988, 57 no. 15 (published again in Held 2003, 469-70).

CHAPTER III

DREAMER'S BAY

Overview

Over 10 km of hostile weathered cliffs provide little shelter along the southern coast of Akrotiri. Near the center, however, the anchorage of Dreamer's Bay would have been a welcome sight for ancient mariners (Figs. 1.2, 3.1 and 3.2). In its present state, the bay is by no means an ideal harbor, offering little respite against stronger winter winds from the south. A low-lying headland does allow some protection from westerly winds common during the sailing season, and a small island helps shelter the western portion from wave action from the southwest. However, this western sector, in places shallower than 1 m, is not deep enough to have been the primary ancient anchorage, unless substantial uplift has taken place since antiquity, which seems highly unlikely.

On the other hand, Flemming suggests a subsidence along this coast of about 2 m over the past 2000 years.¹⁶⁴ Interestingly, the southern Akrotiri Peninsula seems to be one of the more rapidly submerging areas of the island, with the remainder of the southern Cypriot coast having subsided or risen irregularly over the past couple of millennia.¹⁶⁵ At the western edge of Dreamer's Bay in particular, rock strata extend gradually down the shore and under the water (Fig. 3.3). With a coastline 2 m higher in antiquity, this rock would have formed a coastal shelf, and the small island currently

¹⁶⁴ Flemming 1978, 415 tbl. 1 no. 172.

¹⁶⁵ Flemming 1974, 1978, 434-5; Morhange et al. 2000.



Fig. 3.1 Dreamer's Bay facing northeast.



Fig. 3.2 Western Dreamer's Bay looking southwest.



Fig. 3.3 Western edge of Dreamer's Bay looking north.

offshore a headland. The water's edge thus would have been pushed significantly eastward, perhaps 100 m or more, into the more open area of the bay.

The best landing around the bay today is clearly at its western edge, where there stand conspicuous ruins of the ancient site of *Akrotiri-Vounari tou Kambiou*. This prominent site seems to have been utilized from at least the Hellenistic period, when the sea-passage through the Akrotiri Peninsula may still have existed, with Akrotiri effectively standing as an island slightly offshore (see Chapter I).¹⁶⁶ Leonard has

¹⁶⁶ Leonard and Demesticha 2004, 198.



Fig. 3.4 Warehouses onshore at *Vounari tou Kambiou*.

reasonably connected the site to the mysterious Kourias of Strabo (14.6.3) and Kargaiai of the *Stadiasmós* (303).¹⁶⁷ A pair of sizable Roman necropoleis stretches conspicuously across much of the cliffs, which are also marked by quarries and wheel ruts from heavy carts.¹⁶⁸ On the low-lying southernmost headland, a series of warehouses (*horrea*) indicates a commercial purpose to the settlement (Fig. 3.4). Quantities of LR1 and Early Roman pinched-handle amphoras on shore hint at the maritime connections Akrotiri maintained during a period of lively island-wide commerce. Furthermore, Leonard and

¹⁶⁷ Leonard 1995b 232 n. 14 and 234 n. 20; Leonard and Demesticha 2004, 190.

¹⁶⁸ Heywood 1982, 169-71.

Demesticha, on the basis of ceramic wasters, over-fired sherds and the hitherto unique fabric of the LR1 amphoras found here, have raised the possibility of a kiln site nearby.¹⁶⁹ An unsubstantiated report hints at production of glass as well.¹⁷⁰

Such a sizable port and warehouse facility would certainly have drawn considerable traffic around the tip of Cape Zevgari, and thus makes the bay an obvious and promising choice for underwater exploration. With the kind permission of the Director of the Department of Antiquities, who graciously allowed the inclusion of this new stretch of coastline in the second season of the Episkopi Bay Marine Survey, underwater work commenced in July 2004. Since the crew was small and the area large, a concerted effort was made to ensure as thorough a recording of the ceramic record as possible in select areas, even if it meant neglecting others, with the understanding that the team would return the following season. Closely spaced divelines and a series of small triangle-searches using prominent coastal features as headings helped reduce the possibility of missing important assemblages. While the shallower western portion could be reached from shore, operations in the more open eastern part were conducted from *Maria*.

Stone Anchors

In the open deeper portion of Dreamer's Bay, where occasional sandy patches punctuate an otherwise rocky seabed, the team recorded nine stone anchors (Fig. 3.5). All were marked with a handheld GPS and photographed on the seabed. All

¹⁶⁹ Leonard and Demesticha 2004, 199.

¹⁷⁰ Haggerty n.d., 1:33

Image removed due to privacy concerns

Fig. 3.5 Plan of Dreamer's Bay with stone anchors and pottery concentrations.

measurements were recorded underwater on a sketch, from which final 1:4 drawings could be produced. No anchors were raised, so no weights could be recorded, though the drawings should allow for some approximations. Most of the anchors had to be disturbed slightly to acquire profile measurements and photographs, and plans for the 2005 season include taking stone samples for identification.

Aside from the lone EBS-A10, these were concentrated around a sandy patch of seabed at a depth of approximately 9-10 m. The sandy character of this seafloor is visible from the surface, which, along with the dense packing of the group, suggests that ancient mariners knew well where they were casting and specifically selected this area as a suitable anchorage.

Tbl. 3.1 Dreamer's Bay anchor dimensions (in m).

Anchor	Figure	Height	Width	Thickness	Piercing(s)
					Height x Width
A10	Fig. 3.6	1.121	0.598	0.235	0.129 x 0.123 0.056 x 0.058
A11	Fig. 3.7	0.426	0.360	0.103	0.055 x 0.058 0.040 x 0.038 0.040 x 0.038
A12	Fig. 3.7	0.510	0.341	0.152	0.062 x 0.062
A13	Fig. 3.7	0.512	0.380	0.179	0.109 x 0.106
A14	Fig. 3.7	0.457	0.407	0.178	0.092 x 0.081
A15	Fig. 3.8	0.416	0.367	0.103	0.039 x 0.039 0.032 x 0.032 0.025 x 0.025
A16	Fig. 3.8	0.490	0.348	0.196	(n.a.) x 0.159 0.055 x 0.067 0.050 x 0.055
A17	Fig. 3.8	0.444	0.301	0.134	0.134 x 0.141
A18	Fig. 3.8	0.629	0.430	0.223	0.116 x 0.168

Catalog of Stone Anchors

Drawings of the anchors from Dreamer's Bay are provided on pages 55, 57, and 62. For convenience, dimensions for the anchors are compiled above on page 53.

EBS-A10 (Fig. 3.6)

H. 1.121; W. 0.598; T. 0.235; P. 0.129 x 0.123, 0.056 x 0.058

Large, roughly rectangular anchor of generally even thickness; single small auxiliary hole at lower corner; opposite lower corner chamfered; gouge in side near top.

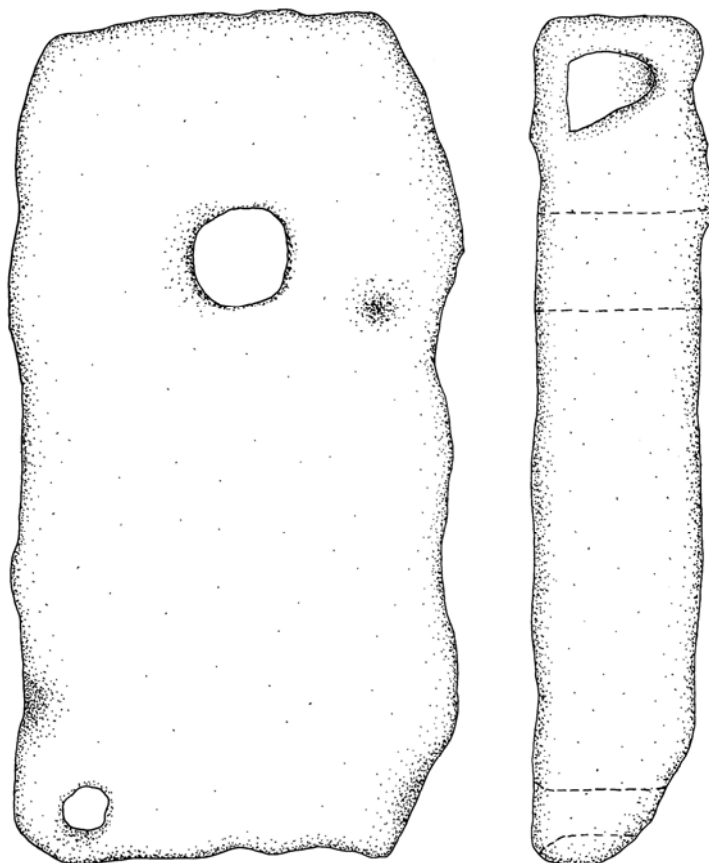
By far the largest and heaviest of those found thus far in the survey area, this anchor is unusual in having a single secondary piercing near the bottom corner. Presumably this was not used for a wooden stake, but rather functioned similarly to the famous L-shaped holes Frost associates with Bronze Age anchors from Egypt.¹³² If the anchor became caught rocks on the seabed, it could be freed by pulling on a trip line passed through this hole.¹³³ This attribution to Egypt was made largely on the presence of the famous *nfr* pictograph found on one such anchor at Byblos.¹³⁴ Since then, however, the association has been confirmed by finds of this type on land in Egypt.¹³⁵ The Egyptian anchors, however, are much more finely carved, and have a characteristic L-shaped hole and domed apex, whereas A10 is a poorly cut rectangle with a straight tubular hole.

¹³² Frost 1970a, 381, pl. I A.

¹³³ Frost 1970a, 380; Nibbi 1993, 7.

¹³⁴ Frost 1969, 426-7 tbl. I no. 21 and 439-40.

¹³⁵ Wachsmann 1998, 259-62.



A10

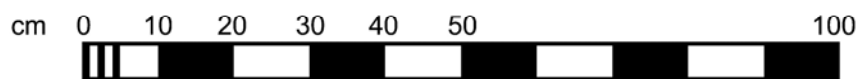


Fig. 3.6 Stone anchor A10 from Dreamer's Bay.

Regarding date, Frost presumes that larger varieties of stone anchors generally fell into disuse with the invention of more technologically sophisticated stone (and later metal) anchors. On the other hand, she suggests that the smaller examples that could be effectively handled by a single man continued in use on small craft such as fishing boats.¹³⁶ While it is impossible at present to determine if this assumption is correct, it would suggest that A10 belongs to an earlier period in anchor development, perhaps as early as the Bronze Age.

EBS-A11 (Fig. 3.7)

H. 0.426; W. 0.360; T. 0.103; P. 0.055 x 0.058, 0.040 x 0.038; 0.040 x 0.038

Small composite anchor with slightly tapering thickness; apex, base and one side flat and straight with rounded edges; other side falls outward, curving down to base; three tubular holes offset to one side; hawser hole square with rounded sides; secondary holes well rounded.

As with many small composite anchors, including A15 below, this stone probably served a smaller local craft. Parallels can be found in the lot of anchors from the harbor of Alexandria, which was in use from the Hellenistic period.¹³⁷ They are common along the coasts of Israel¹³⁸ and Turkey,¹³⁹ often in medieval contexts. Farther abroad, they have been reported along the coasts of Bulgaria¹⁴⁰ and India.¹⁴¹ The

¹³⁶ Frost 1973, 405.

¹³⁷ Tzalas 2002, 795 fig. 2b and c.

¹³⁸ Galili et al. 1993, fig. 5B and C; Raban 2000, 267 fig. 9.

¹³⁹ Evrin et al. 2002, 257 figs. 3 and 4.

¹⁴⁰ Dimitrov 1979, 79 fig. 9.

¹⁴¹ Gaur et al. 2001, fig. 20 nos. 16 and 18-20.

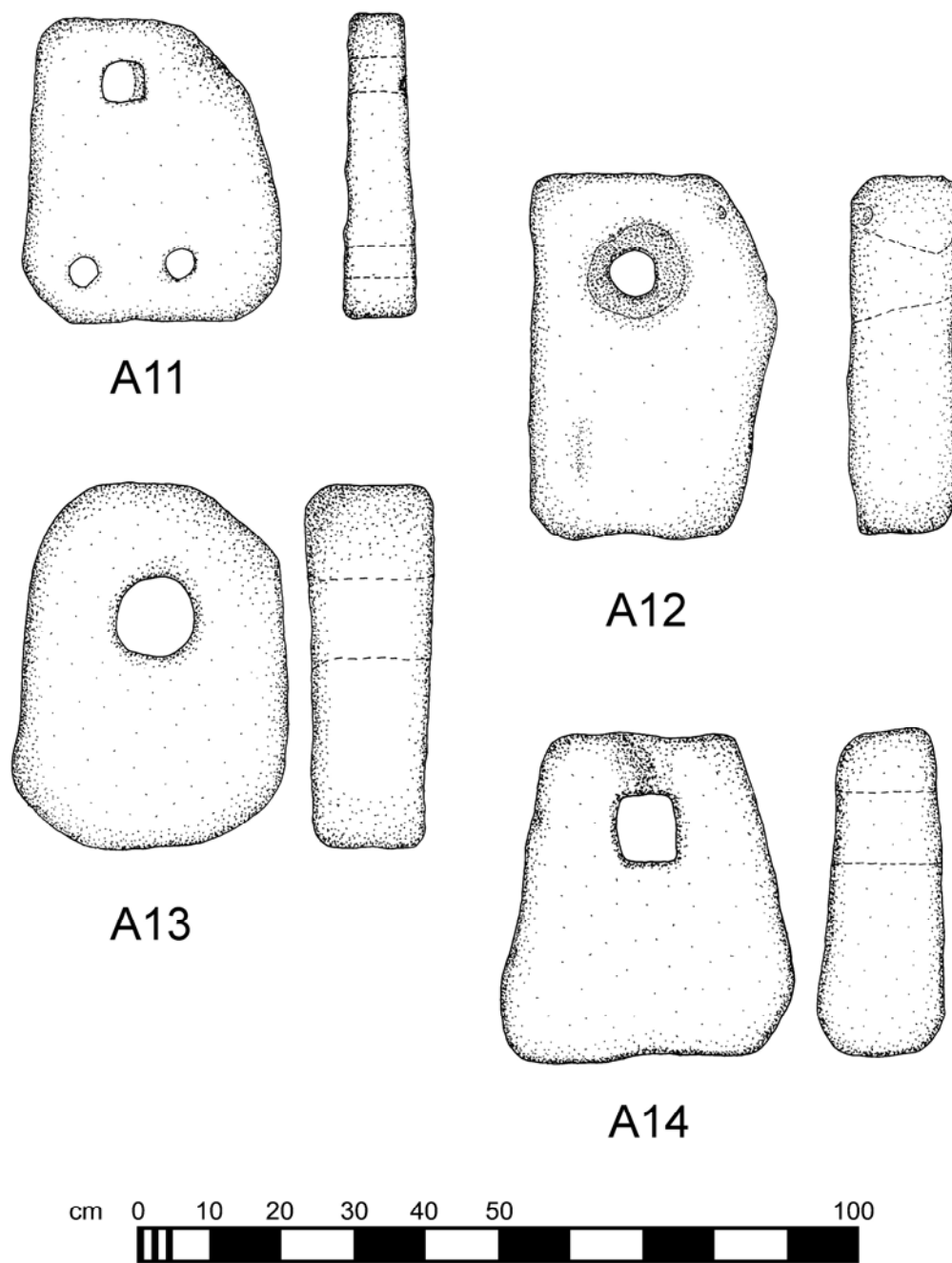


Fig. 3.7 Stone anchors A11 through A14 from Dreamer's Bay.

Museum in Agde houses many light triangular composite anchors, at least some of which date to the medieval period (see A01 at Avdimou, Chapter V).¹⁴² As anticipated, they litter the simple anchorages along the coast of Cyprus where small fishing boats have probably operated for millennia.¹⁴³

EBS-A12 (Fig. 3.7)

H. 0.510; W. 0.341; T. 0.152; P. 0.062 x 0.062

Roughly cut, rectangular weight anchor of even thickness; apex, base and one side straight; other side angles out to point near middle; single piercing biconical and uneven.

Simple weight anchors such as this entailed a minimum of investment, and were probably easily handled and frequently lost by local boats. It is no surprise, therefore, that they appear in quantities in smaller anchorages around Cyprus at Maroni,¹⁴⁴ Cape Kiti,¹⁴⁵ Cape Andreas,¹⁴⁶ Maniki,¹⁴⁷ and Lara.¹⁴⁸ Although of a slightly different shape, Avdimou A07 was likely used in the same way (see Chapter V). Boats on the Dead Sea also utilized such simple weight anchors.¹⁴⁹

¹⁴² Fonquerle 1971, 212-4 (especially 213 pl. 1).

¹⁴³ Among these numerous finds, see Manning et al. 2002, 117 fig. 11 (especially “TSBS.037,” “TSBS.005” and “TSBS.014”) and 120 fig. 15 (especially “TSBS.051,” “TSBS.022,” “TSBS.024” and “TSBS.045”); Leonard 1995a, 139 fig. 8; Green 1973, 172 fig. 31A nos. 015 and 020-023; Giangrande et al. 1987, 193 fig. 7 (“Maniki 4” and “Lara Limnionas 11”).

¹⁴⁴ Manning et al. 2002, 117 fig. 11 (“TSBS.012”).

¹⁴⁵ McCaslin 1978, 119 fig. 215 no. N9044.

¹⁴⁶ Green 1973, 170 fig. 30B no. 019.

¹⁴⁷ Giangrande et al. 1987, 193 fig. 7 (“Maniki 3”).

¹⁴⁸ Giangrande et al. 1987, 193 fig. 7 (“Lara Limnionas 5” and “Lara Limnionas 12”).

¹⁴⁹ Hadas 1992; Hadas 1993.

EBS-A13 (Fig. 3.7)

H. 0.512; W. 0.380; T. 0.179; P. 0.109 x 0.106

Roughly cut weight anchor; rounded and asymmetrical; single, rounded tubular piercing centered below apex.

The uneven shape of this makeshift anchor defies classification. Thick rounded anchors are understandably quite common, appearing on land at Maroni¹⁵⁰ and off the coasts of Cyprus at Cape Andreas,¹⁵¹ Cape Kiti,¹⁵² and Kerati.¹⁵³ Otherwise, the only reasonably similar but dated parallels are among the bulky and well-rounded Late Bronze Age examples from Ugarit.¹⁵⁴ It is also notable that very thick and rounded pierced stones of this type were commonly used as olive press weights during the Roman period on Cyprus.¹⁵⁵

EBS-A14 (Fig. 3.7)

H. 0.457; W. 0.407; T. 0.178; P. 0.092 x 0.081

Trapezoidal weight anchor with tapering thickness; rounded or chamfered corners; square, tubular hawser hole surmounted by wear marks.

Thick, trapezoidal anchors with either square or round holes are very common throughout this part of the Mediterranean, particularly on Cyprus. Excavations at Late Bronze Age Kition yielded a number of parallels. Of the two anchors from Temple 2 that

¹⁵⁰ Manning et al. 2002, 116 fig. 10 (“MVASP.188”).

¹⁵¹ Green 1973, 172 fig. 31A nos. 031 and 032.

¹⁵² Engvig and Åström. 1975, 22 and fig. 48 (“object no. 2”).

¹⁵³ Giangrande et al. 1987, 193 fig. 7 (“Kerati 1”).

¹⁵⁴ Frost 1969b, 244-5 tbl. 1 no. 14 (= Frost 1991, 379 and 398 pl. IV no. 11). Similar anchors come from nearby Minet el-Beida: Frost 1969, 244-5 tbl. 1 no. 20; Frost 1991, 386-7 and 404 pl. X nos. 34 and 36.

¹⁵⁵ Hadjisavvas 1992, 66 figs. 120 and 121.

are nearly identical in shape, one has a square hawser hole and the other a round piercing.¹⁵⁶ Additional examples at Kition come from Temple 4¹⁵⁷ and Temenos A.¹⁵⁸ Underwater finds of varying sizes have been reported at Cape Gata,¹⁵⁹ Cape Andreas,¹⁶⁰ Maniki,¹⁶¹ and also at Maroni,¹⁶² an anchorage with large deposits of LC I pottery.

Outside Cyprus, A14 shares affinities with the much larger anchor from the Late Bronze Age shipwreck at Cape Gelidonya,¹⁶³ as well as those from the late 14th-century B.C. wreck at Uluburun.¹⁶⁴ One anchor of this shape appears at Ugarit, showing wear marks around and above the top of the hawser hole similar to those on A14.¹⁶⁵ Excavations at Byblos revealed three trapezoidal examples.¹⁶⁶ One of the earliest Byblian anchors (c. 2300-2000 B.C.) has an additional groove intentionally cut into the anchor top for the hawser,¹⁶⁷ somewhat similar to those found on types labeled “Byblian” and “Egyptian” by Frost.¹⁶⁸ Later weight anchors with sharp edges, a thick base, and a nearly pyramidal shape can be found among the ruins of the fourth-century B.C. Antidragonera shipwreck.¹⁶⁹

¹⁵⁶ Frost 1985, 295 and 297 fig 4.1. Frost reconstructs the second anchor (no. 5172) as identical, which seems likely: Frost 1985, 295 and 297 fig. 4.2.

¹⁵⁷ Frost 1985, 298-9, 300 fig. 5.6 and 302 figs. 7.1, 7.2 and 7.4. Anchor no. 5178A, heavily reconstructed, may also be of a similar style: Frost 1985, 299 and 302 fig. 7.5.

¹⁵⁸ Frost 1985, 312 fig. 12.15 and 314.

¹⁵⁹ Green 1973, 170 fig. 30C (“F”). The site Green labels generally “Akrotiri” seems not to be Dreamer’s Bay, but rather Cape Gata.

¹⁶⁰ Green 1973, 172 fig. 31A nos. 025 and 112.

¹⁶¹ Giangrande et al. 1987, 193 fig. 7 (“Maniki 2”).

¹⁶² Manning et al. 2002, 117 fig. 11 (“TSBS.018”).

¹⁶³ Pulak and Rogers 1994, 20 and 21 fig. 7; Bass 1999, pl. Vb.

¹⁶⁴ Evrin et al. 2002, 257 fig. 4 no. 18.

¹⁶⁵ Frost 1969b, 244-5 tbl. I no. 2 (=Frost 1991, 376 and 397 pl. III no. 2).

¹⁶⁶ Frost 1969a, 426-7 tbl. I nos. 18, 20 and 22.

¹⁶⁷ Frost 1969a, 426-7 tbl. I no. 18.

¹⁶⁸ Frost 1970a, 381; Frost 1979, 147 fig. 3 and 149; see also Galili 1985; Galili 1987; Galili et al. 1994; McCaslin 1980, 67 fig. 35.

¹⁶⁹ Κουρκουμέλης 1999, 735; Θεοδούλου and Κουρκουμέλης 2002, 248 fig. 5.

EBS-A15 (Fig. 3.8)

H. 0.416; W. 0.367; T. 0.103; P. 0.039 x 0.039, 0.032 x 0.032, 0.025 x 0.025

Very small triangular composite anchor with greatest thickness at center; sides straight and lower corners rounded to flat base; three small, asymmetrical piercings are round and tubular.

This small composite anchor fits generally into the same category as A11 and several from Avdimou Bay (see Chapter V, A01, A06 and A08). The smallest of this type from these areas, A15 could have served as an anchor for only small boats. Particularly early examples come from Late Bronze Age Kition.¹⁷⁰ The majority of dated examples, however, come from much later contexts postdating the introduction of more sophisticated designs. For instance, several small composite anchors were found in the harbor of Alexandria, which was in use from the Hellenistic period.¹⁷¹ Again, small triangular composite anchors, some dated to the medieval period, are common along the coast of France.¹⁷²

Another possible identification for A15 is as a weight for fishing gear. Such variously shaped devices are common in this part of the Mediterranean, and are unlikely to be typologically distinct.¹⁷³

¹⁷⁰ Frost 1985, 311 and 312 fig. 12.1. A similar, medium-sized anchor comes from Minet el-Beida, near Ugarit: Frost 1991, 386 and 404 pl. X no. 35. The examples from the Aleppo Museum may also be early: Frost 1991, 382 and 398 pl. IV nos. 18 and 19.

¹⁷¹ Tzalas 2002, 795 fig. 2b and c.

¹⁷² Fonquerle 1971, 212-4, including 213 pl. 1 nos. 16-39; Frost 1963a, 4 figs. 24-5.

¹⁷³ Galili et al. 2002, 187 fig. 3d; Dimitrov 1979, 79 fig. 9 nos. 9-19; Frost 1973, 400 fig. 1 "E," 403 and 405.

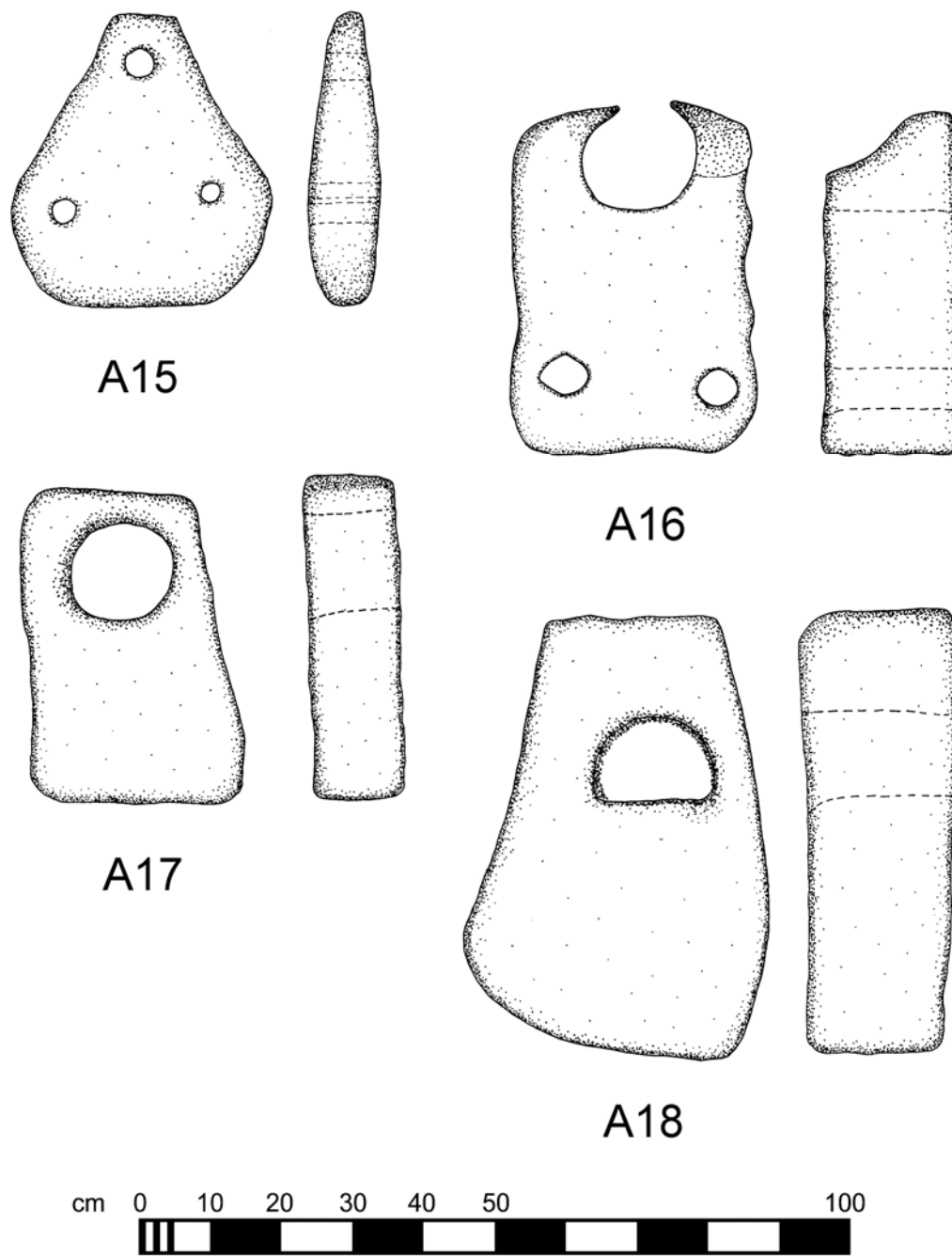


Fig. 3.8 Stone anchors A15 through A18 from Dreamer's Bay.

EBS-A16 (Fig. 3.8)

H.pres. 0.490; W. 0.348; T. 0.196; P. (n.a.) x 0.159, 0.055 x 0.067, 0.050 x 0.055

Evenly thick composite anchor with roughly straight sides and base; apex not preserved (originally domed or perhaps flat); very large hawser hole tubular and rounded; secondary holes remain slightly square.

The lack of a complete reconstruction of the uppermost portion of this anchor hinders positive attribution to any of the general anchor categories. In particular, it is impossible to determine whether it originally had a rounded or squared apex. While it is clear that these edges are well-worn, the depth of the find (10 m) makes it unlikely that wave action is responsible for the missing portion. Instead, it is more probable that this rather bulky anchor broke in antiquity at a particularly weak section above its main piercing, rendering it unrecoverable. Two anchors from Byblos show just such impractically thin sections above their hawser holes.¹⁷⁴

One of the more common shapes for composite anchors is rectangular, several examples of which appear in Bronze Age contexts at Ugarit.¹⁷⁵ On the other hand, their dimensions are generally much greater, while their main piercings are not proportionately larger. Similar anchors are numerous on Cyprus in the excavations of Late Bronze Age Kition¹⁷⁶ and Hala Sultan Tekke,¹⁷⁷ and in the underwater surveys at

¹⁷⁴ Frost 1969a, 426-7 tbl. I nos. 20 and 22.

¹⁷⁵ Frost 1969b, 244-5 tbl. I nos. 5 and 6 (= Frost 1991, 376-7 and 397 Plate III nos. 4 and 5). For an undated rectangular anchor from Ugarit: Frost 1991, 381 and 398 Plate IV no. 16.

¹⁷⁶ Frost 1985, 295-6 and 297 fig. 4.3-4 (“4972” and “4973”), 310 fig. 11.15 (“2603”) and 311.

¹⁷⁷ McCaslin 1978, 119 fig. 215. See also Hult 1981, 42 (“F 1254”), 84 figs. 134-5 and 89 fig. 140 no 26.

Cape Kiti¹⁷⁸ and Cape Andreas.¹⁷⁹ An anchor of this general appearance also resides in the collection of the Bodrum Museum of Underwater Archaeology.¹⁸⁰

While it seems that the rectangular composite anchor was common along the Levantine coast and Cyprus, particularly at Ugarit and Kition, the proportions of A16 prevent a positive ascription to this broad group. The small but thick shape is unattested elsewhere. Frost notes, probably rightly, that small composite anchors continued in use as the poor man's substitute even after the innovation of better metal counterparts.¹⁸¹

Frost also identified, however, a category of specifically Cypriot "basket-shaped" anchors with exceptionally large hawser holes.¹⁸² Unfortunately, only a few examples are known, and none come from securely dated contexts. Two of her "basket-shaped anchors" from Late Bronze Age contexts at Hala Sultan Tekke have their upper halves and hawser holes entirely reconstructed based on the similar proportions of a single undated parallel from underwater nearby at Cape Kiti.¹⁸³ A slightly better preserved example was later recovered at Hala Sultan Tekke, though its hawser hole is not quite so large and even this reconstruction is fraught with difficulties.¹⁸⁴ The evidence is hardly conclusive at present, but two additional parallels from underwater off the island's other coasts lend legitimacy to this type.¹⁸⁵ These are notably tapering and thin, with an overall trapezoidal appearance, which distinguishes A16 from this class. On the other

¹⁷⁸ Engvig and Åström 1975, 19, 22 and figs. 15, 16, 20 ("S7a" and "S8a") and 49 no. 7 (=McCaslin 1978, 119 fig. 215 and 126 fig. 217 and figs. 279-80).

¹⁷⁹ Green 1973, 172 fig. 31A nos. 039, 114 and possibly also 123 and 101.

¹⁸⁰ Evrin et al. 2002, 257 fig. 4 no. 15.

¹⁸¹ Frost 1973, 405.

¹⁸² Frost 1970b, 15-7 and 21.

¹⁸³ Frost 1970b, 14 fig. 1 nos. 3 and 4.

¹⁸⁴ Hult 1977, 147-8 and 149 fig. 170.

¹⁸⁵ Frost 1970b, 21 fig. IV nos. 7 and 11; McCaslin 1980, 30 fig. 16. To this group should also be added an anchor from Cape Pyla: McCaslin 1978 fig. 305 and McCaslin 1980, 66.

hand, the presence of a strange class of smaller bulkier single-hole weight anchors with similarly exaggerated hawser holes (including A17 below) hints that this unusual feature may be a peculiarity of the island.¹⁸⁶ If so, A16 would fit nicely within the broader family of typically “Cypriot” anchors, despite its apparent uniqueness in not belonging to either the weight or composite class of “basket-shaped” anchors.

EBS-A17 (Fig. 3.8)

H. 0.444; W. 0.301; T. 0.134; P. 0.134 x 0.141

Evenly thick weight anchor with angled sides, flat apex and base; very large hawser hole tubular and rounded.

Despite its slightly uneven yet simple shape, this type of anchor has proven to be fairly enlightening. Termed the “basket-shaped weight anchor” by McCaslin, this type shares similar features with the typical basket-shaped composite anchor discussed above as of likely Cypriot origin.¹⁸⁷ The principle difference, of course, is the absence of the secondary holes, although examples of this type seem considerably smaller as well.

Two underwater surveys off Cyprus have thus far yielded examples of this type. At Cape Kiti, archaeologists recorded two examples.¹⁸⁸ A member of Green’s team at Cape Andreas recorded a third specimen in an assemblage of stone anchors somewhere off Akrotiri.¹⁸⁹ More descriptive information is not given about the location of this

¹⁸⁶ McCaslin 1980, 66 and 67 fig. 35 A4b; see discussion under EBS-A17 of McCaslin’s “basket-shaped weight anchors.”

¹⁸⁷ McCaslin 1980, 66 and 67 fig. 35 A4b.

¹⁸⁸ McCaslin 1978, 119 fig. 215 I nos. N4000bis and S50a.

¹⁸⁹ Green 1973, 170 fig. 30 “Anchor E” from “Site C”; McCaslin 1980, 30-1. Green’s “Anchor G” might be another parallel for A17, provided that this anchor found some 35 years ago is not actually the very

anchor, though the site sketch appears to show a depth ranging from 8-10 m, which corresponds well with the depth of the present Dreamer's Bay concentration.¹⁹⁰ However, the other anchors clearly do not match the present group, suggesting that this is indeed the fourth example of the basket-shaped weight anchor, albeit with a more rectangular apex than the others.

The extremely large hole, nearly the entire width of the anchor top, would have made this type more fragile, as Frost suggests for her composite basket-shaped anchors.¹⁹¹ However, the greater thickness would certainly have added to its strength. One wonders why such a large hole was necessary if it was only an attachment point for a hawser. On the other hand, the greater diameter would have been beneficial if the stone were meant to weigh down a series of lines, perhaps as a net weight. The small size of all four examples lends support to this identification. Unfortunately, no examples of this type come from dated contexts, though Frost's basket-shaped composite anchors have been dated to the Late Bronze Age.¹⁹² The fact that no parallels are known outside the island suggests that the style may be indigenous to Cyprus.

EBS-A18 (Fig. 3.8)

H. 0.629; W. 0.430; T. 0.223; P. 0.116 x 0.168

same anchor as A17 above. McCaslin's map (McCaslin 1980, 3) suggests that Green's reference to Akrotiri, where Anchor G was found, is to be interpreted specifically as Cape Gata, at the southeast tip of the peninsula. Such a find at Cape Gata would not be surprising, since this is an area explored in depth by the local British Sub Aqua Club (BSAC), which has its clubhouse just north of the cape.

¹⁹⁰ Green 1973, 170 fig. 30 "Site C."

¹⁹¹ Frost 1970b, 15.

¹⁹² Frost 1970a, 390.

Asymmetrical weight anchor of slightly tapering thickness; flat apex; base angled and offset to one side, with lower corners more rounded than upper corners; semicircular tubular piercing offset.

The odd shape of this anchor, with offset hole and uneven sides, defies categorization into any of the few generally established types. Furthermore, no good parallel is known to this author for the semicircular hawser hole, which was clearly carved with some attention to detail. Anchors of Frost's basket-shape exhibit generally larger holes.¹⁹³ The more robust thickness of A18 corresponds better with examples from the Bronze Age than those from later periods.¹⁹⁴

Ceramic Evidence

The following discussions treat the ceramics by period and assemblage, after which can be found full catalog entries and figures. Distribution of the sites is given in Figure 3.5.

Hellenistic through Mid-Roman

Diagnostic remains predating the Late Roman period underwater at Dreamer's Bay are not plentiful. While a number of roof tile and amphora sherds in the westernmost sector are potentially early, it was only with the discovery of a few handles from typical Hellenistic Rhodian amphoras that the submerged record yielded verifiably

¹⁹³ Frost 1970b, 15.

¹⁹⁴ Frost 1986, 356-7; Frost 1973, 405; see also the anchors from the Late Bronze Age shipwreck at Uluburun: Pulak 1999, 210-1 and 233 fig. 1.

pre-Roman remains. One isolated handle was raised from among the shallows for further documentation (EBS-04-008). Haggerty reports additional Rhodian jars from the northwest sector of the bay,¹⁹⁵ in the area of the possible harbor construction discussed below, but these finds remain unconfirmed.

Although Rhodian amphoras underwent a long evolution, this particular form is unmistakable. It belongs to the heyday of Rhodian commerce in the last part of the third and first half of the second century B.C., when amphoras of this type circulated ubiquitously throughout the eastern Mediterranean. While the form is generally ascribed to manufacture at a variety of workshops across the island of Rhodes, it is now apparent from compositional variation as well as located production centers, that limited numbers were being manufactured during this busy period in the Peraea as well.¹⁹⁶

While Rhodian (or rather proto-Rhodian) amphoras appear at an early date among the cargo of the famous early third-century B.C. Kyrenia ship,¹⁹⁷ this later typical form is naturally the more prevalent on Cyprus. Fifteen intact examples from the Cyprus Museum in Nicosia range in date from 240 to 123 B.C.¹⁹⁸ Similar amphoras come from contexts of the second quarter of the second century at Ktima,¹⁹⁹ and additional jars have been found in late-third- through mid-second-century contexts at Paphos.²⁰⁰ A loosely contemporaneous amphora resides in the Kourion Museum in Episkopi.²⁰¹ At least one

¹⁹⁵ Haggerty n.d., 2:32.

¹⁹⁶ Empereur and Picon 1986b, 115-6; Empereur and Tuna 1989; Whitbread 1995, 59-63; Şenol et al. 2004; Rasmussen and Lund 2004.

¹⁹⁷ Bass and Katzev 1968, 172.

¹⁹⁸ Nicolaou and Empereur 1986.

¹⁹⁹ Deshayes 1963, 30, 34 no. 32, and pl. XX no. 7.

²⁰⁰ Hayes 1991, 85-6 and pl. 20

²⁰¹ Personal observation.

possible shipwreck of Rhodian amphoras from this period has been surveyed off the western Cypriot coast,²⁰² in addition to that recorded in the shallows north of Cape Zevgari (see Chapter IV). Unfortunately, little of EBS-04-008 remains, and its probable stamp is obscured through wear. Thus it is impossible to speculate with any more precision than that given above, namely late third or first half of the second century B.C.

Scattered remnants of Roman commerce can also be found at Dreamer's Bay. A single top from a typical pinched-handle (MR4) amphora was located in the deeper eastern area surveyed (Fig. 3.9). Since it was located only on the last day of the field season, little time was available for proper conservation, and thus it was photographed and left on the seabed. J. Lund provides the most comprehensive study,²⁰³ while Leonard sketches the details of fabric.²⁰⁴

Finds from Pompeii provide the earliest context for pinched-handle amphoras, and are characterized by tall necks and long handles.²⁰⁵ Over the succeeding centuries, the type evidently became more popular, with many shorter-handled and narrower-necked examples known from second-century A.D. levels at Paphos.²⁰⁶ Amphoras of the later third and fourth centuries exhibit reduced neck-size, and may have handles without the characteristic pinch.²⁰⁷

²⁰² Leonard 1995a, 142 and 168 n. 24.

²⁰³ Lund 2000.

²⁰⁴ Leonard 1995a, 144-5.

²⁰⁵ Panella 1973, 623 and 631 (no. 34); for a possible earlier find from Caesarea: Leonard 1995a, 145.

²⁰⁶ Hayes 1991, 91-2 ("Type III").

²⁰⁷ Robinson 1959, 43 and pl. 8 ("G 199").

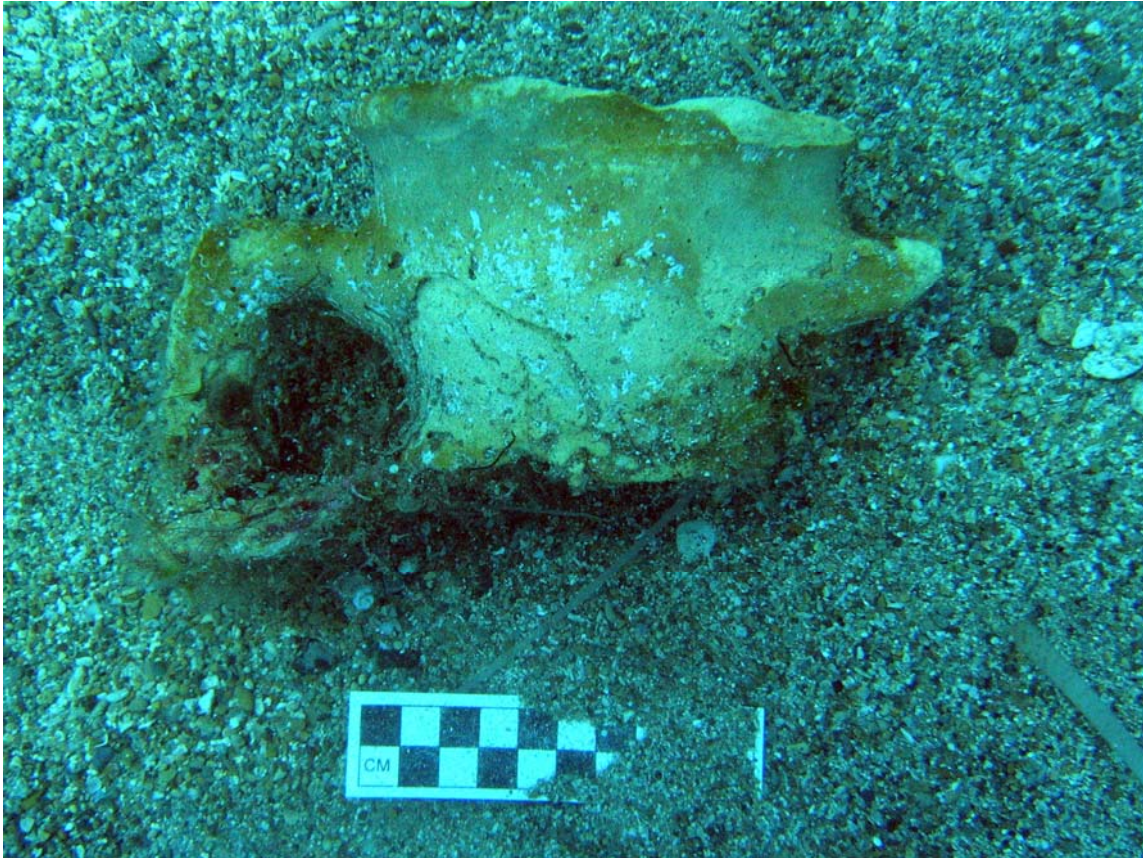


Fig. 3.9 Pinched-handle amphora from Dreamer's Bay.

Isolated finds from the western Mediterranean and Black Sea indicate that the pinched-handle amphora did occasionally travel some distance.²⁰⁸ The vast majority, however, seem to be relegated to the eastern, and especially the northeastern, Mediterranean along the coasts of western Cyprus and Cilicia,²⁰⁹ with the only possible shipwreck thus far noted by Leonard at Kioni.²¹⁰ Interestingly, finds from the eastern part of the island are few. In the area of Episkopi Bay and Akrotiri, the type has been

²⁰⁸ Lund 2000, 570-1; for Black Sea finds: Abadie-Reynal 1999, 262; Opař 2004b, 23.

²⁰⁹ Lund 1993, 126-7; Leonard 1995a, 144-5; Lund 2000, 567; Reynolds 2005, 564.

²¹⁰ Leonard 1995a, 148.

found at Kourion²¹¹ and recently onshore at *Vounari tou Kambiou*.²¹² Not surprisingly, evidence of production also exists in Cilicia and Cyprus. A kiln excavated Anemurium was producing this type.²¹³ Recently, surface finds along the remainder of the Rough Cilician coast east of Anemurium have suggested manufacture at several additional localities.²¹⁴ The variety of fabrics both on Cyprus and in Cilicia indicates diffuse production, and Lund reasonably suggests multiple production centers also along the southwestern Cypriot coast.²¹⁵

The neck and handle proportions of the example from underwater at Dreamer's Bay recall some of those from Paphos, rather than the earlier form witnessed at Pompeii or the later ones seen in Cilicia, and therefore may indicate a similar date. With such diffuse production, however, it stands to reason that some variation may have existed in the competing forms from a given period. Thus, any assertion of a more specific date than the first through fourth centuries A.D. is little more than speculation at present. Furthermore, since no fabric was recorded, no attribution can be made to a production center.

An artifact raised in the bay's western shallows may be the toe of another pinched-handle amphora. Although the most commonly described toe in this class has a knob terminus, other variants are slender and slightly tapered or spirally ridged. In particular, EBS-04-007 bears a general resemblance to the simple tapered peg toe with

²¹¹ Leonard, Jr. 1987, 109 fig. 63 "c" and possibly also "b," "d," "h" and "i."

²¹² Leonard and Demesticha 2004, 198-9 figs. 11-13.

²¹³ Williams 1989, 91-5.

²¹⁴ Rauh and Slane 2000, 328-9; Rauh 2004.

²¹⁵ Lund 2000, 569-70.

slightly concave base of certain amphoras of this class.²¹⁶ With very little of the base preserved, this suggestion is necessarily speculative.

Late Roman

The Late Roman or Early Byzantine period comprises the largest group in the material record. Pottery from the fourth through the seventh centuries dominates in terms of quantity and number of coherent assemblages. Thus far, each group of amphoras and other ceramics that forms a discrete concentration belongs to the Late Roman period.

Within this preponderance of Late Roman pottery, the LR1 amphora clearly stands out and merits special attention (Fig. 3.10). The type is exceedingly common in the eastern Mediterranean, especially on Cyprus, and has been recorded in the British Isles, along the Black Sea coast, and across the Mediterranean as far south as modern Sudan.²¹⁷ In addition to the northeast corner of the Mediterranean, it is particularly prevalent throughout Egypt,²¹⁸ along parts of the north coast of Africa,²¹⁹ and around the Black Sea.²²⁰ Large deposits have also been found at select sites in the Aegean,²²¹ and

²¹⁶ Rauh 2004, 332 fig. 9; Williams 1989, 93 and fig. 55 no. 557; Alpözen et al. 1995, 75; possibly Hayes 1991, pl. XXIV no. 6.

²¹⁷ For distribution, see Peacock and Williams 1986, 186 fig. 105 and the more updated map in Martini and Steckner 1993, 197-8 fig. 46. See also Pacetti 1995, 273-9. Even in the past decade, however, large numbers have been brought to light and greatly expanded the known corpus.

²¹⁸ Empereur and Picon 1992, 149; Majcherek 1992, 101-4 (Alexandria); Arthur and Oren 1998, 201-3 (Sinai); Oked 1996, 170 (Ostrakine); Egloff 1977, 112-3 (Kellia); Tomber 1998, 170 (Berenike - Wadi Shenshef).

²¹⁹ Riley 1981, 120 (Carthage); Peacock 1984, 119 (Carthage); Riley 1979, 213 fig. 41 (Benghazi); Keay 1989, 48 and 70 (Sabratha); Boardman and Hayes 1973, 116-7 (Tocra).

²²⁰ Sazanov 1999; Opaıt 2004b, 8-10.

²²¹ Abadie 1989, 52, 54 (Argos); Abadie-Reynal 1991, 157-8 (Thasos and Istanbul); Hautumm 1981, 58-77 (Samos); Garnett and Boardman 1961, 110 fig. 9 and 111 fig. 11 nos. 22 and 24 (Chios); Bass 1982, 155-7 (Yassiada); Böttger 1992, 373-4 (Kerameikos).

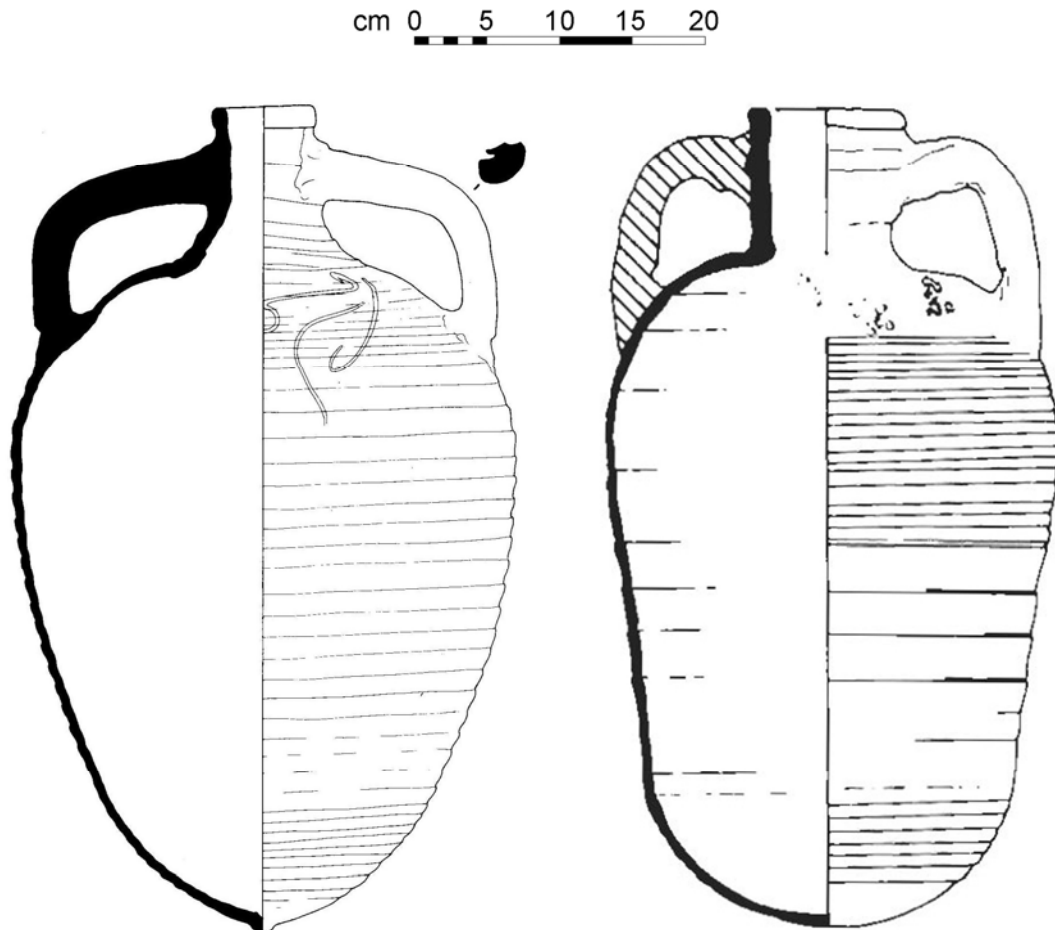


Fig. 3.10 Early LR1 (left) from Kellia in Egypt (from Egloff 1977, pl. 58 no. 2) and later, typical LR1 (right) from Carthage (from Peacock 1984, 120 fig. 34 no. 1).

the type was unusually popular at Marseille.²²²

On Cyprus, LR1 amphorae show up on nearly all Late Roman sites, making their dominance unambiguous.²²³ The type is immediately apparent among surface finds

²²² Bonifay and Villedieu 1989, 20 fig. 2.4; 21 fig. 3.9 and 3.10; Bonifay and Piéri 1995, 108.

²²³ See the recent summary of finds on Cyprus: Rautman 2003, 170-1 n. 14.

onshore here at Akrotiri-Vounari tou Kambiou.²²⁴ Just inland from Larnaca, at Panayia Ematousa, LR1 represent 75% of all late Roman amphoras.²²⁵ They account for c. 21% of the assemblage at Maroni-Petrera,²²⁶ and are common finds from late contexts at Paphos.²²⁷ Not surprisingly, they have been noted in the area of Kourion,²²⁸ and regional surveys have tracked their penetration beyond the island's coasts.²²⁹ The excavators at Kalavassos-Kopetra in the Vasilikos valley recorded nearly 70% LR1 in more than three fabrics distinguished through compositional analysis. Imports from the mainland northwest of Cyprus accounted for 60% of this figure, while 20% were brought in locally from the south coastal plain and lower Mesaoria plain.²³⁰ Quantities of LR1 recorded off the island's coasts make the type's role in Late Roman maritime commerce unmistakable.²³¹

Studies of the multiple fabrics at *Kopetra* and Yassiada²³² emphasize the complexities associated with using this prevalent form in interpreting Late Antique economic trends, as Jacobsen has recently underscored.²³³ It is rapidly becoming clear

²²⁴ Leonard and Demesticha 2004, 198-9.

²²⁵ Jacobsen 1998, 359; Jacobsen 2004, 144.

²²⁶ Manning et al. 2002, 42.

²²⁷ Daszewski 1970, 141 and pl. 23.5; Megaw 1971, 31 and 46; Giudice and Giudice 1999, 286, 288 and 291 nos. 18, 21, 24 and 35; Jacobsen 2004, 146; for kiln sites: Demesticha 2000, Demesticha and Michaelides 2001.

²²⁸ Leonard, Jr. 1987, 106 and 108 fig. 61.b; Williams 1987, 237; Hayes 1980a, fig. 15.2.

²²⁹ Lund 1993, 130-2 (Canadian Palaepaphos Survey Project); Given and Knapp 2003, 280 (Sydney Cyprus Survey Project); Jacobsen 2004, 146 (Troodos Archaeological and Environmental Survey Project); thanks to R. Scott Moore for preliminary comments on his ceramics from the Pyla-Koutsopetria Archaeological Project, which again point to very high levels of LR1.

²³⁰ Rautman 2000, 321; Rautman et al. 1999, 379; Rautman 2003, 168, 170-1.

²³¹ Green 1973, 161-3; Morris and Peatfield 1987, 210-2; Engvig and Åström 1975, 19-21 and figs. 27, 28, 39, 41, 44, 45; Engvig and Beichmann 1984, 181-2, 184 figs. 3-8; McCaslin 1978, 134-6 and figs. 236, 238-40, 247-8, 258-60; additional LR1 fragments were noted offshore at *Zygi-Petrini*: Manning et al. 2000, 254 fig. 12.1.

²³² van Alfen 1996.

²³³ Jacobsen 2004, 145.

that LR1 amphoras were manufactured at a variety of sites across a large area of the northeast Mediterranean. Until Williams' heavy mineral analysis revealed otherwise,²³⁴ however, the type was generally thought to originate in Egypt on account of the large numbers there. Work by Empereur and Picon followed upon Williams' suggestions, and identified a remarkable number of production centers clustered in Cilicia and northwest Syria around the Bay of Iskenderun (Gulf of Alexandretta), as well as on neighboring Cyprus.²³⁵ Additional outlying workshops in the southeast Aegean may also have been manufacturing limited quantities of the related forms, as suggested by Empereur and Picon's finds on Rhodes and the mainland Peraea.²³⁶ Five workshops on Paros seem to have been manufacturing a generally similar type in the fifth century.²³⁷ Each identification unfortunately tended to be made not on the basis of an excavated kiln, but through an observed "dépotoir d'atelier." Reynolds has recently (and quite justifiably) questioned the grounds for some of these identifications, since in many cases these deposits may actually represent no more than simple sherd dumps.²³⁸ Publications of the fabrics are just now starting to appear, and will no doubt shed light on which centers were the producers and which simply consumers.²³⁹

On the other hand, the suggestions of Empereur and Picon, at least on Cyprus, are proving correct. The first suggestion of LR1 production on the island was put forth in the 1970s by M. Lang, who interpreted marks on the shoulders of several amphoras at

²³⁴ Williams 1982, 102-3.

²³⁵ Empereur and Picon 1989, 237-42; Empereur and Picon 1988, 35 fig. 21.

²³⁶ Empereur and Picon 1989, 242; Empereur and Picon 1988, 35 fig. 21.

²³⁷ Empereur and Picon 1986a, 506-7.

²³⁸ Reynolds 2005, 566.

²³⁹ Williams 2005.

Athens as capacity measurements in the Cypriot *modius*.²⁴⁰ Recent investigation of kiln sites has expanded this knowledge many times over. Empereur observed wasters and two wells containing the amphoras near the ancient port of Amathus, though no actual production facilities were uncovered.²⁴¹ Demesticha and Michaelides have published the first LR1 kiln on Cyprus, excavated as part of rescue work along the coast just east of the city center of Paphos.²⁴² The second kiln, sadly eroding into the sea at *Zygi-Petrini*, was surveyed by the Vasilikos Valley Project and documented by Manning et al.²⁴³ Demesticha's work on the amphora type has yielded evidence of two additional fabrics, one indicative of a workshop somewhere between *Zygi* and *Amathus* ("Workshop ZA"), and the second suggestive of production between *Akrotiri* and *Kouklia* ("Workshop X").²⁴⁴ Empereur and Picon's assertion of a kiln just west of *Kourion* has not yet been confirmed, but seems extremely likely in light of Demesticha's petrological analysis.²⁴⁵

Demesticha's comprehensive publication is, by necessity, limited to the developed LR1 forms of the sixth and seventh centuries, since these are the datable contexts from the production centers and deposits thus far uncovered on the island.²⁴⁶ The thoroughly studied amphoras from *Kopetra* provide useful comparanda, but are again relegated to this latter part of the Late Roman period when the site saw its greatest settlement.²⁴⁷ For the very early stages of the LR1 evolution, Williams has published an

²⁴⁰ Lang, 1976, 58, 62-3 nos. Ha36 and Ha 44.

²⁴¹ Empereur 1985, 989 fig. 36; Empereur and Picon 1989, 242; Touma 1989, 873.

²⁴² Demesticha 2000; Demesticha and Michaelides 2001.

²⁴³ Manning et al. 2000.

²⁴⁴ Demesticha 2003, 470-1.

²⁴⁵ Empereur and Picon 1989, 242.

²⁴⁶ Demesticha 2003, 474.

²⁴⁷ Rautman 2003, 44.

amphora form sealed in the earthquake deposit of c. A.D. 365 at Kourion.²⁴⁸ A problematic lacuna exists for Cyprus in the middle of the evolution, though, with few tightly dated and thoroughly published examples from the nearly 150 years between the late fourth and the early sixth century. A few more detailed chronologies for this period are available outside the island. At many sites, though, the spectrum of related forms ranging in date from the fourth through the seventh century is usually lumped together into one LR1 class. Some confusion is to be expected, of course, especially when handling quantities of body sherds. Even at excavations with well-stratified and long-lived Late Antique settlement, variation is rarely described in detail. Nonetheless, the chronology of the type seems generally clear, even if the subtler contours of the typology are at present elusive.

Early jug-like predecessors in the characteristic LR1 fabric have recently been reported in the northern Sinai, and may date to as early as the third century.²⁴⁹ Similar forms appear in an early fourth-century deposit at Beirut alongside a more recognizable early LR1 form.²⁵⁰ By the second half of the fourth and early fifth centuries, the LR1 was already widely distributed, with a narrow and tall-necked variety evident at Marseille.²⁵¹ The typical early form has evenly-spaced stepped ribbing over much of its broad shoulders and ovoid body, which terminates in a small button toe.²⁵² The neck is generally cylindrical and narrow, while the handles are long and usually horizontal to reach the width of the shoulders from the midpoint of the neck. These handles are

²⁴⁸ Williams 1987, 237.

²⁴⁹ Arthur and Oren 1998, 202 fig. 6.1-2 and 203.

²⁵⁰ Reynolds 2005, 591 figs. 26-8.

²⁵¹ Pieri 1998, 99.

²⁵² Williams 1987, 237; Egloff 1977, 113 and pl. 58.2 (Egypt); Bonifay and Piéri 1995, 108 (Marseille).

marked by longitudinal incisions or grooves, sometimes twisted, along their upper surfaces, a feature that remains diagnostic throughout the type's evolution. This form appears in contexts from the late fourth through the end of the fifth century, and is particularly common in deposits of the fifth century at Kellia in Egypt, where it was designated class 169 by Egloff (Fig. 3.10 left).²⁵³ Over time, the neck widened, with the typical latter fifth- and sixth-century LR1 necks having a squat, nearly square profile (Fig. 3.10 right).²⁵⁴ The body becomes narrower and nearly barrel-shaped, eventually exhibiting a pinch just below midsection. In late types, this feature is sometimes exaggerated to a very narrow, spindly shape.²⁵⁵ The characteristic ribbing is now more widely spaced at the midsection than at the shoulders and base. This is the true LR1 form, distinguished from the earlier shape as Kellia 164 by Egloff.²⁵⁶ Generally, the fabrics are calcareous with ultrabasic inclusions, and are most commonly described in reports as hard and sandy, with a color ranging from “pinkish-cream” to “reddish-yellow,” according to Peacock and Williams.²⁵⁷

The multiple fabrics often noted are clearly indicative of diverse production regions, while the tremendous variation in rim profile and handle section is to be expected when so many individual workshops were competing in each of these general areas.²⁵⁸ While the verified production centers of Demesticha do allow a few of the LR1

²⁵³ Egloff 1977, 113.

²⁵⁴ Peacock 1984, 119 and 129 fig. 34.1-2; Riley 1979, 212 and fig. 91 no. 337; Swan 2004, 372 fig. 1. A transitional example is provided by Opait 2004b, 8 (“LRA 1A3”).

²⁵⁵ Peacock and Williams 1986, 185 fig. 104B.

²⁵⁶ Egloff 1977, 112.

²⁵⁷ Peacock and Williams 1986, 187; Riley 1979, 212 and Rautman et al. 1999, 389.

²⁵⁸ This variation is most apparent in the 11 types (some with multiple subtypes) of LR1 amphoras in the cargo of the 7th century shipwreck at Yassiada: van Alfen 1996.

amphoras from Dreamer's Bay to be assigned to specific production centers on Cyprus, detailed discussion of many artifacts is impossible until more thorough typologies are created that combine form with compositional analysis. At *Kopetra*, the remarkably high level (60%) of imported LR1 amphoras alongside those in Cypriot fabrics underscores the necessity of considering production centers outside the island, despite the relative dearth of work in these areas.

Several possibilities have been put forward as LR1 commodities.²⁵⁹ When the type was first assigned to production in northwest Syria, it was presumed that it carried oil, since the Antioch region appears to have experienced tremendous expansion of its olive groves from the fourth to the sixth century.²⁶⁰ Riley, however, points to the strange situation this would have created at Carthage, with oil being imported in large quantity to one of the most prolific oil-producing regions in the empire.²⁶¹ Also, Rothschild-Boros' analysis of residues from fifth-century amphoras at the Schola Praeconum in Rome found no traces of lipids from oil.²⁶² The amphoras of the seventh-century wreck at Yassiada preserved some pitch lining and a single grape seed, implying a content of wine.²⁶³ Many of the amphoras imported to Marseille similarly contained pitch.²⁶⁴ Nothing necessitates a single commodity, since the primary manufacturing centers were producing both wine and oil,²⁶⁵ along with a variety of other products suitable to be transported in such containers. The growing evidence for reuse of amphoras, especially

²⁵⁹ See particularly the discussion in Panella 1993, 665-6 n. 220; Elton 2005, 691-2.

²⁶⁰ Liebeschuetz 1972, 79-81.

²⁶¹ Riley 1981, 120.

²⁶² Rothschild-Boros 1981, 86.

²⁶³ van Alfen 1996, 203.

²⁶⁴ Bonifay and Piéri 1995, 109.

²⁶⁵ Decker 2001, 78-80.

in the Late Roman period, further complicates the situation by obscuring the traditionally accepted relationship of a single product and its designated containers.²⁶⁶

Regularly appearing on LR1, and especially frequent on the earlier forms, are *tituli picti*. This script, painted in red or black has been notoriously problematic, with various authors reading them in different ways.²⁶⁷ Much time has been devoted to their decipherment, since it was thought that they might yield evidence for contents. Often, however, they seem to reflect Greek personal names and Christian symbols. Some numbers may indicate capacity notations such as the Cypriot *modius* mentioned above. Others seem to involve abbreviations for dry measurements, including *kotylai* and *artabai*, which may indicate that non-liquid goods like barley and wheat were shipped in them from time to time.²⁶⁸

The LR1 finds from Dreamer's Bay represent a wide range of containers from at least three centuries. Among the earlier LR1s here is an assemblage of Kellia 169, which is particularly common in Egypt not only at Kellia,²⁶⁹ but also at Alexandria, where Majcherek assigns it a general date from the fifth century and into the sixth.²⁷⁰ Outside Egypt, the form shows up in the harbor of Caesarea²⁷¹ and in some quantity in fifth- or sixth-century levels at Gortyna on Crete.²⁷² The late fourth-century ship that wrecked off

²⁶⁶ The best documented evidence for reuse during this period remains the amphoras from the Yassiada and Serçe Limani shipwrecks: van Doorninck, Jr. 1989.

²⁶⁷ Bonifay and Piéri 1995, 108-9; Whitehouse et al. 1985 (Pensabene "Appendice 1. Le anfore con iscrizioni cristiane"); Egloff 1977, 112-3.

²⁶⁸ Riley 1979, 215; Hautumm 1981, 62-4; Hayes 1992, 434 n. 7.

²⁶⁹ Egloff 1977, 113.

²⁷⁰ Majcherek 1992, 104.

²⁷¹ Tomber 1999, 313 and 314 fig. 5 no. 85.

²⁷² Di Vita and Martin 1996, 379 (no. A90), 381 (no. A87), 382 (no. A81), 384 (A94), 386 (A86) and tav. CXLIIf.

the coast of Turkey at Yassiada carried them among its cargo.²⁷³ At Argos, this variety appears in the late fourth and fifth centuries.²⁷⁴ They occur in Scythia at Topraichioi in the first half of the fifth century,²⁷⁵ and contemporaneously at Tanais.²⁷⁶ In the western Mediterranean, the type appears with frequency only in the fifth century, although a possible early fourth-century precursor has been reported at Rome.²⁷⁷ A probable late fourth-century example at Narbonne foreshadows considerable importation into southern France over the next century, especially c. 400-475.²⁷⁸ The type was apparently imported to Rome in limited quantity, to judge from the finds at the Temple of Cybele on the Palatine.²⁷⁹ Keay does not specifically describe this variety among the early LR1 imports to coastal Spain (his Type LIII), which began only toward the end of the fifth century.²⁸⁰ Some of his narrow necks, however, bear closer resemblance to the typical Kellia 169 than the more common wider-neck variety and, therefore, may rank among the earlier of his recorded forms.

On Cyprus, the type is only occasionally reported, either on account of its scarcity or, more likely, due again to lack of differentiation within the LR1 class generally. A rather early group was trapped under the rubble of the Kourion earthquake of c. 365.²⁸¹ According to Demesticha, its origin is uncertain.²⁸² It is worth noting that

²⁷³ Bass and van Doorninck, Jr. 1971, 34 and pl. 2 figs. 10 and 11.

²⁷⁴ Abadie 1989, 52 and 53 fig. 9.

²⁷⁵ Opař 2004a, 294 fig. 1.

²⁷⁶ Sazanov 1999, 268 and 277 fig. 8 Type 6 nos. 1-2.

²⁷⁷ Arthur 1998, 164.

²⁷⁸ Congès et al. 1983, 352 and 353 fig. 5; Bonifay and Villedieu 1989, 25; Bonifay and Piéri 1995, 108.

²⁷⁹ See Pensabene in Whitehouse et al. 1985, 190-200.

²⁸⁰ Keay 1984, 278.

²⁸¹ Williams 1987, 237.

²⁸² Demesticha, personal communication, 2005. Thanks to S. Demesticha for sharing her preliminary thoughts on these amphoras.

they were not found among the late sixth- through mid-seventh-century kilns that have recently been excavated at Paphos²⁸³ and Zygi,²⁸⁴ suggesting that their production ceased previous to the earliest excavated levels at these sites. On the other hand, the shared fabric recorded in Kellia 164 and 169, as noted by Egloff,²⁸⁵ argues strongly for continuity of production between these forms, and thus it is not inconceivable that the later workshops studied by Demesticha may have produced this earlier style as well.

One distinct assemblage (site **DR-C**) of the earlier LR1 subtype Kellia 169 was found in the area. It should be assigned a date from the second half of the fourth through the end of the fifth century. Located slightly northeast of Vatha Rocks, the concentration included at least 18 nearly identical amphoras. The gravel seabed and marine growth here concealed some of them, suggesting that this concentration may contain yet more. Three were raised for further study (EBS-04-016, EBS-04-018 and EBS-04-019). Given the information above, it stands to reason that they would have been produced in the same areas as those standard LR1s that seem to have replaced them, primarily northwest Syria, Cilicia and Cyprus itself.²⁸⁶ All the examples raised here have medium-grain clays, that is, finer than those usually characterizing later LR1 amphoras. Their pastes, ranging from reddish yellow to shades of brown, generally recall the most common fabric presumed to have originated in the workshops of Syria and Cilicia,²⁸⁷ although it is only through additional detailed study of early LR1 composition that any light might

²⁸³ Demesticha 2000.

²⁸⁴ Manning et al. 2000.

²⁸⁵ Egloff 1977, 110, 112-3.

²⁸⁶ Empereur and Picon 1988, 35 fig. 21; Empereur and Picon 1989, 236-42.

²⁸⁷ Rautman 2003, 170.

be shed on the possibility of continuous production from Kellia 169 to Kellia 164 over the course of the Late Roman period.

A second type of amphora was raised from this assemblage. Although site DR-C produced only one example of this type (EBS-04-017), a nearly identical jar (EBS-04-009) was recovered in the shallows further west. EBS-04-017 belongs to the general family of Late Roman globular amphoras in an orangish fabric. It has its earliest parallels from destruction debris of A.D. 375 at the Isis complex of Kenchreai.²⁸⁸ The type appears at Benghazi in Cyrenaica, where it is assigned a date in the second half of the fifth century.²⁸⁹ In Egypt, finds from Kellia date to the fifth century,²⁹⁰ while a few similar amphoras at Ballana and Qustul in Egypt containing solidified resin have been assigned a date in the fifth to sixth centuries based on a *dipinto*.²⁹¹ Although this single example need not be from the same depositional event as the early LR1 forms, the likely date for EBS-04-017 around the fifth century does not exclude such a possibility.

In the area of **DR-B**, southwest of site DR-C, a poor cluster of sherds yielded a few additional examples of a similarly early LR1 form. None were sufficiently preserved to allow a more precise dating than simply the overall range of late fourth or fifth century that is assigned generally to Kellia 169. In the same area, however, the team raised a single example of an Agora M334 (EBS-04-015). Although body fragments were generally left on the seabed, the single large sherd EBS-04-014 was raised since it very likely comes from the same amphora as EBS-04-015. The type is particularly

²⁸⁸ Adamsheck 1979, 113 and pl. 26 no. RC10a.

²⁸⁹ Riley 1979, 228 and fig. 93 nos. D365-6 (Benghazi LR9).

²⁹⁰ Egloff 1977, 114 (Kellia 171).

²⁹¹ Emery and Kirwan 1938, 390 and pl. 111 (Type 9).

common throughout Israel from as early as the first half of the fourth century.²⁹² The glass factory at Jalame provides several examples from around the fourth century.²⁹³ Outside Israel the amphora makes an appearance in Sinai,²⁹⁴ and was popular in fourth- and fifth-century contexts at Beirut.²⁹⁵ It shows up with some frequency at select sites in Italy and Sicily,²⁹⁶ as well as Carthage²⁹⁷ and southern France.²⁹⁸ On Cyprus it has been recorded only at Salamis.²⁹⁹ Among the later examples are an intact jar sealed in a sixth-century deposit at the Athenian Agora.³⁰⁰ A small version appears among the galley wares of the early seventh-century wreck at Yassiada.³⁰¹ This amphora has now been linked to kilns in the Akko (Acre) region of northern Israel, of which the example from site DR-B most closely resembles the fabric of amphoras from Horvat ‘Uza.³⁰² Wine was a common product of the region,³⁰³ and the jars at Horvat ‘Uza were found in association with a wine press that fell into disuse in the late fourth or early fifth century.

The later LR1 type, however, remains the most common among the assemblages at Dreamer’s Bay. A date in the fifth to seventh centuries is likely for EBS-04-032, which was raised as part of a group (site **DR-E**) of at least 18 similar amphora tops. The short thick neck with vertical rounded rim has parallels in two complete jars from the

²⁹² For the most comprehensive study of this amphora’s distribution, see Reynolds 2005, 571-2; Arthur 1998, 161 provides a distribution map; the early fourth-century example comes from the Galilee region: Arthur 1998, 160.

²⁹³ Johnson 1988, 209 fig. 7.49 and 210 nos. 724-6.

²⁹⁴ Arthur and Oren 1998, 201.

²⁹⁵ Reynolds 2000, 390, 394 and 395 fig. 8 no. 46.

²⁹⁶ Arthur 1998, 160-1 n. 16.

²⁹⁷ Neuru 1980, pl. VI no. 44.

²⁹⁸ Bonifay and Villedieu 1989, 35-6.

²⁹⁹ Diederichs 1980, 55 and pl. 20 no. 210.

³⁰⁰ Robinson 1959, 115 and pl. 33 no. M334.

³⁰¹ Bass 1982, 185 fig. 8-20, 186 and 187 fig. 8-22 no. P80.

³⁰² Reynolds 2005, 571.

³⁰³ Johnson and Stager 1995; Kingsley 2001.

British Mission to Carthage, dated to c. 500 and c. 600 or thereafter, respectively.³⁰⁴ Unfortunately, the assemblage yielded no intact base which might allow a better understanding of the place of EBS-04-032 within the overall LR1 evolution. Its reddish-yellow fabric fits well the range suggested by Peacock and Williams.³⁰⁵ The widespread nature of this fabric signifies immense production in a concentrated area, which may point to a source among the kilns of northwest Syria or Cilicia. As mentioned above, this awaits further investigation, so an origin on Cyprus cannot be excluded.

This assemblage at site DR-E also contained two examples of a more precisely datable amphora. EBS-04-031 belongs as well to the LR1 group, fitting generally among the excavated finds on Cyprus of Demesticha's LR1 Type 4(v).³⁰⁶ The slim, straight-walled and gently-tapered neck with well-defined, concave rim is the hallmark of this type. In this case, however, the rim diameter of 0.069 m is smaller than Demesticha's typical 4(v) (c. 0.075). She reports stratified finds on Cyprus at Amathus and Maroni-*Petrera*,³⁰⁷ and others at Kalavastos-*Kopetra*³⁰⁸ and Alassa in the Kouris River valley,³⁰⁹ indicating that this type was in circulation by the early seventh century. Other finds from Salamis³¹⁰ and Kourion³¹¹ hint that this slim variant may have continued in use throughout the seventh century and perhaps beyond. The two shallow symmetrical grooves on the handles of this example from Dreamer's Bay and a cursory look at its

³⁰⁴ Peacock 1984, 119 and 120 fig. 34 nos. 1 and 2.

³⁰⁵ Peacock and Williams 1986, 187.

³⁰⁶ Demesticha 2003, 472; Demesticha 2000, 549 fig. 1 "Group C."

³⁰⁷ Demesticha 2003, 474; Manning 2002, 52 and 53 fig. 6.6 nos. 97 and 98.

³⁰⁸ Rautman 2003, 195 and 196 fig. 5.11 no. 142.

³⁰⁹ Flourentzos 1996, 18 and pl. 30 no. 42.

³¹⁰ Diederichs 1980, 55 and pls. 19 and 20, nos. 211 and (especially) 212.

³¹¹ Hayes 1980a, 379 and fig. 15.2.

fabric are reminiscent of products from the kiln at Zygi,³¹² although amphoras of the subtype were manufactured elsewhere, including Paphos.³¹³ A reasonably similar example has been found among cargoes lost off Cape Andreas.³¹⁴

Close parallels for this particular subtype outside the eastern Mediterranean are scarce. Keay's study of the Catalan collections included no close form.³¹⁵ Riley identified a subset at Benghazi which he labeled LR1a, similar to Demesticha's T.4(iv) and (v), though with recorded rim diameters slightly larger at 0.082 and 0.089.³¹⁶ A miniature LR1 with a seemingly narrow neck and well-defined concave rim was recovered from the sea off the southern coast of Turkey.³¹⁷ A reasonably similar example comes from Caesarea,³¹⁸ and a second from Kenchreai may date to the seventh or eighth century.³¹⁹ Examples from the northern coast of the Black Sea have been dated as late as the second half of the seventh and early eighth centuries.³²⁰ Unfortunately, this subtype is rarely distinguished within the LR1 class and, indeed, it is often impossible to differentiate between the two from sherds alone.

That these 20 amphoras form a discrete assemblage seems likely given the near total dearth of additional ceramics in the surrounding area. A cooking pot and the neck/single ring-handle of a jar, both poorly preserved, were recorded at site DR-E, though neither was raised. Since these fragmentary pieces cannot be identified further, a

³¹² Manning et al. 2000, 245; Demesticha 2003, 472 n. 11.

³¹³ Demesticha 2000; Demesticha and Michaelides 2001.

³¹⁴ Green 1973, 161 and 163 fig. 21.

³¹⁵ Keay 1984, 268-78 (Type LIII).

³¹⁶ Riley 1979, 216, pl. XXXV and fig. 91 nos. D346 and D347.

³¹⁷ Sibella 2002, 11 no. 189.1.95.

³¹⁸ Adan-Bayewitz 1986, 102 ill. 103 and 124 fig. 2 no. 4.

³¹⁹ Adamsheck 1979, 116 and pl. 27, no. RC 19. Adamsheck also cites "several unpublished amphoras" of this type from the Agora of Athens.

³²⁰ Opař 1984, 319 and taf. XV no. 3; Sazanov 1997, 93-4 fig. 3 no. 29.1.

date for the assemblage must rest on the two transport amphoras. While detailed study of select LR1s from Cyprus allows EBS-04-031 to be placed more securely, the lack of evidence from Syria and Cilicia leaves the other variety of LR1 obscure. The presence of Demesticha T.4(v) in contexts no earlier than about the early seventh century, and the long lifespan into the seventh century of the typical LR1 to which EBS-04-032 belongs, indicate a best date around this period. This probable cargo seems to represent a localized, northeastern Mediterranean trade.

Another group of amphoras was identified at site **DR-F**, the easternmost ceramic concentration found during the 2004 season. It included approximately 15 LR1s of the standard late type, marked by squat necks with a prominent ridge below the rim and a diameter in the range of 0.10 m. Also in the concentration were several examples of at least one other amphora shape (not raised), along with an unidentified base and a possible cooking pot. The most diagnostic artifact in the assemblage, EBS-04-033, was raised. This is the well preserved top of a spatheion, common during the Late Roman period in large quantities throughout the western Mediterranean. Numerous variants have been recognized in Spain, of which Keay's Subtype G, dating to the sixth century, is the closest parallel.³²¹ Similar jars appear during the last quarter of the fifth century at Carthage,³²² and in fifth- and sixth-century contexts at Sabratha³²³ and Benghazi.³²⁴ Large numbers occur along the coast of France, including among the cargo of the late fourth- or early fifth-century Dramont E wreck, which seems to have been carrying

³²¹ Keay 1984, 212-9.

³²² Peacock 1984, 134 fig. 42.100 and 135 no. 66.

³²³ Keay 1989, 50 Type 30.

³²⁴ Riley 1979, 226-7.

several forms of spatheia alongside terra sigillata and other North African amphoras.³²⁵ In the eastern Mediterranean and Black Sea, spatheia are also widespread, although generally in smaller numbers and often in later contexts than in the west. Sporadic finds on Cyprus include a fifth- or sixth-century context at Paphos³²⁶ and a seventh-century deposit from the basilica at Alassa north of Kourion.³²⁷ Panella's suggestion that spatheia carried oil is reasonable in light of North Africa's reputation for the commodity,³²⁸ and is supported by the discovery of olive pips found inside the jars at Dramont.³²⁹ The ceramics considered together suggest a best date in the sixth century for the assemblage at site DR-F, though perhaps a century earlier or later is possible.

Over 20 amphoras were found at site **DR-G**, again including primarily LR1. Of these amphoras, which were fundamentally similar in form and size, a single well-preserved top and a largely intact base were raised for identification. Moreover, these two samples share sufficiently similar clay fabrics to suggest a common origin, even if they derive from two different examples of the same form. The form in question seems to be Demesticha's Type 2, characterized by a rectangular neck-section and a rounded, slightly thickened and everted rim (diameter of about 0.10 m) with a prominent lower ridge.³³⁰ These same features are characteristic of amphoras on Cyprus at Panayia Ematousa,³³¹ and are also typical of Sazanov's Type XIV, which he dates from the second quarter of the sixth through the third quarter of the seventh century in the Black

³²⁵ Joncheray 1975, 144-5.

³²⁶ Megaw 1972, 328 fig. B.

³²⁷ Flourentzos 1996, 18 and pl. XXX no. 49.

³²⁸ Panella 1993, 682.

³²⁹ Tchernia 1969, 472.

³³⁰ Thanks to S. Demesticha for this suggestion.

³³¹ Jacobsen 2005, 634, fig. 7 (top).

Sea.³³² The handles are oval in shape with deep, offset, finger-made double-grooves, although EBS-04-028 seems to have wider and more evenly spaced grooves, with a third shallow impression. Demesticha has isolated this variety of LR1 as a product of “Workshop X,” which has not yet been discovered but must lie somewhere on the island between Akrotiri and Kouklia based on petrology.³³³ Amphoras of this producer have already been identified on land at *Vounari tou Kambiou*.³³⁴ A kiln site has been proposed by Empereur and Picon just west of Kourion,³³⁵ and the fabric description of LR1 (Kellia 169) amphoras from the destruction layer of c. 365 at Kourion compare well with those of EBS-04-028 and EBS-04-029.³³⁶ Jacobsen has drawn a comparison between later LR1 amphoras from Panayia Ematousa and this possibly local fabric of Kourion.³³⁷ Several deposits along the southern coast of Cyprus indicate a date in the early seventh century for Demesticha’s Type 2 LR1 amphoras, which appear to represent a development from an earlier Cypriot form also ascribed to “Workshop X” (Demesticha Type 1).³³⁸ At the present stage, however, an earlier date for Type 2 cannot yet be entirely ruled out, especially without more extensive knowledge of the specific kiln. It seems that these LR1s at site DR-G, as well as some of those at Panayia Ematousa, may have been produced toward the end of the Late Roman period in the outskirts of Kourion.

³³² Sazanov 1999, 269.

³³³ Demesticha 2003, 471.

³³⁴ Leonard and Demesticha 2004, 199.

³³⁵ Empereur and Picon 1989, 242.

³³⁶ Williams 1987, 237.

³³⁷ Jacobsen 2005, 626.

³³⁸ Demesticha 2003, 474.

Jar EBS-04-027 belongs to a class commonly known as the “carrot” amphora from its long tapering body. The low profile and oblique slant of its handles, oval in section, distinguishes the form, as does its generally reddish color. The type is very prevalent in the northeast Mediterranean,³³⁹ with examples found at Tarsus.³⁴⁰ Further south along the Levant, they have been recorded underwater near Tripoli,³⁴¹ at Dor,³⁴² and as far south as Egypt.³⁴³ It has been noted in the Aegean at Ephesus,³⁴⁴ near Bodrum,³⁴⁵ and in the Kerameikos of Athens.³⁴⁶ On Cyprus, carrot amphoras have been found at Kourion³⁴⁷ and in a late sixth-century context at Ayios Philon.³⁴⁸ The type represented 4% of the survey amphoras in the area of *Kopetra*.³⁴⁹ Leonard and Demesticha report an assemblage of a related form onshore further west at *Vounari tou Kambiou*.³⁵⁰

Because of its prevalence in this corner of the Mediterranean and a presumed workshop recorded at Seleucia,³⁵¹ it has commonly been assigned to production in Syria during the third and fourth centuries.³⁵² However, recent investigations in the area of Sinope, on the northern coast of Anatolia, have revealed a workshop active during at

³³⁹ Sibella 2002, 14 fig. 19b provides an example from underwater along this coast.

³⁴⁰ Follin Jones 1950, 278 and fig. 166 no. 831.

³⁴¹ Chollot 1973, 151 fig. 3; Zemer 1977, 49-50 no. 40.

³⁴² Kingsley and Raveh 1996, 48 and pl. 43 no. P13; republished with Sinopean identification in Kingsley 2002, 3 fig. 5 (middle).

³⁴³ Empereur and Picon 1989, 232 n. 22.

³⁴⁴ Opaît 2004a, 297.

³⁴⁵ Alpözen et al. 1995, 69.

³⁴⁶ Böttger 1992, 343 abb. 3.14, 375 and taf. 102.4 no. 79.

³⁴⁷ Hayes' forthcoming publication is cited by Rautman 2003, 174.

³⁴⁸ du Plat Taylor and Megaw 1981, 245 and fig. 61 nos. 465-7.

³⁴⁹ Rautman 2003, 174.

³⁵⁰ Leonard and Demesticha 2004, 199 and 200 figs. 14-5.

³⁵¹ Empereur and Picon 1989, 232.

³⁵² Zemer 1977, 49-50 no. 40.

least the fourth and fifth centuries³⁵³ and similar jars scattered throughout the Black Sea region into the fifth and sixth centuries, and perhaps even as late as the seventh century.³⁵⁴ As Erten et al. have observed, it now seems more likely that the large numbers along the coast of the eastern Mediterranean actually originated here and not at Seleucia.³⁵⁵ Unfortunately, the finds of Empeureur and Picon from the site have not yet been tested to ascertain whether their origin is indeed local. Reynolds observed no wasters at Seleucia, but rather considers the large number of sherds merely a dump associated with port facilities for the imports from Sinope.³⁵⁶ At any rate, the common ascription of a range in the third and fourth centuries clearly needs revision in light of the new later evidence from the Black Sea, and thus need not prevent EBS-04-027 from dating to a later period, perhaps contemporaneous with the rest of the finds from site DR-G. On Cyprus, the finds from Ayios Philon clearly demonstrate that the type continued to be imported from Sinope to this part of the island quite late and, in fact, these examples are among the closest in appearance to EBS-04-027 of the dated parallels.

The last piece raised from site DR-G, a single dish (EBS-04-030), bears general similarity to Hayes Cypriot Red Slip Ware Form 9A.³⁵⁷ The reddish fabric with some inclusions rupturing the surface is quite similar to Hayes' characterization of CRS

³⁵³ Garlan and Kassab Tezgör 1996, 331 and 332 figs. 10-1; Kassab Tezgör and Tatlican 1998; Kassab Tezgör 1999; Erten et al. 2004.

³⁵⁴ Scorpan 1977, 283 and 284 fig. 23; Sazanov 1997, 89 fig. 1 no. 14, 90 and 92; Opař 2004b, 23.

³⁵⁵ Erten et al. 2004, 106; Kassab Tezgör 2001.

³⁵⁶ Reynolds 2005, 566.

³⁵⁷ Hayes 1972, 378-82, especially 378 fig. 81 no. 1.

generally.³⁵⁸ Although this example does not have the low ledge-foot common on Hayes Form 9A, its rim is typical of this form in that it lacks the curvature seen in later developments. A parallel from *Kopetra* likewise lacks a molded foot.³⁵⁹ Hayes assigns a date range for this type in the second half of the sixth century,³⁶⁰ fitting well with the amphoras that constitute the rest of the assemblage and suggesting a best date for the assemblage around the late sixth century.

A small and poorly preserved cluster of LR1 amphoras was noted in the area of site **DR-A**. The single top raised for study (EBS-04-011) dates to between the fifth and the seventh century. The uneven, wavy neck walls are indicative of sloppy production, and the connection was left visible where the separately manufactured neck was folded over inside the body. The general appearance is consistent with some of those among the cargo of the early seventh-century wreck at Yassiada, and a similarly late date may therefore be appropriate.³⁶¹

Finally, site **DR-D** yielded a considerable amount of late material, although nothing in a particularly coherent assemblage. Among a large quantity of scattered non-diagnostic sherds were recorded a single amphora toe (EBS-04-021), a cooking pot (EBS-04-022), and the only verifiable example of an LR2 amphora (EBS-04-023) recorded at Dreamer's Bay thus far.

A large number of roof tiles were also scattered over this wide area. Small numbers of tiles are often reported in conjunction with shipwrecks and presumed to have

³⁵⁸ Hayes 1972, 371.

³⁵⁹ Rautman 2003, 181 and 182 fig. 5.2 no. 18.

³⁶⁰ Hayes 1972, 382.

³⁶¹ van Alfen 1996.

been part of the covering for ships' galleys, as is evident on the seventh-century wreck at Yassiada.³⁶² On the other hand, without a coherent shipwreck on this spot, the more likely origin for this group is the spillage ubiquitous in ancient anchorages, especially since none were found intact. Large numbers of tile cargoes have been noted in the underwater archaeological record,³⁶³ an obvious objection to the common assertion that such a seemingly simple and inexpensive product is unlikely to have been transported over substantial distances.

Three large sherds were raised for identification, two of which are clearly of the same type. When considered together, these two yield an accurate reconstruction. EBS-04-024 preserves its entire width of c. 0.363 m, while EBS-04-025 shows that the original tile must have been c. 0.711 m long. These examples belong to a lengthy tradition of curvilinear tiles known as "Laconian" from their probable place of invention. EBS-04-024 and EBS-04-025 represent concavely curved lower tiles which, when laid parallel, could be spanned by cover tiles. The type has its origin in the Archaic period,³⁶⁴ although the simple design endured for many centuries with little modification. Usually, this prohibits attribution of a date without context, known production center or maker's mark. In this case, however, the tiles were inscribed by finger before firing with a *lambda* and *epsilon* ("ΛΕ"). Parallels for these tiles, including the same fabric, dimensions, features and inscription, have been recorded at the sixth- and early seventh-century settlement at Kalavassos-Kopetra.³⁶⁵ Neutron activation analysis performed on

³⁶² van Doorninck, Jr. 1982b, 97-110.

³⁶³ Parker 1992, 18; Jurišić 2000, 73.

³⁶⁴ Winter 1993, 95-98.

³⁶⁵ Rautman 2003, 205 and 206 fig. 5.18 no. 219.

these, along with Cypriot Red Slip Wares in the same diagnostic fabric identified a common source for the ceramics in the western part of the island between Polis and Paphos.³⁶⁶ Other examples of this distinctive tile have been found at Amathus, Ayios Kononas, Peyia, Paphos and Pyla, and a piece in the Cesnola collection probably from Kourion.³⁶⁷ Thus, the Laconian style tiles from site DR-D must have been produced around the sixth or perhaps the early seventh century probably close to the island's western coast, perhaps even in the same workshop which produced Cypriot Red Slip Wares.

The other piece (EBS-04-026) represents the lower tile of an entirely different system termed "Corinthian" from its early Archaic use in this part of Greece.³⁶⁸ Its lifespan too was quite long, and without any diagnostic marks or context, no precise date can be asserted. EBS-04-026, although not fully preserved over its length or width, shares similarities with Type X flat pan tiles from the Sanctuary of Apollo just west of the city center of Kourion, where they were certainly in use by the first century A.D. but may have continued to be utilized well into the fourth century.³⁶⁹ Other pan tiles of similar design have been recorded at the Late Antique basilica of Amathus³⁷⁰ and late contexts in the vicinity of Kalavassos-Kopetra.³⁷¹ On the other hand, a rather similar late fifth-century B.C. tile used to seal a niche at Marion (on the island's northwest coast), now in the Medelhavsmuseet in Stockholm, warns against automatically presuming such

³⁶⁶ Gomez et al. 1996; Rautman et al. 1999.

³⁶⁷ For distribution: Rautman 2003, 178; Hadjichristophi 1989, 877 fig. 36 and 878 (Type IV – Amathus); Mitford 1971, 308-9 no. 163 (Cesnola - Kourion).

³⁶⁸ Winter 1993, 19-21.

³⁶⁹ Huffstot 1987, 265 fig. 179 and 267.

³⁷⁰ Hadjichristophi 1989, 876 fig. 34. and 877.

³⁷¹ Rautman 2003, 205 and 206 fig. 5.18 no. 221.

a late date.³⁷² This chronological range suggests that styles did not change drastically between the Classical and Early Byzantine periods. Both Huffstot and Hadjichristophi suggest their tiles may be of local production,³⁷³ while some of those from *Kopetra* may have been carried a short distance from the area of Salamis.³⁷⁴

Site DR-D also yielded the only LR2 or LR13 amphora found at Dreamer's Bay during the 2004 season. The LR2 form of globular amphora with a greatest diameter at the shoulder seems to be an Aegean product, since excavations at Porto Cheli in the Argolid revealed a kiln producing jars in a distinctive buff to pink or light red fabric.³⁷⁵ As was the case with LR1, the variety of fabrics points to diffuse production across the area, with a number of distinguishable variants in shape, of which some probably have chronological significance.³⁷⁶ Earlier forms, some dating as early as the fourth century, are generally differentiated by a more elaborate rim that is tall and cupped, and a base terminating in a low knob.³⁷⁷ By the late sixth century, these were replaced by later varieties marked by a completely rounded base and a more cylindrical neck with a simpler, narrower rim.³⁷⁸ In the early seventh century, this type gives way to the new LR13 sequence, which was produced in Cyprus and probably also the Aegean.³⁷⁹ Scholars have often lumped this type together with the LR2, although its sudden

³⁷² Wikander 1986, 44-6 no. 1.

³⁷³ Huffstot 1987, 281; Hadjichristophi 1989, 877.

³⁷⁴ Rautman 2003, 178.

³⁷⁵ Zimmerman Munn 1985; the Porto Cheli LR2 fabric is generally buff to pink: Megaw and Jones 1983, 246-7; for general observations on the fabric: Williams 1982, 102; Peacock and Williams 1986, 184.

³⁷⁶ Arthur 1998, 168.

³⁷⁷ Adamsheck 1979, 114-5 and pl. 26 no. RC 14; Papadopoulos 1989, 84 fig. 11.a, c-e; Condurachi 1954, 459 figs. 383-4; Opaït 1984, 677-8 taf. II-III.

³⁷⁸ Hautumm 1981, 182-7 and abb. 17-41.

³⁷⁹ Riley 1979, 231-2 and figs. 93-4 nos. 373-5; Touma 2001, 51 and 56 fig. 3; Demesticha 2002, 118-9.

appearance in Cypriot fabrics without any apparent predecessor manufactured on the island lends credibility to this as a distinct type.³⁸⁰

Within this range, EBS-04-023 resembles the latter class of LR2 or perhaps the LR13. A date in the late sixth or seventh century is therefore appropriate. It is possible that EBS-04-023 may be a product of the island, since it matches the Amathusian fabric, but not the form, documented for the LR13 of M. Touma.³⁸¹ On the other hand, Demesticha's example from Amathus is closer in appearance to EBS-04-023, although she describes the fabric as "yellowish to greenish."³⁸² At any rate, the same morphological features are evident in examples from the cargo of the early seventh-century wreck at Yassiada,³⁸³ as well as on several amphoras from seventh-century contexts on Samos.³⁸⁴

Globular Late Roman amphoras are reasonably common throughout the Mediterranean and beyond, with very high numbers in the Aegean and Black Seas.³⁸⁵ On Cyprus, however, they are fairly infrequent, especially in comparison to the ubiquitous LR1.³⁸⁶ A few LR2 examples appear at Soloi.³⁸⁷ The type constituted 1-2% and 5% of the amphoras at different sectors of *Kopetra*³⁸⁸ and less than 1% at *Maroni-Petrera*.³⁸⁹ To judge from the multitude of grape seeds and pitch among the amphoras at Yassiada,

³⁸⁰ Demesticha 2003, 474-5.

³⁸¹ Touma 2001, 50-1 and 56 fig. 3.

³⁸² Demesticha 2003, 472 n. 11 and 473 fig. 4b.

³⁸³ van Doorninck, Jr. 1989, 249 fig. 1 no. 9.

³⁸⁴ Hautumm 1981, 183-4 nos. 6-7 and abb. 23-5; Martini and Steckner 1993, 150 and 151 abb. 42a.

³⁸⁵ Peacock and Williams 1986, 183 fig. 102; for more detail on the Aegean and Black Sea regions:

Scorpan 1977, 274-7 (Type VII); Martini and Steckner 1993, 197-8 fig. 46; Karagiorgou 2001, 132-45.

³⁸⁶ Finds on Cyprus are compiled in Rautman 2003, 171 n. 17.

³⁸⁷ des Gagniers and Tran Tam Tinh 1985, 98 and figs. 229-31 nos. 96a-c.

³⁸⁸ Rautman 2003, 171.

³⁸⁹ Manning et al. 2002, 42.

LR2 (and probably also LR13) often carried wine, for which Chios was famous in the medieval era.³⁹⁰ At the same time, however, olive pits and select graffiti indicate olives or oil as a second cargo, and the signs of heavy reuse here imply that this jar may have served as a multipurpose vessel much like the LR1.³⁹¹

Undated Finds

Two amphoras remain unclassified at present. Amphora EBS-04-013 is a curved base terminating in a simple toe. Likewise, the thick triangular rim, rounded handle and distinctive fabric of amphora EBS-04-020 have thus far produced no satisfactory parallel. EBS-04-013 was raised from site DR-B, while EBS-04-020 was an isolated find.

Catalog of Ceramics

EBS-04-007

H.pres. 0.129; D.toe 0.025; T. 0.0095

Amphora toe tapering to slightly rounded stub. Large gap between toe and base where joined. Clay medium (7.5YR 6/6 Reddish Yellow) with medium and medium-large gray inclusions.

³⁹⁰ van Doorninck, Jr. 1989, 252.

³⁹¹ van Doorninck, Jr. 1989, 252-3; *tituli picti* on these amphoras are discussed at length by Scorpan 1977, 274-6.



Fig. 3.11 EBS-04-008 from the western shallows at Dreamer's Bay.

EBS-04-008 (Fig. 3.11)

H.pres. 0.256; H.rim 0.007; T.rim 0.0065; T.neck 0.006; handle 0.027 x 0.032

Amphora handle with small portion of vertical neck and rounded, slightly everted rim preserved. Handle rises outward from neck below rim before angling down past vertical.

Handle oval in section. Top of rising portion of handle flattened, as for stamp, although no outline or other features apparent. Clay medium-fine (7.5YR 6/6 Reddish Yellow) with few small white inclusions.

EBS-04-009 (Fig. 3.12)

H.neck 0.072; D.rim 0.061; H.rim 0.011; T.rim 0.008; T.neck 0.007-0.008; T.shoulder 0.007-0.008; handle 0.024 x 0.025



Fig. 3.12 EBS-04-009 from the western shallows at Dreamer's Bay.

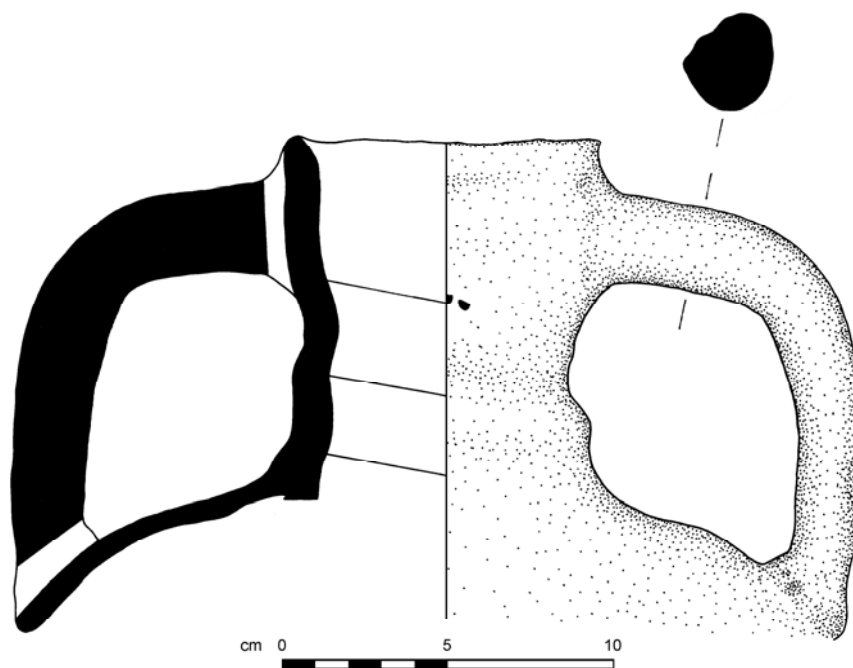


Fig. 3.13 EBS-04-011 from site DR-A

Amphora top, with neck, handles and upper body. Neck slightly conical and uneven, with short, inverted, thickened rim. Rounded handles rise from midpoint of neck before falling outward to well-rounded shoulders. Grooves prominent on inside of upper body. Patches of pitch remain on inside and outside of neck, as well as outside of shoulder. Interior surface of shoulders has surface deposit of darker (2.5YR 3/4 Dark Reddish Brown) flaky material. Clay medium-fine with two tones (exterior 7.5YR 6/6 Reddish Yellow; interior 2.5YR 5/6 Red) and few medium-fine gray inclusions.

EBS-04-011 (Fig. 3.13)

Site DR-A

H.neck 0.103; D.rim 0.096; H.rim n/a; T.rim n/a; T.neck 0.010-0.011; T.shoulder 0.006; handle 0.025 x 0.031

Amphora top, including neck, both handles and shoulders. Well-worn and slightly irregular shape. Poorly articulated rim. Ridges on tops of handles. Some faint wide diagonal ridges on exterior and interior of neck. Base of neck folded over interior and pressed to join underside of shoulders. Body pitted and worn. Long (0.021 x 0.003) hole in middle of one side of neck between handles, seemingly ancient. Clay medium (7.5YR 6/6 Reddish Yellow) with medium-small white inclusions and much gray discoloration.

EBS-04-012

Site DR-B

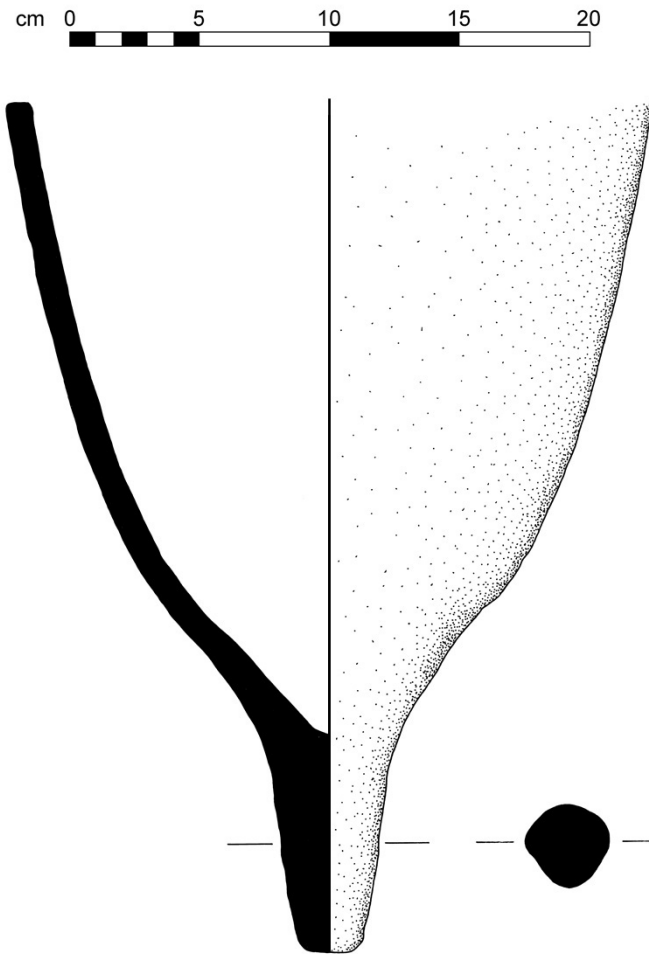


Fig. 3.14 EBS-04-013 from site DR-B.

H.neck 0.075; D.rim 0.060; H.rim 0.020; T.rim 0.0085; T.neck 0.0065; T.shoulder
0.007; handle 0.025 x 0.029

Short, narrow amphora neck with partial handles attached horizontally at midpoint of neck. Little articulated rim surviving, though exterior of neck and handles all extremely worn. Little shoulder or body, though ridges on inside of base of neck where affixed to

body. Clay medium and sandy (5YR 5/6 Yellowish Red) with many medium white and light gray inclusions.

EBS-04-013 (Fig. 3.14)

Site DR-B

H.pres. 0.330; T.toe varies; T.body 0.010

Amphora lower body sherd with base and toe. Toe generally rounded, although some facets are evident. Uppermost preserved portion still curving outward, suggesting large maximum diameter. Clay is medium (7.5YR 6/4 Light Brown) with medium-large dark gray and brown inclusions.

EBS-04-014 (Fig. 3.15)

Site DR-B

H.pres. 0.252; T.body 0.005-0.010

Amphora body sherd with prominent, evenly spaced combing over entire exterior. Sherd nearly straight, with only slight concavity over its height. Clay medium (7.5 YR 6/6 Reddish Yellow) with medium-small red-brown inclusions.

EBS-04-015 (Fig. 3.15)

Site DR-B

H.neck 0.092; D.rim 0.072; H.rim 0.019; T.rim 0.005; T.neck 0.008-0.010; T.shoulder 0.006-0.009; handle 0.021 x 0.029

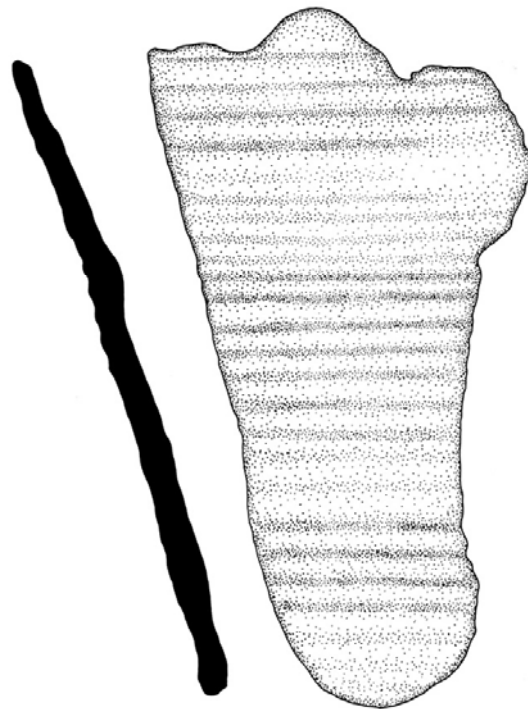
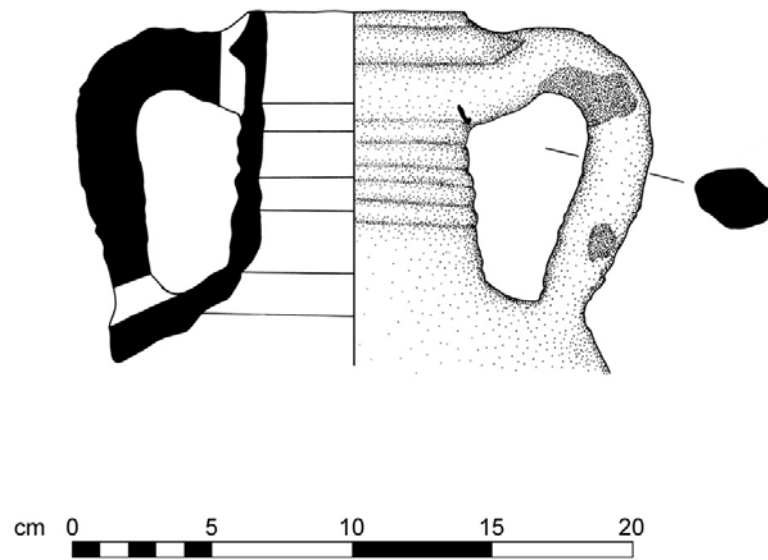


Fig. 3.15 EBS-04-014 (bottom) and EBS-04-015 (top) from site DR-B.

Amphora top, with neck and rim, both handles and shoulders. Triangularly shaped rim at top of slightly conical neck has large protruding ridge to which tops of handles are attached; top of rim is uneven and worn. Arching handles roughly made and poorly affixed to neck. Prominent combing on midsection of neck. Clay medium (7.5YR 6/6 Reddish Yellow) with numerous small gray and brown inclusions and uneven reddish and orange coloration.

EBS-04-016

Site DR-C

H.neck 0.100; D.rim 0.070; H.rim 0.015; T.rim 0.011; T.neck 0.005; T.shoulder 0.005; handle 0.025 x 0.032

Amphora top, with partial neck and rim, one handle and shoulder. Lower half of neck slightly tapered. Handle extends horizontally outward before falling down to shoulder. Handle top has deep groove surrounded by ridge on either side. Shoulders slightly rounded, with faint ridges on exterior and interior of lower neck and shoulder. Well-worn, darker brown (7.5YR 4/2 Brown) surface on lighter (7.5YR 6/6 Reddish Yellow) medium clay with many gray, black and brown inclusions.

EBS-04-017

Site DR-C

H.pres. 0.148; H.pres.neck 0.068; D.neck 0.046; T.neck 0.005; T.shoulder 0.007; handle 0.020 x 0.020

Partial amphora neck, handles and shoulders with portion of upper body. Neck curves inward as it rises. No rim extant. Handles extend slightly upward from neck before falling to nearly vertical. Faint grooves on exterior at shoulders and upper body; shallow grooves with thin lines on interior. Pitch around inside of neck and patches on inside of shoulders. Surface (2.5Y 5/3 Light Olive Brown) darker than medium-fine clay core (7.5YR 6/3 Light Brown).

EBS-04-018 (Fig. 3.16)

Site DR-C

H.neck 0.109; D.rim 0.068; H.rim 0.020; T.rim 0.012; T.neck 0.011; T.shoulder 0.005; handle 0.021 x 0.032

Amphora top, with neck, rim, handles and shoulders. Handles extend horizontally from neck before falling sharply to vertical. Handle top has deep, wide groove bordered by pronounced ridge on either side. Shoulders rounded, with faint ridges on exterior and interior of neck. Some gray discoloration across surfaces. Small pieces of pitch remain on interior of rim. Clay medium (7.5YR 6/4 Light Brown) with gray, white and some brown inclusions.

EBS-04-019 (Fig. 3.17)

Site DR-C

H.neck 0.096; D.rim 0.075; H.rim 0.012; T.rim 0.012; T.neck 0.010-0.012; T.shoulder 0.005; handle 0.025 x 0.034



Fig. 3.16 EBS-04-018 from site DR-C.

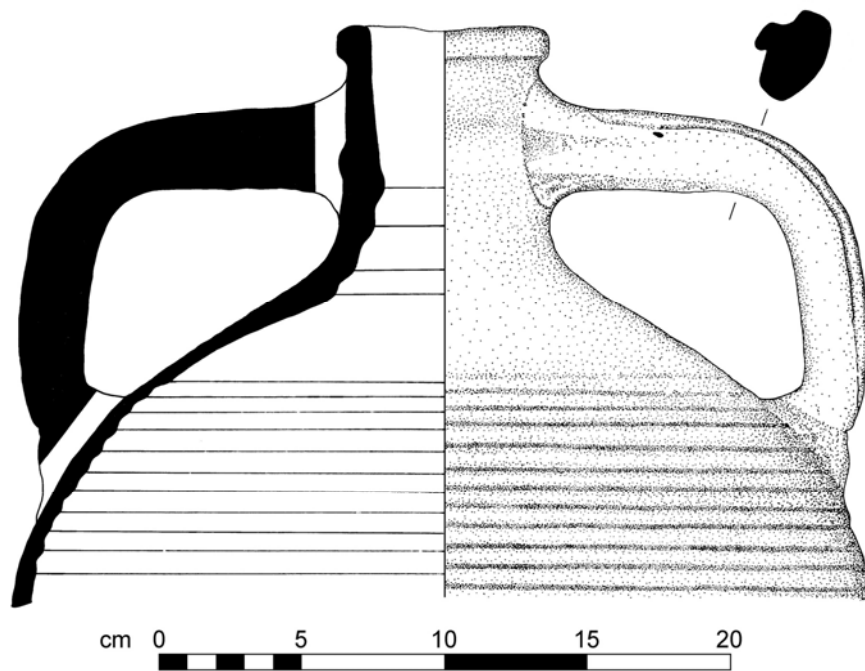


Fig. 3.17 EBS-04-019 from site DR-C.

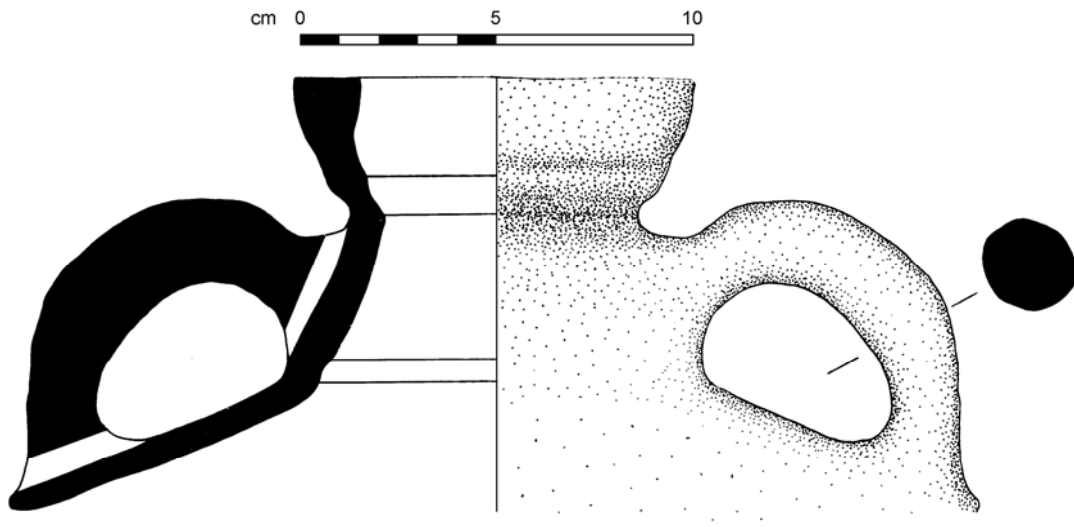


Fig. 3.18 EBS-04-020 from between sites DR-C and DR-D.

Amphora top with neck, rim, handle and shoulder. Neck exterior slightly concave with small, rounded rim. Handle extends horizontally from neck before falling sharply to nearly vertical, attaching haphazardly to shoulder, leaving voids and cracks. Handle top has prominent ridge between two grooves. Shoulders rounded, with combing on exterior and interior. Gray coloration on handle, exterior and some interior of body. Clay medium (7.5YR 5/6 Strong Brown) with many medium black, gray, brown and white inclusions.

EBS-04-020 (Fig. 3.18)

H.neck 0.078; D.rim 0.103; H.rim 0.033; T.rim 0.017; T.neck 0.009; T.shoulder 0.007;

handle 0.023 x 0.026

Amphora top, with neck, handle and shoulder. Short, conical neck surmounted by thick, triangular, flaring and flat-topped rim. Round handles arch away from midsection of neck below rim before curving to flat shoulders. Side of neck between handles, below rim very thin with seemingly original hole. Groove on interior of rim and at base of neck. Clay medium (exterior 7.5YR 5/2 Brown; core and interior surface 2.5YR 5/6 Red) with some tan and gray inclusions.

EBS-04-021

Site DR-D

H.pres. 0.160; W.toe 0.021; T.body 0.008-0.010

Amphora base tapering to pointed toe. Wide spiral ridge on exterior and interior. Some darker discoloration on exterior. Clay medium (7.5YR 6/4 Light Brown) with some voids, and medium and few large gray inclusions.

EBS-04-022 (Fig. 3.19)

Site DR-D

H.pres. 0.053; D.rim 0.098; H.rim 0.016; T.rim 0.008; T.shoulder 0.006; handle 0.011 x 0.015

Top of small pot, with rim and two handles. Slightly pinched neck. Nearly vertical rim with wide internal groove. Handles arch from shoulders before curving down. Clay medium-fine (10R 4/6 Red) with brown exterior and interior on body (7.5YR 4/2 Brown).

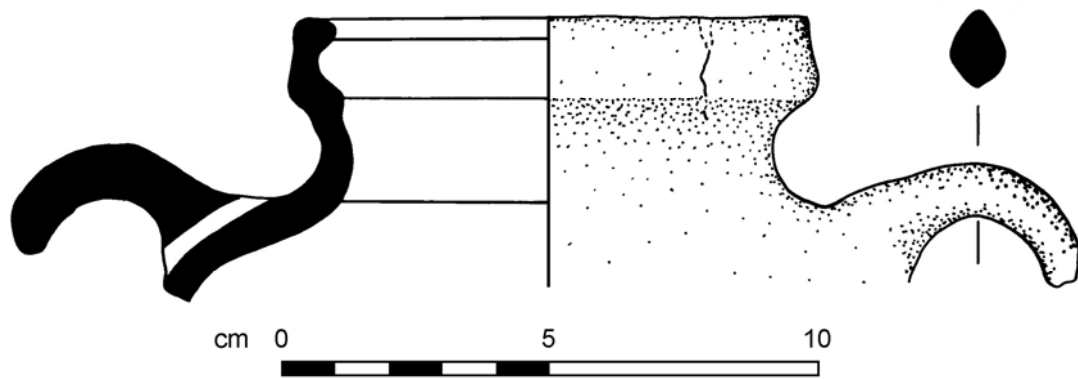


Fig. 3.19 EBS-04-022 from site DR-D.

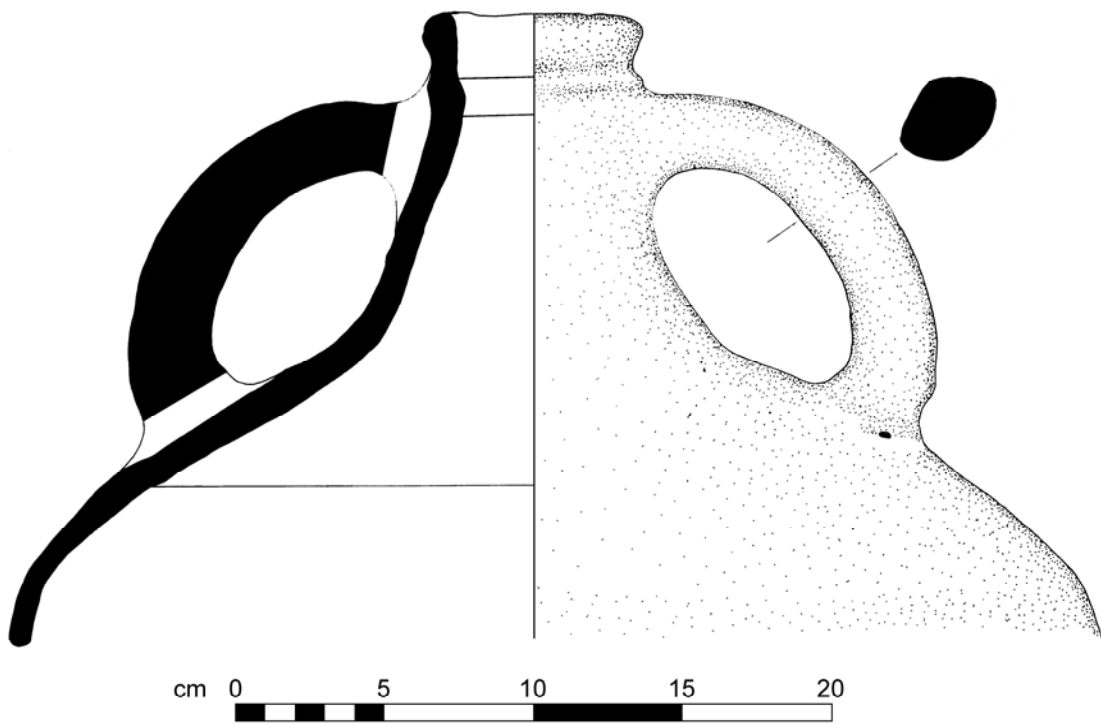


Fig. 3.20 EBS-04-023 from site DR-D.

EBS-04-023 (Fig. 3.20)

Site DR-D

H.neck 0.113; D.rim 0.074; H.rim 0.015; T.rim 0.012; T.neck 0.009; T.body 0.007;
handle 0.027 x 0.036

Amphora top, with neck, rim, handles and shoulders; missing portion of rim. Conical neck surmounted by rounded, worn rim with little flare. Handles curve down from neck. Shoulders angle out to wide body. Surfaces badly pitted. Clay medium (5YR 6/6 Reddish Yellow) with medium tan and brown inclusions.

EBS-04-024 (Fig. 3.21)

Site DR-D

L.pres. 0.327; W. 0.363; T. 0.013; W.ridge1 c. 0.043; T.ridge1 0.021; W.ridge2 0.050;
T.ridge2 0.025; W.ridge3 c. 0.045; T.ridge3 0.029

Upper end of roof tile; curved over its width. Top, concave surface has pair of low, triangular ridges at long edges, formed by folding over edges. Top, short edge has small rectangular ridge bordered on inside by pair of pronounced finger grooves (c. 0.012 wide). Faint remains of finger inscribed signature along broken edge; probably best reconstructed as “ΛΕ” seen on EBS-04-025. Clay medium (2.5YR 6/6 Light Red) with medium-large gray, white and brown inclusions.

EBS-04-025 (Fig. 3.22)

Site DR-D

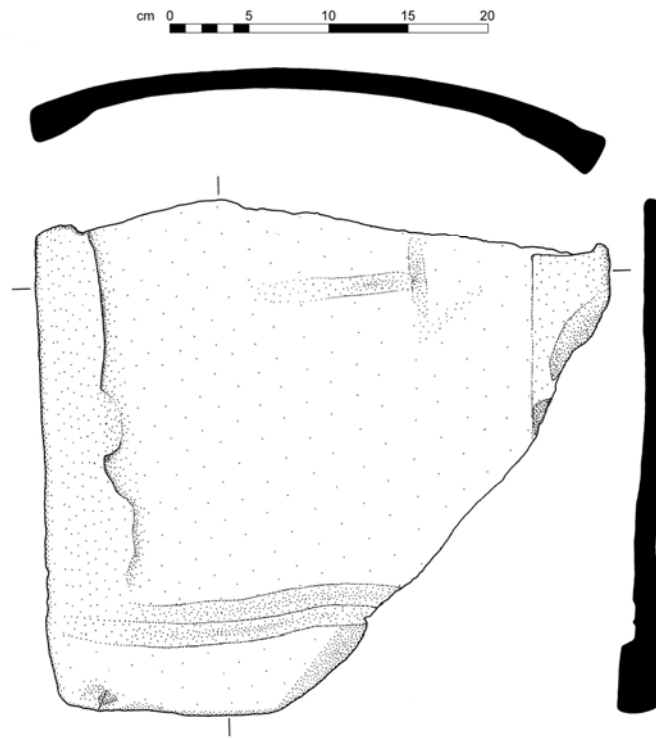


Fig. 3.21 EBS-04-024 from site DR-D.



Fig. 3.22 EBS-04-025 from site DR-D.

L. 0.711; W.pres. 0.306; T. 0.011; W.ridge1 c. 0.047; T.ridge1 0.0215; W.ridge2 c. 0.041; T.ridge2 0.0225

Right half of roof tile; curved over its width. Top, concave surface has low, triangular ridge along side, formed by folding over edge. Top, short edge has small rectangular ridge bordered on inside by pair of pronounced finger grooves (c. 0.012 wide). Large finger-inscribed “AE” signature, as on EBS-04-024. Clay medium (2.5YR 6/6 Light Red) with medium-large gray, white and brown inclusions.

EBS-04-026 (Fig. 3.23)

Site DR-D

L.pres. 0.288; W.pres 0.234; T. 0.016; W.ridge1 0.028; T.ridge1 0.042; T.ridge2 0.033

Upper right corner of flat roof tile. Tall, wide, squared ridge (ridge1) at right edge of top, worn surface; lower, triangularly shaped ridge (ridge2) inset from upper edge of top surface. One small finger groove bordering inside each ridge. Bottom flat with no features. Clay very coarse (5YR 5/6 Yellowish Red), with numerous large light and dark brown, dark red and gray inclusions.

EBS-04-027 (Fig. 3.24)

H.neck 0.155; D.rim 0.075; H.rim 0.006; T.rim 0.014; T.neck 0.011; handle 0.015 x 0.031

Site DR-G

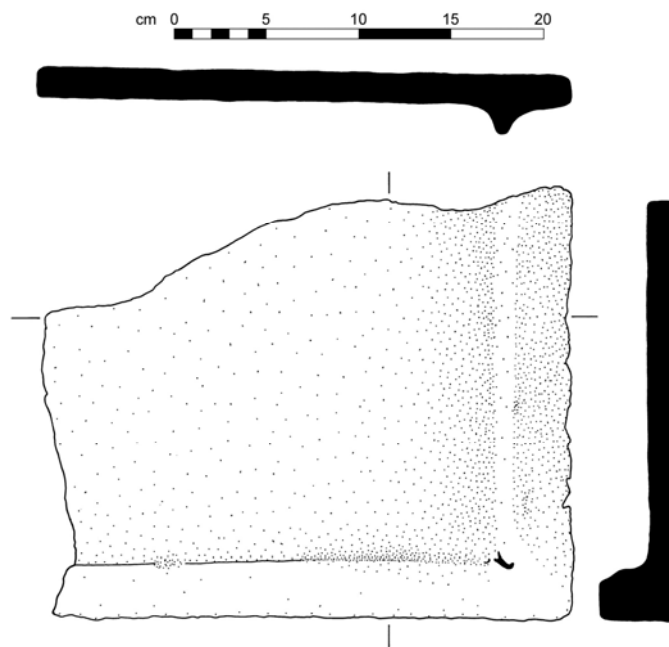


Fig. 3.23 EBS-04-026 from site DR-D.

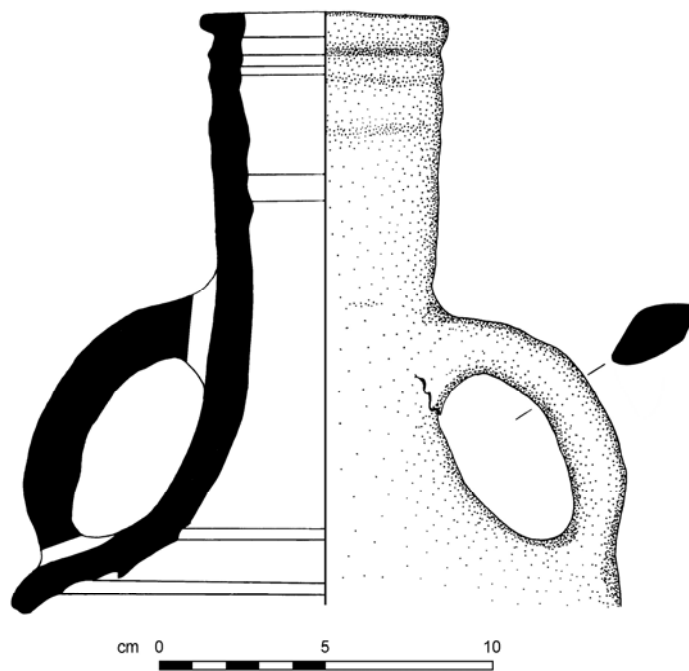


Fig. 3.24 EBS-04-027 from site DR-G.

Amphora top with neck, handles and shoulders. Tall, cylindrical neck surmounted by short, flat, thickened rim. Thin handles fall outward from midpoint of neck. Shallow, horizontal grooves on inside and outside of neck. Lighter, grayer surface (5YR 6/4 Light Reddish Brown). Clay medium-fine (2.5YR 5/8 Red) with medium brown and gray inclusions.

EBS-04-028 (Fig. 3.25)

Site DR-G

H.neck 0.102; D.rim 0.097; H.rim 0.025; T.rim 0.014; T.neck 0.008; T.shoulder 0.008; handle 0.026 x 0.037

Amphora top, with neck, rim, handles and upper body. Top of handles attach below base of rim. Thickened, rounded lip on rim. Neck nearly cylindrical but uneven. At least nine closely spaced grooves evident on upper body. Top of handles have prominent ridges with one or two grooves on either side. Exterior surface has some gray discoloration. Clay medium (7.5YR 6/3 Light Brown) with medium dark brown and gray inclusions.

EBS-04-029 (Fig. 3.26)

Site DR-G

H.pres. 0.175; T.base 0.008

Amphora base; portion of bottom missing. Hourglass-shaped. Prominent ridging on exterior; some closely spaced horizontal ridges near base, with diagonal ridging more

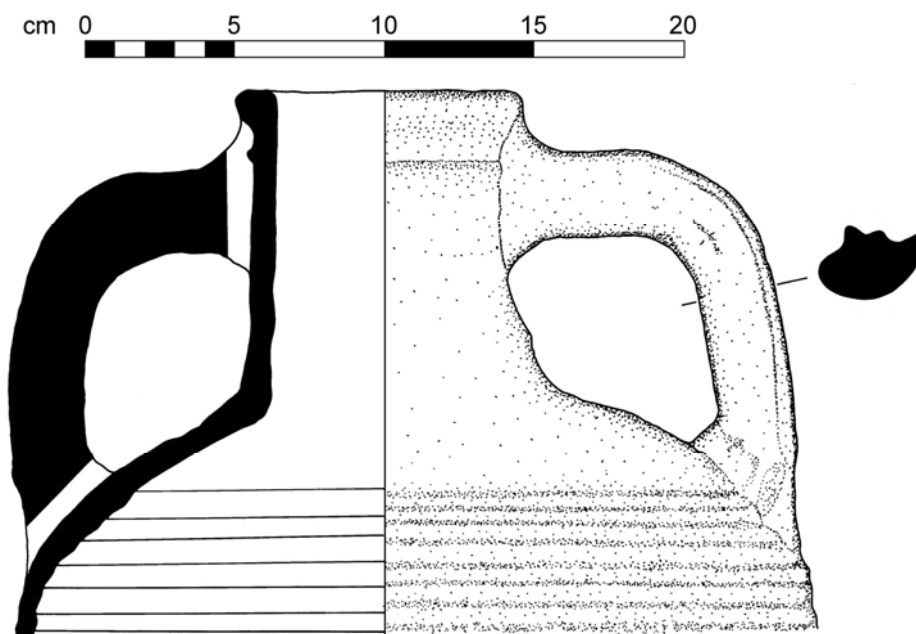


Fig. 3.25 EBS-04-028 from site DR-G.

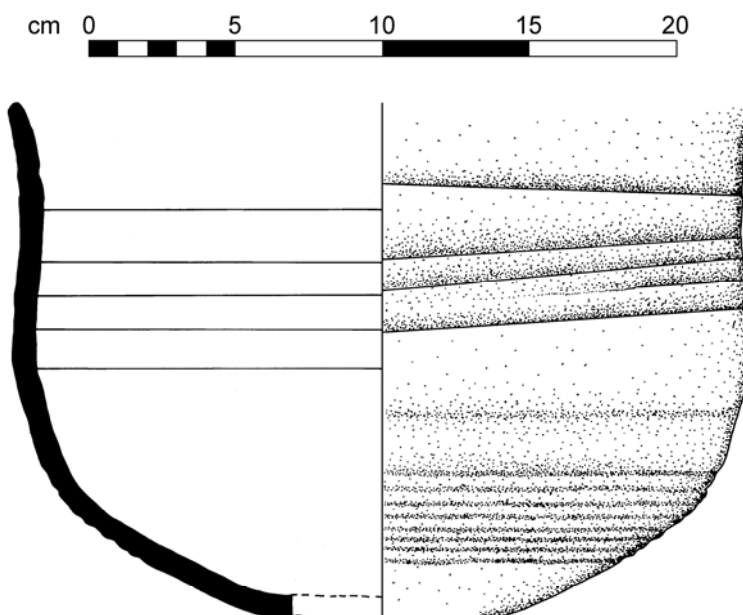


Fig. 3.26 EBS-04-029 from site DR-G.

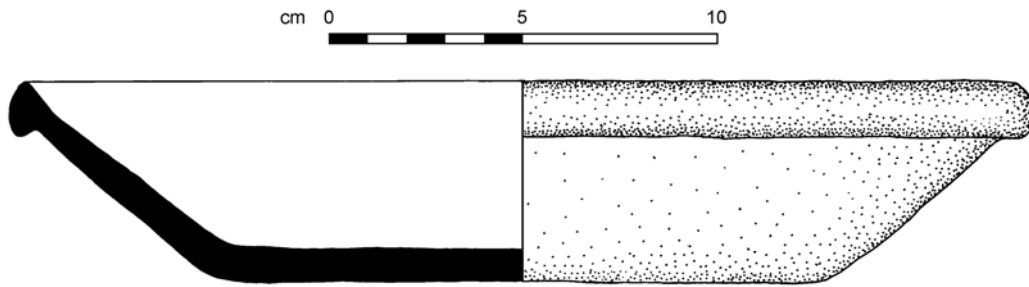


Fig. 3.27 EBS-04-030 from site DR-G.

widely spaced on upper portion. Clay medium (7.5YR 5/3 Brown) with medium brown and gray inclusions.

EBS-04-030 (Fig. 3.27)

Site DR-G

H. 0.053; D.rim 0.267; H.rim 0.015; T. 0.008

Shallow ceramic bowl or plate, with enough of side, rim and base preserved for full reconstruction of shape. Triangular rim. Sandy surfaces. Some circular scratches on interior and exterior. Clay medium-fine (5YR 6/6 Reddish Yellow) with some gray discoloration around worn surfaces and some medium-fine red inclusions.

EBS-04-031 (Fig. 3.28)

Site DR-E



Fig. 3.28 EBS-04-031 from site DR-E.

H.neck 0.113; D.rim 0.069; H.rim 0.040; T.rim 0.012; T.neck 0.008; T.shoulder 0.005;
handle 0.021 x 0.026

Amphora top, with neck, rim, handles and portion of shoulder. Neck conical with smooth but prominent ridges on exterior. Top of handles attach over ridge at base of tall rim; lip of rim thickened and triangular in section. Handles pinched at lower attachments to shoulder. Interior and exterior of neck have splotches of gray discoloration (7.5YR 5/1 Gray). Clay coarse (7.5YR 6/6 Reddish Yellow) with many medium and medium-large black, white and brown inclusions.



Fig. 3.29 EBS-04-032 from site DR-E.

EBS-04-032 (Fig. 3.29)

Site DR-E

H.neck 0.101; D.rim 0.108; H.rim n/a; T.rim n/a; T.neck 0.018; T.shoulder 0.007; handle 0.027 x 0.029

Amphora top, with neck, rim, handles and portion of thin shoulders. Thick, cylindrical neck with poorly distinguished vertical, rounded rim. Handles extend horizontally from base of rim before falling outward to shoulder. Low, faint ridges on exterior of neck. Impressions on inside of neck from attachment of handles. Gray discoloration throughout. Clay medium (surface 7.5 YR 6/6 Reddish Yellow; core 5YR 4/4 Reddish Brown) with medium light and dark gray inclusions.

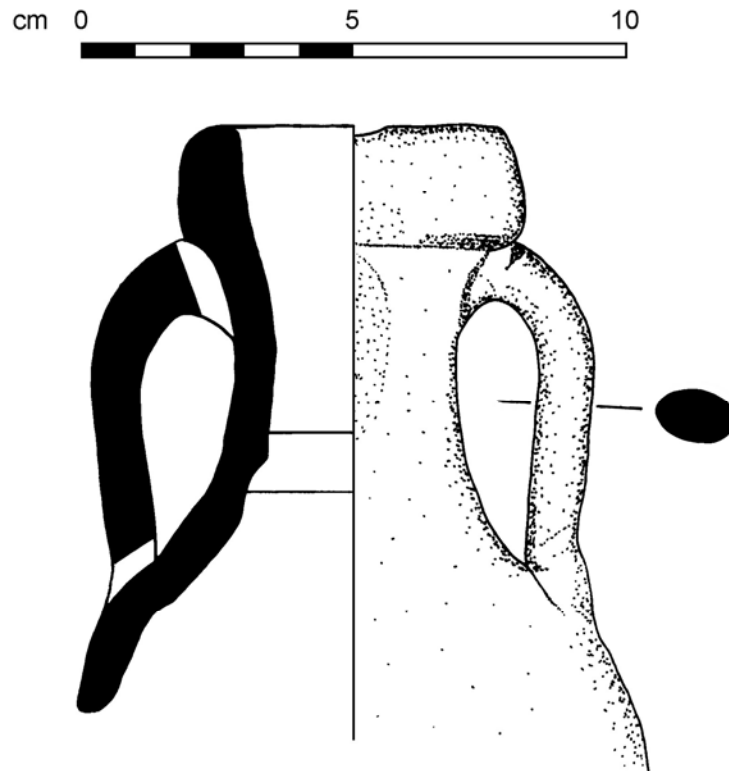


Fig. 3.30 EBS-04-033 from site DR-F.

EBS-04-033 (Fig. 3.30)

Site DR-F

H.neck n/a; D.rim 0.065; H.rim 0.022; T.rim 0.012; T.neck 0.008; handle 0.010 x 0.015

Small amphora top, with neck, rim, handles and shoulders. Tall, bulky, rectangular rim, below which handles curve down and fall inward to shoulder. Concave neck joins smoothly to rounded but steep shoulders. Clay medium-fine (7.5YR 6/4 Light Brown) with medium-small brown inclusions.

A Possible Harbor at Dreamer's Bay

During investigations at Dreamer's Bay over three decades ago, N. Flemming made preliminary notes on a possible ancient harbor feature along the inlet's north edge.³⁹² Not far from shore, projecting in a northwest-southeast orientation, was an astonishingly linear feature that, when cleared of overgrowth in the 1980s by amateur archaeologist F. Haggerty, revealed what appears in fact to be an artificial harbor wall.³⁹³ Photographs subsequent to the cleaning indicate the linear outline of such a construction, along with a possible secondary amorphous feature detached to the east of the north end.³⁹⁴

From his investigations, Haggerty has produced a plan of an ashlar construction over 150 m in length and c. 5 m in width, although this increases measurably at its seaward end (Fig. 3.31).³⁹⁵ Leonard and Demesticha note the similarity here with the widened header blocks utilized in the breakwaters at Nea Paphos, dated to the late fourth or early third century B.C.³⁹⁶ In his unpublished study, Haggerty offers a similar pre-Roman date. He indicates a range of sizes for the ashlar used in the wall, which is now entirely submerged. The end near shore, where the water is only c. 2 m deep, is c. 0.5 m below the surface, while at the seaward end, at c. 6 m of depth, the top of the feature remains almost 3 m below. Haggerty's report of two architectural column drums in and

³⁹² Thanks to N. Flemming for his helpful discussions and for providing a map and unpublished notes regarding his investigations here.

³⁹³ Many thanks to F. Haggerty for graciously sharing the results of his years of investigations.

³⁹⁴ Haggerty's photograph is reproduced in Leonard and Demesticha 2004, 193 fig. 5.

³⁹⁵ Haggerty n.d., 2:32.

³⁹⁶ Leonard and Demesticha 2004, 193-4; for more details of the construction at Nea Paphos: Leonard and Hohlfelder 1993; Hohlfelder and Leonard 1994; Hohlfelder 1995a.

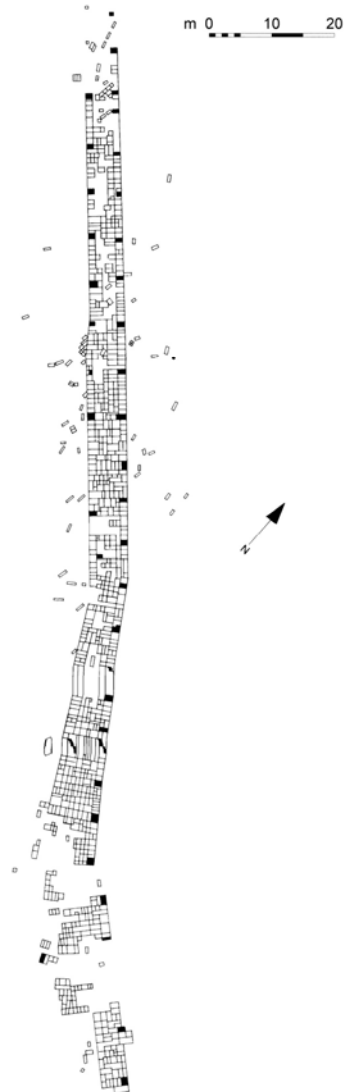


Fig. 3.31 Dreamer's Bay construction (from Leonard and Demesticha 2004, 193 fig. 6).

around the breakwater could be taken as evidence for adornment by a colonnade,³⁹⁷ or could simply represent utilization of spolia.

³⁹⁷ Leonard and Demesticha 2004, 194.

These descriptions, while precise, are at present tentative. Haggerty's useful report remains to be verified during 2005, since a shortage of time and manpower in 2004 prevented comprehensive investigations in the northern sector of the bay. No work has yet been carried out north or west of site DR-D. The 2005 field season, however, will resume operations here in an effort to learn more about this possible harbor wall, including both its construction method and hopefully its date. The presence of a construction seemingly detached from the more appropriate western shore and so close to inhospitable cliffs may be explained by this feature's relationship to the possible ancient harbor's overall plan. Reports of rock-cut steps partially preserved in the cliff nearby hint at an access route to the harbor from the cliff-top above,³⁹⁸ although no major interface with the land befitting a commercial harbor is obvious in the current layout. No additional remains for harbor walls have yet been found that might further delineate the ancient port's layout, making the single construction problematic.

Some suggestions can be made, though, based on change in sea level since antiquity and, more importantly, localized subsidence. As mentioned previously, the area's subsidence over the past two millennia means that the shallow western portion of Dreamer's Bay could not have functioned as the ancient site's harbor.³⁹⁹ Instead, the more open and deeper part to the east, in the area northeast of Vatha Rocks, would have made a suitable anchorage. A subsidence of 2 m would also have placed the upper surface of much of Haggerty's wall here above sea level, thereby helping to provide the more substantial shelter one would expect from a built harbor. It should be noted that if

³⁹⁸ Leonard and Demesticha 2004, 195.

³⁹⁹ Flemming 1978, 415 tbl. 1 no. 172.

the construction's seaward end is in fact almost 3 m below the surface, localized subsidence may have been even greater than Flemming suggested, provided that upper courses are not missing. Although small, a rise in sea level in the past 1500 years of even 0.30 m would still account for part of this discrepancy.⁴⁰⁰

The long north-south reef at Vatha Rocks, the most conspicuous feature in the underwater topography at Dreamer's Bay, rises gently from the seabed to break the surface in the more open eastern part of the inlet. It begins about 150 m offshore and stretches out to sea in a southerly direction for over 150 m in length. While apparently natural, this feature may have originally delineated the westernmost edge of the harbor. Flemming posits a coastline in antiquity which certainly extended several hundred meters west of the present water's edge.⁴⁰¹ Rectifying the local subsidence in this way would make Vatha Rocks an island near shore or perhaps even a headland, in either situation resulting in more sheltered conditions for mariners anchoring to the north and northeast, and probably also providing them with a more suitable shoreline for docking. The presence of much scattered debris along with nine stone anchors and several substantial assemblages north and east of Vatha Rocks implies that this area was likely the primary anchorage for the ancient port at Akrotiri. A single dive spent south of the offshore island and southern coast of *Vounari tou Kambiou* yielded hardly any ceramic debris.

⁴⁰⁰ Flemming et al. 1973, 1.

⁴⁰¹ Flemming personal communication.

The Dreamer's Bay Harbor and Anchorage in Context

Several stone anchors from Dreamer's Bay are suggestive of very early maritime presence, perhaps dating to the Bronze Age. As is the case with the stone anchors from Avdimou described below (see Chapter V), they are generally small (with the exception of A10), and their variation in shape and type argues that they were deposited by a number of different ships over the years. Their concentration in the deeper part of the bay around a sandy patch of seabed indicates that the site was specifically chosen for ships to lie at anchor, yet it does not imply any direct communication with Akrotiri or stopping over on what was then the island. No settlement has yet been brought to light here that might suggest the area was a destination for Bronze Age mariners rather than simply a resting point. The near total dearth of pottery in the area of the anchors, as opposed to the great quantities just a hundred meters west, precludes any further interpretation of the nature of this early presence.

The localized subsidence of the past two millennia noted by Flemming merits further discussion since it has fundamental implications for the presumed ancient harbor's layout. Lifting the present seafloor 2 m would move the western coast of the bay considerably east, much closer to the construction reported by Flemming and recorded by Haggerty, and perhaps even creating a recurved inlet sheltered from southerlies by an arm or headland stretching toward the present Vatha Rocks.⁴⁰²

In light of this new shoreline, the single anchor found northeast of the others (A10) demands an explanation. It was found on a rocky seabed north of the Vatha Rocks

⁴⁰² Thanks to N. Flemming for sharing an unpublished map and his insights on the ancient shoreline here.

in only c. 3 m of water. When interpreting a stone anchor that could be older than 2000 years, the estimation of 2 m of subsidence may be conservative. Even so, the anchor would have been deposited in an extremely shallow, probably wave-washed environment. As such, it may signify a ship driven aground by southerly winds. If, as seems more likely, the anchor was placed here intentionally, it may have functioned as a more permanent mooring stone or buoy for smaller boats.⁴⁰³ The considerable subsidence at Dreamer's Bay, with its stone anchors in deeper water, contrasts sharply with the situation described in Chapter V at Avdimou Bay, where little change has taken place since antiquity and the anchors were therefore probably deposited in the present 3-4 m of water.

The reconstruction of the ancient coastline and investigations into the probable harbor wall are already yielding important clues for the changing utilization of Dreamer's Bay throughout history. Whereas the ships that left behind the other eight stone anchors clearly chose to remain well out to sea in the deeper middle area of the bay, the wealth of Late Roman ceramics indicate use of the shallower western section, near where the ancient harbor construction has been recorded. Thus, a dichotomy appears between the bay's exploitation as a simple anchorage and its function as a sheltered harbor for the settlement onshore. Unfortunately, while the ceramic debris generally delineates the temporal bounds for the possible western harbor, the stone anchors are typologically (and therefore chronologically) problematic. The inclination to situate these earlier than the Late Roman pottery, although tempting, cannot be validated

⁴⁰³ Thanks to C. Pulak for raising this possible alternative.

on the present evidence alone. As indicated in the discussions above, many stone anchors, especially smaller varieties, have been recovered from post-classical contexts, and the examples here may even derive from more recent fishing in the bay long after the abandonment of *Vounari tou Kambiou*.

The ceramic evidence from the bay, while perhaps not indicating the absolute temporal range for its use, clearly ascribes the greatest maritime commerce here to the Late Roman period. Within this group, the complete domination of LR1 is noteworthy. The wide variety of morphological and compositional variation in the class highlights the substantial gaps in the present understanding of LR1 production, including a lack of *verified* kiln sites with published fabrics, especially for Cilicia and Syria. Even within the corpus at Dreamer's Bay, representing perhaps three or more centuries, considerable differences are apparent. That each of the relatively coherent assemblages discussed above is dominated by LR1 highlights the strongly regional character of Late Roman commerce at Dreamer's Bay.

Regardless of the provenance of certain individual LR1 amphoras (and a combination of many major and minor production centers seems highly likely), it seems safe to presume that the majority were destined to carry the agricultural staples for which Cyprus, Cilicia, and Syria were famous. It should be noted that Leonard and Demesticha found preliminary hints of an amphora production center, including over-fired sherds and a ceramic waster, although they raise the question of whether sufficient arable land was available on the peninsula to produce exportable quantities of foodstuffs.⁴⁰⁴ Of

⁴⁰⁴ Leonard and Demesticha 2004, 199 and 202.

course, an untold percentage of these amphoras were no doubt imported to Akrotiri where their contents were consumed locally. On the other hand, in light of the evidence on land and now also underwater, small communities like *Vounari tou Kambiou* evidently played an important role not only in the production and consumption of staples, but also in their collection and redistribution.

Apart from the stone anchors and harbor wall, underwater evidence thus far for an early utilization of the probable port at Dreamer's Bay is scarce. Although amphora sherds on land at Akrotiri leave little doubt that the site was heavily involved in the trade in amphora-based commodities during at least the Middle Roman era, little corroborating evidence has emerged to date from the submerged record. First, the single verifiable Hellenistic Rhodian amphora handle (EBS-04-008), though certainly imported, is an isolated find from a shallow area unlikely to have been completely submerged in antiquity and, therefore, is best considered debris from the terrestrial site. With regard to the pinched-handle amphora located in the deeper eastern waters, one example cannot be taken as proof of any substantial early commerce, and in this sense the underwater survey is fortunate to have corroborating material on land. It is particularly interesting that no verifiable traces of Sub-Koan amphoras, the most common Hellenistic and Roman ceramics from Cape Zevgari (see below Chapter IV), were recorded at Dreamer's Bay. Future work in the north sector of the bay, especially around the probable harbor wall, will hopefully help fill in the picture of maritime trade at Akrotiri. Haggerty's report of Rhodian amphoras in the area, although not yet confirmed, is intriguing and awaits investigation.

Future work at Dreamer's Bay will concentrate on establishing the early history of utilization of the bay for commercial purposes. In conjunction with more detailed research on the amphora fabric groups and the Late Antique material economy, the 2005 season will hopefully yield new coherent assemblages to elucidate further the underlying commercial relationships of this important settlement. Since it appears that little work is likely to be undertaken on land at *Vounari tou Kambiou* in the near future, the surface survey of Leonard and Demesticha and the present underwater investigations will be all the more integral to understanding the site's role in ancient maritime commerce.

CHAPTER IV

CAPE ZEVGARI AREA

Overview

At the southwest tip of the Akrotiri peninsula, Cape Zevgari would have been a familiar sight to ancient mariners (Figs. 1.2 and 4.1). Merchants setting out on an eastward voyage from *Bamboula* or Kourion would have pressed hard with winds abeam to clear the cape at a safe distance. Sudden gusts of the predominant westerlies and southwesterlies threatened to push ships toward the shallows that extend several hundred meters from the headland. In particular, a pair of rocks to the south and a single boulder to the west pose acute challenges, as does a long reef only visible from the white waters it churns (Fig. 4.2). Two modern wrecks further north along the western coast of the peninsula bear witness to the dangerous winds and currents that prevented work on more than one occasion (Fig. 4.3). Still today, small boats fishing nearby navigate these waters with the utmost care.

Flemming's observations for the southern coast of Akrotiri further east (see Chapter III) must also be taken into consideration.⁴⁰⁵ The 2 m of subsidence witnessed at Dreamer's Bay may imply a similar measure of change at Cape Zevgari, given that the two sites surveyed lie along the same Pleistocene outcrop that long ago formed Akrotiri island. Lifting the seabed by 2 m would extend the shoreline slightly, although the vast majority of area surveyed would nevertheless remain underwater. More noticeable,

⁴⁰⁵ Flemming 1978, 415 tbl. 1 no. 172.



Fig. 4.1 Cape Zevgari facing north.

however, would be the possible protrusion of the long Zevgari reef above the water's surface, making it more visible but creating additional hazards in new shallower reefs all around.

Given the continuous deposition near the mouth of the Kouris River, Cape Zevgari held the greatest potential for insight into the extent and nature of ancient trade at *Bamboula* and Kourion. Moreover, the cape's hazardous conditions and the limited survey technology available suggested that Zevgari was the best candidate for obtaining a representative sample of overall maritime trade along this coast throughout history. More so than in the anchorages and harbors, the ceramic debris here can be assumed to



Fig. 4.2 Rock (front) and reef (back) at Cape Zevgari looking west.



Fig. 4.3 Modern wreck along the west coast of Akrotiri.

Image removed due to privacy concerns

Fig. 4.4 Plan of the Cape Zevgari area with pottery concentrations.

reflect reasonably well the traffic that passed this direction. Of course, when the passage through Akrotiri was open, probably into the Hellenistic period (see Chapter I), at least a portion of the commerce took this shorter and likely safer route, even if evidence from Dreamer's Bay hints at Bronze Age anchoring in the area (see Chapter III).

Four general areas were explored during the 2003 and 2004 field seasons (Fig. 4.4). The twin rocks just over 100 m south of the tip, labeled site AK-S1, rise abruptly from a depth of approximately 20 m to break the surface. The shallower waters at site AK-S2 surrounded the third hazardous rock c. 100 m offshore. Site AK-S3 included a large area around and north of the dangerous reef here. The northern shores of Cape Zevgari from its westernmost point were surveyed collectively as site AK-S4. The tip of the cape offers no good access to the sea from onshore, and so all diving here was necessarily from a boat.

The predominant winds and currents also suggested that investigations might prove useful further north, in the shallow inlets along the west coast of southern Akrotiri (Fig. 4.5). Only 0.5 km inland lies the site of *Katalymata ton Plakoton*, which, although only preliminarily explored, promises to be one of the more extensive and interesting Late Roman settlements on the peninsula. The chance that ships may have anchored off the settlement's nearest shore strengthened the likelihood of finding cultural material, although the bays are quite shallow in places.

As such, intensive swimlines from shore were carried out in 2003 with divers spaced in visual range, combing the three northern bays labeled, from north to south, AK-N1 through AK-N3 (Fig. 4.4). An additional dive during the 2004 season was



Fig. 4.5 West Akrotiri Bays (left to right: AK-N1 to AK-N3).

undertaken in the next bay north (AK-N6) to help determine the limit and nature of what proved to be an extensive debris scatter.

Ceramic Evidence

The ceramics are treated by period in the following discussions, after which can be found full catalog entries and figures.

Classical through Mid-Roman

The earliest material from Cape Zevgari is a small scattering of so-called “basket-handle” amphoras from AK-S2. Several diagnostic handles, one retaining a portion of the shoulder, were raised for identification (EBS-03-068, EBS-03-069 and two additional examples not cataloged), although unfortunately no rims were found intact. Probably the earliest ceramics from the survey thus far, they are not well-understood and merit some elaboration.

The type is easily recognized by its thick looping handles rising from the shoulders to well above the rim. The axes of the handle attachments are oriented horizontally through which was passed a beam to facilitate transport, as depicted on a bronze bowl from Cyprus.⁴⁰⁶ The neck is usually quite short, often little more than a rim, while the body tends to be rather thick-walled and therefore naturally quite heavy.⁴⁰⁷ Jacobsen has noted the weakness of the handle connection, explaining why so many handles are found cleanly detached from their shoulders.⁴⁰⁸ Indeed, one of the examples cataloged below demonstrates well this phenomenon (EBS-03-068). Citing surface marks where extra clay was shaved off, she has suggested that many of these vessels were built on a slow turntable.⁴⁰⁹ Interior grooves and impressed bands at the jars’ greatest diameters imply the use of cord or cloth in binding two individually turned

⁴⁰⁶ Gjerstad 1946, 9 fig. 5a; Calvet 1986, 506.

⁴⁰⁷ Jacobsen 1998, 351.

⁴⁰⁸ Jacobsen 1998, 349.

⁴⁰⁹ Jacobsen 2002, 171, 173.

halves during the leather-hard stage.⁴¹⁰ The most thorough typology remains that of A. Sagona, though the distribution is now much greater 20 years later.⁴¹¹

Within this class of amphora, a general evolution is apparent, even if the duration of each variant is not well understood. According to Gjerstad, the form first appeared in the Early Archaic period (Cypro-Archaic I),⁴¹² and finds from the necropolis of Salamis seem to corroborate a date in the very late eighth century.⁴¹³ The early form has a short, wide biconical body with sloping, slightly convex sides. The neck is little more than a tall, separately made rim, while the base is flat, often with a recess.⁴¹⁴ During the Classical period, the shape becomes attenuated, eventually losing its biconical body for a maximum diameter near the more rounded shoulders. The handles, still protruding vertically from the shoulders, now rise far above the rim, while the toe becomes a simple cylindrical stump.⁴¹⁵

Stern and Zemer have suggested, based on a few early examples from Ialysos on Rhodes, that this island invented the series.⁴¹⁶ However, as Sagona notes, given “the greater number and variety in Cyprus, this claim is hardly valid.”⁴¹⁷ Calvet likewise favored Cyprus.⁴¹⁸ Gjerstad probably rightly believed the series derived from the rounded Plain White III and IV forms of the Late Geometric period (Cypro-Geometric III), although he was not so sure that all such basket-handle amphoras were made on the

⁴¹⁰ Humbert 1991, 577.

⁴¹¹ Sagona 1982, 88-91.

⁴¹² Gjerstad 1960, fig. 15 and 120-1.

⁴¹³ Karageorghis 1973-1974, 52-5, 121, pls. XV, XVI.1, XLV-XLVI, CCXXI-CCXXIV.

⁴¹⁴ Sagona 1982, 89 fig. 4.1-2.

⁴¹⁵ Sagona 1982, 89 fig. 4.3-4

⁴¹⁶ Stern 1982, 115; Zemer 1977, 31.

⁴¹⁷ Sagona 1982, 90.

⁴¹⁸ Calvet 1986, 505.

island.⁴¹⁹ The Cypriot predilection for these loop handles is well attested in their earlier Iron Age pottery.⁴²⁰ Compositional analyses have also reinforced the attribution of production to Cyprus. Petrographic observations of early examples from the Levantine site of Tell Keisan show that they were not produced locally, but rather share a common mineral fingerprint with jars from Salamis.⁴²¹ Subsequent neutron activation analysis by Gunneweg and Perlman affirmed that all 30 basket-handle amphoras from Tell Keisan were indeed Cypriot products.⁴²² Thus, in addition to the earliest dated jars occurring on the island at Salamis, the oldest examples from outside also point to a Cypriot origin. It seems safe, therefore, to assign to Cyprus the invention of the basket-handle amphora tradition.

Manufacture continued on the island through the Classical and well into the Hellenistic period, as attested by the finds from Aradippou, which were observed also to be of native clay.⁴²³ A fifth- or fourth-century jar from Amathus has proven to be of significant interest, as it bears a pre-firing Eteo-Cypriot inscription, arguing strongly for local production.⁴²⁴ By the fifth century, if not the sixth, production spread to the mainland. Basket-handle amphoras from Tell el-Hesi demonstrate much compositional variation pointing to a number of manufacturing centers along the Levantine coast.⁴²⁵ The excavators at Tel Michal have attributed by petrography their amphoras to a

⁴¹⁹ Gjerstad 1960, fig. 15.1 and 2; Gjerstad 1946, 9 n. 2.

⁴²⁰ Jacobsen 2002, 170.

⁴²¹ Curtois 1980, 358-60.

⁴²² Gunneweg and Perlman 1991, 594. Their studies also definitively prove that Rhodes was not the origin of these jars (596).

⁴²³ Jacobsen 1998, 350 fig. 40.91 and 351.

⁴²⁴ Aupert 1978, 948, 949 figs. 15 and 18.

⁴²⁵ Bennett and Blakely 1989, 210-3.

workshop nearby, possibly in the Carmel region.⁴²⁶ Likewise, the late jars from Tel Sukas are believed to be local products.⁴²⁷

From the finds offshore, it appears that the basket-handle amphora was the first widely exported Cypriot type, with a distribution corridor extending from the southeast Aegean to Egypt.⁴²⁸ Many examples recovered underwater attest to the type's important role in Archaic, Classical, and Hellenistic commerce. Examples from the Bodrum Museum of Underwater Archaeology⁴²⁹ and the Alanya Museum⁴³⁰ were probably raised nearby. Additional jars from southwest Turkey were raised at Çökertme⁴³¹ and Kepçe Burnu.⁴³² Worthy of note are finds from the sea off Arwad (Syria)⁴³³ and Athlit (Israel),⁴³⁴ and a substantial component of the Ma'agan Mikhael ship's cargo.⁴³⁵ Around Cyprus, they have been noted at Cape Andreas⁴³⁶ and Cape Kiti⁴³⁷ off the island's eastern shores, and Kioni⁴³⁸ and Keratidhi⁴³⁹ on the west coast.

The amphora's primary contents remain a matter of conjecture.⁴⁴⁰ They apparently included oil, to judge from inscriptions on Cyprus,⁴⁴¹ at Tell Keisan⁴⁴² and at

⁴²⁶ Singer-Avitz 1989, 118.

⁴²⁷ Buhl 1983, 15-23, 113.

⁴²⁸ Sagona 1982, 106-8; Jacobsen 2002, 176 fig. 3.

⁴²⁹ Alpözen et al. 1995, 70-1.

⁴³⁰ Sibella 2002, 5 fig. 2.

⁴³¹ Rosloff 1981, 279-80.

⁴³² Cowin 1986, 24-5.

⁴³³ Frost 1966, 26-7 and pl. 8; Parker 1992, 60 no. 58.

⁴³⁴ Zemer 1977, 29-31.

⁴³⁵ Lyon 1993, 43, 45-60; Artzy and Lyon 2003, 192, 194-5.

⁴³⁶ Green 1971, 18-9 and 24; Green 1973, 150.

⁴³⁷ McCaslin 1978, fig. 249.

⁴³⁸ Leonard 1995a, 154-5 fig. 26 ("B7/8-44").

⁴³⁹ Morris and Peatfield 1987, 199 and pl. LVIII.3.

⁴⁴⁰ Jacobsen 1998, 173-4.

⁴⁴¹ Karageorghis 1967, 38 and pls. XLI and CXXVI no. 101; Masson 1967, 132-3; Hadjisavvas 1996b, 133 and 134 fig. 2.

⁴⁴² Peuch 1980, 301-3 and pl. 91.

Kadesh-Barnea.⁴⁴³ On the other hand, Humbert suggested that deposits found inside these jars may indicate lime added to prevent the contents from fermenting.⁴⁴⁴

The basket-handle amphoras recorded at AK-S2 are generally similar in appearance and probably derive from a single event. The only preserved shoulder has a curvature most appropriate for jars around the fifth and fourth centuries, and the fabrics are reasonably close to the typical clay of Cypriot examples.⁴⁴⁵

A unique find from the extreme shallows just west of the cape is EBS-04-004. This miniature skyphos, though badly worn and encrusted, retains traces of black glaze over its deep reddish orange clay. Black-glaze skyphoi were the most common drinking cups during the Classical period at Athens, where Sparkes and Talcott have traced their development.⁴⁴⁶ This simple example has the single curve and simple handles typical of earlier cups in the series. The thicker handles, heavier foot, and iron-rich clay suggest an origin for this piece at Athens rather than Corinth, where the shape was also favored.⁴⁴⁷ Though much smaller, EBS-04-004 resembles generally an example of the early fifth century from the Athenian Agora.⁴⁴⁸ The skyphos is the most popular glazed ceramic at Kition, where a miniature form was also noted.⁴⁴⁹

Other early amphoras recorded in the Cape Zevgari area belong to the characteristic mushroom-rim class. In the shallows just north of the headland at AK-S4 was found an assemblage of jars with distinctly undercut rims (Fig. 4.6). One top (EBS-

⁴⁴³ Dothan 1965, 141 fig. 7.13.

⁴⁴⁴ Humbert 1991, 577.

⁴⁴⁵ Calvet 1986, 505; Jacobsen 1998, 349.

⁴⁴⁶ Sparkes and Talcott 1980, 81-7.

⁴⁴⁷ Sparkes and Talcott 1980, 84-5.

⁴⁴⁸ Sparkes and Talcott 1980, pl. 16 no. 338.

⁴⁴⁹ Jehasse 1981, 93-5.



Fig. 4.6 Concreted mushroom-rim jars at site AK-S4.

03-028) and one base (EBS-03-005) of this amphora family were also raised from the West Akrotiri Bays at AK-N1. The style seems to have its origin in the Aegean (especially the southeast Aegean), where workshops producing many variants in the late fifth and fourth centuries have been located at Kos, the Knidian peninsula, Ionia, Paros, Peparethos, Rhodes and Samos.⁴⁵⁰ In fact, EBS-03-005 is quite similar to early fourth-century amphoras of this type from Kos.⁴⁵¹ Grace has suggested a content of olive oil for

⁴⁵⁰ Nørskov 2004, 289-90.

⁴⁵¹ Papuci Wladyka 1997, 49 fig. 1.1-2.

those jars produced on Samos.⁴⁵² To be sure, however, amphoras with mushroom-shaped rims were manufactured as well in southern Italy and Sicily.⁴⁵³ The type has been recorded among the cargo of the late fourth- or early third-century shipwreck at Kyrenia.⁴⁵⁴ One complete example comes from the necropolis of Ktima.⁴⁵⁵ Another example, with a rim showing a more triangular profile lacking the undercut, was noted in the area of AK-S3, though it was unfortunately also too encrusted to be removed.

The ubiquitous Rhodian amphoras, like the example from Dreamer's Bay described in Chapter III, are well represented in the underwater material from Cape Zevgari. Several phases in the development of the style are evident. Two early pieces, a handle with rim (EBS-03-050) and a base (EBS-03-051), may belong to an early sequence Grace deemed of Rhodian origin, which includes good early third-century B.C. parallels from the Koroni peninsula in Attica.⁴⁵⁶ Jars of this family, though with a hollowed toe, are among the cargo of the very early third-century Kyrenia shipwreck.⁴⁵⁷ Not surprisingly, early Rhodian amphoras such as these are, not surprisingly, known from Egypt.⁴⁵⁸

The most important assemblage of Rhodian jars, however, comes from AK-S4 and contains at least 32 examples of the typical late third- or early second-century shape, distinguished by its diagnostic bent handle (Fig. 4.7). Although a rectangular stamp was apparent on the one handle that was raised (EBS-04-010), it was far too worn to provide

⁴⁵² Grace 1971, 79-80.

⁴⁵³ Will 1982; Vandermersch 1986; 1994, 60-92.

⁴⁵⁴ Grace 1971, 78-9 n. 68.

⁴⁵⁵ Deshayes 1963, 210 and pl. LXVI.2.

⁴⁵⁶ Grace 1963, 323 fig. 1.2 and 1.5; Empereur and Hesnard 1987, 18-20.

⁴⁵⁷ Bass and Katzev 1968, 172.

⁴⁵⁸ Grace and Savvatianou-Petropoulakou 1970, 292.



Fig. 4.7 Concreted Rhodian amphoras from the wreck site at AK-S4.

any useful information, and therefore the dating must be established by shape alone. Isolated examples of this jar-type have been noted as well in the area of AK-S3. An earlier Rhodian form, EBS-03-066 from AK-S2 is characterized by more arched handles. A lone find from AK-S2 (EBS-03-063), though poorly preserved, seems to represent a later development in the Rhodian amphora evolution. The incurved handles may indicate a date around the first century B.C. A partial handle from another likely Rhodian amphora (EBS-03-038) was recorded further north in the West Akrotiri Bays at site AK-N1, but it is too fragmentary to allow more precise identification.

As mentioned above in Chapter III, the classic Rhodian form has many parallels on the island, including at Paphos⁴⁵⁹ and Ktima,⁴⁶⁰ as well as in the Cyprus Museum of Nicosia.⁴⁶¹ At least one wrecked cargo is reported off the western coast of Akamas.⁴⁶² Although production is usually ascribed to the island of Rhodes, it is now clear that the neighboring mainland is responsible for manufacture of a limited quantity as well.⁴⁶³

One fragment raised at site AK-S2 (EBS-03-059) belongs to a very large, thick-walled, coil-built storage jar (*dolium* or *pithos*), probably for wine. These containers, which were used sedentarily for onsite storage as well as onboard ships for bulk transport, have generally received very little attention.⁴⁶⁴ Finds on land and underwater in the western Mediterranean, especially around Italy, show that the type was most popular during the height of Imperial Roman commerce in the first centuries A.D., when mushroom-rims of the type on EBS-03-059 were common.⁴⁶⁵ The total assemblage of sherds from AK-S2 probably constitutes at least one jar.

Scattered throughout the same area were many amphoras of the Koan or Sub-Koan (Dressel 2-4) type. Unfortunately, most jars were so fragmentary that their presence among the sherds could only be ascertained by the numerous broken but easily recognizable bifid handles. From the shallows, one well-preserved top (EBS-03-065)

⁴⁵⁹ Hayes 1991, 85-6 and pl. XX; Barker 2004.

⁴⁶⁰ Deshayes 1963, 30, 34 no. 32, pl. XX.7, and pl LXVI.13.

⁴⁶¹ Nicolaou and Empereur 1986.

⁴⁶² Leonard 1995a, 142 and 168 n. 24.

⁴⁶³ Empereur and Picon 1986b, 115-6; Empereur and Hesnard 1987, 18-20; Empereur and Tuna 1989; Whitbread 1995, 59-63; Şenol et al. 2004; Rasmussen and Lund 2004.

⁴⁶⁴ Hayes 1997, 35-6.

⁴⁶⁵ Brenni 1985, 37-43.

was raised. The survey team recorded a single jar of this type also at AK-N1 (EBS-03-001).

Although amphoras with mushroom-rims were manufactured on the island of Kos from the late fifth century B.C., the classic form with double-rolled handles dates from the early Hellenistic period. It is presumed to have carried the wine for which the island was famous,⁴⁶⁶ and *dipinti* on later forms seem to confirm this.⁴⁶⁷ Over the succeeding centuries, a general trend toward attenuation is apparent, with the addition of a marked division between the shoulder and the cylindrical neck terminating in a small rolled rim.⁴⁶⁸ Although some Koan amphoras feature stamps,⁴⁶⁹ no such marks were found in the group at AK-S2. Attribution of a jar to a specific area is problematic at present, especially when fragmentary, since the type was copied throughout the eastern and western Mediterranean from the end of the second century B.C. through the second century A.D., and in places still later.⁴⁷⁰ Peacock and Williams call the derivation “the most important western Mediterranean wine amphora of the early Empire,” with production centers throughout Italy, Spain, southern France and perhaps even Britain.⁴⁷¹ In the east, the jar was manufactured in many varieties not only on Kos, but throughout the southeast Aegean and further afield in southern Turkey, Cyprus, and Egypt, where the latest examples have been found.⁴⁷²

⁴⁶⁶ Sherwin-White 1978, 236-41.

⁴⁶⁷ Peacock and Williams 1986, 106.

⁴⁶⁸ Papuci-Wladyka 1997, 52-3.

⁴⁶⁹ Empeureur and Hesnard 1987, 22; Papuci-Wladyka 1997, 50 and 52.

⁴⁷⁰ Hesnard 1986, 75-8.

⁴⁷¹ Peacock and Williams 1986, 105-6; Empeureur and Hesnard 1987, 23.

⁴⁷² del Cerro et al. 1977; Empeureur 1986; Empeureur and Hesnard 1987, 22; Empeureur and Picon 1989, 225-9; Lund 1993, 123.

In quantified assemblages in North Africa, the type is most common in first-century B.C. and first- to early second-century A.D. contexts.⁴⁷³ On Cyprus, they have been recorded underwater off the west coast at Keratidhi,⁴⁷⁴ and across the southwest, including large numbers in the hinterland of Palaepaphos⁴⁷⁵ as well as at Paphos itself, where Hayes has suggested local production.⁴⁷⁶ A large group of the jars from Aradippou near Kition may also be of Cypriot manufacture.⁴⁷⁷ The fabric of Hellenistic amphoras from Kos is generally reddish yellow (5YR 6/4-6/6) with light and dark inclusions.⁴⁷⁸ Preliminary observations of the fabrics of EBS-03-001 and EBS-03-065 reveal a general similarity to that from Kos, and it would not be surprising if these examples were imported from the island, though it is impossible to determine at present. Lund has identified the largest proportion of Koan type amphoras from the Palaepaphos area as imports from Kos,⁴⁷⁹ and a mid-first century B.C. example from Paphos may likewise be a true Koan.⁴⁸⁰

One jar top (EBS-03-030), probably belonging to the tail end of the Imperial centuries, is particularly elusive. Its massive bifid handles and shoulder carination recall the Sub-Koan series, although the low cylindrical neck with simple, unthickened vertical rim are more suggestive of Late Roman traditions. All known examples come from the area of Cyprus and Syria south to Egypt. Leonard recorded a single example in the

⁴⁷³ Riley 1979, 171-3; Keay 1989, 38-9.

⁴⁷⁴ Morris and Peatfield 1987, 210 and pl. LVIII.6; Howitt-Marshall 2004, personal communication.

⁴⁷⁵ Lund 1993, 123-4.

⁴⁷⁶ Hayes 1977, 100; 1991, 85-6.

⁴⁷⁷ Jacobsen 1998, 355-6.

⁴⁷⁸ Grace 1962, 119; Papuci-Wladyka 1997, 52.

⁴⁷⁹ Lund 1993, 123.

⁴⁸⁰ Hayes 1991, 86 no. 19 and pl. 21.4.

waters at Kioni,⁴⁸¹ off western Cyprus, and reports an unpublished find from nearby Cape Arnauti.⁴⁸² Several amphoras are known from the coast of Israel at Dor⁴⁸³ and Ma'agan Mikhael.⁴⁸⁴ Many fragments were recorded at Hof Hacarmel, including a base that reveals the jar to be quite bulky, with a greatest diameter near the bottom.⁴⁸⁵ Raban has suggested a date in the third or fourth century,⁴⁸⁶ which Kingsley and Raveh narrow to the late third or early fourth century.⁴⁸⁷ Examples from Ostrakine and three other sites in the north Sinai have been attributed by Arthur and Oren to north Syrian manufacture based on their affinity to well-known mortaria of the region.⁴⁸⁸

While it is understandable that small handle fragments of this type may be misidentified as the Sub-Koan jars which probably served as their inspiration, their unusual thickness and weight make them more resilient and therefore prone to survive. With regard to the date, it is interesting to note that an independent series of amphoras with very similar sagging body proportions, although with a different neck, has been noted sporadically in late fourth- and early fifth-century contexts in the Aegean and Black Seas.⁴⁸⁹ At any rate, it seems certain from the few concentrated finds that this is the product of a small workshop with only limited regional distribution.

⁴⁸¹ Leonard 1995a, 146 fig. 22 and 165 fig. 36.

⁴⁸² Leonard 1995a, 170 n. 89.

⁴⁸³ Kingsley and Raveh 1996, 45, 48 and fig. 34 (“P12”); republished with “Syrian or Cypriot” identification in Kingsley 2002, 3 fig. 5 bottom.

⁴⁸⁴ Kingsley and Raveh 1994a, 126 n. 2.

⁴⁸⁵ Raban 1969-1971, 68 fig. 4.

⁴⁸⁶ Raban 1969-1971, 67.

⁴⁸⁷ Kingsley and Raveh 1994a, 126 n. 2.

⁴⁸⁸ Arthur and Oren 1998, 198 fig. 4.6 and 203.

⁴⁸⁹ Papadopoulos 1989, 98-100; Opař 2004b, 16-7.

Late Roman

The Late Roman centuries account for a large portion of the ceramics in the Cape Zevgari area, including the clear majority in the West Akrotiri Bays. As was the case at Dreamer's Bay, the LR1 is the best represented late amphora.

Investigations in the Cape Zevgari area brought to light the remains of many early LR1 forms (Kellia 169) similar to EBS-04-018 and EBS-04-019 from site DR-C at Dreamer's Bay (see Chapter III). The largest concentration came from AK-N2, where at least four nearly identical tops were well-preserved, two of which are cataloged below (EBS-03-044 and EBS-04-045). These broad, wheel-ridged jars have long horizontal handles and gently tapering necks terminating in simple rolled rims. Overall, the necks at AK-N2 are somewhat taller and narrower than those from DR-C. Also, the joints between the necks and shoulders are smoother, and the clay colors are occasionally redder. It should be noted that, despite their nearly identical forms, EBS-03-044 and EBS-03-045 have notably different handle sections and clay colors. Though no origin is yet certain, this group, like the assemblage at site DR-C, should be assigned a date between the second half of the fourth and the end of the fifth century.

The classic form of LR1 is well-attested in the material record both around the tip of Zevgari and further north in the West Akrotiri Bays. In the shallows of AK-N1, the team discovered a number of amphora tops that closely resemble Demesticha's Type 4(i) or 4(ii).⁴⁹⁰ The two cataloged examples (EBS-03-013 and EBS-03-027) are characterized by a slightly everted rolled rim that is thickened down to a prominent lower ridge. The

⁴⁹⁰ Demesticha 2003, 472 fig. 3.

neck is very slightly funnel-shaped, and the handles, marked by two grooves running their length, extend nearly horizontally from the neck before falling outward to shoulders. Another example of this type (EBS-03-046) was raised from the cape at AK-S1.

Demesticha's Type 4(i) and 4(ii) are early forms in a series manufactured from the late sixth century at Paphos and subsequently also at three sites in the area of Amathus and Zygi.⁴⁹¹ Corroborating evidence comes from the Black Sea area, where Sazanov has dated similar amphoras to the period 525-675.⁴⁹² All three examples from the Cape Zevgari area have clays that are reasonably similar, matching the description given for the products of the Paphos kiln, that is, "light to reddish brown."⁴⁹³

The largest coherent assemblage of LR1s, numbering at least 150, was found strewn northwest of the reef atop a ledge measuring approximately 35 m by 15 m (Fig. 4.8). Many largely intact jars were too encrusted for removal (Fig. 4.9), although one loose top was raised for identification (EBS-03-067). The neck is conical near its base, but bulges slightly at the height of the handle attachments. The everted, rolled rim has no pronounced lower ridge. EBS-03-067 lacks good parallels among the LR1 jars from Cyprus, though Sazanov dates the appearance of LR1s with bulges in the Black Sea to the period 525-625.⁴⁹⁴ The body of the most intact amphora from this wreck has a pinched midsection, a common feature on later LR1s. To judge from the photograph, the height appears to be around 0.55-0.60 m. On the present evidence, the wreck cannot be

⁴⁹¹ Demesticha 2003, 472 and 474.

⁴⁹² Sazanov 1999, 269 and 279 fig. 12 ("Type 14").

⁴⁹³ Demesticha 2003, 472 n. 11.

⁴⁹⁴ Sazanov 1999, 268 and 277 fig. 7 ("Type 4").

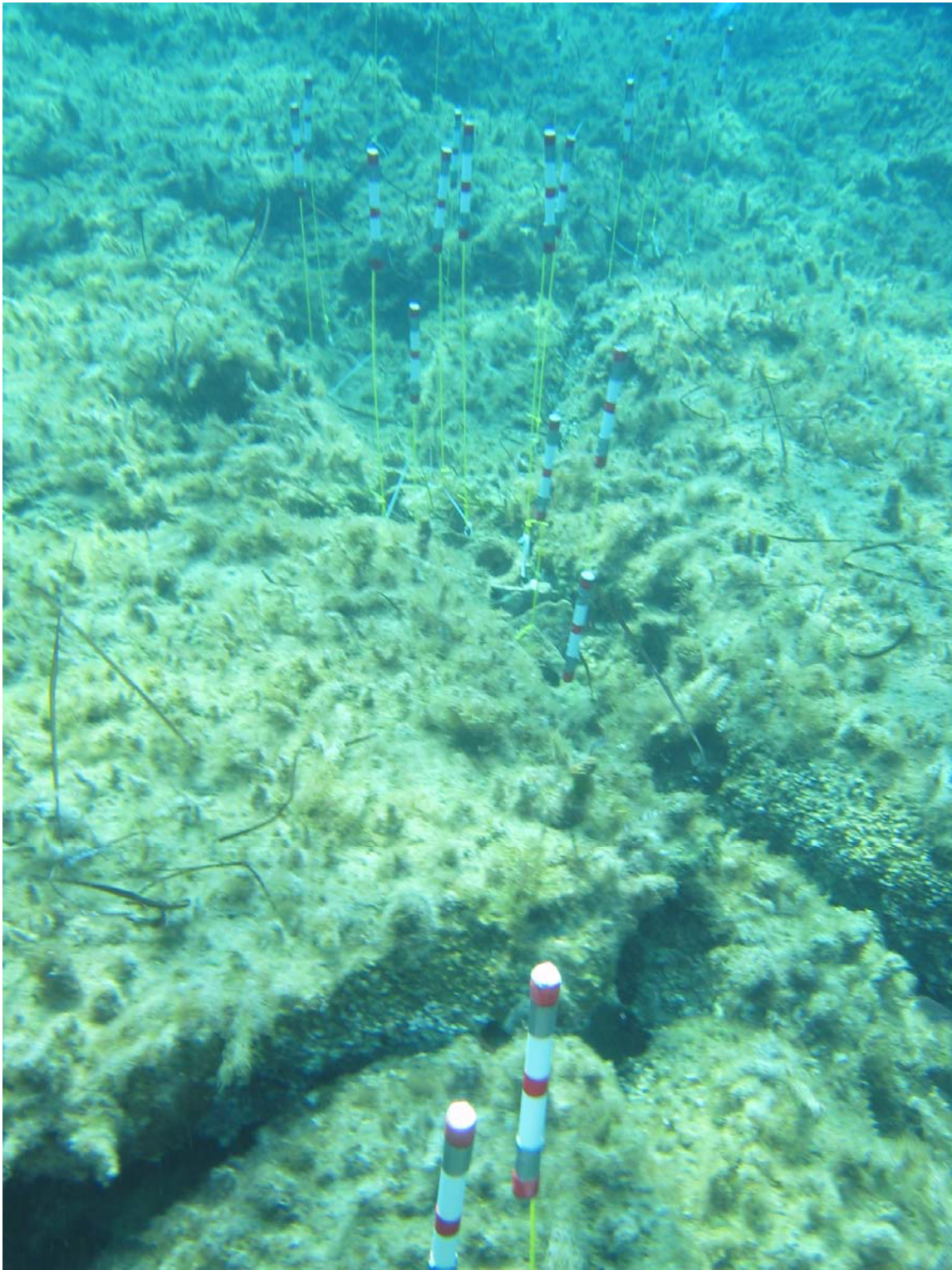


Fig. 4.8 Buoys marking LR1 amphorae buried throughout the ledges at site AK-S3.

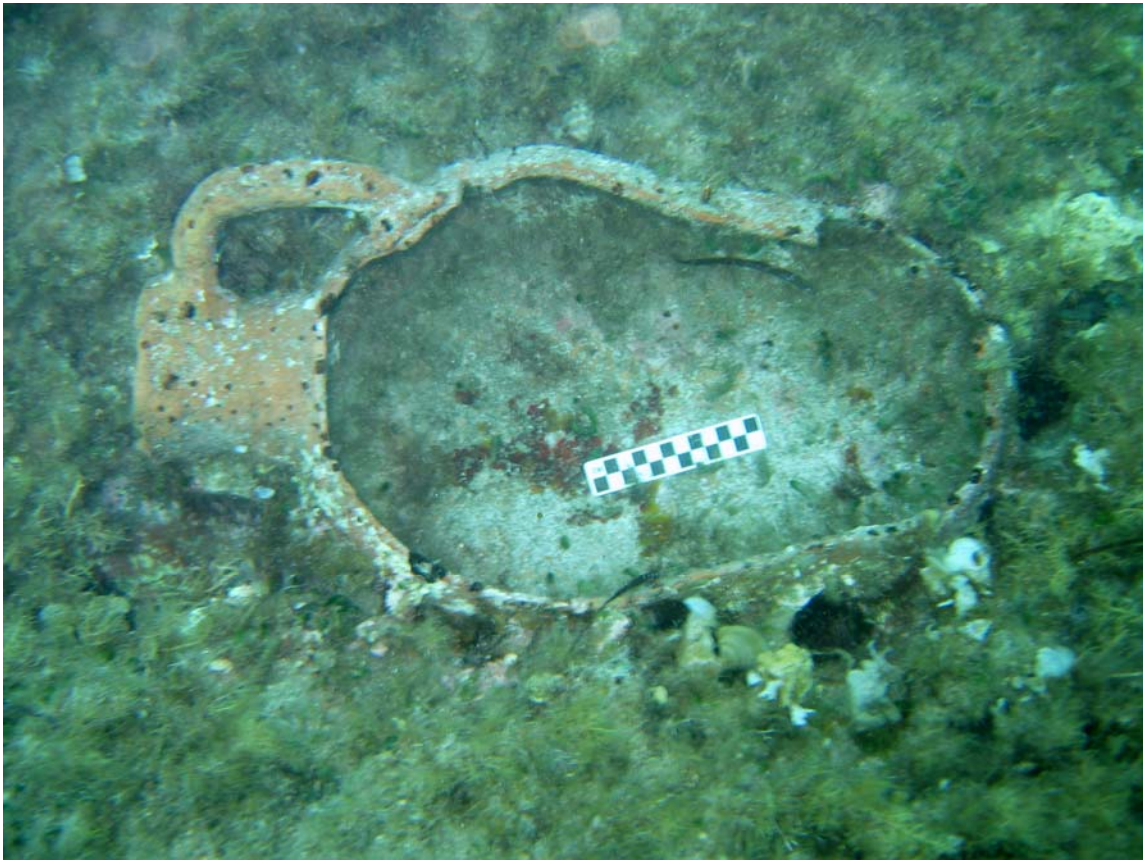


Fig. 4.9 LR1 amphora from the wreck assemblage at site AK-S3.

dated more precisely than the fifth to seventh centuries. The only non-ceramic noted in the assemblage, a pierced lead block (EBS-03-070), is discussed following the catalog of ceramics.

A probable LR1 amphora (EBS-03-052) raised from AK-S2 is well-made in dark gray clay. It lacks good parallels in form and fabric from the known production centers on Cyprus. It has a straight-walled, conical neck with a cupped rim that is tall and thin. The handles, with an amygdaloid section and single groove, are set close to the neck. The generally narrow proportions suggest that the body too may have been rather slim, a



Fig. 4.10 Sinopean carrot amphora from site AK-S4.

common variation on later LR1s (cf. EBS-04-031 from site DR-E at Dreamer's Bay: see Chapter III),⁴⁹⁵ which may indicate a date in the sixth or seventh century for EBS-03-052.

Surveys in the shallows southwest of the tip of Zevgari at site AK-S4 also brought to light a single isolated neck of a Sinopean carrot amphora (Fig. 4.10). Although not raised, the type is clearly similar to those recorded further east at Dreamer's Bay site DR-G (see Chapter III).

⁴⁹⁵ Hayes 1980a, 379 and fig. 15.2.

Later Finds

A single amphora of mid-Byzantine date (EBS-03-024) has its best parallels in Hayes' Type 54 from Saraçhane, where it is extremely common.⁴⁹⁶ What Hayes describes as "a bewildering assortment of neck- and rim-forms" accounts for 30-50% of all amphoras from the late 10th to the early 12th century.⁴⁹⁷ Some of the jars from the 11th-century shipwreck at Serçe Limani are generally similar.⁴⁹⁸ Günsenin reports many more from museums in Turkey,⁴⁹⁹ and other examples have been recorded in the eastern Adriatic.⁵⁰⁰

While returning from a dive in AK-N3, T. Nowak noted a pair of Ottoman ceramic smoking pipes (EBS-03-047 and EBS-03-048) wedged into the shallow rocks. The two were found in close proximity and are nearly identical in form. One is complete; the other lacks a portion of the bowl, although enough remains to reconstruct the shape and decoration. Their "lily" bowls, bulbous stems and internal socket-diameters follow closely the typological characteristics set forth by Robinson for pipes of the mid- to late 19th century.⁵⁰¹ On the other hand, the larger factories centered on Istanbul typically stamped their wares with distinctive names,⁵⁰² which are lacking on the examples here.

⁴⁹⁶ Hayes 1992, 70 fig. 24, 73 and 75.

⁴⁹⁷ Hayes 1992, 75.

⁴⁹⁸ van Doorninck, Jr. 1989, 255 fig. 4.1.

⁴⁹⁹ Günsenin 1989, 268 fig. 1 and 269-71.

⁵⁰⁰ Brusić 1976, 40 p. III and 42 p. V.

⁵⁰¹ Robinson 1985, 161-3.

⁵⁰² Hayes 1980c, 8; Robinson 1985, 161.

According to Baram, the smaller regional and local producers of Palestine preferred simple abstractions that convey no specific information.⁵⁰³ Whereas the few pipes extensively recorded on Cyprus suggest that the local market was dominated by the mass-produced wares of the major Turkish industries,⁵⁰⁴ these two pieces show clearer connections to the smaller Palestinian operations studied by Baram. The predominant decorative elements on these two pipes are bands of diamonds around the bowl, sets of 10 diamonds or dots, again on the bowl, and short incised parallel lines on the stem. Nearly identical pipes have been noted in southwest Cyprus at Kouklia⁵⁰⁵ and Prastio.⁵⁰⁶ Finds from Palestine⁵⁰⁷ and Israel⁵⁰⁸ show similar decorative schemes, strengthening the connection to Cyprus.⁵⁰⁹

Undated Finds

Two ceramic bases remain unclassified at present. EBS-03-061 (from site AK-S2) is a convex, pointed base, slightly thickened at the bottom. EBS-04-006 (from site AK-S3), also convex, terminates in a simple ring base. In addition, two fragmentary rims and handles (EBS-03-049 from site AK-N3 and EBS-03-058 from site AK-S2) probably belong to Roman or Byzantine cooking pots. However, such wares are subject to much local variation, and their generic shapes changed little over time, thus precluding any

⁵⁰³ Baram 1995, 304.

⁵⁰⁴ Baram 1996, 164.

⁵⁰⁵ Graf 2001, 393 fig. 12.

⁵⁰⁶ Rupp et al. 1999, 70-1 figs. 30-1.

⁵⁰⁷ Baram 2000, 150 fig. 5.1.c.

⁵⁰⁸ Belmont Castle: Simpson 2000, 160 fig. 13.5; Zir'in (Tell Jezreel): Simpson 2002, 161 fig. 1.

⁵⁰⁹ I am particularly indebted to Uzi Baram of New College Florida for his expert advice on these and other pipes and their humble but fascinating place in the Ottoman material economy. For more details, see Leidwanger (forthcoming a).

closer dating. Finally, among many small sherds of roof tiles, the team at AK-N1 raised EBS-03-002, the lower corner of a Corinthian style pan *tegula*. Lacking associated finds, no precise date can be proposed, since this simple shape was apparently in use on the island from the Classical period through Late Antiquity.

Catalog of Ceramics

EBS-03-001 (Fig. 4.11)

Site AK-N1

H.pres. 0.172; D.rim 0.121; H.rim 0.010; T.rim 0.014; T.neck 0.005; handle 0.021 x 0.040

Bifid amphora handle, including partial neck and rolled rim with flattened top. Handle arches from neck before falling vertically. Neck tapers inward near rim. Clay medium-fine grain (5YR 7/6 Reddish Yellow) with few small gray inclusions.

EBS-03-002 (Fig. 4.12)

Site AK-N1

L. 0.144; W.pres. 0.165; T. 0.018-0.020; W.ridge1 0.022; T.ridge1 0.019

Lower left corner of flat rectangular ceramic tile. Ridge along one edge of top, with another partial ridge (flow-director) meeting it at corner. Lower surface pitted. Clay medium-fine (7.5YR 5/4 Brown) with numerous small white inclusions.

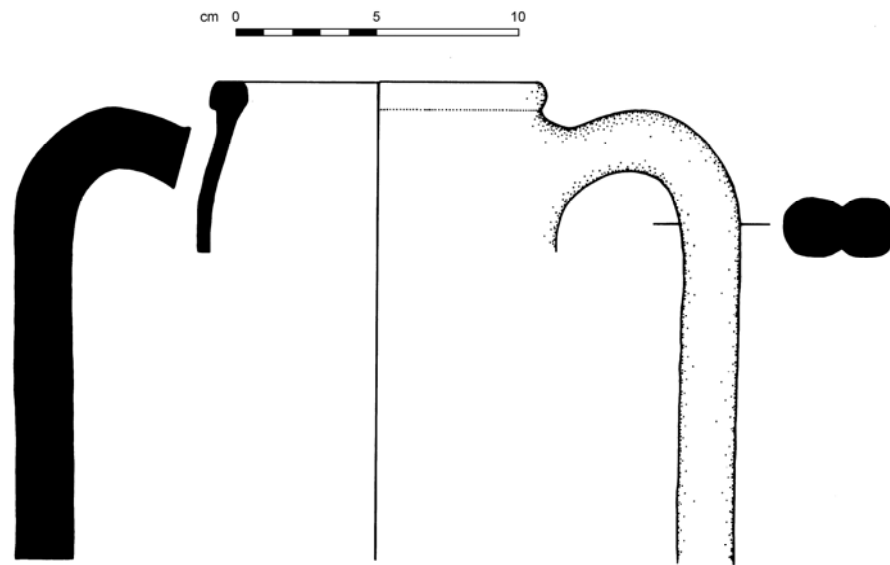


Fig. 4.11 EBS-03-001 from site AK-N1.

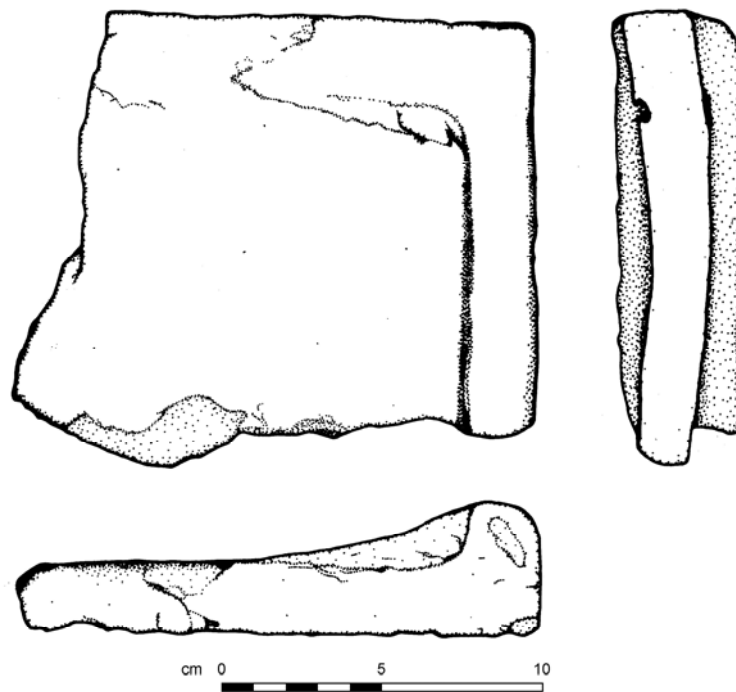


Fig. 4.12 EBS-03-002 from site AK-N1.

EBS-03-005 (Fig. 4.13)

Site AK-N1

H.pres. 0.084; T.base 0.014; W.toe 0.060

Amphora base with stem toe terminating in hollow flaring knob. Interior badly pitted. Base slightly concave. Clay medium-fine (2.5YR 5/6 Red) with small black and white inclusions.

EBS-03-013 (Fig. 4.14)

Site AK-N1

H.pres. 0.087; D.rim 0.106; H.rim 0.024; T.rim 0.013; T.neck 0.012; handle n/a

Uneven amphora neck with attachments for handles. Flaring rolled rim and articulated lower ridge. Clay medium (5YR 6/4 Light Reddish Brown) with numerous small and large black inclusions.

EBS-03-024 (Fig. 4.15)

Site AK-N1

H.neck n/a; D.rim 0.076; H.rim 0.008; T.rim 0.008; T.neck 0.006; handle 0.020 x 0.029

Amphora handle with part of shoulder and neck with small rim. Handle rises from neck before bending at right angle, falling outward to shoulder. Clay medium (7.5YR 6/6 Reddish Yellow) with small to medium light and dark inclusions as well as gray streaks primarily at core.

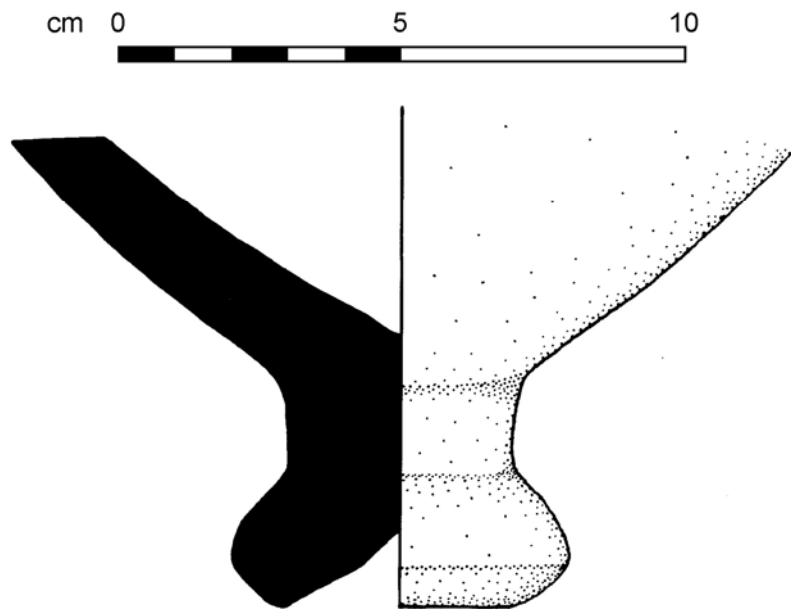


Fig. 4.13 EBS-03-005 from site AK-N1.

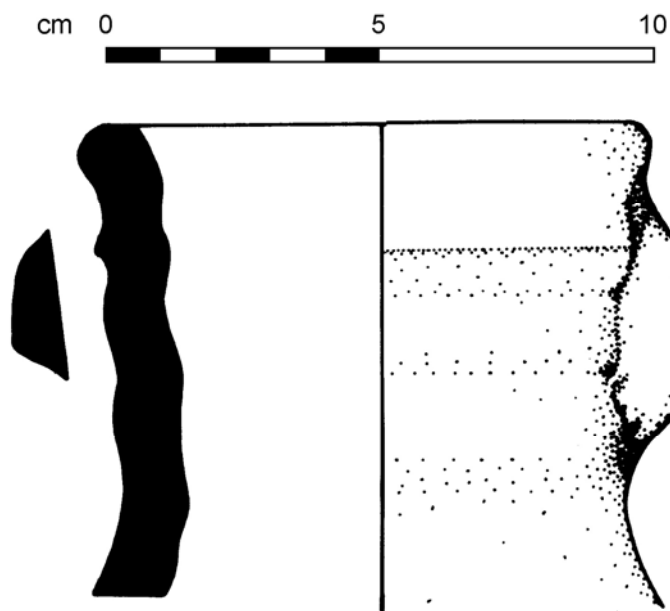


Fig. 4.14 EBS-03-013 from site AK-N1.

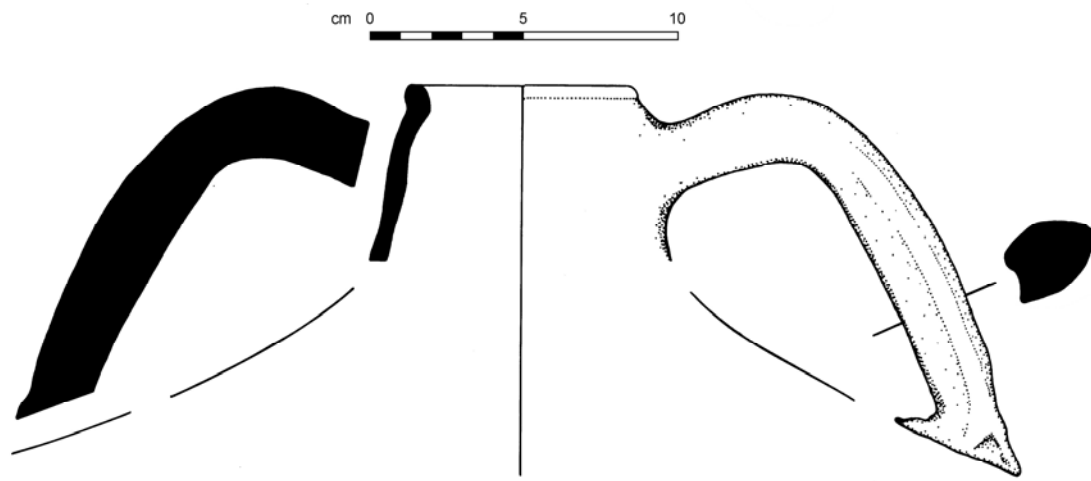


Fig. 4.15 EBS-03-024 from site AK-N1.

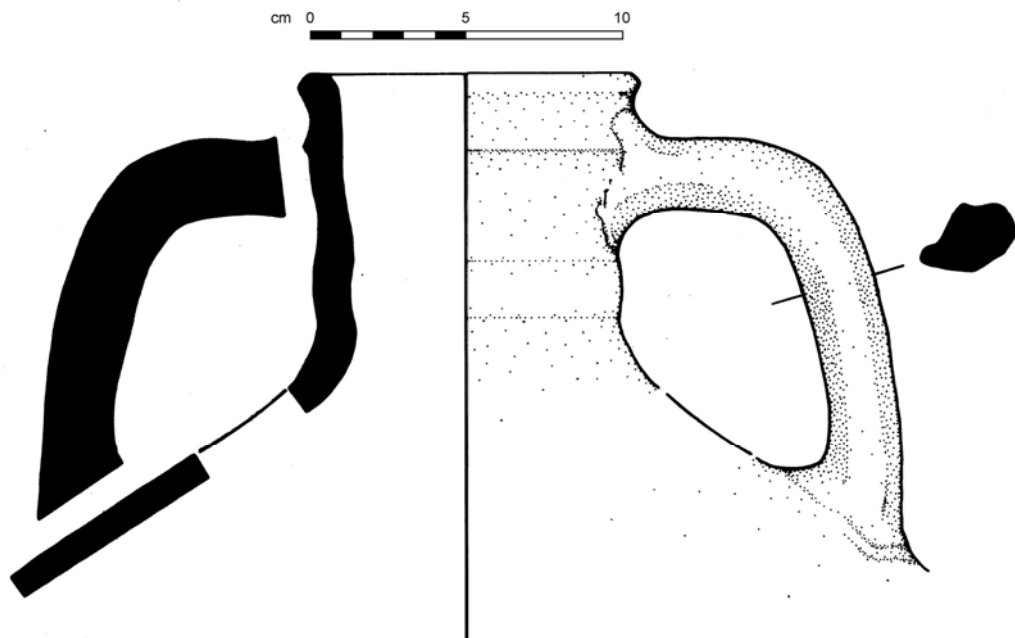


Fig. 4.16 EBS-03-027 from site AK-N1.

EBS-03-027 (Fig. 4.16)

Site AK-N1

H.neck c. 0.097; D.rim 0.111; H.rim 0.026; T.rim 0.012; T.neck 0.011; T.shoulder 0.010; handle 0.022 x 0.033

Amphora top with partial rim, one handle and partial shoulder. Rim has only slight flare, but distinct lower ridge. Clay medium (7.5YR 6/4 Light Brown) with numerous medium gray and brown inclusions

EBS-03-028 (Fig. 4.17)

Site AK-N1

H.neck 0.186; D.rim 0.168; H.rim 0.018; T.rim 0.016; T.neck 0.006; T.shoulder 0.005; handle 0.025 x 0.040

Amphora top, including neck, one handle and broad shoulder. Smooth neck tapers outward to flaring mushroom-rim with upper ridge and shallow groove underneath. Neck attachment to shoulder smooth. Ovoid handles arch from neck, nearly touching rim before falling in slight S-curve. Clay medium-fine (2.5YR 5/6 Red) with medium gray inclusions.

EBS-03-030 (Fig. 4.18)

Site AK-N1

H.neck c. 0.089; D.rim 0.113; H.rim n/a; T.rim 0.018; T.neck 0.017; T.shoulder 0.014; handle 0.029 x 0.077

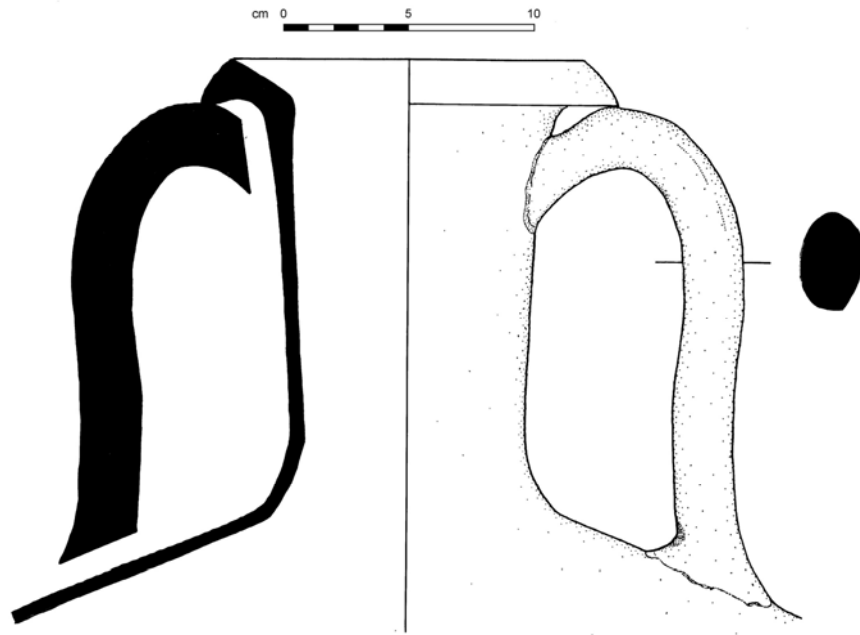


Fig. 4.17 EBS-03-028 from site AK-N1.

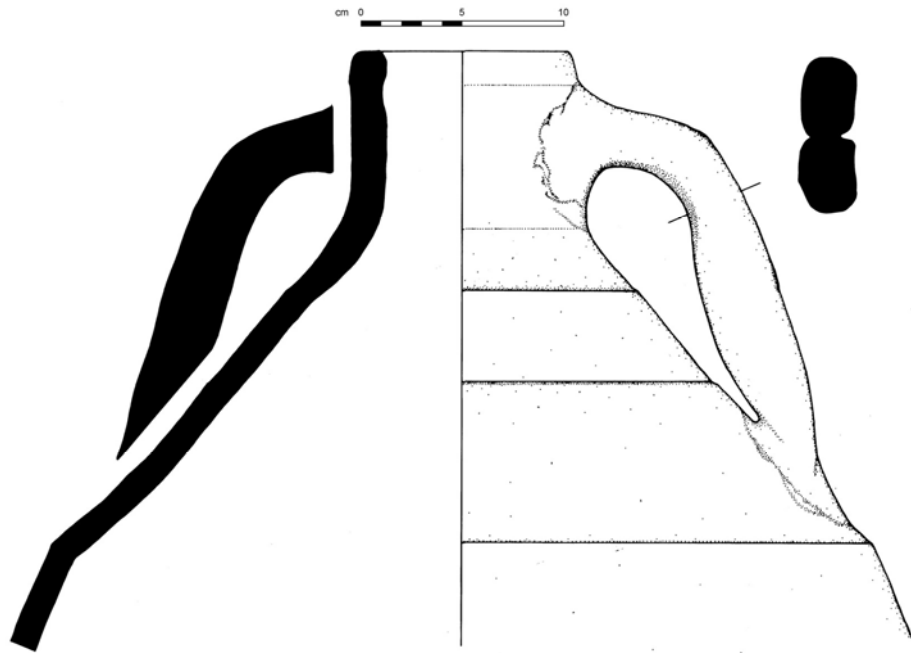


Fig. 4.18 EBS-03-030 from site AK-N1.

Amphora top with rim, handles, shoulders and portion of body. Cylindrical neck with simple vertical rim. Massive bifid handles fall outward, closely set to shoulders. Prominent ridge below base of neck with sharp carination at base of shoulders. Clay medium (2.5YR 5/6 Red) with gray inclusions.

EBS-03-038

Site AK-N1

handle 0.029 x 0.033

Partial amphora handle with small portion of attachment at angle. Clay medium-fine (7.5YR 7/4 Pink) with few small gray inclusions.

EBS-03-044 (Fig. 4.19)

Site AK-N2

H.neck c. 0.105; D.rim 0.060; H.rim 0.013; T.rim 0.011; T.neck 0.007; T.shoulder 0.006; handle 0.023 x 0.030

Amphora top with slightly conical neck, simple thickened rolled rim, one handle, shoulder and upper body. Faint grooves on neck; prominent wheel-ridging on exterior and interior of shoulders and body. Clay medium (exterior: 7.5YR 6/6 Reddish Yellow; core: 7.5YR 5/1 Gray) with many medium light and gray inclusions.

EBS-03-045 (Fig. 4.20)

Site AK-N2

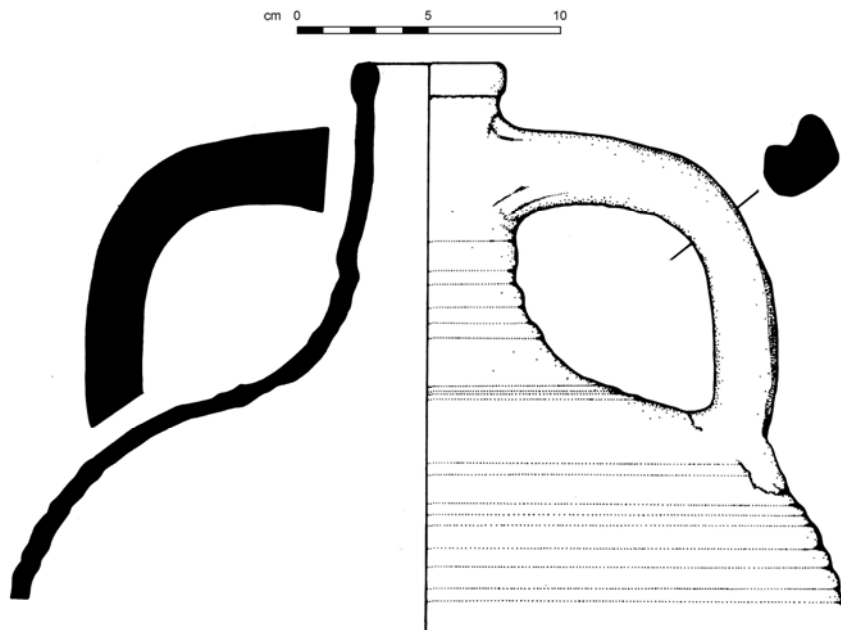


Fig. 4.19 EBS-03-044 from site AK-N2.

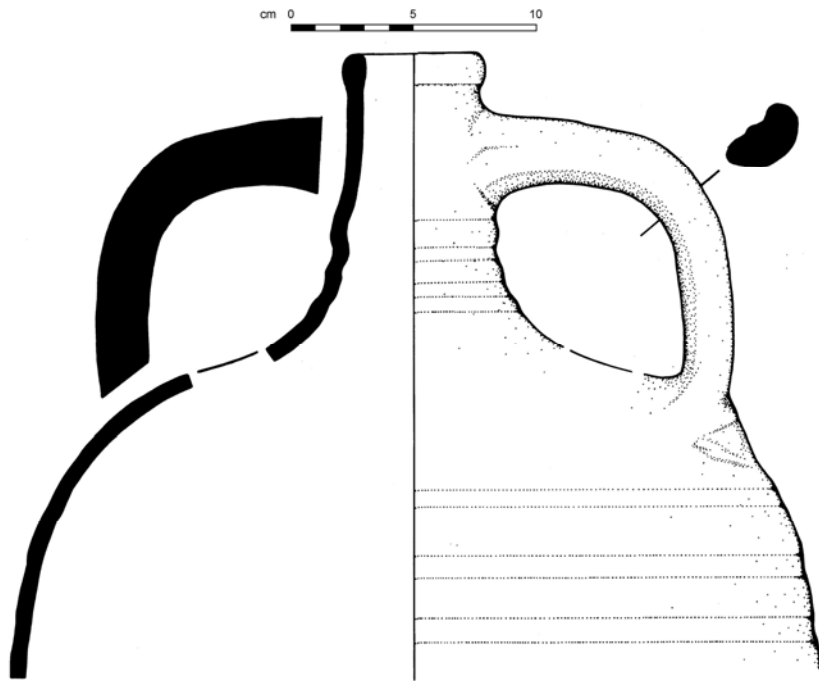


Fig. 4.20 EBS-03-045 from site AK-N2.

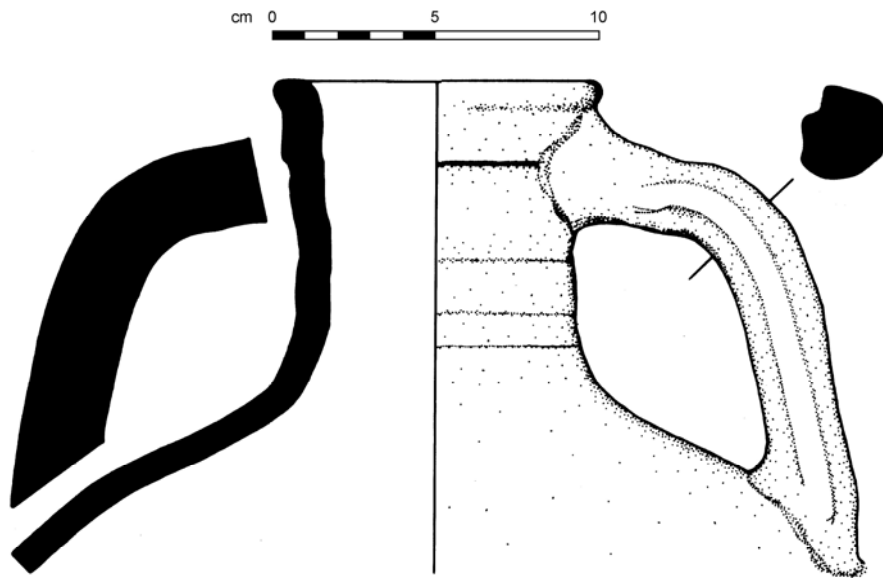


Fig. 4.21 EBS-03-046 from site AK-N1.

H.neck c. 0.106; D.rim 0.059; H.rim 0.013; T.rim 0.010; T.neck 0.007; T.shoulder 0.007; handle 0.019 x 0.034

Amphora top with slightly conical partial neck, simple thickened rolled rim, one handle, shoulder and upper body. Faint grooves on neck; prominent wheel-ridging on exterior and interior of shoulders and body. Clay medium (7.5YR 7/3 Pink) with numerous medium dark gray and black inclusions as well as large gray patches and streaks.

EBS-03-046 (Fig. 4.21)

Site AK-N1

H.neck 0.092; D.rim 0.101; H.rim 0.026; T.rim 0.013; T.neck 0.010; T.shoulder 0.009; handle 0.027 x 0.031

Amphora top with neck, one handle and shoulder. Rim has only slight flare, but distinct ridge at base. Clay medium (interior: 7.5YR 5/1 Gray; exterior: 7.5YR 6/4 Light Brown) with some light and dark brown as well as gray inclusions.

EBS-03-047 (Fig. 4.22)

Site AK-N3

L.overall 0.084; D.bowl 0.049; H.bowl 0.042; T.bowl 0.004; D.socket 0.029; D.socket-hole 0.017

Clay smoking pipe bowl; missing portion of bowl. Bulbous stem with socket and three rows of incised short parallel lines. Stem extends up under front of bowl (“keel”). Lily-shape bowl preserves 10 dots arranged as bowling pins and bands of small faint diamonds around rim. Stamp (D. 0.010 m) on keel with three dots arranged around one side of central dot (palmette/rosette?). Clay medium-fine (5YR 4/4 Reddish Brown) with some small black inclusions.

EBS-03-048 (Fig. 4.23)

Site AK-N3

L.overall 0.076; D.bowl 0.045; H.bowl c. 0.035; T.bowl 0.004; D.socket 0.026; D.socket-hole 0.015

Intact clay smoking pipe bowl. Bulbous stem with socket and three rows of incised short parallel lines. Stem smoothly joined to bowl with no “keel.” Lily-shape bowl preserves pattern of 10 diamonds arranged as bowling pins and five bands of small diamonds



Fig. 4.22 EBS-03-047 from site AK-N3.

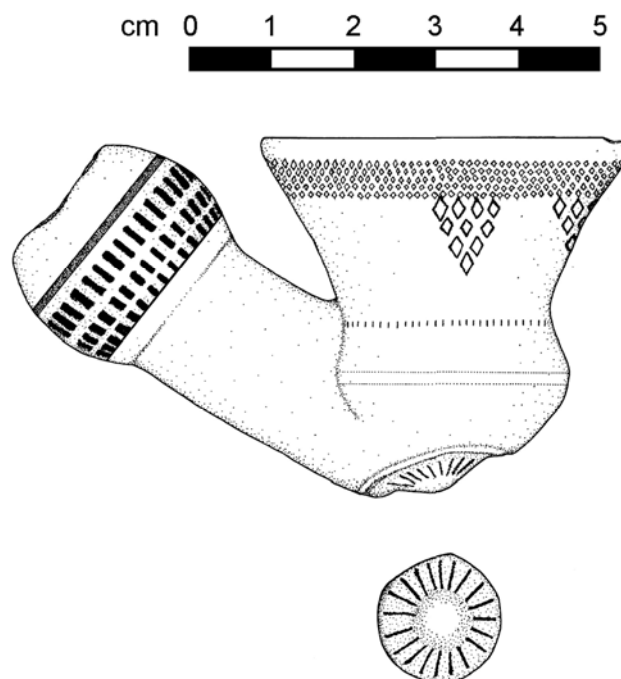


Fig. 4.23 EBS-03-048 from site AK-N3.

around rim. Stamp (D. 0.015 m) on base of bowl shows short lines arranged radially around raised center (“rayed sun” or “rayed dot”), indicating stamp with hollow or depressed center. Clay medium-fine (5YR 5/6 Yellowish Red; some surface discoloration: 7.5YR 6/1 Gray) with some small to medium black inclusions.

EBS-03-049 (Fig. 4.24)

Site AK-N3

H.pres. 0.092; D.rim 0.118; H.rim n/a; T.rim c. 0.007-0.008; T.body 0.008; handle 0.009 x 0.030

Top of ceramic vessel; portion of rim, handle and body. Prominent ridge with groove above on interior at base of vertical rim. Ribbon handle arches before curving down and angling into shoulder. Clay medium-fine (5YR 5/4 Reddish Brown) with many small gray inclusions.

EBS-03-050 (Fig. 4.25)

Site AK-S2

H.pres. 0.203; D.rim n/a; H.rim 0.027; T.rim 0.010; T.neck 0.008; handle 0.031 x 0.041

Amphora handle, including part of neck and vertical rim with angled outer face. Handle rises from neck to arch prominently before falling to vertical. Three shallow horizontal grooves on interior of neck. Clay medium-fine (5YR 5/6 Yellowish Red) with some medium gray inclusions.

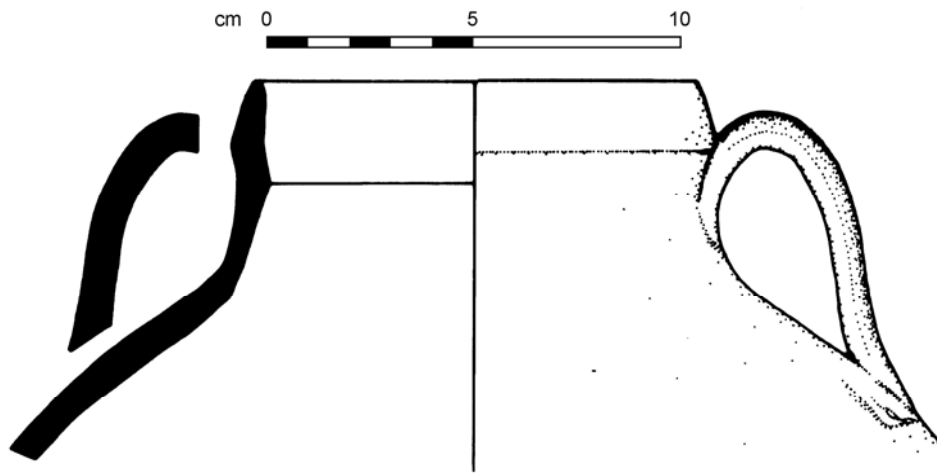


Fig. 4.24 EBS-03-049 from site AK-N3.

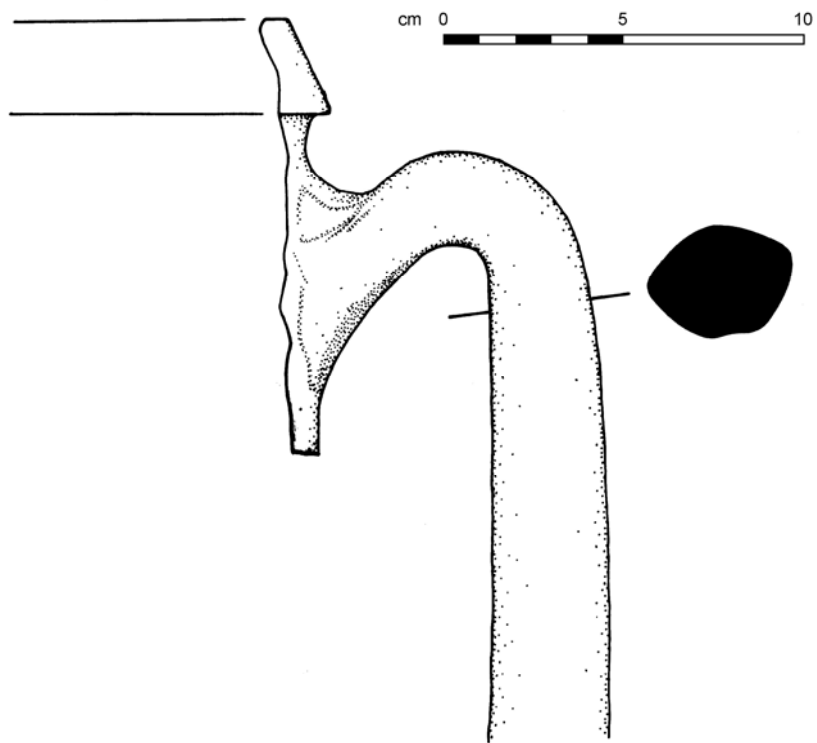


Fig. 4.25 EBS-03-050 from site AK-S2.

EBS-03-051 (Fig. 4.26)

Site AK-S2

H.pres. 0.166; T.base 0.009; W.toe 0.051

Amphora base with generally straight sides terminating in bulbous toe narrowing at bottom. Depression on either side of exterior above toe. Clay medium (5YR 5/8 Yellowish Red) with medium gray inclusions.

EBS-03-052 (Fig. 4.27)

Site AK-S2

H.neck 0.118; D.rim 0.090; H.rim 0.039; T.rim 0.006-0.009; T.neck 0.009; T.shoulder 0.007; handle 0.023 x 0.043

Amphora top with neck, handles and shoulders. Conical neck rises to carefully shaped, everted rim that is tall and thin. Handles close to neck, curving gently from base of rim to shoulders. Well-made. Clay medium (7.5YR 4/1 Dark Gray).

EBS-03-058 (Fig. 4.28)

Site AK-S2

H.pres. 0.064; D.rim 0.140; H.rim c. 0.014; T.rim 0.006; T.body 0.003; handle 0.012 x 0.015

Top of thin-walled ceramic vessel; portion of rim, handle and body. Loop handle attaches at top of thickened everted rim. Clay medium (2.5YR 4/4 Reddish Brown) with many dark gray and black inclusions.

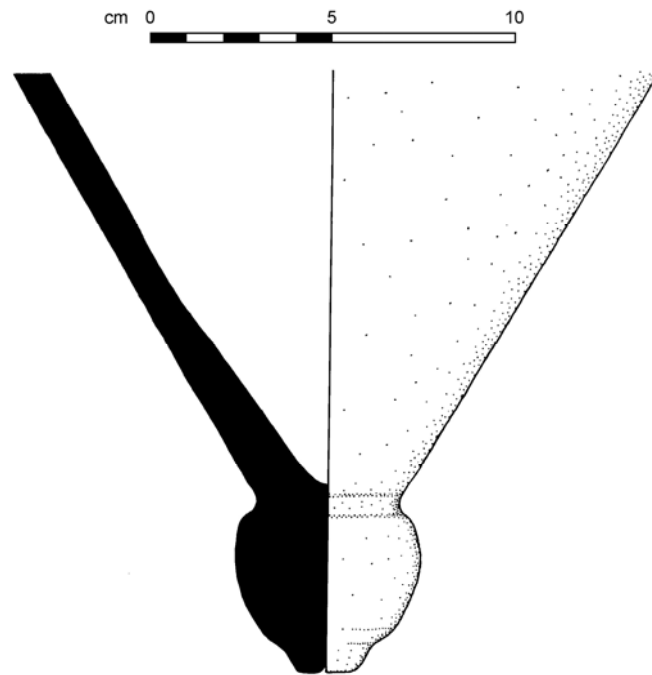


Fig. 4.26 EBS-03-051 from site AK-S2.

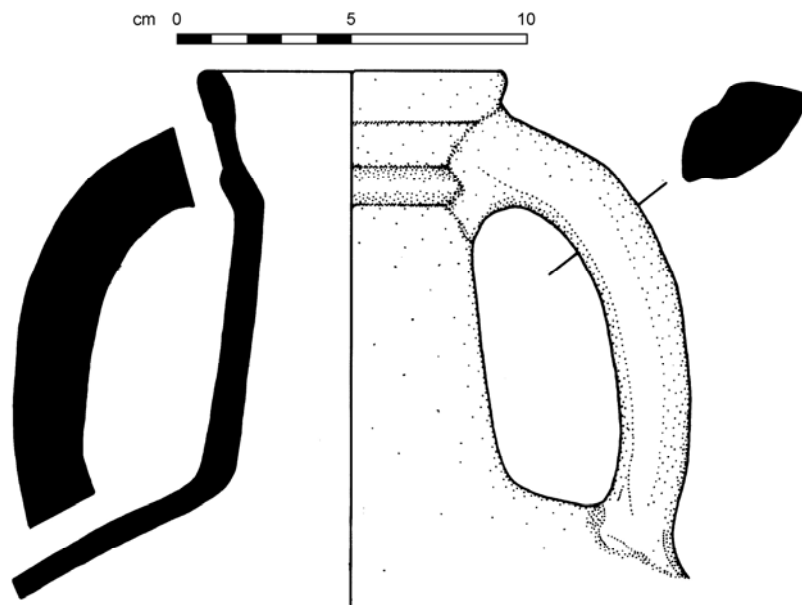


Fig. 4.27 EBS-03-052 from site AK-S2.

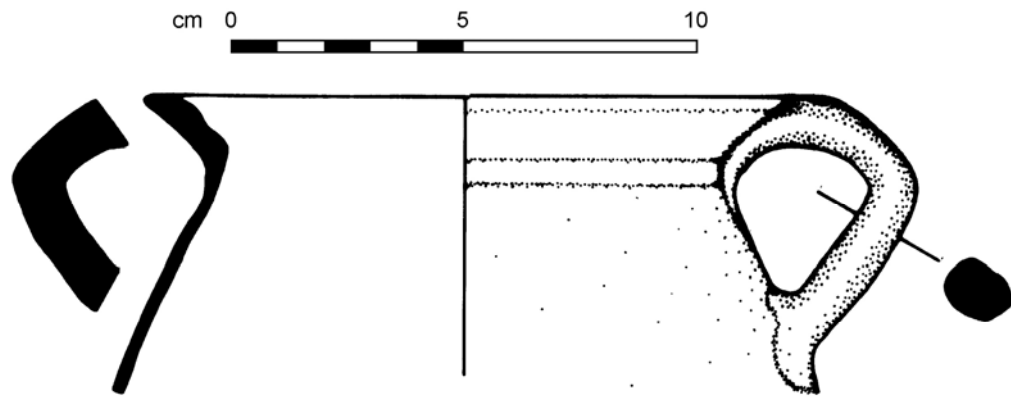


Fig. 4.28 EBS-03-058 from site AK-S2.

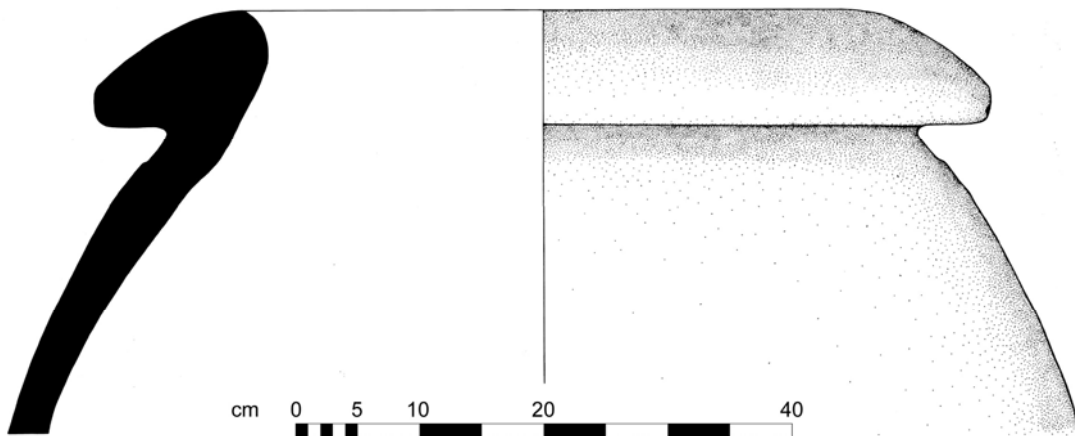


Fig. 4.29 EBS-03-059 from site AK-S2.

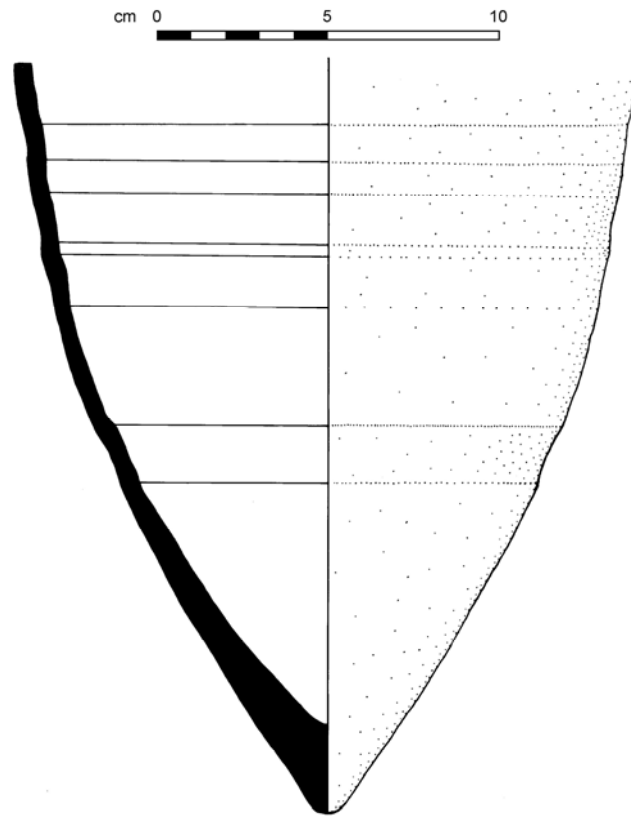


Fig. 4.30 EBS-03-061 from site AK-S2.

EBS-03-059 (Fig. 4.29)

AK-S2

H.pres. 0.343; D.pres 0.870; D.rim 0.729; H.rim 0.096; T.rim 0.117; T.body 0.030-0.042

Rim and upper body of large open rounded vessel. Heavy mushroom rim, triangular in section. Clay coarse (5YR 4/6 Yellowish Red) with dark gray inclusions.

EBS-03-061 (Fig. 4.30)

Site AK-S2

Pointed convex base, slightly thicker near base. Shallow wheel-ridging evident on interior and exterior. Clay medium (5YR 5/6 Yellowish Red) with some medium black inclusions.

EBS-03-063 (Fig. 4.31)

Site AK-S2

H.pres. 0.125; D.rim 0.133; H.rim 0.013; T.rim 0.011; T.neck 0.006; handle 0.026 x 0.026

Partial amphora handle, including part of neck and small rolled rim. Round handle rises from neck before angling down and then curving inward. Clay medium-fine (7.5YR 6/6 Reddish Yellow) with some gray inclusions.

EBS-03-065 (Fig. 4.32)

Site AK-S2

H.neck 0.139; D.rim 0.120; H.rim 0.011; T.rim 0.011; T.neck 0.007-0.008; T.shoulder 0.007; handle 0.025 x 0.048

Cylindrical amphora neck with one bifid handle and shoulder, as well as portion of slightly everted, rolled rim. Handle rises from below rim before bending down to horizontal. Attachment of neck to shoulder offset with sharp groove on exterior; shallow irregular grooves on interior of lower neck and upper shoulder, as well as one at handle-level. Exterior slightly pitted. Clay medium (2.5YR 6/4 Light Reddish Brown) with many medium dark red and light gray inclusions.

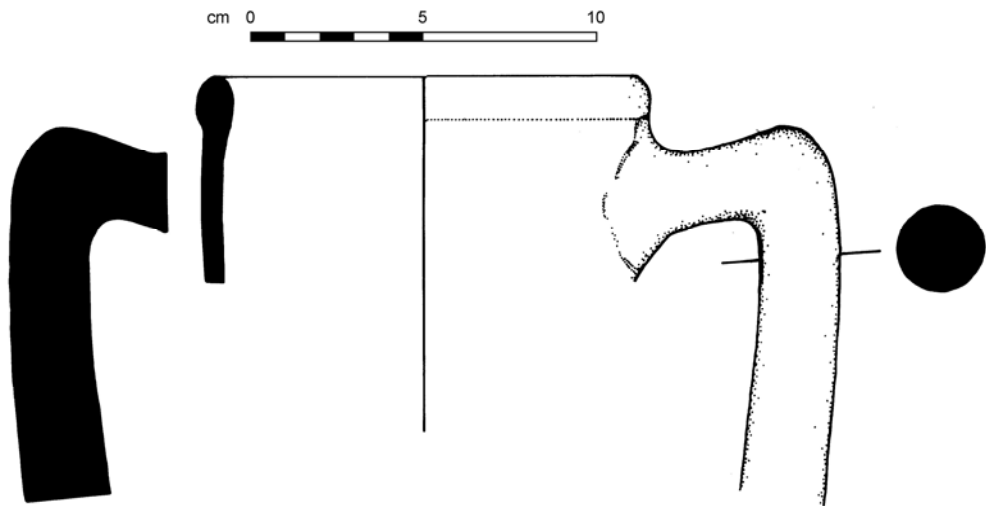


Fig. 4.31 EBS-03-063 from site AK-S2.

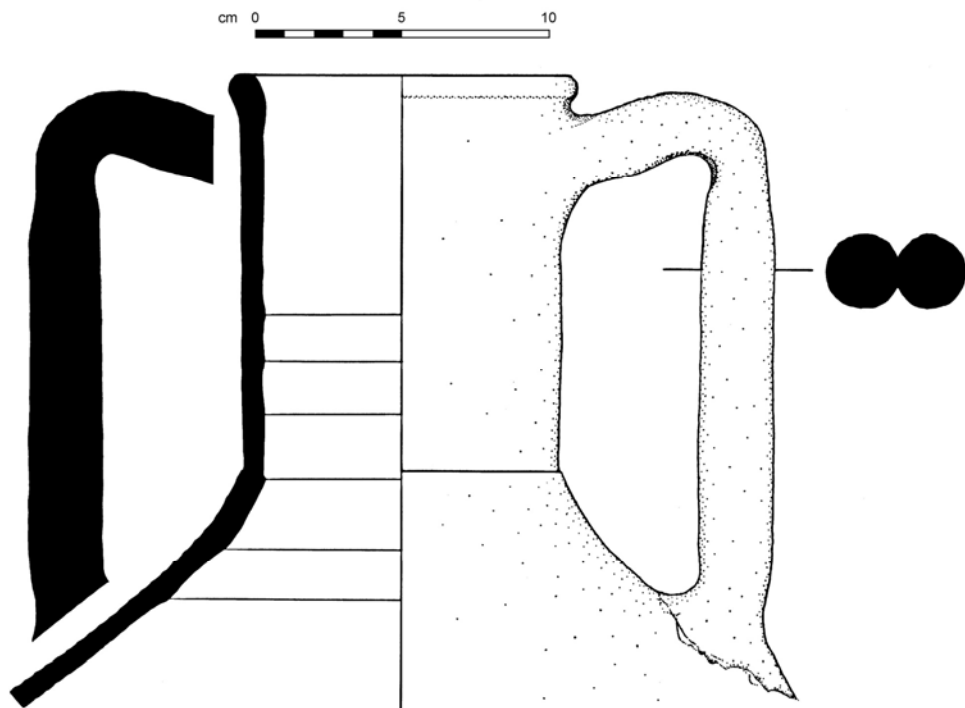


Fig. 4.32 EBS-03-065 from site AK-S2.

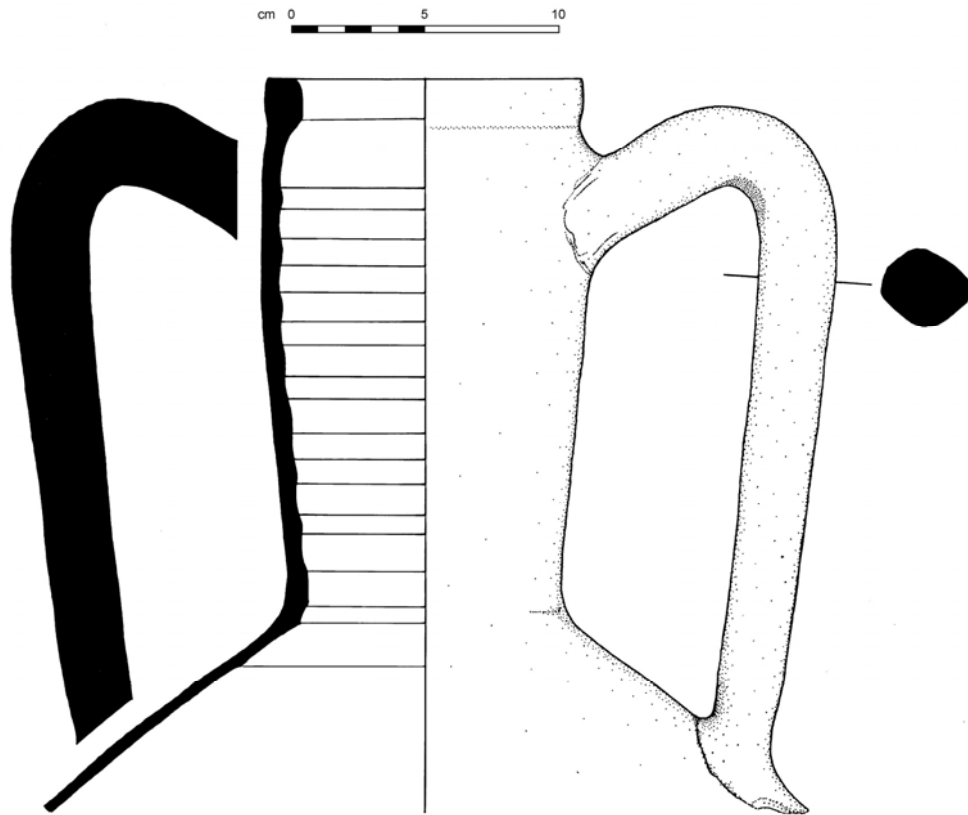


Fig. 4.33 EBS-03-066 from site AK-S2.

EBS-03-066 (Fig. 4.33)

Site AK-S2

H.neck 0.207; D.rim 0.120; H.rim 0.018; T.rim 0.015; T.neck 0.007-0.008; T.shoulder 0.004; handle 0.030 x 0.034

Tall amphora neck with part of rim, both handles and one shoulder. Neck slightly concave, with many shallow finger-grooves on interior. Rolled rim with flattened top. Handles rise from neck before arching down past vertical, falling inward to shoulder. Clay medium (5YR 5/6 Yellowish Red) with medium gray inclusions.

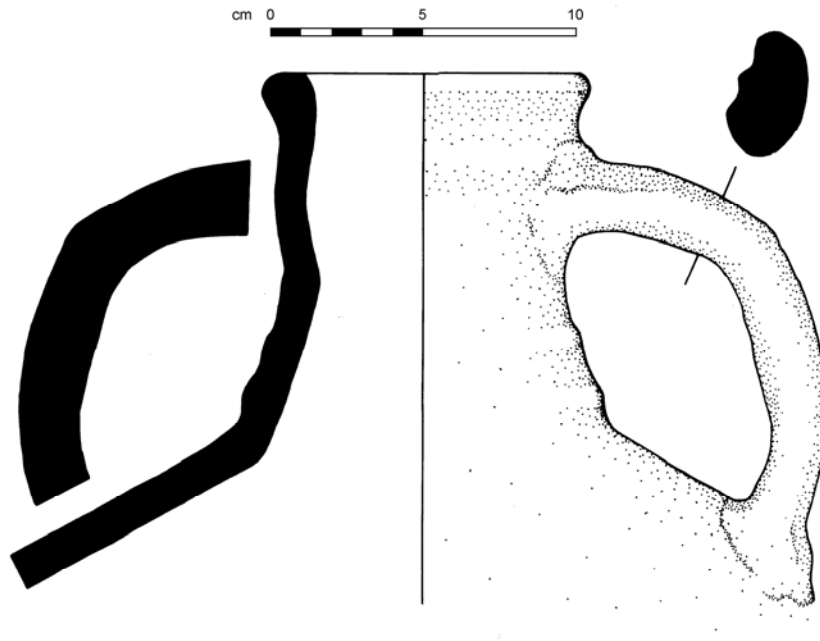


Fig. 4.34 EBS-03-067 from site AK-S3.

EBS-03-067 (Fig. 4.34)

AK-S3

H.neck 0.117; D.rim 0.109; H.rim c. 0.017; T.rim 0.016; T.neck 0.011-0.012; T.shoulder 0.012; handle 0.024 x 0.042

Amphora top with neck, one complete handle and shoulder. Lower portion of neck conical; slight bulge at level of handle attachments. Thickened rounded flaring rim. Clay medium (5YR 5/6 Yellowish Red) with varying streaks of darker and lighter reddish coloration as well as many dark gray inclusions.

EBS-03-068 (Fig. 4.35)

Site AK-S2

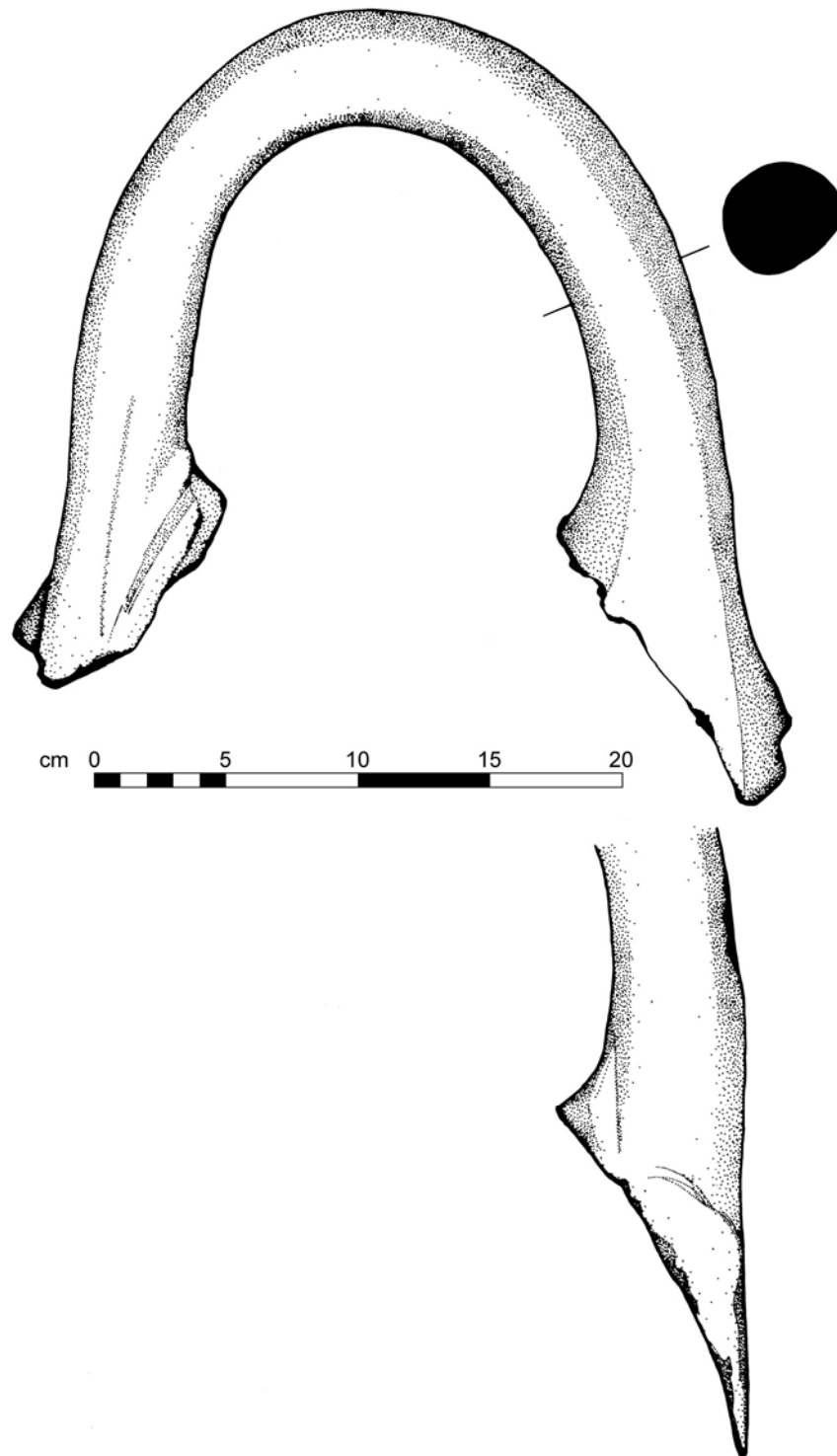


Fig. 4.35 EBS-03-068 from site AK-S2.

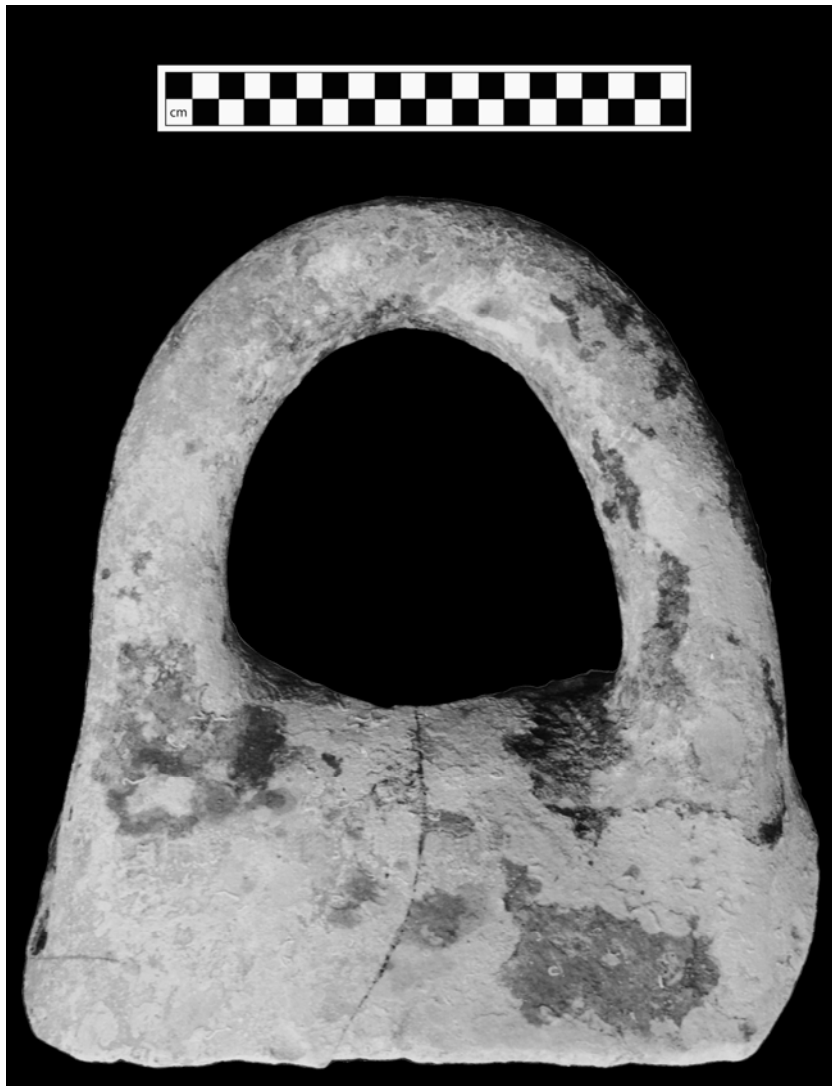


Fig. 4.36 EBS-03-069 from site AK-S2.

H.pres. 0.306; handle 0.040 x 0.046

Complete basket-handle detached cleanly from shoulder; broken upon removal, revealing internal void (D. 0.004). Attachments scored to join shoulder. Clay medium (exterior: 7.5YR 6/4 Light Brown; interior: 7.5YR 7/2 Pinkish Gray) with medium gray inclusions.

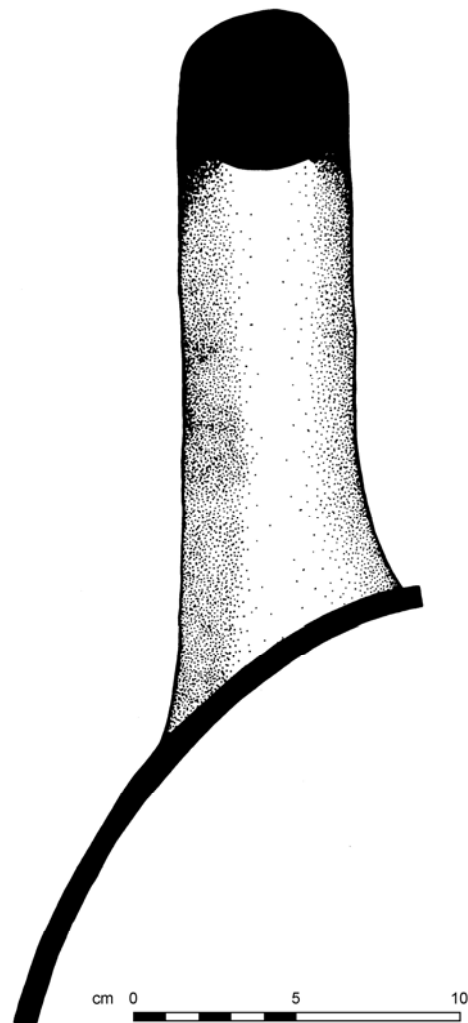


Fig. 4.37 Profile of EBS-03-069 from site AK-S2.

EBS-03-069 (Figs. 4.36-4.37)

Site AK-S2

H.pres. 0.310; T.shoulder 0.007; handle 0.054 x 0.054

Complete basket-handle with portion of well-rounded shoulder. Clay medium (7.5YR 7/4 Pink) with some brownish-red and gray inclusions.

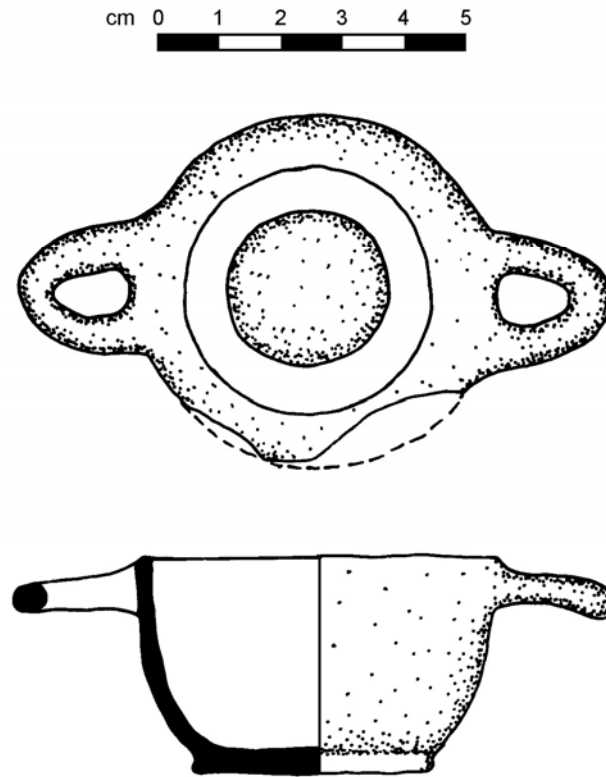


Fig. 4.38 EBS-04-004 from site AK-S4.

EBS-04-004 (Fig. 4.38)

Site AK-S4

H. 0.036; D. 0.059 (without handles); T.side 0.003; D.base 0.040; T.base 0.004; handle 0.005 x 0.006

Small two-handled cup (skyphos), nearly intact, with simple ring base. Loop handles oriented horizontally just below straight rim. Traces of black gloss over surface slip on interior and exterior. Clay very fine and consistent (7.5YR 7/6 Reddish Yellow) with darker surface/slip (7.5YR 5/8 Strong Brown) and no visible inclusions.

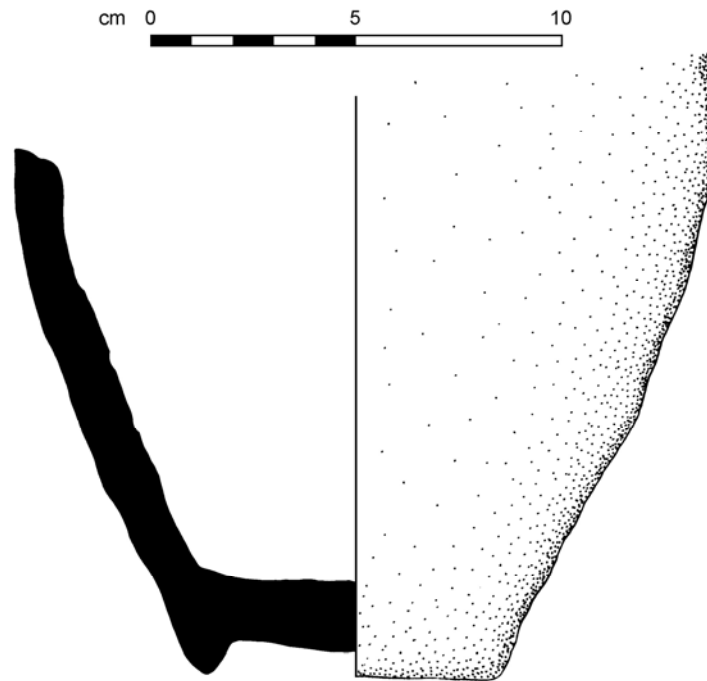


Fig. 4.39 EBS-04-006 from site AK-S3.

EBS-04-006 (Fig. 4.39)

Site AK-S3

Lower portion of vessel with ring base. Interior and exterior badly worn and pitted. Clay medium (5YR 5/6 Yellowish Red; interior surface deposit: 10YR 7/4 Very Pale Brown) with many small voids and small gray inclusions.

EBS-04-010 (Fig. 4.40)

Site AK-S4

H.pres. 0.257; D.rim 0.110; H.rim 0.007; T.rim 0.010; T.neck 0.006; handle 0.027 x 0.032

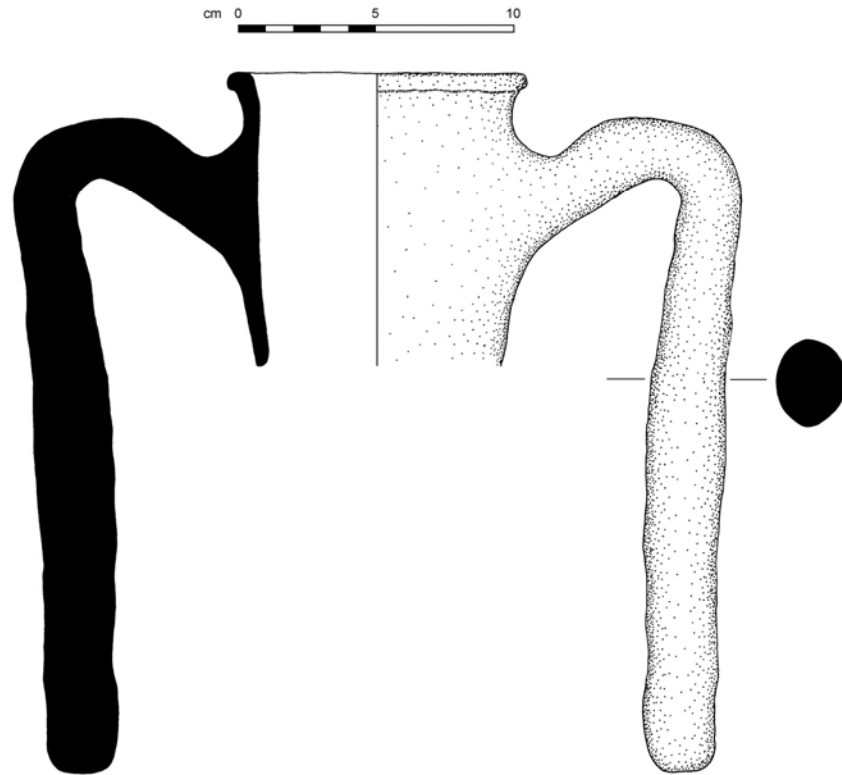


Fig. 4.40 EBS-04-010 from site AK-S4.

Amphora handle, including part of neck and flaring rolled rim. Round handle rises from neck before bending down past vertical. Some darker discoloration. Clay fine to medium-fine and consistent (7.5YR 6/4 Light Brown) with few medium-fine inclusions.

A Lead Block from Site AK-S3

The only non-ceramic raised from the survey area at Cape Zevgari is a small rectangular block of lead (EBS-03-070). Its location, heavily concreted among the amphoras at site AK-S3, suggested that it most likely came from the ships that wrecked here during late antiquity. It is pierced twice through its thickness, apparently to be



Fig. 4.41 EBS-03-070 from site AK-S3.

affixed with square nails. A large fissure in the side along its width, though apparent, is probably simply a result of the piece having been cast in several pourings. When discovered, one face was entirely encrusted and upon removal lead sludge was apparent in the cavity.

The block's few diagnostic features, primarily the two square nail-holes, along with its provenance among the wreckage, implies some function aboard a Late Antique ship. Excavation of the seventh-century shipwreck at Yassiada revealed four similar objects that are believed to be parts of the steering-oar complex based on their location among the wreckage.⁵¹⁰ Lead blocks, one of which was pierced, were also recorded underwater at Dor.⁵¹¹

⁵¹⁰ Katzev 1982, 281-3 figs. 12.10-11 ("MF 26" to "MF 29").

⁵¹¹ Kingsley and Raveh 1996, 28, fig. 27 and pl. 21 ("MM1" to "MM4").

EBS-03-070 (Fig. 4.41)

Site AK-S3

L. 0.137; W. 0.995-0.104; T. 0.022-0.028; P.(D.) 0.012, 0.016

Rectangular lead with two evenly spaced round holes through thickness. Split in side extends to holes, leaving two halves flaring.

The Cape Zevgari Area and Wrecks in Context

The masses of ceramics strewn around the tip of Zevgari and throughout the West Akrotiri Bays underscores immediately the danger posed by the area's rocks and reefs, exacerbated by predominant winds and currents. Indeed, the severity of the conditions is ever more apparent in the two modern wrecks just to the north.

To judge from their dissipated cargoes, however, the ships that sank here were probably badly broken and disturbed by strong currents. The underwater environment here is atypical of sandy Episkopi Bay in that its rocky seabed would have left wrecks unburied, susceptible to the natural degradation processes. Thus, it is highly unlikely that any of the many wrecks are in good condition. The Late Roman assemblage slightly distant from the shallows at AK-S3 probably represents the maximum coherence and preservation that can be expected in the area.

This is not to say, however, that useful information cannot be gathered from the material record here. The vessel laden with over 150 LR1 amphoras, for instance, seems to have been coasting around Akrotiri during a period of exceptionally rich maritime commerce. Its location west of the reef suggests that it may have been sailing west

before rounding the cape too closely, running over rocks and eventually sinking after some 100 m. If the 150 amphoras represent the entirety (or at least most) of the cargo, then this must have been a smaller merchant venture. The location of the scatter atop a low shelf 5-7 m deep indicates that the jars reside in their original position, less disturbed than the finds further east. The low profile of this wreck, with its amphoras wedged deep in the narrow cracks and crevices, warns that such sites can be easily missed, and certainly never would have been found through remote-sensing.

The best example of a ship caught in these conditions is the assemblage of Hellenistic Rhodian amphoras at AK-S4. The site, kindly shown to the author by A. Garrod of the Western Sovereign Base Area Archaeological Society, is right along the coast and only 3-4 m deep, perhaps even less in antiquity (Fig. 4.42). Although the waters here can be tumultuous, the wreckage was immediately within reach of the ancients, who would no doubt have salvaged what they could. Equally accessible today, modern divers have no doubt continued this tradition. Garrod reports that the number of jars here has decreased substantially even in the past 10 years since she last visited the area. She also recalls many more intact jars. Today, the site is suspiciously denuded of nearly all removable ceramics. Each of the larger pieces remaining in the group is thoroughly concreted, and only the smallest sherds are scattered in the gravel seabed. It would appear, then, that the original cargo must have been much greater.

At the same time, it seems likely that at least some of the debris, especially around Zevgari reef, represents dumped, rather than wrecked, cargo. Vessels caught in the shallows and threatened with total destruction may have jettisoned amphoras to



Fig. 4.42 North shore of Cape Zevgari at site AK-S4 looking east.

lighten their load. Certain small groups of amphoras that probably do not represent entire cargos fit this possible scenario well (e.g. the handful of basket-handles), especially since it is unlikely that the ancients would have ventured to recover jars from such tumultuous waters.

The most important function of the material record here, however, must be as a gauge for cultural contacts and relative intensity of various periods of maritime commerce. In this respect, piles of broken necks, handles and concreted sherds speak clearly to elevated levels of seaborne commerce in the Late Hellenistic and Early Roman

periods and a true flourish during the Late Roman centuries. The complete lack of Bronze Age material may be taken as an indication that mariners preferred the passage through Akrotiri, although the stone anchors from Dreamer's Bay (see Chapter III) cast some suspicion on this presumption.

It should be noted, however, that among thick masses of smaller, often amorphous sherds like those on the reefs at Zevgari, there is a tendency toward over-representation (or rather over-*recording*) of the more immediately recognizable and resilient features, including sturdy basket-handles and distinctive bifid handles. At the same time, some of the shallowest material around the West Akrotiri Bays may in fact be debris dumped from shore. Although the survey was not comprehensive in searching methodically every part of the cape, extensive work in the most promising areas should nonetheless provide a relatively reliable index of ancient shipping here.

The concentration of ceramics in the West Akrotiri Bays presents a somewhat different view of a commerce that is clearly shorter-lived. Setting aside for a moment the sporadic mushroom-rim, Sub-Koan, late Rhodian and Middle Byzantine amphoras, only a few traces here hint at pre- and post-Late Roman trade. As was the case at Dreamer's Bay, each inlet is dominated by LR1 amphoras in various forms. An important group of fragmentary late fourth- or fifth-century jars (Kellia 169) from AK-N3 sets the lower boundary, while the many classic LR1 tops throughout AK-N1, AK-N2 and AK-N3 seem to have been the last major deposits here. Although the material record at Cape Zevgari likewise demonstrated increased levels of Late Roman trade, the disparity here is still greater.

The proximity of these inlets to the contemporary Late Antique site of *Katalymata ton Plakoton*, slightly inland on Akrotiri, raises the possibility that the settlement may have been involved in some scale of trade. Although unexcavated *Katalymata* is largely ignored, the impressive mosaic floor uncovered during rescue work speaks to modest affluence and a town of some stature. Could these inlets have functioned as a makeshift anchorage for loading and unloading goods for *Katalymata*'s population? While the shores of AK-N1 through AK-N3 are faced with low, weathered cliffs, a decent passage does provide access to central Akrotiri from the coast just north at AK-N6. A single dive undertaken in 2004 revealed a near total dearth of cultural material, hardly consonant with what would be expected of an inlet offering no less protection than AK-N1 further south.

This is not to say that the three West Akrotiri Bays that do contain ceramics are very successful anchorages. They lie exposed to nearly every wind and wave. In fact, their primary redeeming quality is their greater accessibility from *Katalymata*, which lies approximately 2.5 km from the nearest obvious choice for a more sheltered port at *Vounari tou Kambiou*. In truth, however, this may have been enough to warrant their occasional use. Although the inlets are at present only marginally separated by submerged rock shelves, an adjustment for the likely subsidence over the past millennium and a half shows that these would have been more distinct bays in antiquity. In search of more direct evidence of anchoring here, a brief sweep with a metal detector around several ceramic assemblages revealed no anchors of metal. At the same time,

however, the absence of ceramics in AK-N6 implies preferential deposition in these three bays, which once again reiterates the possibility of an anchorage.

Lacking the tell-tale artifacts and layout of a typical anchorage, it seems best, at present, to presume that at least a portion of the material in the West Akrotiri Bays arrived much the same way as that further south. Considering the winds, currents and layout of these inlets set back from the headland, the most likely ships to have come to grief here were those merchantmen that failed to sail far enough into the wind after departing Kourion.

CHAPTER V

AVDIMOU BAY

Overview

The small inlet of Avdimou Bay, approximately 11 km west of Kourion, was selected for exploration during the 2004 season (Figs. 1.2 and 5.1). The cove would have offered ancient mariners some degree of refuge from the prominent westerly winds, though it does lie completely exposed to the southerlies that characterize the winter months. Still today, several of the few remaining local fishermen tie up their modest boats, and from time to time pleasure craft seek refuge in these waters overnight. Indeed, this is one of the few decent natural anchorages with sandy landings along a stretch of coastline marked primarily by inhospitable weathered cliffs. It would have been a suitable stop for sailors riding the westerly winds and longshore currents from Paphos to Kourion.

The survey team noted substantial concentrations of pottery onshore at the western edge of the bay (Fig. 5.2). Here, the weathered promontory that shelters the cove was littered with mostly amorphous sherds. However, a few diagnostic examples retain traces of dull black glaze, which suggests that the unexcavated site may have been utilized as early as the Hellenistic period. In his analysis of the Roman harbors of Cyprus, Leonard locates in the area of Avdimou Bay the problematic “Treta” mentioned in the first-century B.C. *Geography* of Strabo (14.6.3).⁵¹² If so, this western promontory

⁵¹² Leonard 1995b, 233 fig. 5.



Fig. 5.1 Avdimou Bay looking east.

may have been involved with the ancient trade of Treta, perhaps functioning as a watch tower or commercial outpost for a settlement just inland. Leonard also relates the presence of later carob stores onshore,⁵¹³ which were likely involved in the exportation of this important agricultural commodity into modern times.

During historical times, Avdimou Bay witnessed the invasion of the Mameluke army. In A.D. 1426, a force of 150 ships and 3000 men landed here and ultimately

⁵¹³ Leonard 1995b, 235 fig. 7.

Image removed due to privacy concerns

Fig. 5.2 Plan of Avdimou Bay with stone anchors and pottery site.

brought the island into the Muslim domain.⁵¹⁴ A small shrine onshore marks the memory of the first Mameluke martyr from this campaign (Fig. 5.3). The area in general, including the town of Avdimou 4 km inland, remained a predominantly Turkish Cypriot community well into the 20th century.

Aside from the bay's obvious geographic advantage and historical potential, the presence of a long wall nearly perpendicular to shore further added to the site's likelihood of functioning as an ancient anchorage. Since the westernmost portion of the

⁵¹⁴ Swiny 1982b, 161.



Fig. 5.3 Shrine at Avdimou Bay.

bay remained the best sheltered, the team carried out dive lines on a north-south axis beginning at this western edge. Divers were spaced to maximize coverage area while remaining in visual contact, pivoting once the designated distance from shore was reached. At Avdimou, this meant swimming slightly beyond the southernmost edge of

the weathered western promontory discussed above. Since this area, like much of the rest of the Episkopi Bay and Akrotiri region, is shallow and sandy, with few notable features, lines proceeded quickly toward the bay's center.

Just offshore from a rocky outcrop that separates the shoreline into two sandy beaches, the seabed is characterized by scattered rocks extending for over 100 m from shore (Fig. 5.4). Moving east, bedrock is occasionally exposed in shallower areas, suggesting that this area has not received enough permanent longshore deposition to bury and obscure completely any archaeological material. Among the rocks, the team was able to confirm this low sand accumulation rate with the discovery of exposed stone anchors. Eight anchors of various types were documented in the area, with another lying further east and closer to shore. These provide the best archaeological evidence for early utilization of this anchorage.

Stone Anchors

Divers recorded a total of nine pierced stones in three distinct concentrations near the center of Avdimou Bay (Fig. 5.2). As with those from Dreamer's Bay, the anchors were marked with a handheld GPS unit and photographed from all angles in situ. A series of measurements were taken and a sketch made underwater which were later checked against photographs to produce 1:4 scale drawings. Only one anchor was raised (EBS-A01), which was then registered as EBS-04-005 (Fig. 5.5). The team left the remaining finds on the seafloor, re-concealing them and their features in hopes that they will not be disturbed by the area's occasional recreational divers and snorkelers.



Fig. 5.4 Avdimou Bay looking west.

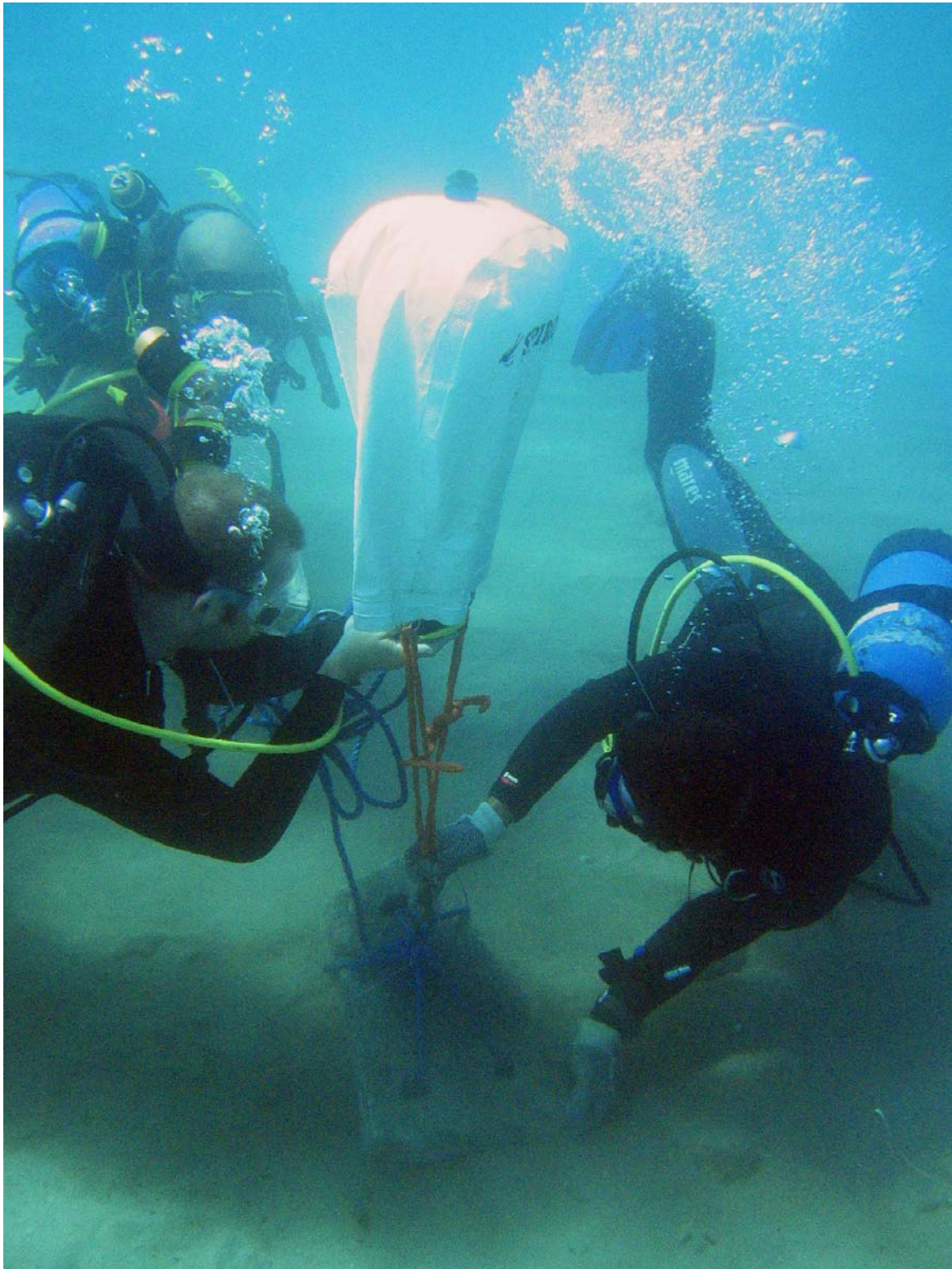


Fig. 5.5 Raising A01 (EBS-04-005) from Avdimou Bay.

Unfortunately, no weights or stone samples were taken from the anchors left underwater. However, detailed measurements are given in the catalog below and future reconstructions from drawings should allow approximations of their weights. No anchors of metal were apparent in the search area.

Catalog of Stone Anchors

Drawings of the anchors from Avdimou Bay are given on pages 197, 203, and 208. For convenience, dimensions for the anchors are compiled below in Table 5.1.

Tbl. 5.1 Avdimou Bay anchor dimensions (in m).

Anchor	Figure	Height	Width	Thickness	Piercing(s)
					Height x Width
A01	Fig. 5.6	0.571	0.307	0.081	0.030 x 0.077 0.025 x 0.049 0.026 x 0.038
A02	Fig. 5.6	0.310	0.398	0.078	0.033 x 0.028
A03	Fig. 5.6	0.345	0.404	0.164	0.051 x 0.050
A04	Fig. 5.6	0.489	0.549	0.115	0.117 x 0.061
A05	Fig. 5.7	0.607	0.444	0.106	0.079 x 0.076
A06	Fig. 5.7	0.482	0.466	0.102	0.046 x 0.040 0.041 x 0.040 0.037 x 0.036
A07	Fig. 5.7	0.504	0.394	0.130	0.034 x 0.035
A08	Fig. 5.6	0.461	0.440	0.115	(n.a.) x 0.084 0.091 x 0.086 0.078 x 0.086
A09	Fig. 5.8	0.606	0.781	0.218	0.108 x 0.107

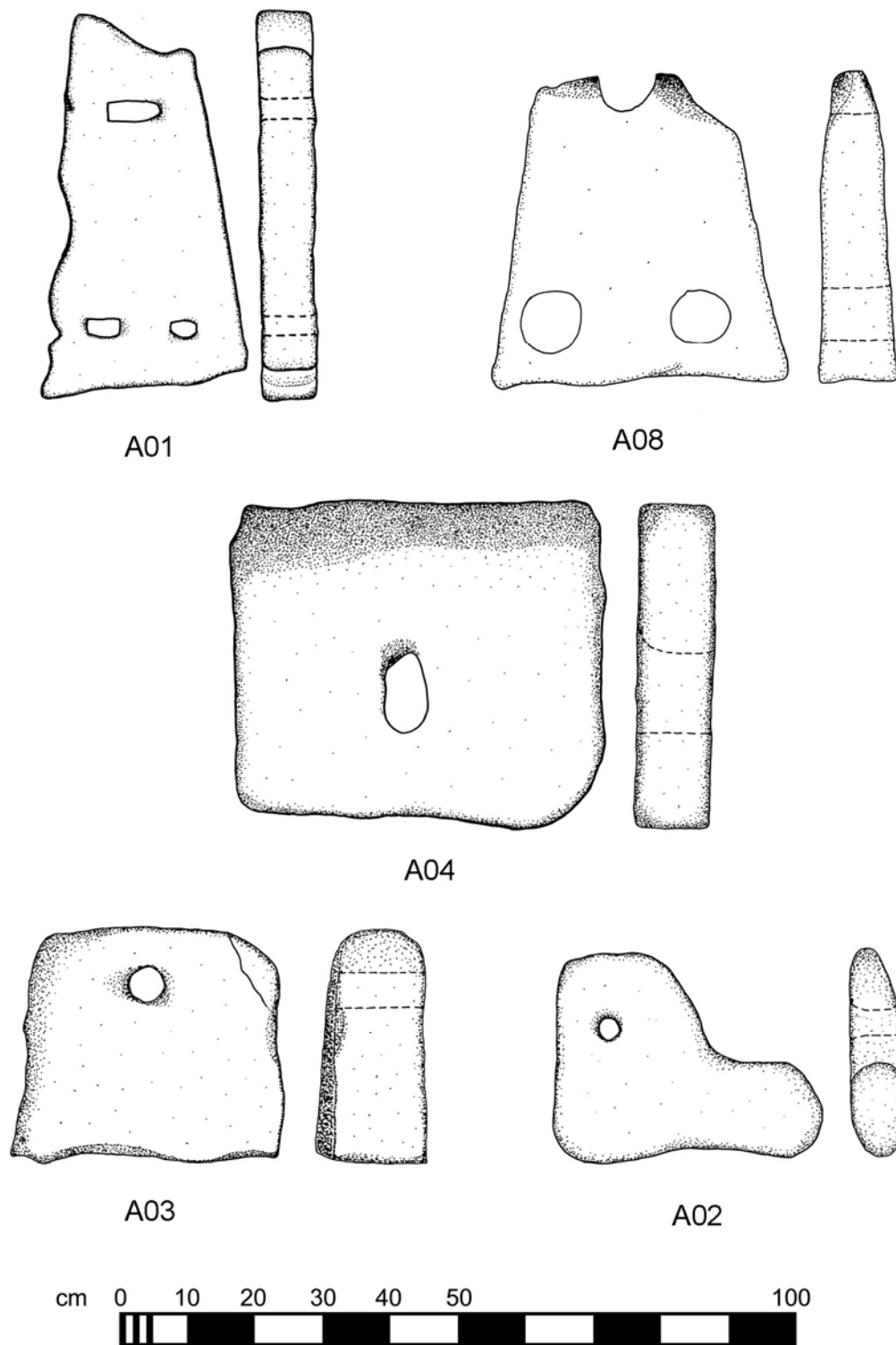


Fig. 5.6 Stone anchor assemblage 1 (A01-A04, A08) from Avdimou Bay.

EBS-A01 (EBS-04-005; Fig. 5.6)

H. 0.571; W. 0.307; T. 0.081; P. 0.030 x 0.077, 0.025 x 0.049, 0.026 x 0.038

Narrow composite anchor of trapezoidal shape; straight sides, one of which is uneven; consistent thickness throughout; apex and base not flat; three rectangular holes evenly cut with rounded edges; holes on reverse more rounded than obverse; diagonal ridge across reverse face. Sandstone.

The thin, attenuated shape of A01 belongs to the “Byzantine-Arab” category identified early on by H. Frost, who cites literary evidence for the large scale manufacture of anchors at Ancyra in Egypt.⁵¹⁵ In fact, A01 has its best parallel at Alexandria, where work during the late 1990s brought to light a large concentration of 32 pierced stones, including a number of typologically similar composite anchors. One example has the same tall, flat trapezoidal shape and rectangular holes as A01, and is approximately the same size.⁵¹⁶ Although no absolute date can be ascribed, it seems reasonable to assert that the Alexandrian examples derive from a period after the foundation of the city and its harbor in the early Hellenistic era.

At Agde in France, sport divers have deposited quantities of stone and other anchors in the local museum, including several small triangular and trapezoidal anchors bearing inscribed marks that include a pentagram as well as the Greek letters “π” (*pi*) and perhaps also “Δ” (*delta*).⁵¹⁷ H. Frost identifies these signs as local masons’ marks from the 11th to 13th century.⁵¹⁸ Similarly shaped anchors have also been recovered in

⁵¹⁵ Frost 1963b, 49.

⁵¹⁶ Tzalas 2002, 796 fig. 2.f.

⁵¹⁷ Fonquerle 1971, 213 pl. 1 and 214.

⁵¹⁸ Frost 1973, 402-3.

shallow waters near Marseilles.⁵¹⁹

Even later examples come from the Red Sea coast of Israel. Two anchors from the Na'ama Wreck of the late 13th or early 14th century A.D. demonstrate the same fine proportions, though they are slightly larger than Avdimou A01 and have round holes.⁵²⁰ Composite anchors in medieval contexts are also common along the Mediterranean coast of Israel⁵²¹ and Turkey.⁵²² Small rectangular, trapezoidal and triangular anchors at Athlit, cited by McCaslin as Late Bronze Age in date, should more likely be associated with the Crusader ruins nearby.⁵²³ Similar but smaller composite anchors on Cyprus at Apostolos Andreas Bay may be line weights,⁵²⁴ as may those from Maniki and Lara Limnionas, recovered in an anchorage littered with Hellenistic through late Byzantine pottery.⁵²⁵ Small composite anchors, including two-holed varieties, are common in the Black Sea along the coast of Bulgaria.⁵²⁶ Finally, it should be noted that a number of stone anchors of this general form have been found in India in contexts as early as 2300 B.C.,⁵²⁷ and are known to have been manufactured there into the 20th century A.D.⁵²⁸

Given the strong associations of these anchors with vessels of the post-antique period, A01 may hint at use of the Avdimou anchorage during this era.

⁵¹⁹ Frost 1963b, 4 figs. 24 and 25.

⁵²⁰ Raban 1990, 302 fig. 3; 2000, 262 and 264 fig. 4 nos. 12 a and b.

⁵²¹ Raban 2000; Grossmann and Kingsley 1996.

⁵²² Evrin et al. 2002, 257 figs. 2-3.

⁵²³ McCaslin 1980, 41 fig. 25 nos. 23 and 29; Kingsley and Raveh 1996, 30.

⁵²⁴ Frost 1973, 400 fig. 1.E and 403.

⁵²⁵ Giangrande et al. 1987, 192 and 197 fig. 7 nos. 4, 10 and 11; Howitt-Marshall 2003; thanks to D. Howitt-Marshall for information on the stone anchors from his recent surveys at Maniki and elsewhere along the island's western coast.

⁵²⁶ Dimitrov 1976, 82 fig. 2; 1979, 79 fig. 9.

⁵²⁷ Rao 1985, 565.

⁵²⁸ Gaur et al. 2001, 104-7; Rao et al. 1992; Tripathi and Gaur 1997; Souter 1998.

EBS-A02 (Fig. 5.6)

H. 0.310; W. 0.398; T. 0.078; P. 0.033 x 0.028

Small irregular stone weight with “L” shape; all edges rounded and well worn; single small biconical piercing at one corner.

The small size of this stone argues that it never could have functioned effectively as an anchor acting alone. Rather, it more likely served as a hawser or net weight for fishing lines, a practice that has continued into modern times.⁵²⁹ Such makeshift and generally shapeless weights are common throughout the eastern Mediterranean, and defy dating or other categorization without secure contexts.⁵³⁰ Interestingly, simple one-hole stone anchors of various shapes were used in Roman times on inland bodies of water, such as the Dead Sea.⁵³¹ As to be expected, atypical weights pierced by a single hole are ubiquitous along the coasts of Cyprus.⁵³²

EBS-A03 (Fig. 5.6)

H. 0.345; W. 0.404; T. 0.164; P. 0.051 x 0.050

Squat rectangular anchor; very thick; edges at apex rounded; edges at base sharp; large crack on upper right corner of obverse face; single tubular piercing at top center.

The short, thick proportions of this anchor have their best parallel at Dor, where S. Wachsmann and Y. Kahanov found one such specimen resting on sherds from the

⁵²⁹ Wachsmann 1998, 275 fig. 12.35 and 286-8.

⁵³⁰ Frost 2001, 201; Green 1973, 175; Kingsley and Raveh 1996, 31; 1994b; Grossmann 2001, 109-10 figs. 88-9; Evrin et al. 2002, 257 figs. 3.F and 5.D; Galili et al. 2002, 183-4 and 195-6.

⁵³¹ Hadas 1992, 1993; Nissenbaum et al. 1990.

⁵³² Giangrande et al. 1987, 193 fig. 7; Green 1973, 172 figs. 31A and 31B; Engvig and Åström 1975, fig. 34, Engvig and Beichmann 1984, fig. 15; McCaslin 1978, figs. 299 and 300.

Persian period (586-332 B.C.), which they thus most likely postdate.⁵³³ Elsewhere, a parallel has been found at Cape Greco on the east coast of Cyprus.⁵³⁴ At Maroni, on the island's south coast, underwater surveys yielded a number of anchors, including one similar to A03, in and around a concentration dominated by LC I pottery of the 16th century.⁵³⁵ Again, the simple shape and lack of diagnostic features prevent any secure dating.

EBS-A04 (Fig. 5.6)

H. 0.489; W. 0.549; T. 0.115; P. 0.117 x 0.061

Wide rectangular stone block; edges and corners worn, especially at edge of apex and obverse face; large oblong piercing just off center; top edge of piercing at obverse face worn, possibly from rope.

This simple rectangular shape with a single central hole is common along the coasts of Cyprus and unlikely to be typologically significant. Several thick blocks with makeshift piercings were found at Maroni, which may date as early as the 17th century B.C.⁵³⁶ Similar blocks are recorded by D. McCaslin at Cape Kiti⁵³⁷ and Hala Sultan Tekke,⁵³⁸ the latter datable to the Late Bronze Age. One example from the Museum at Adge is similarly shaped, with a single central hole showing wear marks apparently from

⁵³³ Wachsmann and Kahanov 1997, 8 fig. 6.

⁵³⁴ McCaslin 1980, 26 fig. 12 "CG-2."

⁵³⁵ Manning et al. 2002, 120 fig. 15 "TSBS.023."

⁵³⁶ Manning et al. 2002, 117 fig. 11 "TSBS.027," "TSBS.029" and "TSBS.009."

⁵³⁷ McCaslin 1978, 119 fig. 215 I "S38a."

⁵³⁸ McCaslin 1980, 23 fig. 10 "N4000."

a rope tied around a longer, rather than shorter, side.⁵³⁹ No parallels, however, have been found for the slim oblong hole of A04. The wear marks at the upper edge of the hole on the obverse may suggest continuous contact with rope under tension pulling from inshore of the stone. This pattern raises the possibility that this heavy specimen may be a permanent mooring stone.⁵⁴⁰ Unfortunately, the stone's weight prohibited inspection of the reverse.

Another large block with the remains of a rectangular "L"-shaped hole in the upper corner was located in the vicinity. Although the hole was partially filled by encrustation, it is likely another permanent mooring stone.

EBS-A05 (Fig. 5.7)

H. 0.607; W. 0.444; T. 0.106; P. 0.079 x 0.076

Tall, rectangular anchor with shallow domed apex; sides nearly straight; obverse face convex across width; biconical diamond shaped hole at center near top.

The greater care taken in carving this evenly shaped anchor allows closer parallels to be drawn. Two anchors lining a 15th- or 14th-century dromos at Ugarit are larger, but have the same general proportions.⁵⁴¹ In comparing these to Late Bronze Age parallels at Kition, Frost describes their "family likenesses to Cypriot anchors, but

⁵³⁹ Fonquerle 1971, 208 fig. 3 and 213 pl. 1 no. 14.

⁵⁴⁰ I am indebted to J. Daniel for his careful observations here.

⁵⁴¹ Frost 1969b, 244-5 figs. 27 and 28; 1991, 382-3 and 401 pl. VII 22 and 22 a; McCaslin 1980, 46 fig. 28.

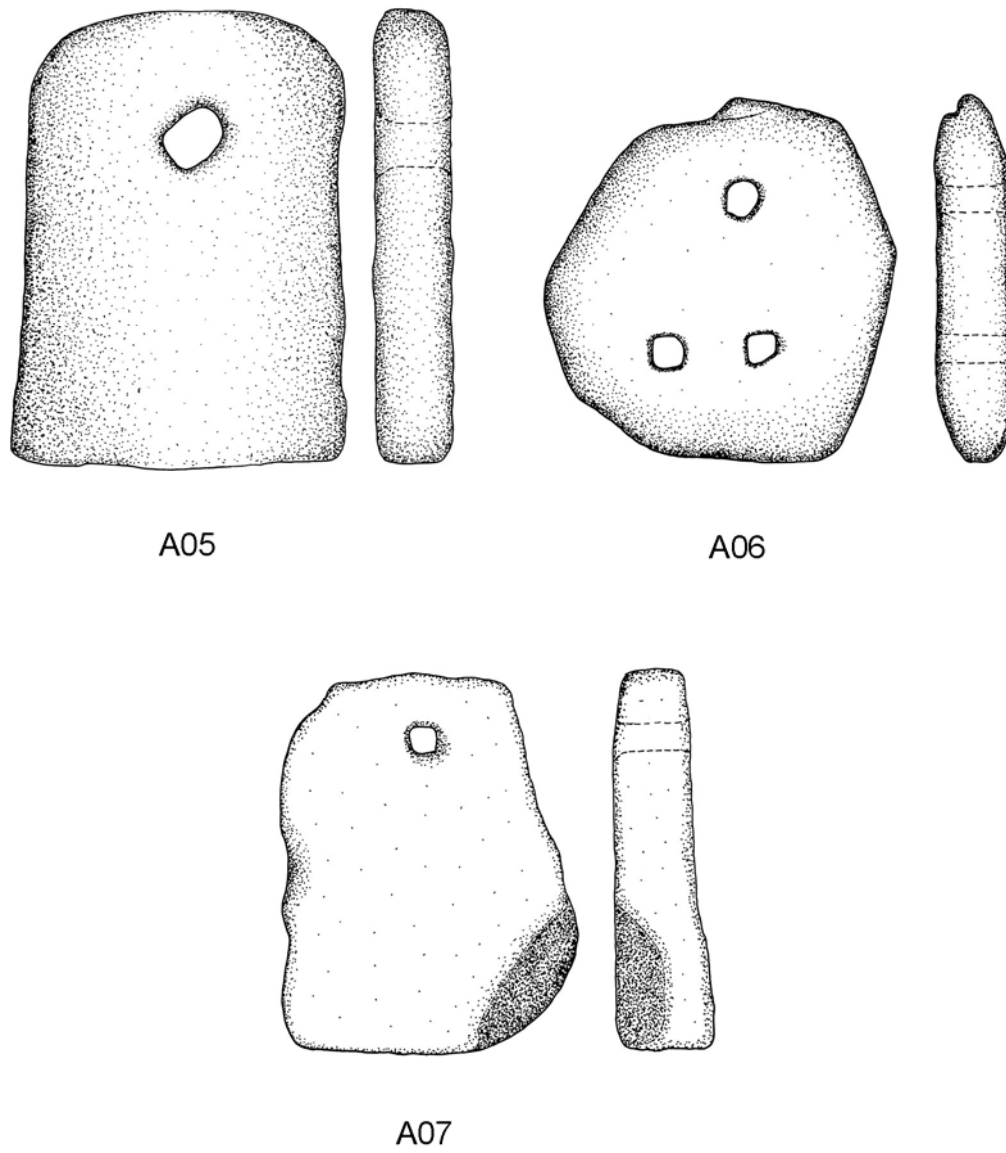


Fig. 5.7 Stone anchor assemblage 2 (A05-A07) from Avdimou Bay.

without any exact match.”⁵⁴² Similar anchors have been found in the sea off Israel, including a large example inscribed with a double axe of likely Middle Bronze Age Minoan inspiration.⁵⁴³ Wachsmann and Raveh draw a comparison between an anchor from Dor and the pair from Ugarit.⁵⁴⁴ On Cyprus, an example with a higher domed apex was recorded at Kition Temple 1, dated to near the end of the Late Bronze Age,⁵⁴⁵ and a generally similar, but undated anchor was recorded underwater at Maniki.⁵⁴⁶ With no context and so few diagnostic features, however, it is impossible to be sure whether Avdimou A05 shares a similar date.

EBS-A06 (Fig. 5.7)

H. 0.482; W. 0.466; T. 0.102; P. 0.046 x 0.040, 0.041 x 0.040, 0.037 x 0.036

Irregular round composite anchor; sides, apex and base worn and not flat; three generally squared tubular holes of same size; placement of holes off center due to irregular, uneven shape.

The lack of a standardized shape here again prevents any substantive identification, though thin composite anchors are often indicative of a late, perhaps medieval, date, as with A01 and A08 (see also Dreamer’s Bay anchors A11 and A15). Makeshift anchors of this type are likely to be found anywhere smaller boats operated, as at Cape Andreas⁵⁴⁷ and possibly also Kioni, off the Akamas peninsula in the northwest

⁵⁴² Frost 1991, 382.

⁵⁴³ Frost 1991, 382-3 and 401 pl. VII 22 d; Galili and Raveh 1988, 45-6.

⁵⁴⁴ Wachsmann and Raveh 1980, 50; republished by Kingsley and Raveh 1996, 32, 34, fig. 28 and pl. 30.

⁵⁴⁵ Frost 1985, 305 and 307 fig. 9.

⁵⁴⁶ Giangrande et al. 1987, 193 fig. 7 (“Maniki 1”?).

⁵⁴⁷ Green 1973, 172 fig. 31A no. 020.

of the island.⁵⁴⁸ Outside Cyprus, rounded examples can be found off the Cilician,⁵⁴⁹ Israeli⁵⁵⁰ and Bulgarian⁵⁵¹ coasts, and as far east as India.⁵⁵²

EBS-A07 (Fig. 5.7)

H. 0.504; W. 0.394; T. 0.130; P. 0.034 x 0.035

Generally trapezoidal anchor with uneven sides, apex and base; one side nearly vertical, joining base at angle; other side falls outward, rounding to base; lower obverse face at rounded corner badly worn; single small square hole at center top.

The lack of diagnostic attributes makes identification of this anchor impossible. The most distinctive feature on this large flat anchor, the small square hole, is obviously common. Examples come from Cape Andreas⁵⁵³ and Maroni⁵⁵⁴ on Cyprus. Irregularly shaped stones of varying thicknesses with single small square piercings are identified as net weights at Dor.⁵⁵⁵

EBS-A08 (Fig. 5.6)

H.pres. 0.461; W. 0.440; T. 0.115; P. (n/a) x 0.084, 0.091 x 0.086, 0.078 x 0.086

Composite anchor broken approximately at middle of worn hawser hole; originally trapezoidal or possibly triangular; sides and base straight and flat; large tubular holes.

⁵⁴⁸ Leonard 1995a, 139 fig. 8

⁵⁴⁹ Evrin et al. 2002, 257 fig. 3 C.

⁵⁵⁰ Kingsley and Raveh 1996, 40-1 and fig. 32 "AN 109."

⁵⁵¹ Dimitrov 1979, 79 fig. 9.

⁵⁵² Gaur et al. 2001, 105 fig. 20 no. 18.

⁵⁵³ Green 1973, 172 fig. 31A no. 025.

⁵⁵⁴ Manning et al. 2002, 116 fig. 10 "MT.147."

⁵⁵⁵ Kingsley and Raveh 1996, 40, fig. 31 and pl. 38 "AN 95," "AN 96" and "AN 91."

Like A01, this small composite anchor is similar to Frost's "Byzantine-Arab" type, and may be late.⁵⁵⁶ Anchors with similar proportions, well-cut shape and large round holes are known from Roman contexts at Alexandria, though they exhibit a lateral hawser piercing.⁵⁵⁷ Another late anchor from Alexandria shows the same triangular shape and large holes.⁵⁵⁸ A01 bears a strong resemblance to even later, medieval anchors from Apollonia⁵⁵⁹ and Athlit.⁵⁶⁰ AN 78 from Dor may share a similar date.⁵⁶¹ The round holes and angled sides of A08 are reminiscent of the examples noted above from the late-13th-or early-14th-century Na'ama Wreck on the Red Sea.⁵⁶² Further abroad, it is worth noting again that similarly thin triangular composite anchors are known from India.⁵⁶³ A badly worn anchor recovered from the Cilician coast of Turkey shows the same large round holes, but is more rectangular in shape.⁵⁶⁴ Two small and generally similar examples from the Bodrum Museum of Underwater Archaeology probably came from the west coast of Anatolia.⁵⁶⁵

Further abroad at Agde in France, a nearly identical anchor bears the mason's mark " π " (*pi*),⁵⁶⁶ for which H. Frost ascribes a date from the 11th to the 13th century A.D.⁵⁶⁷ Similarly shaped anchors, though with square holes, have also been recovered in

⁵⁵⁶ Frost 1963b, 49-50.

⁵⁵⁷ Nibbi 1991, 187 fig. 3 and 192.

⁵⁵⁸ Tzalas 2002, 795 fig. 2a.

⁵⁵⁹ Grossmann and Kingsley 1996, 51 figs. 2 and 3; Grossmann 2001, 110 fig. 89 and 111 fig. 90 no. 21.

⁵⁶⁰ Raban 2000, 267 fig. 9.

⁵⁶¹ Kingsley and Raveh 1996, 33, 39, fig. 31 and pl. 31.

⁵⁶² Raban 1990, 302 fig. 3.

⁵⁶³ Gaur et al. 2001, 106.

⁵⁶⁴ Evrin et al. 2002, 257 fig. 3a and 258 fig. 5a.

⁵⁶⁵ Evrin et al. 2002, 257 fig. 4 nos. 7 and 13.

⁵⁶⁶ Fonquerle 1971, 211 fig. 16.

⁵⁶⁷ Frost 1973, 402-3.

shallow waters near Marseilles.⁵⁶⁸ It should be noted, however, that this type is not unique to the medieval period. Triangular anchors with prominent round piercings have been found in Bronze Age contexts at Ugarit.⁵⁶⁹

Unfortunately, no good parallels from Cyprus have been found in dated contexts. CG-1 from Cape Greco and a recently recorded parallel from Maniki have similar piercings, but their shapes are generally more rectangular than A08.⁵⁷⁰

EBS-A09 (Fig. 5.8)

H. 0.606; W. 0.781; T. 0.218; P. 0.108 x 0.107

Large irregular weight; generally wide and oblong, with rounded edges and indentation on apex; deep groove down center of sides, separating into two uneven halves; single round tubular piercing; traces of possible rust stains; fabric of pebbles and sand.

The conglomerate composition (conglomerite), with its matrix of beach pebbles and sand, sets this weight apart from the rest. It is possible that the rust-like stains may point to a chain, rather than rope, hawser indicative of a more recent date. In the area are several concrete objects cast in regular solid blocks or rings, a couple of which are still serving local craft. On the other hand, they may also simply be surface manifestations of a natural hematite present in the pebbles.⁵⁷¹ The single, central hole and placement of the object very near the shoreline away from the remaining anchors may indicate that it served as a mooring stone, perhaps like A04.

⁵⁶⁸ Frost 1963a, 4 figs. 24-5.

⁵⁶⁹ Frost 1969b, 244-5 no. 7; 1991, 398 pl. IV and 399 pl. V no. 8.

⁵⁷⁰ McCaslin 1978, fig. 306; Howitt-Marshall 2005, personal communication.

⁵⁷¹ Thanks to C. Pulak for pointing out this alternative.

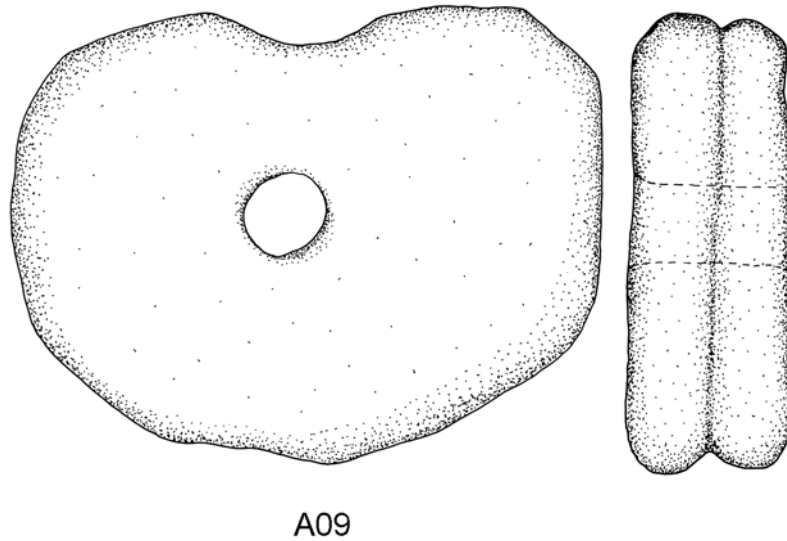


Fig. 5.8 Stone anchor A09 from Avdimou Bay.

Ceramic Evidence

Among a wide scattering of stones approximately 130 m from shore, the team noted quantities of broken amphoras (Figs. 5.9 and 5.10). The jars were found lying in two closely spaced (c. 15-20 m) but distinct concentrations, hereafter known collectively as site AV-A (Fig. 5.2). The survey team explored the site in a series of dives to determine the extent and nature of the assemblage, and ultimately to raise a representative sample for additional documentation and analysis. Two amphora tops (EBS-04-001 and EBS-04-002) were removed from the seabed, along with one well preserved base (EBS-04-003). Also noted among this fairly homogenous assemblage were a single LR1 amphora neck of perhaps the fourth or fifth century and the shoulder, lower neck and handles of an amphora that may be Hellenistic, but is clearly intrusive.



Fig. 5.9 Amphora top in situ at site AV-A.



Fig. 5.10 Amphora body sherd in situ at site AV-A.

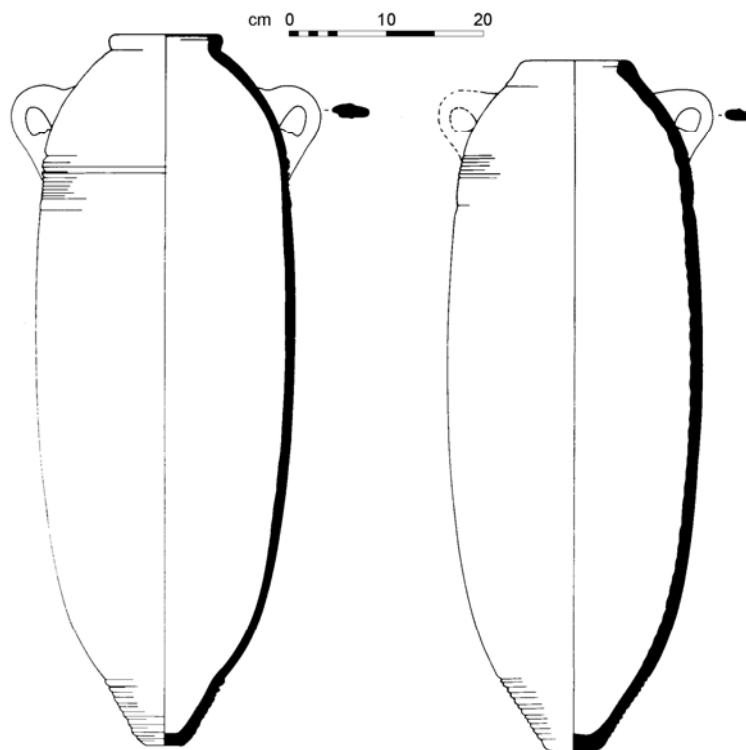


Fig. 5.11 LR4 jars from the seabed off Israel (from Zemer 1977, 63 pl. 18 nos. 49-50).

These jars belong to the Late Roman 4 (LR4) class of amphoras from Gaza in Palestine. They are easily recognized by their tall, cylindrical shape, low-lying rim and lack of neck, small ring handles attached at the shoulder and varying bands of ridging (Fig. 5.11). Their general proportions and shoulder inclination change predictably over time. The common accretions of clay, sometimes described as remnants of a stopper,⁵⁷² are more likely from a clay base used to secure the inverted amphora top during manufacture (Fig. 5.12).⁵⁷³

⁵⁷² Zemer 1977, 61.

⁵⁷³ Johnson and Stager 1995, 99.



Fig. 5.12 Detailed view of EBS-04-001 from site AV-A.

J. Riley, in classifying the pottery from Caesarea, suggested Palestinian production, an attribution confirmed by petrographic observations.⁵⁷⁴ Although commonly dubbed the “Gaza jar” based on ancient references to “γαζίτιον,” it is unlikely that all originated from this single port;⁵⁷⁵ they were likely manufactured at a number of sites across the area, a suggestion which the many subtle variants in form and fabric tend to support.⁵⁷⁶ Ashkelon and Ashdod seem to have produced variants, to judge from the ancient appellation “ασκαλώνιον” and the large quantities recovered during recent

⁵⁷⁴ Riley 1975, 27-31.

⁵⁷⁵ Mayerson 1994, 347.

⁵⁷⁶ Ballet and Picon 1987, 33; Blakely 1988, 37; Majcherek 1992, 107; 1995, 166.

excavations at presses.⁵⁷⁷ Outside Israel, limited production has been suggested for some finds in Egypt, but this has yet to be verified.⁵⁷⁸ J. Blakely proposed that some jars of this type were produced at other sites in the Negev on the basis of petrology,⁵⁷⁹ and recent excavations have brought to light a ceramic workshop for the type at Elusa.⁵⁸⁰

LR4 amphoras seem to have been put to various uses carrying other staples, including olive and sesame oil⁵⁸¹ and, on occasion, even fish.⁵⁸² Their primary function is also complicated by a variety of documented reuses for burials and as storage containers for nails, feeding troughs for livestock and perhaps also bee-hives.⁵⁸³ However, their primary content must have been the local wine made famous by ancient sources for its religious connotations and medicinal effects.⁵⁸⁴ The presence of pitch lining, as seen inside EBS-04-003 (Fig. 5.13), would lend support to their carrying wine or some other liquid commodity.⁵⁸⁵ It is not surprising, therefore, that they are among the most common amphoras in Late Roman and Early Byzantine contexts throughout the eastern Mediterranean, having been reported at sites from Britain to southern Arabia and from Spain to the Black Sea.⁵⁸⁶

⁵⁷⁷ Mayerson 1994, 78; Stager 1991, 52-3; Reynolds 2005, 574-5.

⁵⁷⁸ Empereur and Picon 1989, 243.

⁵⁷⁹ Bennett et al. 1987, 239; Blakely 1987, 112; 1988, 37-8.

⁵⁸⁰ Fabian and Goren 2002.

⁵⁸¹ Rothschild-Boros 1981, 86; Passi et al. 1981, 783-4.

⁵⁸² Zemer 1977, 61; Adan-Bayewitz 1986, 99.

⁵⁸³ Wiseman 1967, 419 and pl 88d; Scorpan 1977, 281; Bakirtzis 1996, 159.

⁵⁸⁴ Mayerson 1993; Johnson and Stager 1995, 103-4. The sixth- and early-seventh century jars from the warehouse just south of Ashkelon contained such resinated wine: Fabian and Goren 2001, 213.

⁵⁸⁵ Pitch was common on the interiors of LR4 amphoras from Avdimou. From the Dor D wreck, 31 of 52 sherds were coated: Kingsley 2002, 27.

⁵⁸⁶ Riley 1979, 221 fig. 46. Keay (1984, 656-7), Hayes (1992, 64-5), Johnson and Stager (1995, 106-7 fig. 6.7) and, most recently, Kingsley (2002, 74-7 and 80 fig. 120) greatly expand and update Riley's catalog. Note that the distribution of LR4 is even wider than that of its local relative, the LR5 amphora: Kingsley 2002, 77-81. To Kingsley's LR4 catalog should be added recent finds on Cyprus, discussed below.

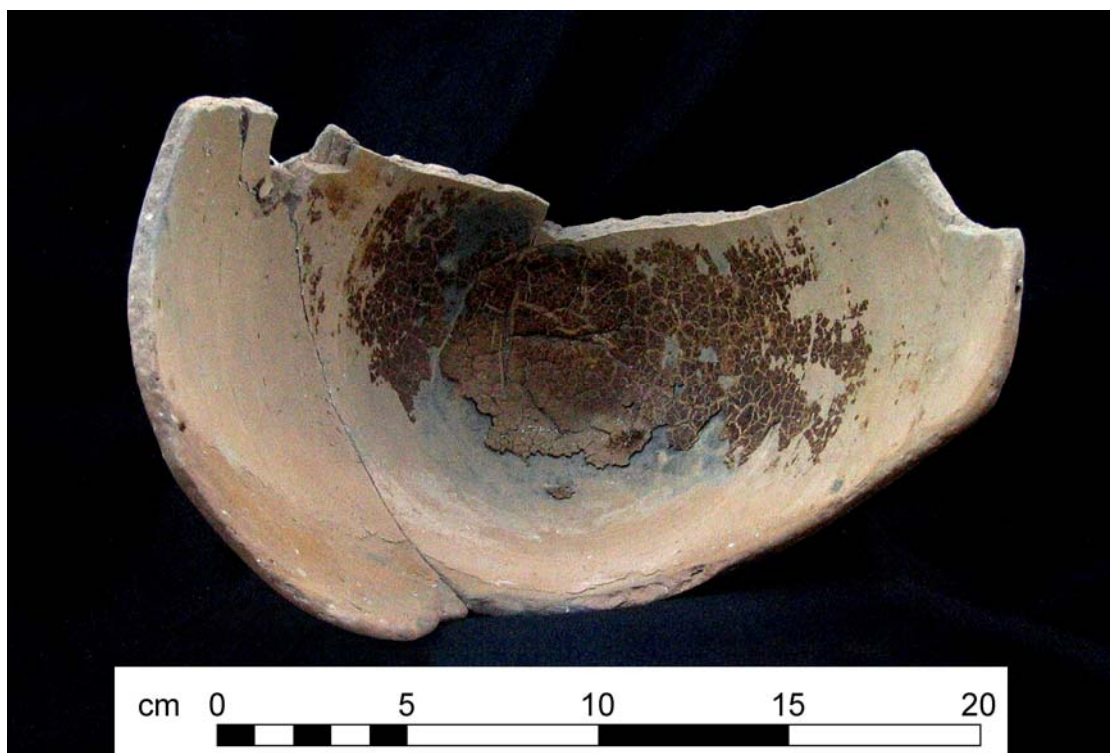


Fig. 5.13. Interior of EBS-04-003 from site AV-A.

Peacock and Williams, dividing the Gaza jars into two types, assert a date range from the third to the sixth century,⁵⁸⁷ though earlier precursors are now appearing.⁵⁸⁸ At Tell el-Maskhuta, the earliest forms are recorded in mid-second-century A.D. levels,⁵⁸⁹ and similarly early imports reached Mons Claudianus.⁵⁹⁰ At Akoris, LR4 jars are recorded in fourth- and fifth-century levels.⁵⁹¹ While the commercial vessel's first appearance may have been quite early, it is not until the fourth century that exports pick up, appearing in larger quantities in fifth- and sixth-century contexts at Carthage and

⁵⁸⁷ Peacock and Williams 1986, 196 and 199.

⁵⁸⁸ Reynolds 2005, 574-5.

⁵⁸⁹ Holladay 1982, 41-3 and figs. 60-3.

⁵⁹⁰ Tomber 1996, 45.

⁵⁹¹ Kawanish and Tsujimura 1995, 108 and 111 fig. 81.1; 116 and 121 fig. 88.1.

Saraçhane.⁵⁹² Substantial export continued even into the seventh century,⁵⁹³ with Egypt remaining a most important market. At Alexandria, almost 70% of all amphoras from sixth- and seventh-century contexts are LR4.⁵⁹⁴ The type constituted up to 63% of amphoras at one area of Ostrakine in the North Sinai.⁵⁹⁵ These amphoras from Gaza continued to be exported well into the seventh century, even appearing in contexts dated as late as the first half of the eighth century, though it is uncertain whether these are in fact primary deposits.⁵⁹⁶

Several wrecked cargoes of LR4 amphoras are recorded throughout the Mediterranean, often accompanied by consignments of LR5 jars, also from Palestine.⁵⁹⁷ Select Gaza jars appear on the Dramont E and La Palud shipwrecks, both off the southern coast of France.⁵⁹⁸ The late sixth-century shipwreck at Iskandil Burnu, Turkey, and the well preserved Dor D wreck of the same period from the Israeli coast attest to traffic in the eastern half of the Mediterranean as well.⁵⁹⁹ This latter wreck from Israel, in particular, has important implications for Late Roman trade between southwest Cyprus and Palestine.

The Gaza type is first recorded on Cyprus in a deposit sealed during the earthquake of A.D. 365 at Kourion.⁶⁰⁰ Thus, Cyprus was one of the first importers of the Gaza amphora, and during the sixth and seventh centuries, the type appears at a number

⁵⁹² Riley 1981, 120; Hayes 1992, 65.

⁵⁹³ Fabian and Goren 2001.

⁵⁹⁴ Majcherek 1992, 112.

⁵⁹⁵ Oked 1996, 168.

⁵⁹⁶ Bonnet 1994, 398 and 400.

⁵⁹⁷ Kingsley (2001, 52 table 3.2) provides a register of shipwrecks carrying LR4 and LR5 amphoras.

⁵⁹⁸ Santamaria 1995, 62-3; Long and Volpe 1998, 337-8.

⁵⁹⁹ Lloyd 1984; Kingsley 2002.

⁶⁰⁰ Williams 1987, 235-6.

of sites. At the Late Roman church at Maroni-*Petrera*, the type comprised about 10% of the total amphoras by weight,⁶⁰¹ while excavations at sixth- and seventh-century Kalavastos-*Kopetra* revealed levels of LR4 from 3.3% to 6.1% of amphoras by count.⁶⁰² The small, nearby coastal site of Zygi-*Petrini* showed evidence of seventh-century LR4 imports.⁶⁰³ The Garrison Camp at Paphos yielded these jars,⁶⁰⁴ as did the Late Roman dump site at the Paphos theater.⁶⁰⁵ Recent work at *Ayioi Pente* is uncovering them in numbers,⁶⁰⁶ and several Gaza amphoras are reused in sixth- and seventh-century contexts at Pegeia-*Agios Georgios*.⁶⁰⁷ The Canadian Palaepaphos Survey Project recorded LR4 amphoras along the coastal plain between Paphos and Kourion.⁶⁰⁸ Off the eastern coast of the island, at Cape Andreas and Cape Kiti, Gaza amphoras have been found in isolated underwater contexts.⁶⁰⁹ Note also that Episkopi Bay Survey divers located a few sherds in the areas of Cape Zevgari and Dreamer's Bay.⁶¹⁰

The amphoras at Avdimou display certain characteristics of Majcherek's Forms 2 and 3,⁶¹¹ the equivalents of Oked's Types 5 and 6.⁶¹² The evenness of the ridging spacing, as well as the placement of the ridges, recalls Majcherek's Form 2, though ridging at the handle level is also common in Form 3. EBS-04-001, which preserves

⁶⁰¹ Manning 2002, 42, 47 fig. 6.2 and 52-3 fig. 6.6.

⁶⁰² Rautman 2003, 172, 195 and 196 fig. 5.11.

⁶⁰³ Manning et al. 2000, 251.

⁶⁰⁴ Giudice and Giudice 1999, 286.

⁶⁰⁵ Jacobsen 2004, 146.

⁶⁰⁶ Michaelides, personal communication, 2004. Thanks to D. Michaelides of the University of Cyprus for his kind invitation to visit the site and for sharing his most recent finds.

⁶⁰⁷ Bakirtzis 1996, 158-9.

⁶⁰⁸ Lund 1993, 132-3.

⁶⁰⁹ Green 1971, 18 and 19 fig. 7; McCaslin 1978, 134, 136 and figs. 230, 261 and 262.

⁶¹⁰ To this list should be added finds of LR4 amphoras from Limassol Bay, which were kindly shown to the author by local sport divers during the summer of 2004.

⁶¹¹ Majcherek 1995; see especially 172 pl. 3.

⁶¹² Oked 2001, 233 fig. 1 (dates provided in abstract, XIV).

more of the body than EBS-04-002, has a maximum preserved diameter of c. 0.286 m at a point at which it is still expanding slightly, which is more in line with Form 2 (maximum width c. 0.30 m) than Form 3 (c. 0.25-0.28 m).⁶¹³ The thickened rim with internal groove is also typical of both 2 and 3. Luckily, the preserved base EBS-04-003 is a good example of the more conical Form 3 base, as opposed to the smoothly rounded Form 2. Based on these parameters, it is suggested that the Avdimou amphoras represent a form somewhere between Majcherek's Types 2 and 3 (Oked's Types 5 and 6), yielding a tentative date for the assemblage here around the fifth century.

Catalog of Ceramics

EBS-04-001 (Fig. 5.14)

H.pres. 0.201; D.rim 0.102; H.rim 0.005; T.rim 0.008; T.body 0.007-0.009; handle 0.017 x 0.0035

Amphora rim, shoulders and handles; reconstructed from three pieces; missing a sherd: portion of rim and upper shoulder. Shoulders rounded; slight protruding horizontal rim; no neck. Simple ring handles attached at shoulder, with attachments obscuring some ridging. Shallow impressions from production on inside of body corresponding to upper attachment of handles. Five grooves at shoulder. Exterior surface slightly uneven and worn, with clay accretions on upper shoulder below rim. Numerous internal lines from wheel turning. Black discoloration around rim and upper shoulders as well as splotches

⁶¹³ Majcherek 1995, 166 and 168.

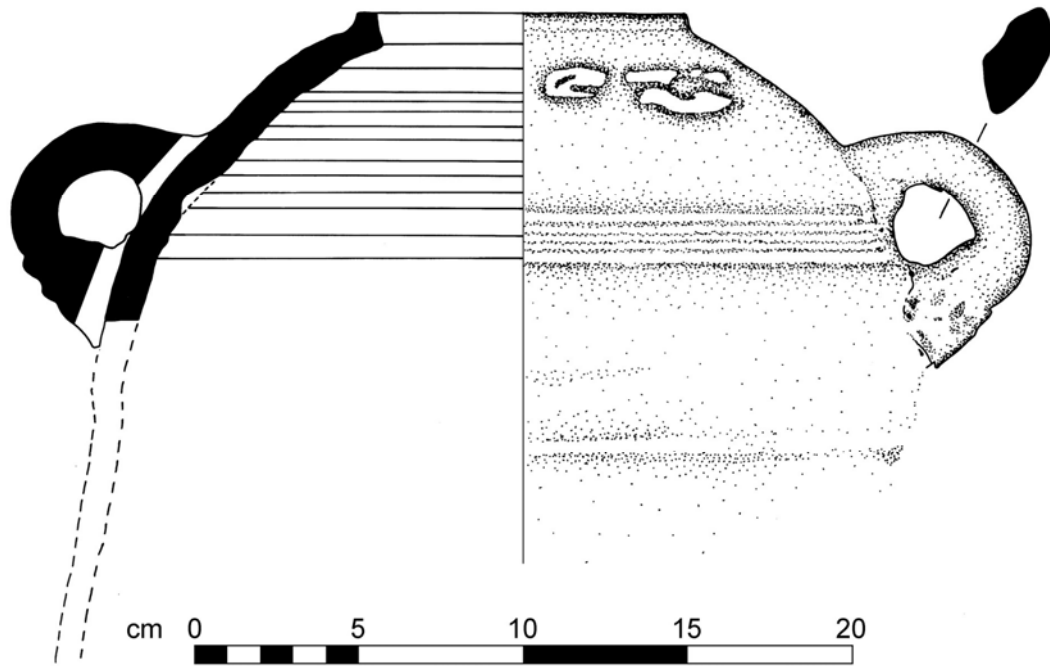


Fig. 5.14 EBS-04-001 from site AV-A.

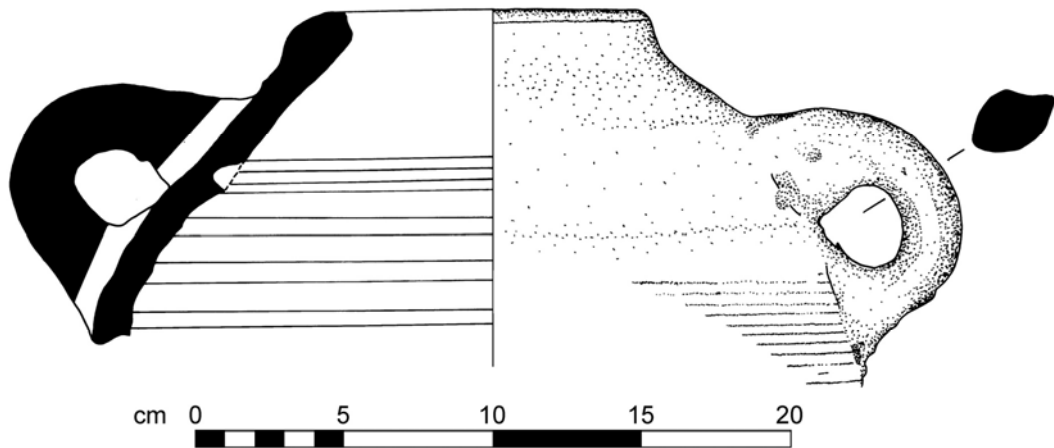


Fig. 5.15 EBS-04-002 from site AV-A.

of black on interior. Clay medium-fine (7.5YR 6/4 Light Brown), with internal cracks and medium white and light gray inclusions.

EBS-04-002 (Fig. 5.15)

H.pres. 0.133; D.rim 0.108; H.rim 0.006; T.rim 0.012-0.015; T.body 0.007-0.009; handle 0.0205 x 0.032

Amphora rim, shoulders and handles. Shoulders rounded; slight rounded rim; no neck. Simple ring handles attached at shoulder, with lower attachment obscuring some ridging. Impressions from production on inside of body corresponding to upper attachment of handles. At least 11 grooves, though more were originally present below, and additional upper grooves may be obscured by surface wear from exposure underwater. Exterior surface slightly uneven and worn. Five wide shallow grooves on inside of body from production. Traces of green (5GY 4/2 Dark Grayish Green) and white residue on inside and outside of rim as well as upper portions of shoulders. Clay medium-fine (7.5YR 6/4 Light Brown), with many internal cracks and medium white and light gray inclusions.

EBS-04-003 (Fig. 5.16)

H.pres. 0.176; T.base 0.004-0.007

Amphora base; reconstructed from two pieces. Body walls slightly convexly curved at uppermost preserved portion. Ten prominent deeply cut and evenly spaced (0.004-0.005 m) ridges on exterior near bottom. Small sherd stuck in side wall above ridges, either broken and then concreted underwater or, more likely, placed there to plug a small hole.

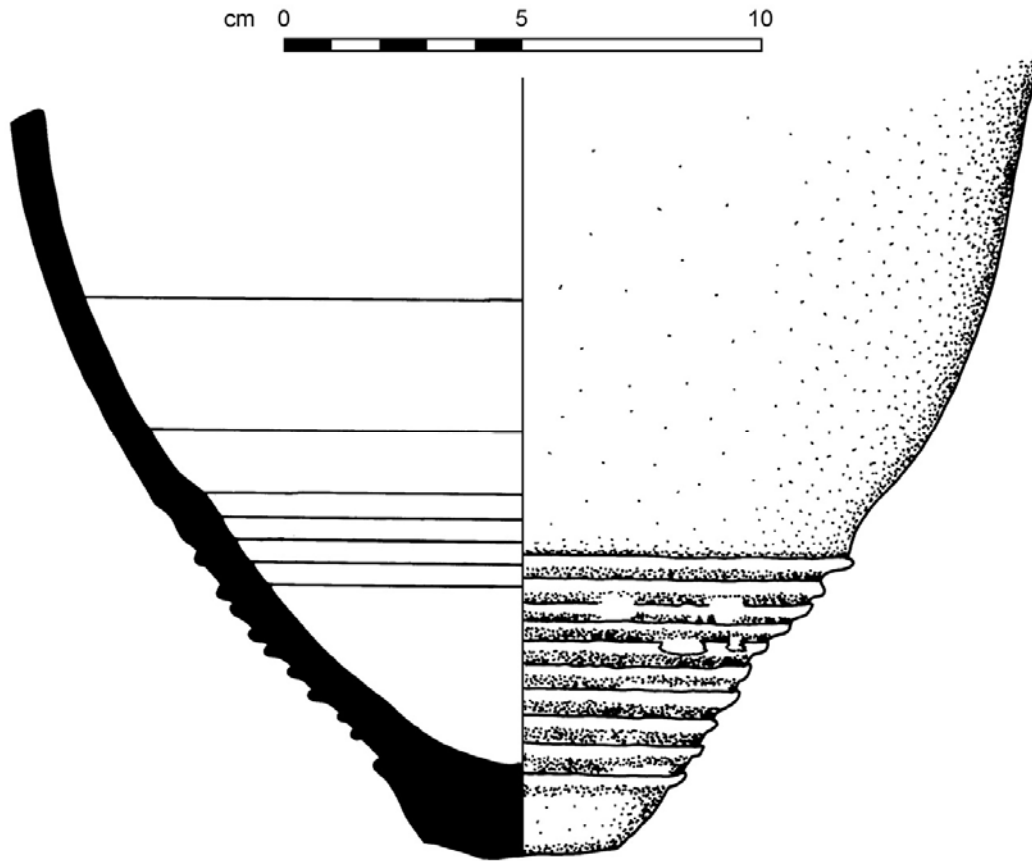


Fig. 5.16 EBS-04-003 from site AV-A.

This small piece appears to have been fired before it was lodged in the hole. Large, thick splotches of pitch remain on interior at bottom. Numerous internal lines from wheel turning. Some small spots of gray-black discoloration on exterior, as well as underneath pitch coating. Clay medium-fine (7.5YR 5/3 Brown), with few small internal cracks and some medium white and light gray inclusions.

A Possible Mole at Avdimou Bay

The bedrock exposed by thinner sand accumulations toward the center of the bay provides a solid foundation for a long wide feature that enhances the bay's protection (Figs. 5.2 and 5.17). In order to gain a better understanding of the anchorage's early history, the team created a simple preliminary map of the structure's layout and orientation. It was also important to determine if the feature is indeed manmade, given the rock outcrops onshore slightly west.

Measurements were taken to either side of the structure from a baseline anchored near shore. Regular intervals were spaced at no more than 5 m, and extra measurements were taken for any prominent features. Since the top of the wall lies slightly below water, divers were able to take readings to both sides from a single baseline. While it was certainly more difficult to insure that the measurement to the farther side was taken at perpendicular, this method had the advantage of consistency over attempting to correlate two distant baselines, especially in shallow, turbulent water. Thick mats of vegetation often complicated measurements and made discernment of the feature's true dimensions difficult. The structure's substantial width necessitated placing the baseline as close as possible if reasonably accurate figures were to be obtained. Thus, in order to gain the shortest and most reliable measurements, one angle was allowed in the line. North of 70 m, the baseline ran directly north-south, while south of this point, it turned 15° east. Accounting for this bend was simple, since the results were plotted using AutoCAD drafting software.

The stone feature extends due south for approximately 135 m, perpendicular to



Fig. 5.17 Avdimou mole looking east.

the shore (Fig. 5.18). Exact measurements are problematic for the end nearest the shore, since much debris lies strewn across the area, as indicated on the map. This scatter, largely the result of relentless pounding by waves, extends from the shore up to 42 m. The main portion of the structure is just over 102 m in length. In general, readings were taken to the east and west edges of the scatter, making the landward end seem rather wide on the plan. The deeper section, on the other hand, was far more coherent, terminating abruptly in 3.5 m meters of water, and reaching 35 m at its greatest width. The top of the structure generally lies just below the surface, although it is exposed during more tumultuous seas.

Unfortunately, brief inspections at various points around and inside the structure failed to yield any chronological or technological clues. No joints or other fastenings

Image removed due to privacy concerns

Fig. 5.18 Preliminary plan of the possible mole at Avdimou Bay.

were observed, and indeed it appears to be composed simply of large boulders piled on sand and bedrock. Divers noted a few sherds along the western edge that likely originated from the LR4 assemblage discussed above, but nothing in any direct contexts which might shed light on the structure's date.

With so few clues or features, and no test excavations, it is as yet impossible to say anything definitive. Its layout, nearly perpendicular to the shore, and its apparent uniqueness in the area make it highly unlikely that it is natural. Although single strata of bedrock up to 0.5 m thick lie exposed slightly to the west, the height of the wall suggests that it is not merely a product of the local geology. The widening and abrupt termination at the seaward end follows a reasonable breakwater design, paralleled at the Hellenistic harbor of Paphos to the west, albeit in far less elaborate architecture.⁶¹² The lack of carefully cut ashlar such as those at Paphos is to be expected at the marginal coastal community at Avdimou, which could neither afford nor make use of such facilities. In this case, the civic endeavor took the form of large boulders piled in a long, wide row. When exactly this event took place is not clear. One would, of course, expect a complementary wall perpendicular to this one in order to enclose the basin as a true harbor. However, there are no traces of such a construction, and it is unlikely that one ever existed.

The Avdimou Anchorage and Wreck in Context

The anchorage at Avdimou was in use during antiquity from at least the Late

⁶¹² Hohlfelder 1995a, 199-201. The underwater construction for the harbor at Dreamer's Bay (Akrotiri-Vounari tou Kambiou), discussed below, shows a widening toward its seaward end as well.

Roman period, if not the Hellenistic era. Possible earlier stone anchors hint at traffic as early as the Bronze Age. By nature, and later perhaps by design, the bay provided a haven for mariners visiting the chain of coastal ports integral to the economic prosperity of this Early Byzantine province. How long the anchorage was in use cannot be determined, though its natural setting makes it unlikely that it was ever totally abandoned. That the Mameluke fleet of 150 ships could land here in A.D. 1426 implies that it was still suitable; certain stone anchors may even derive from this impressive endeavor. The apparently late A09 argues for the bay's continued use into more modern times.

Though hardly an ideal haven from the harsher winter southerlies, Avdimou Bay apparently offered protection for some ancient mariners. The north-south feature is not particularly suited for winter shelter. On the other hand, if the single wall's purpose was to provide a margin of respite from the longshore currents and summer westerlies, it may well have proved useful enough.

As was the case at Dreamer's Bay, the great diversity of stone anchor shapes and styles argues that they came from a number of ships over the years, indicating a respectable amount of maritime traffic. Even the three composite anchors (A01, A06, and A08) have substantially different proportions. Nor is there homogeneity within the concentrations. Assemblage 1, in the area of site AV-A, is composed of two composite and three weight anchors, and even these simple weights vary greatly in size and shape. Two composite anchors from this assemblage, A01 and A08, are generally similar in shape, although even between these two the overall effect is quite different. Of the nine

pierced stones, several factors cast doubt on the identification of at least three as true “anchors.” As discussed above, one of the single-hole examples (A02) is certainly too small to have functioned effectively as a weight anchor, and should probably therefore be identified rather as a weight, perhaps for a net. Two of the documented stones (A04 and A09) may have served as permanent mooring stones rather than movable anchors. The deposition of stone anchors in this shallow inlet argues against any considerable subsidence along this stretch of coastline since antiquity, a notable contrast with the situation along southern Akrotiri, where stone anchors were concentrated in the deeper middle of Dreamer’s Bay (see Chapter III).

The proximity of the largest concentration (A01, A02, A03, A04, and A08) to the LR4 amphoras at site AV-A raises the possibility that at least some of the stones may have come from the ship that deposited the Gaza jars. Note that the nearly contemporary Dor D ship seems to have been employing at least three crude stone anchors when it foundered.⁶¹³ Moreover, the best parallels for two of the more diagnostic anchors (A01 and perhaps A08) come from Roman and even later contexts in Israel, Alexandria and France. Admittedly, the link is tenuous and multiple depositions and disturbances are to be expected in such shallow areas. However, this possible connection is further supported by the near total dearth of other material in the area, including iron anchors of the type one would expect on a wreck of this date.⁶¹⁴

The ship that carried the Gaza amphoras recovered at Avdimou may well have been sailing ahead of these winds and longshore currents from Paphos over 40 km west

⁶¹³ Kingsley 2002, 9-10 and 86; two additional stone anchors may also have been part of the ship’s consignment: Kingsley and Raveh 1996, 64-5.

⁶¹⁴ van Doorninck, Jr. 1982a, 141-2; Kingsley 2002, 86.

when, for one reason or another, it met misfortune here. The Dor D wreck, which was laden with both LR4 and LR5 jars, was apparently running much the same route, returning from the Paphos area when it came to grief off the Israeli coast. It has been speculated, therefore, that the ship's amphoras were actually empties destined for recycling, thus necessitating the loading of ballast, which has been sourced to southwest Cyprus.⁶¹⁵

Such may have been the case here as well, if the Avdimou ship was indeed sailing eastward from Paphos. No analysis has been undertaken on the single LR1 amphora from this site (Fig. 5.19); the general LR1 type, however, is known to have been manufactured on southwestern Cyprus in the area of Paphos, where a kiln of the late sixth and early seventh century was recently excavated.⁶¹⁶ The jar top appears to belong to the earlier form of LR1 (Kellia 169) which was in circulation during the fourth and fifth centuries, and thus does overlap with the period suggested for the Gaza amphoras. Although only about 30 jars were positively identified on the surface, additional amphoras clearly lie buried in the sand, and untold numbers may have been removed in antiquity and more recently by casual salvagers. The scattering of stones noted among the amphoras may indicate ballast, again like the Dor D ship. Alternatively, the cargo could have included organic material unlikely to survive. Plans for the future involve selective sampling to gauge the variety of the cargo, and probing to determine the extent and preservation of the wreck, including whether additional amphoras or hull remains may lie concealed in the seabed.

⁶¹⁵ Kingsley 2002, 85.

⁶¹⁶ Demesticha and Michaelides 2001.



Fig. 5.19 LR1 amphora neck from Gaza assemblage at site AV-A.

While a date and provenance for the Avdimou ceramics can be proposed, the identity of the site itself is more problematic. In any shallow-water site near shore, the possibility exists that ceramics could be the remains of dumped cargo. This phenomenon is particularly apparent at Dreamer's Bay (e.g. site DR-D). In the case of dangerous shoals, cargo could be jettisoned to gain better control of the vessel. In harbors and anchorages such as this one, pottery broken during the voyage or while loading and unloading was probably discarded, thus complicating the archaeologists' work. The uniformity and coherence of the ceramic site, however, argues against repeated

depositional events. Given the spacing of the two discrete groups of amphoras, approximately 15-20 m apart, the ship may have voluntarily dumped part of its cargo (and anchors?) before finally sinking closer to shore. The possibility remains that the ship's (stone?) anchors may have already been deployed. That ships wrecked while at anchor is immediately apparent from the "graveyard" at Dor, where underwater surveys over several decades located over a dozen wrecks.⁶¹⁷ It is also interesting to note that the ship wrecked on what was ostensibly the less advantageous, exposed side of the mole.

Another possibility, however, is that the site actually represents two wrecks, though chronologically close. While jars from the two groups do appear at first glance to be reasonably uniform in shape, future inspections will raise additional samples to determine if any distinction can be drawn between the two groups, either in form or fabric.

The Avdimou ship clearly does not represent a larger-scale venture for the fifth- or sixth-century merchant. If some makeshift stone anchors are part of the wreckage, they may help identify a low-end, regional coasting trade.⁶¹⁸ Although the distribution of LR4 and LR5 jars emphasizes the scale and profitability of the trade in Holy Land wine,⁶¹⁹ this particular merchant may have lacked either the means or the will to invest in a more suitable iron anchor, that is, unless this was salvaged fairly quickly after the event. Perhaps his profit margin was too small to afford the more expensive metal variety, or else he may have recently lost his stock. Alternatively, he may not have ventured far beyond his corner of the eastern Mediterranean, and therefore felt

⁶¹⁷ Wachsmann 1996; Kingsley and Raveh 1996.

⁶¹⁸ Kingsley 2002, 86.

⁶¹⁹ Kingsley 2001, 51-5; 2002, 82-3 tables 9 and 10.

comfortable enough with this straightforward, retrograde technology. The rapidly mounting evidence for pierced stones in surprisingly late contexts warns against presuming a linear evolution of technology for anchors, and brings into serious question the typological foundations of some earlier attributions.⁶²⁰

⁶²⁰ For critiques of stone anchor typologies: particularly Wachsmann 1985, Nibbi 1993, and Kingsley 1996 (“Appendix A” in Kingsley and Raveh 1996).

CHAPTER VI

SUMMARY AND CONCLUSIONS

Early Maritime Activity at Episkopi Bay and Akrotiri

Through two seasons of survey, the maritime landscape at Episkopi Bay and southern Akrotiri is becoming more detailed and complex. Immediately apparent is the outstanding representation of certain periods that clearly denotes remarkable growth in maritime commerce. Setting aside for a moment the particularly tremendous concentrations of Late Roman amphoras, some preliminary remarks can be made on the earlier history of the area's utilization, including possible evidence for Bronze Age trade along these coasts.

Much ink has been spilled, and for good reason, on the problematic Late Bronze Age of Cyprus. Many scholars have turned to the island for clues to understanding the transition to the early Iron Age. Shipwrecks, some of the best evidence for cultural interaction, are few in the Bronze Age, though each of the three excavated Late Bronze Age wrecks (at Cape Gelidonya, Point Iria, and Uluburun) has direct connections to the island, underscoring its primary role in early maritime commerce. Lacking such comprehensive time-capsules in the survey area, however, the character of maritime trade at Late Bronze Age Episkopi-*Bamboula* must be established through more incidental evidence.

At least some of the 18 stone anchors thus far recorded at Avdimou Bay and Dreamer's Bay may date from the Bronze Age. Of course, criticisms of the current

understanding of these simple artifacts are in many cases well-founded. It has become increasingly evident just how much is unknown and misunderstood, and how insufficient the established stone anchor typologies still are, though this is not the place for a full excursus on the subject.⁶²¹ At Dreamer's Bay, however, the clustering of pierced stones outside the possible harbor, combined with the dearth of pottery in their area, suggests that the anchors and ceramics were deposited during entirely different periods, with the latter clearly connected to the possible harbor. Whether the anchors were left previous to or subsequent to the commercial boom at Akrotiri awaits proof, although the clear similarity with some Bronze Age examples from land sites argues for an earlier date.

As Blue has suggested, Bronze Age ships likely had access to a direct passage through Akrotiri Peninsula, and may have even weighed anchor in the area of the present Salt Lake, just offshore of what was likely a settlement at Asomatos.⁶²² Thus, if anchors at Dreamer's Bay were left behind by Bronze Age ships, some explanation might be sought for why mariners would have chosen to stop off the southern coast of what was then Akrotiri island, in an ostensibly less protected inlet than that provided at Asomatos. It is impossible to say with any certainty, and it could reflect nothing more than a simple preference on occasion for a deeper anchorage than may have been available in the passage. At the same time, however, the presence of some sort of a settlement accessible by sea on Akrotiri island cannot be disproved at present, although the lack of documented Bronze Age remains on this southern part of the peninsula makes the

⁶²¹ Wachsmann 1985; Nibbi 1993; Kingsley 1996.

⁶²² Blue 1995, 170.

possibility remote.⁶²³

At Avdimou, on the other hand, the presence of stone anchors in a concentration of Late Roman amphoras, while not proof of their direct association, raises the possibility that at least some may have been deposited alongside the cargo here around the fifth century A.D. Many in this diverse group are similar to more recent stone anchor forms, though again, the total lack of uniformity may point to a longer duration of use, perhaps lending support to Blue's suggestion that the inlet would have made an acceptable Bronze Age anchorage.⁶²⁴ To what extent ships at anchor here interacted directly with the sites surveyed around the Avdimou and Paramali River valleys remains a mystery. It seems only reasonable that these settlements would have utilized the nearest convenient and relatively sheltered anchorage, in this case the shallow south-facing bays at Avdimou, Paramali and perhaps also Pissouri. Geological surveys along this coast carried out by the Government of Cyprus show mostly pre-Holocene formations that have been relatively stable since antiquity, suggesting a shoreline very similar for Bronze Age mariners.

The area around the mouth of the Kouris River, on the other hand, must have looked much different in antiquity. A cursory look at the geology reveals substantial alluvial deposition along the coast stretching east to Akrotiri and west beyond Kourion.⁶²⁵ The river also apparently deposited masses of sediment along its valley, with much of the present areas of Episkopi village and Kandou further north being largely

⁶²³ The report by Wessex Archaeology notes no Bronze Age remains on the southern stretch, although some Neolithic presence is apparent: Wessex Archaeology 2002, 7. For other pre-Bronze Age remains along the southern shore: Simmons et al. 1999.

⁶²⁴ Blue 1995, 172-3.

⁶²⁵ Geological Survey Department, Cyprus 1995 (Rev.) "Geological Map of Cyprus."

Holocene riverine deposits. The distinct possibility remains, therefore, that the hillock upon which *Bamboula* was founded, one of the few pre-Holocene outcrops in the area, was at the time a waterfront at the head of the Kouris delta. Ships may have traveled into the mouth of the Kouris River and even anchored in the vicinity of *Bamboula*. A similar situation has been proposed for Enkomi, which was probably endowed with an anchorage in the Pedieos River mouth and a well-protected harbor slightly upriver.⁶²⁶ Unfortunately, it is impossible to determine the chronology of the gradual siltation at the Kouris delta, although a detailed study of the area's paleogeography would be beneficial. A report of 2 m of riverine deposit above Late Bronze Age tombs in the delta region underscores the strong, sediment-laden flow that continued into more recent times, probably exacerbated by occasional floods.⁶²⁷

What seems generally clear, however, is that the string of coastal ports and anchorages utilized by Bronze Age mariners was probably more extensive than has often been recognized. While it is evident that the settlements on southeast and east Cyprus, such as Kition, Hala Sultan Tekke, and especially Enkomi, played leading roles in the island's maritime commerce during the Late Bronze Age, newer emphasis on the island's other coasts has been filling in some of the notable gaps in the settlement record. Knapp has defined a more complex maritime landscape for Late Bronze Age Cyprus, centering on a dynamic interaction of administrative and commercial settlements surrounded by outlying villages.⁶²⁸

Limited excavations at Alassa and recent work at *Bamboula*, for instance, have

⁶²⁶ Åström 1969, 76; Collombier 1987, 162; Blue 1995, 149-50.

⁶²⁷ Blue 1995, 172.

⁶²⁸ Knapp 1997b.

earned Episkopi Bay new economic importance centering on copper, and the provenancing of the Amarna tablets to this general area further underscores far-flung commercial relationships (see Chapter II). The considerable amount of imported pottery at *Bamboula*, especially from the Mycenaean mainland, indicates far-flung trade relations, a picture which the current University of Cincinnati excavations will no doubt help clarify.⁶²⁹ Looking beyond the primary centers to the outlying villages, however, a variety of sites surveyed west of Kourion around the Paramali and Avdimou River valleys further complement the settlement pattern here. Even if maritime trade centered on the most prominent coastal settlement (certainly *Bamboula* in the case of Late Bronze Age Episkopi Bay), the subordinate villages themselves may very well have had their own interaction with the sea. The emerging picture of Late Bronze Age trade along the island's shores points to extensive use of natural shelters, including not only the well-protected harbors such as at Enkomi and Kition, but also unassuming coastal anchorages.

Blue's study of the paleogeography of second millennium harbors highlights the suitability of a variety of natural coastal features all around the island.⁶³⁰ Even near the prominent port of Kition, McCaslin identified a simple anchorage just a few kilometers south of Hala Sultan Tekke on the sheltered east side of Cape Kiti.⁶³¹ At the most important Late Bronze Age site on the west coast, *Maa-Palaeokastro*, sheltered bays to the north and south of the promontory may have provided some degree of protection.⁶³²

⁶²⁹ Benson 1972, 105-21; 1973, 118.

⁶³⁰ Blue 1995, 138-81; 1997.

⁶³¹ McCaslin 1978, 128.

⁶³² Blue 1995, 175-6.

However, recent underwater surveys around the promontory and in the inlet at Keratidhi Bay just to the north, while limited in scope, found little evidence of traffic this early.⁶³³ On the other hand, surveys at the outlying bays further north yielded a number of stone anchors, including some probable Bronze Age examples at Maniki and Lara, both of which may have served an auxiliary maritime purpose.⁶³⁴

An especially interesting survey carried out in the shallow waters off Maroni (between Limassol and Larnaca) revealed two major concentrations of stone anchors alongside quantities of LC IA pottery, alluding to utilization of several closely spaced anchorages here during the earlier part of the Late Bronze Age.⁶³⁵ Additional explorations at several inlets on either side of the extreme Karpasia Peninsula by J. Green brought to light evidence for yet more simple anchorages, including especially large numbers at Ayios Philos.⁶³⁶ A recent report of a similar situation near Palaepaphos awaits investigation.⁶³⁷

A more active coastline of Cyprus during the Late Bronze Age is consistent with the picture of smaller coastal trade presented by the ship that wrecked at Cape Gelidonya c. 1200 B.C. while carrying raw and scrap metal probably from Cyprus.⁶³⁸ The ship that met misfortune at Point Iria carried a diverse cargo of pottery that likewise indicates multiple stops on its final voyage from Cyprus to Crete and finally the Gulf of Argos.⁶³⁹

⁶³³ Giangrande et al. 1987, 189-90.

⁶³⁴ Giangrande et al. 1987, 191-2 and 193 fig. 7.

⁶³⁵ Manning et al. 2002.

⁶³⁶ Green 1973, 166-8, 172 fig. 31A and 173 fig. 31B; McCaslin 1980, 27-30.

⁶³⁷ Howitt-Marshall, personal communication, 2005.

⁶³⁸ Bass 1967, 163.

⁶³⁹ Lolos 1995; 1999, 48; Vichos 1999, 79-80.

The Ancient Commerce of Kourion and Akrotiri

Few clues have come to light in the underwater record for Archaic and Classical trade at Episkopi Bay and Akrotiri. Particularly early archaeological remains on land are also rather few, especially at Kourion, where they must lie buried under later Hellenistic and Roman construction. What little is evident (the basket-handle amphoras), however, demonstrates a level of commerce around Cape Zevgari during a period when the passage through Akrotiri was still open to maritime traffic. Perhaps the settlement at *Vounari tou Kambiou* was active in this transit trade at an earlier date than expected. The single fourth-century B.C. Thasian amphora toe of Leonard and Demesticha hints at Late Classical trade at the increasingly important settlement,⁶⁴⁰ but more proof is clearly necessary before attributing large-scale commerce from such an early date.

The incorporation of the island into the Ptolemaic empire brought important commercial connections with Egypt, with specific emphasis on the new administrative center at Paphos. The third-century B.C. archives of Zenon in Egypt reveal important links to Cyprus, including references to jars labeled *Kouriaka* and *Paphia*.⁶⁴¹ It is difficult to gauge to what degree the wine or oil contained in these amphoras, along with jars from the other known producer at Kition, was favored in the Hellenistic world. Although these stamped Cypriot imitations of more common Greek forms are generally uncommon and very limited in distribution,⁶⁴² Strabo's first-century A.D. reference (14.6.5) to Cyprus as both εὔοινος and εὐέλαιος suggests a more positive evaluation.

Interestingly, however, archaeological evidence for Hellenistic settlement and

⁶⁴⁰ Leonard and Demesticha 2004, 198.

⁶⁴¹ Grace 1979, 179-81;

⁶⁴² Zemer 1977, 40 and 41-2 pl. 11; Grace 1979, 179-80; Meyza 2004, 273-5.

commerce is remarkably scarce in the hinterland of Kourion, where a noticeable increase appears only during the subsequent Roman period.⁶⁴³ This pattern is somewhat surprising in light of the literary evidence, seemingly running counter to the generally presumed prosperity of the city in the pre-Roman era.⁶⁴⁴ However, relatively low Hellenistic activity has been similarly recorded in the area of Kouklia, with the Canadian Palaepaphos Survey Project also noting as well a substantial increase in cultural material only during the first century A.D.⁶⁴⁵ The Agia Napa region shows added farmsteads during the Roman era.⁶⁴⁶ Interestingly, recent analysis by the Sydney Cyprus Survey Project in the northeast foothills of the Troodos revealed a substantial retreat from the countryside during the Hellenistic period, with many smaller Classical settlements having been abandoned and some recovery only evident in the Roman period.⁶⁴⁷ Only additional research in other corners of the island is likely to elucidate further this situation, and there is certainly no reason to expect uniformity across the island. For instance, in the Akamas peninsula along the island's western coast, the Late Hellenistic period was by far one of the most active, and is much better represented in the material record than even the subsequent Roman era.⁶⁴⁸

Starting in the first century B.C., the birth and distribution of a new type of fine ware provides another gauge of Cypriot economic growth. Almost certainly a product of the Paphos region, Cypriot Sigillata quickly gained a share in the eastern Mediterranean

⁶⁴³ Swiny and Mavromatis 2000, 438.

⁶⁴⁴ Sørensen 1993, 193; Michaelides 1996, 140-2.

⁶⁴⁵ Lund 1993, 140.

⁶⁴⁶ Hadjisavvas 1997, 176

⁶⁴⁷ Given and Knapp 2003, 277-9.

⁶⁴⁸ Bekker-Nielsen et al. 1995, 22.

fine ware market over the course of the first century A.D.⁶⁴⁹ It edged out its primary competitor, Eastern Sigillata A from the Antioch region, at both nearby Anemurium and Marina el-Alamein in Egypt, and large quantities have been recorded in sites throughout Israel.⁶⁵⁰ In comparing the relative frequencies of these two major sigillatas, Lund has demonstrated an overwhelming preference for the native type on the western portion of the island, which seems to have maintained trade connections with western (Rough) Cilicia, Israel, and Egypt from at least the Ptolemaic period. On the other hand, the prevalence of the imported type in the east of Cyprus reveals direct contacts with southeast Anatolia and northwest Syria.⁶⁵¹ Alongside wine contained in the Cypriot pinched-handle amphoras, the trade in Cypriot Sigillata must have accounted for a substantial share of the island's exports, and it is no surprise that the two pottery types exhibit remarkably similar distribution patterns, probably having been carried by the same merchant vessels.⁶⁵²

Leonard's study of harbors large and small of Roman Cyprus draws attention to the intensive exploitation of the island's coastline during antiquity.⁶⁵³ Of course, some of these facilities predated the Roman era, including the elaborate Hellenistic harbors at Paphos⁶⁵⁴ and Amathus.⁶⁵⁵ To the register might be added even smaller anchorages that dotted the coast, such as at Number Three Bay, where local fishermen have reported

⁶⁴⁹ Lund 1997, 203-5.

⁶⁵⁰ Lund 1997, 205-7; 1999b, 20 fig. 11.

⁶⁵¹ Lund 1999b, 10-2; 2000, 571-2.

⁶⁵² Lund 1999b, 12; 2000, 572-4; a distribution pattern has been noted for *Pinctada margaritifera* shells: Michaelides 1995.

⁶⁵³ Leonard 1995b, 1997.

⁶⁵⁴ Leonard and Hohlfelder 1993; Hohlfelder and Leonard 1994; Hohlfelder 1995a.

⁶⁵⁵ Empereur and Verlinden 1986, 1987; Michaelides 1988; Empereur 1995.

“lead anchors” recovered from deep within the sand. It is hardly surprising to find an investment in such a large harbor at Paphos, which served as the Ptolemaic administrative center, and which clearly benefited from the export of fine wares and wine produced nearby throughout much of the Roman and Late Roman eras. Tying the commercial centers together was an extensive highway network that allowed more effective communication and transfer of resources, including from the interior.⁶⁵⁶

Even with the limited exploration around Cyprus, it is noteworthy that among the few documented wrecks, the western and southwestern coasts of the island provide comparatively strong evidence for Hellenistic trade. Without taking into account the present survey, this stretch of coastline between the Moulia Rocks (near Paphos) to Akamas accounts for perhaps four of the five true wrecks from this era. It may also be worth noting that the typical Rhodian jars constitute the overwhelming majority of their cargoes.⁶⁵⁷

A measure of increased trade during the Late Hellenistic and Early Roman periods is attested in the scattered wreckage at Zevgari and, to a lesser extent, in the West Akrotiri Bays. The shallows north of the cape brought to light a concentration of typical Hellenistic Rhodian amphoras that should best be described as a wreck or wreck-debris. Considered alongside the many bifid handles around the rocks at AK-S2 as well

⁶⁵⁶ Bekker-Nielsen 2004, 108-13.

⁶⁵⁷ Aside from the assemblage recorded during the present survey, one or perhaps two wrecks were found along the western coast of Akamas: Bass and Katzev 1968, 170-1; Leonard 1995a, 140, 142 and 168 n. 24; one at Xerolimni, north of Paphos: Giangrande et al. 1987, 192; one near the Moulia Rocks: Hohlfelder 1995b. Another wreck of Hellenistic Rhodian amphoras on Cyprus is reported by Parker, though no specific location is given: Parker 1992, 158-9 no. 350. The only other reported and verifiable Hellenistic wreck, and the only one not along this stretch of coast, was that excavated near Kyrenia: see Swiny and Katzev 1973. Hellenistic Rhodian jars were found on the wrecks at Kyrenia, Akamas and Moulia Rocks, as well as on the wreck reported by Parker. The amphoras from Xerolimni are not identified, although a date range of third to second century B.C. is reported.

as the occasional mushroom-rim jar, new or intensified connections with the southeast Aegean may be indicated. To a lesser extent, the evidence from the West Akrotiri Bays and the shallows of Dreamer's Bay also testifies to pre-Roman commerce, again oriented toward the southeast Aegean. The Hellenistic finds from the present survey, when evaluated with other underwater evidence and the historical role of southwest Cyprus, underscore important connections to both Rhodes and Egypt, perhaps indicative of an intermediary position along the well-attested trade route between Alexandria and Rhodes.⁶⁵⁸

Additional investigations underwater at Dreamer's Bay should help determine how early the port became a major player in maritime trade. Although Leonard and Demesticha have noted some evidence of earlier trade, it still seems clear that the site's floruit was considerably later, especially in the fifth and sixth century A.D.

The Late Roman Commercial Boom

The overwhelming majority of Late Roman ceramics in the study area leave no doubt as to the busiest period of commerce. Even at Cape Zevgari, where the greatest variety of pottery has been recorded thus far, the LR1 is still clearly the most common amphora form. In the shallows of the West Akrotiri Bays and the anchorages at Avdimou and Dreamer's Bay, the disparity between Late Roman ceramics and those of all other periods is even greater. Note that, with the exception of the Hellenistic Rhodian amphora assemblage along the northern edge of Zevgari, each coherent ceramic

⁶⁵⁸ Lund 1999a, 201.

concentration is dated to between the fourth and seventh centuries, including most importantly the cargo of Gaza amphoras at Avdimou and the LR1 wreck from Zevgari.

This situation, however, is hardly unique to Dreamer's Bay and Akrotiri. A remarkable amount of similar pottery, including at least one probable Late Roman wreck, was recovered from the area of Cape Kiti, just south of Kition and Hala Sultan Tekke.⁶⁵⁹ Late concentrations were noted in the area of *Zygi-Petrini*,⁶⁶⁰ as well as along the western coast at *Thalassines Spilies* and Keratidhi along the western coast.⁶⁶¹ Yet another wreck of the period was preliminarily investigated at a depth of 40 m near Fontana Amorosa off the western coast.⁶⁶² Ceramics of the Late Roman period also dominate the picture at Cape Andreas, where a largely coherent wreck of LR1 amphoras and sarcophagi was recorded.⁶⁶³ Of course, given the incomplete picture thus far provided by the underwater record, one must approach with caution these preliminary observations, which are prone to reflect the inconsistency and distribution of the limited work rather than actual trade as represented in the material record.

The Late Roman (or Early Byzantine) period ushered in new prosperity in the late fourth and fifth centuries for Cyprus such that, by the late fourth century, the historian Ammianus Marcellinus (14.8.14) could already remark that the island “abounds with such manifold fertility in all things that, without any outside aid, from its native resources along, it builds merchant ships from keel to topsails and entrusts them, fully outfitted, to the deep.” In the sixth century, John Lydus (*de Mag.* 2.29) was able to

⁶⁵⁹ Engvig and Beichmann 1984, 181-2.

⁶⁶⁰ Manning et al. 2000, 254 fig. 12.1.

⁶⁶¹ Giangrande et al. 1987, 190-1; Morris and Peatfield 1987, 200 and 202.

⁶⁶² Swiny 1982, 8-9.

⁶⁶³ Green 1973, 161 and 162-3 figs. 19-22

list Cyprus among the empire's most prosperous provinces. Reinvigorated trade relations brought new wealth to the island's metropolitan centers, for the most part ideally situated along the coasts. In this respect, the resurgence of Kourion has already been discussed (see Chapter II). But the picture of Late Roman maritime trade is much more complicated than simply a conglomeration of large cities distributed along the island's shores. As Leonard has aptly pointed out, an elaborate chain of coastal ports and anchorages fed into Roman and Late Roman commerce on a smaller but no less fundamental scale.⁶⁶⁴

At the core of this economic system were the smaller towns and hinterlands that collectively contributed the vast resources recounted by Ammianus Marcellinus, including probably copper, timber, pottery as well as a range of agricultural goods.⁶⁶⁵ They also certainly benefited from maritime commerce, as has become apparent from the recent excavations at Kalavassos-*Kopetra*. This ordinary, mid-sized (c. 500-600 inhabitants), slightly inland settlement thrived during the sixth and early seventh centuries, to judge from its three basilicas.⁶⁶⁶ Other rural sites likewise testify to a measure of affluence that penetrated well beyond the more commercially accessible coasts.⁶⁶⁷

All across the island, a wholesale expansion of settlement proves a late fourth- and fifth-century recovery from the depredations of inflation and general economic instability that had marked in particular the third century. In the hinterland of Kourion,

⁶⁶⁴ Leonard 1995b; Leonard and Demesticha 2004.

⁶⁶⁵ Papacostas 2001, 111-5.

⁶⁶⁶ Rautman 2003, 147.

⁶⁶⁷ Papacostas 2001, 115-21.

the Late Roman period was the highest recorded in the ceramic record, with the majority of farmsteads having been active into the seventh century.⁶⁶⁸ A French survey north of Amathus corroborated this pattern.⁶⁶⁹ In the western part of the island, the Akamas peninsula experienced new growth from the fourth century, with additional settlements appearing and flourishing through the fifth and sixth centuries.⁶⁷⁰ Recovery at Palaepaphos (Kouklia) set in from the late fourth century, culminating in the first half of the sixth century.⁶⁷¹ The Sydney Cyprus Survey Project in the northeast foothills of the Troodos also found the area to have been considerably more prosperous during this period than in previous centuries, with a larger supply of amphoras appearing in the material record.⁶⁷² The Kormakiti peninsula on the northern part of Cyprus was bustling in the sixth and seventh centuries,⁶⁷³ as was a stretch of the northeastern coast facing Cilicia.⁶⁷⁴ On the southern coast, the Vasilikos valley experienced a similar sixth- and seventh-century flourish.⁶⁷⁵ Outside the island as well, tremendous expansion has been noted in the rural landscape of Greece following centuries of abandonment.⁶⁷⁶

This new wave of settlement both contributed to and was fostered by an extension of agricultural production that allowed the island to export a greater volume across a considerable eastern Mediterranean market. The wide distribution achieved by the Late Roman series of amphoras provides tangible evidence for this success around

⁶⁶⁸ Swiny and Mavromatis 2000, 438-9.

⁶⁶⁹ Petit 1996, 176-9.

⁶⁷⁰ Bekker-Nielsen et al. 1995, 24.

⁶⁷¹ Lund 1993, 140.

⁶⁷² Given and Knapp 2003, 280.

⁶⁷³ Catling 1972, 5.

⁶⁷⁴ Hadjisavvas 1991a.

⁶⁷⁵ McClellan et al. 1993, 423.

⁶⁷⁶ Alcock 1993, 37-49.

the eastern Mediterranean as a whole, with the new LR1 jars of Cyprus, northwest Syria and Cilicia appearing ubiquitously across the region from the fourth and especially the fifth centuries onward. The register of LR1 finds stretching from Great Britain to North Africa to the Black Sea need not be repeated here (see Chapter III). Suffice it to say that the clear domination of the type, especially in the northeast Mediterranean, left little room for competition.

Fine wares provide a second useful gauge for the economic health of the island. Cypriot Red Slip Ware succeeded in the fourth century the Cypriot Sigillata of the Roman era after a lapse of a century or more in the archaeological record.⁶⁷⁷ Scientific analysis of Cypriot Red Slip Ware clays has now confirmed an origin in the western part of the island for this product as well.⁶⁷⁸ It achieved a wide circulation around the Aegean, southern Anatolia, the Levantine coast and the eastern part of the North African coast, including select sites in Egypt.⁶⁷⁹ According to Hayes, “the ware is amply represented in all its phases on sites in Cyprus, where it is consistently the commonest fine ware in all Late Roman levels.”⁶⁸⁰

One site established along the western coast of Cyprus is worthy of special note for its unique role in long-distance maritime trade. The settlement at Cape Drepanon maintained a rather urbane standard of living that far outstripped the natural resources of its hinterland. The settlement’s viability appears to have relied exclusively on the promontory’s strategic importance along the grain trade route between Egypt and

⁶⁷⁷ Lund 1991; Meyza 1995; 2000, 524 and 527.

⁶⁷⁸ Rautman 1995.

⁶⁷⁹ Hayes 1972, 385-6; 1980b, 528; Lund 1993, 112.

⁶⁸⁰ Hayes 1972, 385.

Constantinople.⁶⁸¹ In order to ensure a steady supply of foodstuffs to the newly designated imperial capital after A.D. 330 and its military forces along the borders, the state relied heavily on shipments from the more productive regions, executed through contracts with private individuals.⁶⁸² The church too played an active role in this provisioning, and even maintained a fleet at Alexandria.⁶⁸³ The early seventh-century Yassiada ship, with its load of LR1 and LR2/LR13 amphoras, betrays clear connections to the church.⁶⁸⁴

That the business of supplying the population of Constantinople was profitable is lavishly demonstrated in Cape Drepanon's three basilicas adorned in Proconnesian marble, a luxury that likely represents the cargoes of voyages outbound from the imperial capital.⁶⁸⁵ After all, merchants converging on Constantinople would no doubt have sought a profitable commodity for their return voyages. Despite a total lack of the material on the island, marble revetments do appear on some of the many churches on Cyprus and elsewhere established during the fifth and sixth centuries, even those outside the commercial centers.⁶⁸⁶ In the same manner, it might also be suggested that Cypriot Red Slip Wares and agricultural produce in Cypriot LR1 amphoras constituted a substantial part of the trade for grain merchants returning to Egypt, to judge from their large representation in the material record at various Egyptian sites.⁶⁸⁷

The prosperity of Late Roman Cyprus, however, destined the island to play a

⁶⁸¹ Bakirtzis 1995.

⁶⁸² Teal 1959, 91-6.

⁶⁸³ Whittaker 1983, 168.

⁶⁸⁴ Steckner 1989, 65; van Alfen 1996, 211-2.

⁶⁸⁵ Bakirtzis 1995, 250.

⁶⁸⁶ Rautman 2001, 245-6; Ward-Perkins 2001, 173-4.

⁶⁸⁷ Ballet 1995, 17-8; Empereur and Picon 1992, 149; Arthur and Oren 1998, 203.

more active role in this maritime commerce. Although certainly not sufficient to feed Constantinople, the island did export grain to Galatia in times of emergency into the seventh century.⁶⁸⁸ Its more important contribution, though, must have been the export of the two other vital foodstuffs for which the land was known for centuries: wine and oil. The exigencies of the state for agricultural staples, particularly wine, as testified in the literary record, would have placed a heavy burden on the shrinking (albeit still highly productive) cultivated lands still remaining under imperial jurisdiction.⁶⁸⁹ Surpluses of these likely entered the market in LR1 amphoras, and the rapidly growing corpus of production centers on the island reveals the extent to which rural agriculture was linked through commercial centers to the maritime landscape. The jars from Cyprus, along with varieties manufactured in Syria and Cilicia, testify to the widespread popularity (or at least availability) of northeast Mediterranean agricultural staples. Unfortunately, only future compositional analysis within the LR1 class can hope to draw out the more subtle local and intraregional trade, and determine the relative contributions of the production areas to the greater Mediterranean economy.

What the archaeological evidence does make clear, however, is the leading role of Cyprus and its mainland neighbors in provisioning the state. At Saraçhane in Istanbul, LR1 amphoras appear prominently in the fifth century, and are the commonest type in sixth- and seventh-century contexts, where they account for 15-20% of all amphoras.⁶⁹⁰ It is hardly surprising, therefore, that the mosaicists chose to depict this type of amphora

⁶⁸⁸ Rautman 2000, 327.

⁶⁸⁹ Arthur 1998, 177.

⁶⁹⁰ Hayes 1992, 65.

in the floor of the Great Palace of the imperial capital.⁶⁹¹ Justinian's assignment in 536 of Cyprus to the *quaestura exercitus* along with Scythia, Moesia Secunda, the Aegean islands and Caria, though seemingly a haphazard arrangement, actually signifies a profound appreciation for the island's resources and its potential for supplying Byzantine forces stationed along the critical but weakened Danubian frontier.⁶⁹² That goods were already flowing along this path even before Justinian's mandate is apparent in the concentrations of LR1 from Scythian deposits of the fifth century.⁶⁹³ O. Karagiorgou has proposed a similar economic arrangement in accounting for the large numbers of Aegean LR2 amphoras along the lower Danube.⁶⁹⁴ Demesticha has likewise taken the development of the rather late LR13 amphora as a commercial adaptation to this shifting political arrangement.⁶⁹⁵

One is left to account for what might have been available to merchants on their return voyages. Of course, any commerce mandated by the state would have taken precedence over natural markets, and did not necessarily take into consideration any return on the exchange. The benefits to merchants supplying the state's needs may have been so great as to make collecting and selling another cargo on the second leg unnecessary. Regulations stipulated in the *Codex Theodosianus* (13.8.1) make it clear, however, that shipping agents were inclined to earn an extra amount carrying their own merchandise alongside that of the state. Aside from the Proconnesian marble cited above, ships may have carried Phocaean Red Slip from the western coast of Anatolia,

⁶⁹¹ Dunbabin 1999, 233 fig. 246.

⁶⁹² Lokin 1986, 7.

⁶⁹³ Opař 2004a, 294; 2004b, 8.

⁶⁹⁴ Karagiorgou 2001.

⁶⁹⁵ Demesticha 2003, 475.

the major competitor of Cypriot Red Slip Ware.⁶⁹⁶

The same reasoning may explain another important commercial relationship, namely that between the Sinope area and the northeast corner of the Mediterranean. A clear concentration of Sinopean carrot amphoras in the LR1 producing regions, including their appearance at Dreamer's Bay (EBS-04-027) and Cape Zevgari, may be best interpreted as a byproduct of this state-driven trade. Perhaps Sinopean producers shipped their wine in carrot amphoras to nearby Constantinople, where it was sold to entrepreneurial merchants eager to secure a profit on their return voyage to the northeast Mediterranean. This would explain quite handily the appearance of masses of sherds at Seleucia, which Empereur and Picon took to indicate a production center but is more likely simply a dump from a warehouse involved with Sinopean imports. In fact, additional amphora types found throughout northern Syria are just now starting to be recognized as Black Sea products.⁶⁹⁷ Reynolds' observations of Phocaean Red Slip Wares (from the western coast of Anatolia) in the mix could easily be explained by the same commercial mechanism.⁶⁹⁸

Within this trade in agricultural staples, the place of *Vounari tou Kambiou* and Kourion (and perhaps also Avdimou Bay) is clearly important, but not well understood. It is apparent that the market at Akrotiri was oriented to regional exchange, though the degree of integration can only be determined once the fabrics of Cypriot LR1 amphoras and mainland products are distinguished. Jacobsen's suggestion that "the world around the island had shrunk in the Late Roman period" seems applicable thus far with regard to

⁶⁹⁶ Ward-Perkins 2001, 173.

⁶⁹⁷ Kassab-Tezgör and Touma 2001; Erten et al. 2004, 106.

⁶⁹⁸ Reynolds 2005, 566.

imports at Episkopi Bay and southern Akrotiri.⁶⁹⁹ Indeed, long-distance imports seem to have been less frequent during the Late Roman period, with only a few amphoras from the western Mediterranean (EBS-04-033) or Black Sea trickling in, and then usually only as minor additions to probable LR1 cargoes (sites DR-F and DR-G). On the other hand, this lack of large-scale imports from distant lands contrasts with the notable numbers of LR1 amphoras recovered in excavations and surveys outside this corner of the Mediterranean.⁷⁰⁰ This preferential westward flow demands a commercial framework far more complex than any monolithic state-coordinated trade could account for.⁷⁰¹ To some extent, this may explain the lingering presence of African Red Slip Wares at sites on Cyprus even after the fine ware was becoming increasingly scarce, especially in the Western Mediterranean.⁷⁰² Nevertheless, the disparity merits further attention.

The role of Avdimou Bay within this commercial background, though, is harder to evaluate. The single wreck assemblage of LR4 jars clearly does not necessitate a heavy volume of trade, even if the stone anchors argue for additional passing traffic not attested in the ceramic record. The extent and role of the site onshore (“Treta”?), as indicated by surface pottery, requires further investigation. Unless more pottery lies buried in the sand, the bay’s limited use in the Late Roman period suggests that it functioned only as an anchorage for traffic coasting southwest Cyprus. In this case, a merchant heading between the island and the Gaza region of Palestine may have been tramping along southern Cyprus, or else simply preferred a coastal route to minimize the

⁶⁹⁹ Jacobsen 2004, 144.

⁷⁰⁰ Reynolds 1995, 71, 74-5 and 132.

⁷⁰¹ Kingsley and Decker 2001, 13; Ward-Perkins 2001, 173.

⁷⁰² Fentress and Perkins 1988.

open-water distance of his journey. Whether or not Cyprus was his final destination remains unanswerable at present, although this important cargo underscores yet again the complex mechanisms and relationships implicit in Late Antique trade in the eastern Mediterranean.⁷⁰³

By the late seventh century, however, the situation on Cyprus, and across the eastern Mediterranean generally, had drastically changed. A series of devastating wars against Persia left Byzantium victorious but so severely weakened that it failed to ward off the emergent Arab Empire during the 630s and 640s. Within but a generation, Constantinople lost control of many of its most valuable territories, including the prized agricultural lands of Egypt and the Levant. Cyprus, severely raided and partially occupied in 649 and again in 650 by the nascent Islamic navy in search of plunder and captives, soon found itself a precarious point of contention. The succeeding years saw the abandonment of the great Greco-Roman cities as well as many smaller towns for new villages such as Episkopi.⁷⁰⁴ Although the limited literary and archaeological evidence points to some internal continuity into the late seventh and eighth centuries,⁷⁰⁵ it is clear that the island was no longer the prosperous and peaceful province of years past. Now the frontier, Cyprus spent the next three centuries as a demilitarized outpost shared through a treaty of *condominium* in 688 that granted each empire the right to tax and to access the island in both peace and war.⁷⁰⁶ Nevertheless, the population, reduced in size and importance, did more than simply survive; it built and rebuilt churches and

⁷⁰³ Kingsley and Decker 2001.

⁷⁰⁴ Megaw 1988, 1993; Papageorghiou 1993.

⁷⁰⁵ Hayes 1980a; Cameron 1992.

⁷⁰⁶ Jenkins 1970.

public works.⁷⁰⁷ Even if Cyprus' neutrality allowed it access to trade with both empires, the underwater record at Episkopi Bay and elsewhere off the island's shores remains silent at present.

Considerations for Future Work

Two seasons of surveys at Episkopi Bay and Akrotiri, while limited in both scope and technology, vividly demonstrate the area's rich maritime landscape. Summary of the finds thus far has helped identify topics and areas of particular interest. Thus, the 2005 and 2006 seasons will progress with these questions in mind while completing the cultural resource documentation across much of the rest of the coast.

It is of paramount importance that the remainder of Dreamer's Bay be explored as thoroughly as possible. Since limited time and personnel had curtailed the scope and area that could be surveyed in 2004, a return to the area in 2005 will expand systematic coverage further north, along the base of the cliffs that line the north and northeast edge. The probable mole reported by Flemming and Haggerty certainly merits investigation, and will ideally yield a date for what was apparently an important investment in the maritime facilities of *Vounari tou Kambiou*. It is also hoped that more detailed information will surface to elucidate the earlier history at the inlet, including stronger evidence for Hellenistic or even Classical trade corresponding to that observed on land.

The area just north of Cape Zevgari and south of the West Akrotiri Bays investigated in 2003 is highly unlikely to yield coherent assemblages. Nevertheless, it

⁷⁰⁷ Megaw 1986.

could also prove useful to inspect briefly the remaining shallows in order to ensure that the assemblages noted here are as representative of the underwater record as possible.

A return to Avdimou Bay should aim at more thorough documentation of the Late Roman Gaza amphora wreckage. Full excavation is hardly warranted, since Kingsley has already published surveys and test excavations on a similar shipwreck at Dor. On the other hand, mapping the amphora scatter would prove useful, and raising a few additional amphoras will determine the degree of variation within the assemblage, while helping to pinpoint a more exact date for their manufacture. No metal detectors were available during the 2004 explorations, but a general sweep of the site in 2005 would prove useful. Limited probing throughout and around the assemblage could also determine if additional amphoras or hull remains lie buried beneath the sand. If warranted, samples are also to be collected for botanical and palynological analysis, in hope of determining whether wine was indeed the ship's original cargo. Finally, the presence of stone anchors at Avdimou Bay implies that cursory exploration of Paramali Bay, the similarly oriented bay at the mouth of the Paramali River just east of here, might also prove fruitful.

Another facet to future work will be a more detailed program of ceramic analysis. This is of particular interest for the documentation and study of the numerous LR1 jars especially in light of recent advances in the typology. Although a comprehensive individual typology of the amphora underwater at Dreamer's Bay is far beyond the scope of the survey (especially since it would necessitate removal of many more examples from the seabed), groupings of the forms and fabrics thus far uncovered

could assist in distinguishing products of various workshops, thereby recovering more individual contours in the immense Late Roman trade.

Aside from continued diving operations in shallow water, however, the 2005 season will also utilize remote-sensing over the entire permit area. This endeavor will combine magnetometers and multi-beam sonar to document systematically any cultural remains that could lie outside the rocky cape and small inlets that have been the sole focus thus far. The evenly graded seabed stretches for kilometers while remaining relatively shallow, thus creating ideal conditions for rapid remote-sensing. Roughly half of the bay is within diving depth, and the remaining half continues only to a maximum of approximately 200 m deep, still easily accessible by remotely operated vehicle (ROV). It is hoped that the most comprehensive documentation will be achieved through this combination of expansive remote-sensing and intensive visual inspection of anchorages and dangerous rocks and reefs, a methodology fully warranted and equally well-adapted to the environmental conditions, but thus far without precedent along the island's rich coasts.

WORKS CITED

- Abadie, C. 1989. "Les amphores protobyzantines d'Argos (IVe-Vie siècles)." In *Recherches sur la céramique byzantine*, edited by V. Déroche and J.-M. Spieser, 47-56. *BCH* Suppl. 18. Athens: École française d'Athènes.
- Abadie-Reynal, C. 1991. "Céramique et commerce dans le bassin Égéen du IVe au VIIe Siècle." In *Hommes et richesses dans l'Empire Byzantin*. Vol. 2, 143-62. Paris: P. Lethielleux.
- _____. 1999. "Les amphores romaines en Mer Noire (Ier – IVe s.)." In *Production et commerce des amphores anciennes en Mer Noire*, edited by Y. Garlan, 255-65. Aix-en-Provence: Université de Provence.
- Adamsheck, B. 1979. *Kenchreai, Eastern Port of Corinth*. Vol. 4, *The Pottery*. Leiden: Brill.
- Adan-Bayewitz, D. 1986. "The Pottery from the Late Byzantine Building (Stratum 4) and Its Implications. In *Excavations at Caesarea Maritima, 1975, 1976, 1979 Final Report*, edited by L. Levine and E. Netzer, 90-129. *Qedem* 21. Jerusalem: Hebrew University.
- Adelman, C. 1976. "Review of *Bamboula at Kourion*." *JNES* 35:283-5.
- Alcock, S.E. 1993. *Graecia Capta: The Landscapes of Roman Greece*. Cambridge: Cambridge University Press.
- van Alfen, P.G. 1996. "New Light on the 7th-c. Yassi Ada Shipwreck: Capacities and Standard Sizes of LRA1 Amphoras." *JRA* 9:189-213.
- Alpözen, T., A. Özdaş, and B. Berkaya. 1995. *Commercial Amphoras of the Bodrum Museum of Underwater Archaeology*. Bodrum Museum of Underwater Archaeology 2. Ankara: Dönmez Offset.
- Arthur, P. 1998. "Eastern Mediterranean Amphorae between 500 and 700: A View from Italy." In *Ceramica in Italia, 6-7 secolo: Atti del convegno in onore di John W. Hayes*, edited by J. Hayes and L. Sagui, 157-83. Florence: Insegna del Giglio.
- Arthur, P., and E. Oren. 1998. "The North Sinai Survey and the Evidence of Transport Amphorae for Roman and Byzantine Trading Patterns." *JRA* 11:193-212.
- Artzy, M., and J. Lyon. 2003. "The Ceramics." In *The Ma'agan Mikhael Ship: The*

Recovery of a 2400-Year-Old Merchantman. Vol. 1, edited by E. Black, 183-202. Jerusalem: Israel Exploration Society and University of Haifa.

- Åström, P. 1969. "The Economy of Cyprus and Its Development in the IInd Millennium." *Archaeologia viva* 2 (1):73-80.
- _____. 1975. "Review of *Bamboula at Kourion*." *JHS* 95:263-4.
- Aupert, P. 1978. "Rapport sur les travaux de la mission de l'Ecole Francaise à Amathonte en 1977." *BCH* 102:939-81.
- Bakirtzis, Ch. 1995. "The Role of Cyprus in the Grain Supply of Constantinople in the Early Christian Period." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 247-53. Nicosia: University of Cyprus.
- _____. 1996. "Description and Metrology of Some Clay Vessels from Agios Georgios, Pegeia." In *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day*, edited by V. Karageorghis and D. Michaelides, 153-61. Nicosia: University of Cyprus and Bank of Cyprus.
- Ballet, P. 1995. "Relations céramiques entre l'Égypte et Chypre à l'époque gréco-romaine et byzantine." In *Hellenistic and Roman Pottery in the Eastern Mediterranean: Advances in Scientific Studies*, edited by H. Meyza and J. Mlynarczyk, 11-25. Warsaw: Polish Academy of Sciences.
- Ballet, P., and M. Picon. 1987. "Recherches préliminaires sur les origines de la céramique des Kellia (Égypte). Importations et productions égyptiennes." *Cahiers de la céramique égyptienne* 1:17-48.
- Baram, U. 1995. "Notes on the Preliminary Typologies of Production and Chronology for the Clay Tobacco Pipes of Cyprus." *RDAC*:299-309.
- _____. 1996. "Material Culture, Commodities, and Consumption in Palestine, 1500-1900." Ph.D. diss., University of Massachusetts, Amherst.
- _____. 2000. "Entangled Objects from the Palestinian Past: Archaeological Perspectives for the Ottoman Period, 1500-1900." In *A Historical Archaeology of the Ottoman Empire: Breaking New Ground*, edited by U. Baram and L. Carroll, 137-59. New York: Kluwer Academic/Plenum Publishers.
- Barker, C. 2004. "The Use of Rhodian Amphorae in Hellenistic Graves at Nea Paphos, Cyprus." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-*

29, 2002, edited by J. Eiring and J. Lund, 73-84. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.

Bass, G.F. 1967. *Cape Gelidonya: A Bronze Age Shipwreck*. TAPS 57 (8). Philadelphia: American Philosophical Society.

_____. "The Pottery." In *Yassi Ada I: A Seventh-Century Byzantine Shipwreck*, edited by G.F. Bass and F.H. van Doorninck, Jr., 155-88. College Station: Texas A&M University Press.

_____. 1999. "The Hull and Anchor of the Cape Gelidonya Ship." In *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as He Enters His 65th Year*. Vol. 1, edited by P. Betancourt, V. Karageorghis, R. Laffineur and W.-D. Niemeier, 21-5. *Aegaeum* 20. Liège and Austin: Université de Liège and University of Texas.

Bass, G.F., and F.H. van Doorninck, Jr. 1971. "A Fourth-Century Shipwreck at Yassi Ada." *AJA* 75 (1):27-37.

Bass, G.F., and M.L. Katzev. 1968. "New Tools for Underwater Archaeology." *Archaeology* 21:164-73.

Bear, L., and S. Morel. 1960. *The Geology and Mineral Resources of the Agros-Akrotiri Area*. Cyprus Geological Survey Department Memoir 7. Nicosia: Government of Cyprus.

Bekker-Nielsen, T. 2004. *The Roads of Ancient Cyprus*. Copenhagen: Museum Tusulanum Press.

Bekker-Nielsen, T., P. Crabb, J. Fejfer, L. Hannestad, N. Hannestad, P.P. Hayes, J.R. Leonard, and O. Thomsen. 1995. "Introduction." In *Ancient Akamas*. Vol. 1, *Settlement and Environment*, edited by J. Fejfer, 15-25. Aarhus: Aarhus University Press.

Bennett, M.E., R.J. Bennett, J.A. Blakely, and R. Brinkman. "Petrological and Heavy Mineral Analysis of Selected Amphora Fragments." Appendix IV in *Caesarea Maritima: The Pottery and Dating of Vault 1: Horreum, Mithraeum, and Later Uses*, edited by J.A. Blakely, 227-48. Lewiston, NY: Edwin Mellen Press.

Bennett, Jr., W.J., and J.A. Blakely. 1989. *Tell el-Hesi: The Persian Period (Stratum V)*. Winona Lake, IN: Eisenbrauns.

Benson, J. 1972. *Bamboula at Kourion: The Necropolis and the Finds*. Philadelphia: University of Pennsylvania Press.

- _____. 1973. *The Necropolis of Kaloriziki. SIMA 36*. Göteborg: Paul Åströms Förlag.
- Blakely, J.A. 1987. *Caesarea Maritima: The Pottery and Dating of Vault 1: Horreum, Mithraeum, and Later Uses*. Lewiston, NY: Edwin Mellen Press.
- _____. 1988. "Ceramics and Commerce: Amphorae from Caesarea Maritima." *BASOR* 271:31-50.
- Blue, L. 1995. "A Topographical Analysis of the Location of Harbours and Anchorages of the Eastern Mediterranean in the Middle and Late Bronze Ages, and Their Relation to Routes of Trade." Ph.D. diss., University of Oxford.
- _____. 1997. "Cyprus and Cilicia: the Typology and Palaeogeography of Second Millennium Harbors." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R.L. Hohlfelder and H.W. Swiny, 31-43. American Schools of Oriental Research Archaeological Reports 4. Cyprus American Archaeological Research Institute Monograph 1. Atlanta: American Schools of Oriental Research.
- Boardman, J., and J. Hayes. 1973. *Excavations at Tocra, 1963-65: The Archaic Deposits II and Later Deposits*. London: British School of Archaeology at Athens.
- Bolger, D. 1988. *Erimi-Pamboula: A Chalcolithic Settlement in Cyprus. BAR-IS 443*. Oxford: B.A.R.
- Bonifay, M., and D. Piéri. 1995. "Amphoras du Ve au VIIe s. à Marseille: Nouvelles données sur la typologie et le contenu." *JRA* 8:94-120.
- Bonifay, M., and F. Villedieu. 1989. "Importations d'amphores orientales en Gaule (Ve-VIIe siècle)." In *Recherches sur la céramique byzantine*, edited by V. Déroche and J.-M. Spieser, 17-46. *BCH* Suppl. 18. Athens: École française d'Athènes.
- Bonnet, F. 1994. "La matériel archéologique récolté en 1977, 1982 et 1983 aux Qouçoûr er-Roubâ'iyât." In *Explorations aux Qouçoût er-Roubâ'iyât. Rapport des campagnes 1982 et 1983*, edited by R. Kasser and F. Bonnet, 349-406. Louvain: Editions Peeters.
- Böttger, B. 1992. "Die Kaiserzeitlichen und Spätantiken Amphoren aus dem Kerameikos." *MdI* 107:315-81.
- Brenni, G. 1985. "The *Dolia* and the Sea-Borne Commerce of Imperial Rome." M.A.

thesis, Texas A&M University, College Station.

- Brusić, Z. 1976. "Byzantine Amphorae (9th to 12th century) from Eastern Adriatic Underwater Sites." *ArchJug* 17:37-49.
- Buhl, M.-L. 1983. *Sukas*. Vol. 7. Copenhagen: Munksgaard.
- Buitron-Oliver, D. 1996. "Excavation and Architecture." In *The Sanctuary of Apollo Hylates at Kourion: Excavations in the Archaic Precinct*, edited by D. Buitron-Oliver, 1-16. *SIMA* 109. Jonsered: Paul Åströms Förlag.
- _____. 1999. "Kourion: The Elusive Argive Settlement and Its Burial Grounds from the 11th to the 8th Century B.C." In *Cyprus: The Historicity of the Geometric Horizon*, edited by M. Iacovou and D. Michaelides, 69-77. Nicosia: Archaeological Research Unit, University of Cyprus.
- Calvet, Y. 1986. "Les amphores chrypriotes et leur diffusion en Méditerranée orientale." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur and Y. Garlan, 505-14. *BCH* Suppl. 13. Athens: École française d'Athènes.
- Cameron, A. 1992. "Cyprus at the Time of the Arab Conquests." *Cyprus Historical Review* 1: 27-49.
- Carpenter, J. 1981. "Excavations at Phaneromeni: 1975-1978." In *Studies in Cypriote Archaeology*, edited by J. Biers and D. Soren, 59-78. *UCLAMon* 18. Los Angeles: University of California Press.
- Catling, H.W. 1963. "Patterns of Settlement in Bronze Age Cyprus." *OpAth* 4:129-69.
- _____. 1972. "An Early Byzantine Pottery Factory at Dhioros in Cyprus." *Levant* 4:1-82.
- del Cerro, L.F., W.F. de la Vega, and A. Hesnard. 1977. "Contribution à l'établissement d'une typologie des amphores dites 'Dressel 2-4'." In *Méthodes classiques et méthodes formelles dans l'étude des amphores*, edited by École française de Rome, 179-206. *CÉFR* 32. Rome: École française de Rome.
- Chollot, M. 1973. "Perspectives d'archéologie sous-marine au Liban." *CahArchSubaq* 2:147-53.
- Christou, D. 1983. "Excavations at Kourion: First Preliminary Report, 1975-1982." *RDAC*:266-80.
- _____. 1994. "Kourion in the 11th Century B.C." In *Cyprus in the 11th Century*

- B.C.*, edited by V. Karageorghis, 177-88. Nicosia: A.G. Leventis Foundation.
- _____. 1997. "Appendix: Some Brief Thoughts on the Ancient Harbor of Kourion." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R.L. Hohlfelder and H.W. Swiny, 371-2. American Schools of Oriental Research Archaeological Reports 4. Cyprus American Archaeological Research Institute Monograph 1. Atlanta: American Schools of Oriental Research.
- Christou, D., and A. Nicolaïdes. 1998. "La basilique portuaire." *Le Monde de la Bible* 112:50-1.
- Collombier, A. 1987. "Modifications des lignes de ravin et ports antiques de Chypre; État de la question." In *Déplacements des lignes de ravin en Méditerranée d'après les données de l'archéologie*, edited by M. Euzennat, R. Paskoff and P. Troussat, 159-72. Paris: CNRS.
- Condurachi, E. 1954. *Histria*. Bucharest: Editura Academiei Republicii Socialiste Romania.
- Congès, G., M. Bonifay, J.-P. Brun, and M. Pasqualini. 1983. "Un dépotoir de la fin de l'antiquité dans la grotte de la Fourbine, Saint-Martin-de-Crau (B.-du-Rh.)." *RANarb* 16:347-60.
- Cowin, M. 1986. "Artifacts Recovered off the Southwestern Turkish Coast by Institute of Nautical Archaeology Shipwreck Surveys in 1973 and 1980." M.A. thesis, Texas A&M University, College Station.
- Curtois, L. 1980. "Examen pétrographique et caractérisation matérielle de quelques céramiques de Tell Keisan." In *Tell Keisan (1971-1976): Une cite phénicienne en Galilée*, edited by J. Briand and J.-B. Humbert, 353-60. Fribourg: Editions Universitaires.
- Daszewski, W.A. 1970. "Polish Excavations at Kato (Nea) Paphos, in 1968-1969." *RDAC*:112-41.
- _____. 1981. "Port główny i przystanie pomocnicze w Nea Paphos w swietle obserwacji podwodnych." *Meander* 6:327-36.
- Decker, M. 2001. "Food for an Empire: Wine and Oil Production in North Syria." In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 69-86. Oxford: Oxbow Books.
- Demesticha, S. 2000. "The Paphos Kiln: Manufacturing Techniques of LR1 Amphoras."

Rei Cretariae Romanae Favtorvm Acta 36:549-54.

_____. 2002. "Οι σφαιρικοί αμφορείς της ύστερης ρωμαϊκής περιόδου (4ος – 7ος αι. μ.Χ.)" *Enalia* 6:115-21.

_____. 2003. "Amphora Production on Cyprus during the Late Roman Period." In *Actes du VIIe congrès international sur la céramique médiévale en Méditerranée, Thessaloniki, 11-16 Octobre 1999*, edited by C. Bakirtzis, 469-76. Athens: Caisse des Recettes Archéologiques.

Demesticha, S., and D. Michaelides. 2001. "The Excavation of a Late Roman 1 Amphora Kiln in Paphos." In *La céramique byzantine et proto-islamique en Syrie-Jordanie (IVe-VIIIe siècles apr. J.-C.)*, edited by E. Villeneuve and P.M. Watson, 289-96. Beyrouth: Institut Français d'Archéologie du Proche-Orient.

Deshayes, J. 1963. *La nécropole de Ktima*. Paris: Librairie Orientaliste Paul Geuthner.

Diederichs, C. 1980. *Salamine de Chypre*. Vol. 9, *Céramiques hellénistiques, romaines et byzantines*. Paris: de Boccard.

Dikaios, P. 1961. *Sotira*. Philadelphia: University Museum.

_____. 1962. "The Stone Age." In *Swedish Cyprus Expedition*, Vol. 4, pt. 1A, 1-203. Lund: Swedish Cyprus Expedition.

Dimitrov, B. 1976. "Stone Anchors from Sozopol Bay." *IJNA* 5 (1):81-90.

_____. 1979. "Underwater Research along the South Bulgarian Black Sea Coast in 1976 and 1977." *IJNA* 8 (1):70-9.

van Doorninck, Jr., F.H. 1982a. "The Anchors." In *Yassi Ada I: A Seventh-Century Byzantine Shipwreck*, edited by G.F. Bass and F.H. van Doorninck, Jr., 121-43. College Station: Texas A&M University Press.

_____. 1982b. "The Galley." In *Yassi Ada I: A Seventh-Century Byzantine Shipwreck*, edited by G.F. Bass and F.H. van Doorninck, Jr., 87-120. College Station: Texas A&M University Press.

_____. 1989. "The Cargo Amphoras on the 7th Century Yassi Ada and 11th Century Serçe Limani Shipwrecks: Two Examples of a Reuse of Byzantine Amphoras as Transport Jars." In *Recherches sur la céramique byzantine*, edited by V. Déroche and J.-M. Spieser, 247-57. *BCH* Suppl. 18. Athens: École française d'Athènes.

Dothan, M. 1965. "The Fortress at Kadesh-Barnea." *IEJ* 15 (3):134-43.

- Dunbabin, K.M.D. 1999. *Mosaics of the Greek and Roman World*. Cambridge: Cambridge University Press.
- Earthmetrix Geotechnical and Materials Engineers of Nicosia. 1998. "British Sovereign Bases, Salt Lake Akrotiri Subsurface Investigation." Episkopi: Gifford and Kalisperas.
- Egloff, M. 1977. *Kellia: La poterie copte*. Geneva: Georg.
- Elton, H. 2005. "The Economy of Southern Asia Minor and LR1 Amphorae." In *LRCW I. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean, Archaeology and Archaeometry*, edited by J. Ma. Gurt i Esparraguera, J. Buxeda i Garrigós and M.A. Cau Ontiveros, 691-5. *BAR-IS* 1340. Oxford: Archaeopress.
- Emery, W.B., and L.P. Kirwan. 1938. *The Royal Tombs of Ballana and Qustul*. 2 vols. Cairo: Government Press.
- Empereur, J.-Y. 1985. "Le port." *BCH* 109:984-9.
- _____. 1986. "Un atelier de Dressel 2-4 en Égypte au IIIe siècle de notre ère." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur and Y. Garlan, 599-608. *BCH Suppl.* 13. Athens: École française d'Athènes.
- _____. 1995. "Le port hellénistique d'Amathonte." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 131-8. Nicosia: University of Cyprus.
- Empereur, J.-Y., and A. Hesnard. 1987. "Les amphores hellénistiques." In *Céramiques hellénistiques et romaines*. Vol. 2, edited by P. Lévêque and J.-P. Morel, 9-71. Centre de recherches d'histoire ancienne 70. Paris: Les Belles Lettres.
- Empereur, J.-Y., and M. Picon. 1986a. "Des ateliers d'amphores à Paros et à Naxos." *BCH* 110:495-510.
- _____. 1986b. "À la recherche des fours d'amphores." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur and Y. Garlan, 103-26. *BCH Suppl.* 13. Athens: École française d'Athènes.
- _____. 1988. "The Production of Aegean Amphorae: Field and Laboratory Studies." In *New Aspects of Archaeological Science in Greece*, edited by R.E. Jones and H.W. Catling, 33-8. Fitch Laboratory Occasional Paper 3. Athens: British School at Athens.

- _____. 1989. "Les régions de production d'amphores impériales en Méditerranée orientale." In *Amphores romaines et histoire économique*, 223-48. *CÉFR* 114. Rome: École française de Rome.
- _____. 1992. "La reconnaissance des productions des ateliers céramiques: L'exemple de la Maréotide." In *Cahiers de la céramique égyptienne: Ateliers de potiers et productions céramiques en Égypte*, edited by P. Ballet, 145-52. Cairo: Institut Français d'Archéologie Orientale.
- Empereur, J.-Y., and N. Tuna. 1989. "Hiérotélès, potier rhodien de la Pérée." *BCH* 113:277-99.
- Empereur, J.-Y., and C. Verlinden. 1986. "Le port antique d'Amathonte a Chypre." *ArchaeologiaPar* 215:32-7.
- _____. 1987. "The Underwater Excavation at the Ancient Port of Amathus in Cyprus." *IJNA* 16 (1):7-18.
- Engvig, O., and P. Åström. 1975. *Hala Sultan Tekke. Vol. 2, The Cape Kiti Survey. SIMA* 44:2. Göteborg: Paul Åströms Förlag.
- Engvig, O., and M. Beichmann. 1984. "Underwater Activities and the Situation at Cape Kiti, Cyprus." *OpAth* 15:181-6.
- Erten, H.N., D. Kassab Tezgör, I.R. Türkmen, and A. Zararsız. 2004. "The Typology and Trade of the Amphorae of Sinope. Archaeological Study and Scientific Analyses. In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 103-15. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Evrin, V., G. Öke, A. Türkmenoğlu, and Ş. Demirci. 2002. "Stone Anchors from the Mediterranean Coasts of Anatolia, Turkey: Underwater Surveys and Archaeometrical Investigations." *IJNA* 31 (2):254-67.
- Fabian, P., and Y. Goren. 2001. "A Byzantine Warehouse and Anchorage South of Ashqelon." *Atiqot* 42:211-9.
- _____. 2002. "A New Type of Late Roman Storage Jar from the Negev." In *The Roman and Byzantine Near East*, Vol. 3, edited by J.H. Humphrey, 145-53. *JRA* Suppl. 49. Portsmouth: Journal of Roman Archaeology.
- Fentress, E., and P. Perkins. 1988. "Counting African Red Slip Ware." In *L'Africa*

romana: Atti del V convegno di studio, Sassari, 11-13 Dicembre 1987, edited by A. Mastino, 205-14. Sassari: Universita degli Studi di Sassari.

Flemming, N.C. 1974. "Report of Preliminary Underwater Investigations at Salamis, Cyprus." *RDAC*:163-73.

_____. 1978. "Holocene Eustatic Changes and Coastal Tectonics in the Northeast Mediterranean: Implications for Models of Crustal Consumption." *Philosophical Transactions of the Royal Society of London, Series A* 289:405-58.

Flemming, N.C., N.M.G. Czartoryska, and P.M. Hunter. 1973. "Archaeological Evidence for Eustatic and Tectonic Components of Relative Sea Level Change in the South Aegean." In *Marine Archaeology*, edited by D.J. Blackman, 1-66. Hamden, CT: Archon Books.

Flourentzos, P. 1991. *Excavations in the Kouris Valley*. Vol. 1, *The Tombs*. Nicosia: Department of Antiquities.

_____. 1996. *Excavations in the Kouris Valley*. Vol 2, *The Basilica of Alassa*. Nicosia: Department of Antiquities.

Follin Jones, F. 1950. "The Pottery." In *Excavations at Gözli Kule, Tarsus*. Vol. 1, *The Hellenistic and Roman Periods*, edited by H. Goldman, 149-296. Princeton: Princeton University Press.

Fonquerle, D. 1971. "Les instruments d'ancrage en pierre au Musée d'Agde." *RANarb* 4:207-15.

Frost, H. 1963a. "From Rope to Chain: On the Development of Anchors in the Mediterranean." *Mariner's Mirror* 49 (1):1-20.

_____. 1963b. *Under the Mediterranean*. Englewood Cliffs, NJ: Prentice-Hall.

_____. 1966. "The Arwad Plans 1964: A Photogrammetric Survey of Marine Installations." *Annales archéologiques de Syrie* 16:13-28.

_____. 1969a. "The Stone-Anchors of Byblos." *MélBeyrouth* 45:425-42.

_____. 1969b. "The Stone-Anchors of Ugarit." In *Ugaritica*, Vol. 6, edited by C. Schaeffer, 235-45. Paris: Mission Archéologique de Ras Shamra.

_____. 1970a. "Bronze-Age Stone-Anchors from the Eastern Mediterranean." *Mariner's Mirror* 56 (4):377-94.

- _____. 1970b. "Some Cypriot Stone-Anchors from Land Sites and from the Sea." *RDAC*:14-24.
- _____. 1973. "Anchors, the Potsherds of Marine Archaeology: On the Recording of Pierced Stones from the Mediterranean." In *Marine Archaeology*, edited by D. Blackman, 397-409. Hamden, CT: Archon Books.
- _____. 1985. "The Kition Anchors." In *Excavations at Kition. Vol. 5, The Pre-Phoenician Levels*, edited by V. Karageorghis and M. Demas, 281-321. Nicosia: Department of Antiquities.
- _____. 1986. "Stone Anchors: Criteria for a Corpus." *Thracia Pontica* 3:354-69.
- _____. 1991. "Anchors Sacred and Profane." In *Ras-Shamra-Ougarit. Vol 6, Arts et Industries de la Pierre*, edited by M. Yon, 355-410. Paris: Editions Recherche sur les Civilisations.
- _____. 2001. "Anchor Look-Alikes." In *Tropis VI: 6th International Symposium on Ship Construction in Antiquity*, edited by H. Tzalas, 197-206. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- des Gagniers, J., and Tran Tam Tinh. 1985. *Soloi: Dix campagnes de fouilles, 1964-1974*. Quebec: Ste. Foy.
- Galili, E. 1985. "A Group of Stone Anchors from Newe-Yam." *IJNA* 14 (2):143-53.
- _____. 1987. "Corrections and Additions to 'A Group of Stone Anchors from Newe-Yam' (*IJNA* 14: 143-53)." *IJNA* 16 (2):167-8.
- Galili, E., U. Dahari, and J. Sharvit. 1993. "Underwater Surveys and Rescue Excavations along the Israeli Coast." *IJNA* 22 (1):61-77.
- Galili, E., and K. Raveh. 1988. "Stone Anchors with Carvings from the Sea off Megadim, Israel." *Sefunim* 7:41-7.
- Galili, E., B. Rosen, and J. Sharvit. 2002. "Fishing-Gear Sinkers Recovered from an Underwater Wreckage Site, off the Carmel Coast, Israel." *IJNA* 31 (2):182-201.
- Galili, E., J. Sharvit, and M. Artzy. 1994. "Reconsidering Byblian and Egyptian Stone Anchors Using Numeral Methods: New Finds from the Israeli Coast." *IJNA* 23 (2):93-107.
- Garnett, R., and J. Boardman. 1961. "Underwater Reconnaissance off the Island of Chios, 1954." *BSA* 56:102-13.

- Gaur, A.S., Sundaresh, S. Tripathi, P. Gudigar, K.H. Vosa, and S.N. Bandodker. 2001. "A Group of 20 Stone Anchors from the Waters of Dwarka, on the Gujarat Coast, India." *IJNA* 30 (1):95-108.
- Giangrande, C., and G. Richards. "Cyprus Underwater Survey." 1985. *Progress in Underwater Science* 10:159-64.
- Giangrande, C., G. Richards, D. Kennet, and J. Adams. 1987. "Cyprus Underwater Survey, 1983-1984 A Preliminary Report." *RDAC*:185-97.
- Gifford, J.A. 1985. "Post-Bronze Age Coastal Change in the Vicinity of Kition." In *Excavations at Kition. Vol. 5, The Pre-Phoenician Levels. Pt. 1*, edited by V. Karageorghis and M. Demas, 375-87. Nicosia: Department of Antiquities.
- Given, M., and A.B. Knapp 2003. *The Sydney Cyprus Survey Project: Social Approaches to Regional Archaeological Survey*. Monumenta Archaeologica 21. Los Angeles: Cotsen Institute of Archaeology.
- Giudice, F., and E. Giudice. 1999. "Pafos, Garrison's Camp. Vie campagna." *RDAC*:279-314.
- Gjerstad, E. 1946. "Decorated Metal Bowls from Cyprus." *OpArch* 4:1-18.
- _____. 1960. "Pottery Types: Cypro-Geometric to Cypro-Classical." *OpAth* 3:105-22.
- Gomez, B., and P. Pease. 1992. "Early Holocene Cypriot Coastal Palaeogeography." *RDAC*:1-8.
- Gomez, B., M.L. Rautman, H. Neff, and M.D. Glascock. 1996. "Clays Used in the Manufacture of Cypriot Red Slip Pottery and Related Ceramics." *RDAC*:69-82.
- Goodwin, J. 1984. *An Historical Toponymy of Cyprus*. 2 vols. 4th rev. ed. Nicosia: MAM.
- Goren, Y., S. Bunimovitz, I. Finkelstein, and N. Na'aman. 2003. "The Location of Alashiya: New Evidence from Petrographic Investigation of Alashiyan Tablets from El-Amarna and Ugarit." *AJA* 107 (2):233-55.
- Goren, Y., I. Finkelstein, and N. Na'aman. 2004. *Inscribed in Clay. Provenance Study of the Amarna Tablets and Other Ancient Near Eastern Texts*. Tel Aviv: Tel Aviv University.
- Goring, E. 1995. "The Kourion Sceptre: Some Facts and Factoids." In *Klados: Essays in*

- Honor of J.N. Coldstream*, edited by J. Coldstream and C. Morros, 103-10. London: University of London.
- Grace, V.R. 1962. "Stamped Handles of Commercial Amphoras." In *Excavations at Nessana*, Vol. 1, edited by H.D. Colt, 106-30. London: British School of Archaeology in Jerusalem.
- _____. 1963. "Notes on the Amphoras from the Koroni Peninsula." *Hesperia* 32 (3):319-34.
- _____. 1971. "Samian Amphoras." *Hesperia* 40 (1):52-95.
- _____. 1979. "Kouriaka." In *Studies Presented in Memory of Porphyrios Dikaios*, edited by V. Karageorghis, H.W. Catling, K. Nicolaou, A. Papageorgiou, M. Loulloupis, D. Christou, and I. Nicolaou, 178-88. Nicosia: Lions Club of Nicosia.
- Grace, V.R., and M. Savvatianou-Pétropoulakou. 1970. "Les Timbres Amphoriques Grecs." In *L'Îlot de la Maison des Comédiens. Délos 27*:277-382.
- Graf, B. 2001. "Appendix: Türkische Tabakpfeifen "Chibouk" aus Kouklia." *RDAC*:390-6.
- Green, J. 1971. *Cape Andreas Expedition, 1969*. London: Research Laboratory for Archaeology.
- _____. 1973. "An Underwater Archaeological Survey of Cape Andreas, Cyprus, 1969-70: A Preliminary Report." In *Marine Archaeology*, edited by D. Blackman, 141-79. Colston Papers 23. Hamden: Archon.
- Grivaud, G. 1990. *Excerpta Cypria Nova*, Vol. 1, *Voyageurs occidentaux a Chypre au XVème siècle*. Sources et études de l'histoire de Chypre 15. Nicosia: Cyprus Research Centre.
- Grossmann, E. 2001. *Maritime Tel Michal and Apollonia*. BAR-IS 915. Oxford: Archaeopress.
- Grossmann, E., and S. Kingsley. 1996. "A Three-Holed Stone Anchor with Wood Remains from Crusader Arsuf (Apollonia), Israel." *IJNA* 25 (1):49-54.
- Guilaine, J., and F. Briois. 2001. "Parekklisha Shillourokambos: An Early Neolithic Site in Cyprus." In *The Earliest Prehistory of Cyprus: From Colonization to Exploitation*, edited by S. Swiny, 37-53. American Schools of Oriental Research

Archaeological Report 5. Cyprus American Archaeological Research Institute
Monograph 2. Boston: American Schools of Oriental Research.

- Gunneweg J., and I. Perlman. 1991. "The Origin of 'Loop-Handle' Jars from Tell Keisan." *RBibl* 98:591-9.
- Günsenin, N. 1989. "Amphores byzantines dans les musées turcs." In *Recherches sur la céramique byzantine*, edited by V. Déroche and J.-M. Spieser, 267-76. Athens: École française d'Athènes.
- Hadas, G. 1992. "Stone Anchors from the Dead Sea." *'Atiqot* 21:55-7.
- _____. 1993. "A Stone Anchor from the Dead Sea." *IJNA* 22 (1):89-90.
- Hadjichristophi, F. 1989. "Les tuiles de la basilique." *BHC* 113:875-8.
- Hadjisavvas, S. 1989. "A Late Cypriot Community at Alassa." In *Early Society in Cyprus*, edited by E. Peltenburg, 32-42. Edinburgh: University of Edinburgh.
- _____. 1991a. *Καταβολές*. Vol. 1, *Η αρχαιολογική επισκόπηση 20 κατεχόμενων σήμερα χωριών της επαρχίας Αμμοχώστου*. Nicosia: Department of Antiquities.
- _____. 1991b. "LC IIC to LC IIIA without Intruders: The Case of Alassa-Pano Mandilaris." In *Cypriot Ceramics: Reading the Prehistoric Record*, edited by J. Barlow, D. Bolger and B. Kling, 173-80. University Museum Monograph 74. Philadelphia: University Museum.
- _____. 1992. *Olive Oil Processing in Cyprus from the Bronze Age to the Byzantine Period*. *SIMA* 99. Nicosia: Paul Åströms Förlag.
- _____. 1994. "Alassa Archaeological Project 1991-1993." *RDAC*:107-14.
- _____. 1996a. "Alassa: A Regional Centre of Alasia?" In *Late Bronze Age Settlement in Cyprus: Function and Relationship*, edited by P. Åström and E. Herscher, 23-38. *SIMA-PB* 126. Jonsered: Paul Åströms Förlag.
- _____. 1996b. "The Economy of the Olive." In *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day*, edited by V. Karageorghis and D. Michaelides, 127-38. Nicosia: University of Cyprus and Bank of Cyprus.
- _____. 1997. *Agia Napa: Excavations at Makronisos and the Archaeology of the Region*. Nicosia: Agia Napa Municipality and Department of Antiquities.

- _____. 2001. "Crete and Cyprus: Religion and Script: The Case of Alassa." In *Kreta und Zypern, Religion und Schrift*, 205-31. Altenburg: DZA Verlag für Kultur und Wissenschaft.
- Haggerty, F. n.d. "Akrotiri Wall: The Ancient Breakwater at Akrotiri in Cyprus." 2 pts. Unpublished site report on file at Western Sovereign Base Area Archaeological Society, Akrotiri, Cyprus.
- Hautumm, W. 1981. *Studien zu Amphoren der spätrömischen und frühbyzantinischen Zeit*. Fulda: Wolfgang Hautumm.
- Hayes, J.W. 1972. *Late Roman Pottery*. London: British School at Rome.
- _____. 1977. "Early Roman Wares from the House of Dionysos, Paphos." *Rei Cretariae Romanae Favtorvm Acta* 17-18:96-108.
- _____. 1980a. "Problèmes de la céramique des VIIème – IXème siècles a Salamine et a Chypre." In *Salamine de Chypre: Histoire et archéologie*, edited by M. Yon, 375-88. Paris: CNRS.
- _____. 1980b. *Supplement to Late Roman Pottery*. London: British School at Athens.
- _____. 1980c. "Turkish Clay Pipes: A Provisional Typology." In *The Archaeology of the Clay Tobacco Pipe*, Vol. 4, edited by P. Davey, 3-10. *BAR-IS* 92. Oxford: B.A.R.
- _____. 1991. *Paphos*. Vol. 3, *The Hellenistic and Roman Pottery*. Nicosia: Department of Antiquities.
- _____. 1992. *Excavations at Saraçhane in Istanbul*. Vol. 2, *The Pottery*. Princeton: Princeton University Press.
- _____. 1997. *Handbook of Mediterranean Roman Pottery*. London: British Museum Press.
- Held, S. 1988. "Sotira-Kaminoudhia Survey: Preliminary Report of the 1983 and 1984 Seasons." *RDAC*:53-62.
- _____. 2003. "The Regional Archaeological Survey." In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 467-74. American Schools of Oriental Research Archaeological Reports 8. Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.

- Herscher, E. 2003. "The Ceramics." In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 145-210. American Schools of Oriental Research Archaeological Reports 8. Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.
- Herscher, E., and S. Swiny. 1992. "Picking up the Pieces: Two Plundered Bronze Age Cemeteries." In *Studies in Honour of Vassos Karageorghis*, edited by G. Ioannides, 69-87. Nicosia: Society of Cypriot Studies.
- _____. 2003. "Chronology." In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 495-505. American Schools of Oriental Research Archaeological Reports 8. Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.
- Hesnard, A. 1986. "Imitations et raisonnement archéologie: A propos des amphores de Rhodes et de Cos." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur and Y. Garlan, 69-79. *BCH* Suppl. 13. Athens: École française d'Athènes.
- Heywood, H. 1982. "The Archaeological Remains of the Akrotiri Peninsula." In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 162-75. Nicosia: Department of Antiquities.
- Hill, G. 1940-1952. *A History of Cyprus*. 3 vols. Cambridge: Cambridge University Press.
- Hohlfelder, R.L. 1995a. "Ancient Paphos Beneath the Sea: A Survey of the Submerged Structures." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 191-210. Nicosia: University of Cyprus.
- _____. 1995b. "The Cave of the Amphoras." *BiblArch* 58 (1):49-51.
- Hohlfelder, R.L., and J.R. Leonard. 1994. "Underwater Exploration at Paphos, Cyprus: The 1991 Preliminary Survey." *AASOR* 51:45-62.
- Holladay, J. 1982. *Cities of the Delta*. Vol. 3, *Tell el-Maskhuta*. American Research Center in Egypt Report 6. Malibu: Undena Publications.
- Howitt-Marshall, D. 2003. "Cyprus Underwater Project 2002: A Preliminary Report." *Enalia* 7:28-37.
- Huffstot, J. 1987. "Roof Tiles." In *The Sanctuary of Apollo Hylates at Kourion, Cyprus*,

edited by D. Soren, 263-99. Tucson: University of Arizona Press.

- Hult, G. 1977. "Stone Anchors in Area 8." In *Hala Sultan Tekke*, Vol. 3, *Excavations 1972*, edited by P. Åström, G. Hult and M.S. Olofsson, 147-9. *SIMA* 45.3. Göteborg: Paul Åströms Förlag.
- _____. 1981. *Hala Sultan Tekke*, Vol. 7, *Excavations in Area 8 in 1977*. *SIMA* 45.7. Göteborg: Paul Åströms Förlag.
- Humbert, J.-B. 1991. "Essai de classification des amphores dites 'à anses de panier'." *RBibl* 98:574-90.
- Iacovou, M. 1988. *The Pictorial Pottery of Eleventh Century B.C. Cyprus*. *SIMA* 79. Göteborg: Paul Åströms Förlag.
- _____. 1994. "The Topography of Eleventh Century B.C. Cyprus." In *Cyprus in the 11th Century B.C.*, edited by V. Karageorghis, 149-65. Nicosia: A.G. Leventis Foundation.
- Jacobsen, K.W. 1998. "Transport Amphorae Found 1993-1996." *Proceedings of the Danish Institute at Athens II*, edited by S. Dietz and S. Isager, 349-59. Athens: Danish Institute at Athens.
- _____. 2002. "Cypriot Transport Amphorae in the Archaic and Classical Period." In *Pots for the Living, Pots for the Dead*, edited by A. Rathje, M. Nielsen and B. Rasmussen, 169-84. *Acta Hyperborea* 9. Copenhagen: Museum Tusulanum Press.
- _____. 2004. "Regional Distribution of Transport Amphorae in Cyprus in the Late Roman Period." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 143-8. *Monographs of the Danish Institute at Athens* 5. Athens: Danish Institute at Athens.
- _____. 2005. "Late Roman Coarse Wares and Transport Amphorae from Panayia Ematousa, Cyprus." In *LRCW I. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean, Archaeology and Archaeometry*, edited by J. Ma. Gurt i Esparraguera, J. Buxeda i Garrigós and M.A. Cau Ontiveros, 625-34. *BAR-IS* 1340. Oxford: Archaeopress.
- Jehasse, L. 1981. "La céramique attique à vernis noir de Kition de la fin du VIe, à la fin

- du IVe siècle avant J.C.” In *Excavations at Kition*. Vol. 4, *The Non-Cypriote Pottery*, by V. Karageorghis, J.N. Coldstream, P.M. Bikai, A.W. Johnston, M. Robertson, and L. Jehasse, 75-99. Nicosia: Department of Antiquities.
- Jenkins, R.J.H. 1953. “Cyprus between Byzantium and Islam, A.D. 688-965.” In *Studies Presented to David Moore Robinson on His Seventieth Birthday*, Vol. 2, edited by G.E. Mylonas, 1006-14. St. Louis: Washington University Press.
- Johnson, B.L. 1988. “The Pottery.” In *Excavations at Jalame: Site of a Glass Factory in Late Roman Palestine*, edited by G. Weinberg, 137-226. Columbia: University of Missouri Press.
- Johnson, B.L., and L.E. Stager. 1995. “Ashkelon: Wine Emporium of the Holy Land.” In *Recent Excavations in Israel: A View to the West*, edited by S. Gitin, 95-109. Dubuque: Kendall/Hunt Publishers.
- Joncheray, J.-P. 1975. “L’épave “E” du Cap Dramont: Sigillée Claire D et amphores rescapées du pillage.” *CahArchSubaq* 4:141-6.
- Jurišić, M. 2000. *Ancient Shipwrecks of the Adriatic*. BAR-IS 828. Oxford: Archaeopress.
- Karageorghis, V. 1967. *Excavations in the Necropolis of Salamis*. Vol. 1. Nicosia: Department of Antiquities.
- _____. 1973-1974. *Excavations in the Necropolis of Salamis*. Vol. 3. Nicosia: Department of Antiquities.
- _____. 1978. “Chronique des fouilles à Chypre en 1977.” *BCH* 102:879-938.
- _____. 1982. *Cyprus from the Stone Age to the Romans*. London: Thames and Hudson.
- _____. 1984. “New Light on Late Bronze Age Cyprus.” In *Cyprus at the Close of the Late Bronze Age*, edited by V. Karageorghis and J. Muhly, 19-22. Nicosia: A.G. Leventis Foundation.
- _____. 1998. *Cypriote Archaeology Today: Achievements and Perspectives*. Glasgow: University of Glasgow.
- Karageorghis, V., and M. Demas. 1984. *Excavations at Maa-Palaeokastro 1979-1986*. Nicosia: Department of Antiquities.
- Karagiorgou, O. 2001. “LR2: A Container for the Military *annona* on the Danubian

- Border?" In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 129-66. Oxford: Oxbow Books.
- Kassab Tezgör, D. 1999. "Types amphoriques fabriqués à Demirci près de Sinope." In *Production et commerce des amphores anciennes en Mer Noire*, edited by Y. Garlan, 117-23. Aix-en-Provence: Université de Provence.
- Kassab Tezgör, D., and I. Tatlıcan. 1998. "Fouilles des ateliers d'amphores à Demirci, près de Sinope en 1996 et 1997." *Anatolia Antiqua* 6:423-42.
- Kassab Tezgör, D., and M. Touma. 2001. "Amphores exportées de Mer Noire en Syrie du nord." *Anatolia Antiqua* 9:105-15.
- Katzev, S.W. 1982. "Miscellaneous Finds." In *Yassi Ada I: A Seventh-Century Byzantine Shipwreck*, edited by G.F. Bass and F.H. van Doorninck, Jr., 266-95. College Station: Texas A&M University Press.
- Kawanish, H., and S. Tsujimura. 1995. "Adjoining Area outside the North Gate." In *Akoris: Report of the Excavations at Akoris in Middle Egypt, 1981-1992*, edited by Kodaigaku Kyokai, 108-30. Kyoto: Koyo Shobo.
- Keay, N. 1989. "Part I: The Amphorae." In *Excavations at Sabratha 1948-1951. Vol. 1, The Finds. Part 1*, edited by M. Fulford and M. Hall, 5-85. Society for Libyan Studies Monograph 1. Gloucester: Alan Sutton.
- Keay, S. 1984. *Late Roman Amphorae in the Western Mediterranean. BAR-IS 196*. Oxford: B.A.R.
- Kingsley, S. 1996. "Appendix A. Stereotypes in the Identification of East Mediterranean Stone Anchors." In *The Ancient Harbour and Anchorage at Dor, Israel: Results of the Underwater Surveys 1976-1991*, edited by S. Kingsley and K. Raveh, 87-94. *BAR-IS 626*. Oxford: Tempvs Raparatvm.
- _____. 2001. "The Economic Impact of the Palestinian Wine Trade in Late Antiquity." In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 44-68. Oxford: Oxbow Books.
- _____. 2002. *A Sixth-Century AD Shipwreck off the Carmel Coast, Israel: Dor D and the Holy Land Wine Trade. BAR-IS 1065*. Oxford: Archaeopress.
- Kingsley, S., and M. Decker. 2001. "New Rome, New Theories on Inter-Regional Exchange: An Introduction to the East Mediterranean Economy in Late Antiquity." In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 1-27. Oxford: Oxbow Books.

- Kingsley, S., and K. Raveh. 1994a. "Stamped Lead Ingots from the Coast of Israel." *IJNA* 23 (2):119-28.
- _____. 1994b. "Stone Anchors from Byzantine Contexts in Dor Harbour, Israel." *IJNA* 23 (1):1-12.
- _____. 1996. *The Ancient Harbour and Anchorage at Dor, Israel: Results of the Underwater Surveys 1976-1991*. BAR-IS 626. Oxford: Tempvs Raparatum.
- Knapp, A.B. 1997a. *The Archaeology of Late Bronze Age Cypriot Society: The Study of Settlement, Survey and Landscape*. Glasgow: University of Glasgow.
- _____. 1997b. "Mediterranean Maritime Landscapes: Transport, Trade, and Society on Late Bronze Age Cyprus." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R.L. Hohlfelder and H.W. Swiny, 153-62. American Schools of Oriental Research Archaeological Reports 4. Cyprus American Archaeological Research Institute Monograph 1. Atlanta: American Schools of Oriental Research.
- Knapp, A.B., and L. Meskell. 1997. "Bodies of Evidence on Prehistoric Cyprus." *CAJ* 7:183-204.
- Κουρκουμέλης, Δ. 1999. "Σύνολο Πυραμιδοειδών Αγκυρών από το Ναυάγιο της Αντιδραγονέρας στα Κύθηρα." In *Tropis V: 5th International Symposium on Ship Construction in Antiquity*, edited by H. Tzalas, 243-8. Athens: Hellenic Institute for the Preservation of Nautical Tradition.
- Lang, M. 1976. *Graffiti and Dipinti. Agora 21*. Princeton: American School of Classical Studies at Athens.
- Last, J.S. 1975. "Kourion: the Ancient Water Supply." *PAPS* 119 (1):39-72.
- Leidwanger, J. 2004. "Episkopi Bay Survey, Cyprus, 2003." *INA Quarterly* 31 (2):17-27.
- _____. 2005. "Episkopi Bay Survey, Cyprus, 2004." *INA Quarterly* 32 (1):9-14.
- _____. Forthcoming a. "Ottoman Pipes from Akrotiri, Cyprus." *Society for Clay Pipe Research Newsletter*.
- _____. Forthcoming b. "The Underwater Survey at Episkopi Bay: A Preliminary Report on the 2004 Field Season." *RDAC*.

- Leonard, Jr., A. 1987. "A Brief Survey." In *The Sanctuary of Apollo Hylates at Kourion, Cyprus*, edited by D. Soren, 80-116. Tuscon: University of Arizona Press.
- Leonard, J.R. 1995a. "The Anchorage at Kioni." In *Ancient Akamas. Vol. 1, Settlement and Environment*, edited by J. Fejfer, 133-70. Aarhus: Aarhus University Press.
- _____. 1995b. "Evidence for Roman Ports, Harbours and Anchorages in Cyprus." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 227-46. Nicosia: University of Cyprus.
- _____. 1997. "Harbor Terminology in Roman Periplus." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R.L. Hohlfelder and H.W. Swiny, 163-200. American Schools of Oriental Research Archaeological Reports 4. Cyprus American Archaeological Research Institute Monograph 1. Atlanta: American Schools of Oriental Research.
- _____. 2005. "Roman Cyprus: Harbors, Hinterlands, and Hidden Powers." Ph.D. diss., State University of New York at Buffalo.
- Leonard, J.R., and S. Demesticha. 2004. "Fundamental Links in the Economic Chain: Local Ports and International Trade in Roman and Early Christian Cyprus." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 189-202. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Leonard, J.R., and R.L. Hohlfelder. 1993. "Paphos Harbour, Past and Present: The 1991-1993 Underwater Survey." *RDAC*:365-79.
- Liebeschutz, J.H.W.G. 1972. *Antioch: City and Imperial Administration in the Later Roman Empire*. Oxford: Clarendon Press.
- Lloyd, M. 1984. "A Byzantine Shipwreck at Iskandil Burnu, Turkey: Preliminary Report." M.A. thesis, Texas A&M University.
- Lokin, J.H.A. 1986. "Administration and Jurisdiction in Cyprus in the Sixth Century A.D." In *Πρακτικά του δεύτερου διεθνούς κυπριολογικού συνεδρίου*. Vol. 2, edited by Th. Papadopoulos and S.A. Chatzestylles, 1-9. Nicosia: Society for Cypriot Studies.
- Lolos, Y.G. 1995 "Late Cypro-Mycenaean Seafaring: New Evidence from Sites in the Saronic and the Argolic Gulfs." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 65-87. Nicosia: University of Cyprus.

- _____. 1999. "The Cargo of Pottery from the Point Iria Wreck: Character and Implications." In *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 BC*, edited by W. Phelps, Y. Lolos and Y. Vichos, 43-58. Athens: Hellenic Institute of Marine Archaeology.
- Long, L., and G. Volpe. 1998. "Le chargement de l'épave 1 de la Palud (Vie s.) à Port-Cros (Var): Note préliminaire." In *Fouilles à Marseille: les mobiliers (Ier-VIIe siècles ap. J.-C.)*, edited by M. Bonifay, M.-B. Carre and Y. Rigoir, 317-42. Paris: Errance.
- Lund, J. 1991. "Centuries of Darkness? A Ceramic Sidelight on Cyprus and the Eastern Mediterranean between A.D. 200 and A.D. 350." In *Acta Cypria: Acts of an International Congress on Cypriote Archaeology Held in Göteborg on 22-24 August 1991, Part 2*, edited by P. Åström, 193-213. Jonsered: Paul Åströms Förlag.
- _____. 1993. "Pottery of the Classical, Hellenistic and Roman Periods." In *The Land of Paphian Aphrodite. Vol. 2, Artifact and Ecofactual Studies*, edited by L.W. Sørensen and D.W. Rupp, 79-155. *SIMA* 104:2. Göteborg: Paul Åströms Förlag.
- _____. 1997. "The Distribution of Cypriot Sigillata as Evidence of Sea-Trade Involving Cyprus." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R.L. Hohlfelder and H.W. Swiny, 201-215. American Schools of Oriental Research Archaeological Reports 4. Cyprus American Archaeological Research Institute Monograph 1. Atlanta: American Schools of Oriental Research.
- _____. 1999a. "Rhodian Amphorae in Rhodes and Alexandria as Evidence of Trade." In *Hellenistic Rhodes: Politics, Culture and Society*, edited by V. Gabrielsen, P. Bilde, T. Engberg-Pedersen, L. Hannestad and J. Zahle, 187-204. *Studies in Hellenistic Civilization* 9. Aarhus: Aarhus University Press.
- _____. 1999b. "Trade Patterns in the Levant from ca. 100 BC to AD 200 – as Reflected by the Distribution of Ceramic Fine Wares in Cyprus." *Münstersche Beiträge zur antiken Handelsgeschichte* 18:1-22.
- _____. 2000. "The 'Pinched-Handle' Transport Amphorae as Evidence of the Wine Trade of Roman Cyprus." In *Πρακτικά του τρίτου διεθνούς κυπριολογικού συνεδρίου*, edited by G. Ioannides and S. Hadjistyllis, 565-78. Nicosia: Society for Cypriot Studies.
- Luttrell, A. 1996. "The Sugar Industry and Its Importance for the Economy of Cyprus

- during the Frankish Period.” In *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day*, edited by V. Karageorghis and D. Michaelides, 163-74. Nicosia: University of Cyprus and Bank of Cyprus.
- Lyon, J. 1993. “The Pottery from a Fifth Century B.C. Shipwreck at Ma’agan Michael, Israel.” M.A. thesis, Texas A&M University, College Station.
- Majcherek, G. 1992. “The Late Roman Ceramics from Sector “G” (Alexandria 1986-1987).” *ÉtTrav* 16:81-117.
- Majcherek, G. 1995. “Gazan Amphorae: Typology Reconsidered.” In *Hellenistic and Roman Pottery in the Eastern Mediterranean: Advances in Scientific Studies*, edited by H. Meyza and J. Mlynarczyk, 163-78. Warsaw: Polish Academy of Sciences.
- Manning, S.W. 2002. *The Late Roman Church at Maroni Petrera*. Nicosia: A.G. Leventis Foundation.
- Manning, S.W., S. Monks, D. Sewell, and S. Demesticha. 2000. “Late Roman Type 1A Amphora Production at the Late Roman Site of Zygi-Petrini, Cyprus.” *RDAC*:233-27.
- Manning, S.W., D.A. Sewell, and E. Herscher. 2002. “Late Cypriot 1A Maritime Trade in Action: Underwater Survey at Maroni *Tsaroukkas* and the Contemporary East Mediterranean Trading System.” *BSA* 97:97-162.
- Manning, S.W., and S. Swiny. 1994. “Sotira *Kaminoudhia* and the Chronology of the Early Bronze Age in Cyprus.” *OJA* 13:149-72.
- Μαντζουράνη, Ε. 1994. “Το ανθρωπόμορφο ειδώλιο από το νεολιθικό οικισμό Καντού-Κουφόβουνος.” *RDAC*:31-8.
- _____. 1996. “Εκθεση αποτελεσμάτων της ανασκαφής στη θέση Καντού-Κουφόβουνος κατά τις Περιόδους 1994-1995.” *RDAC*:1-28.
- Martini, W., and C. Steckner. 1993. *Das Gymnasium von Samos: das frühbyzantinische Klostersgut*. Bonn: R. Habelt.
- Masson, O. 1967. “Appendice IV: Les inscriptions syllabiques.” In *Excavations in the Necropolis of Salamis*. Vol. 1, by V. Karageorghis, 132-42. Nicosia: Department of Antiquities.
- Mayerson, P. 1993. “The Use of Ascalon Wine in the Medical Writers of the Fourth to the Seventh Centuries.” *IEJ* 43:169-73.

- _____. 1994. "The Gaza 'Wine' Jar (*Gazition*) and the 'Lost' Ashkelon Jar (*Askalônion*)." In *Monks, Martyrs, Soldiers and Saracens: Papers on the Near East in Late Antiquity (1962-1993)*, edited by P. Mayerson, 346-51. Jerusalem: Israel Exploration Society.
- McCaslin, D.E. 1978. "The 1977 Underwater Report." In *Hala Sultan Tekke*. Vol. 4. *SIMA* 44:4. Göteborg: Paul Åströms Förlag.
- _____. 1980. *Stone Anchors in Antiquity: Coastal Settlements and Maritime Trade-Routes in the Eastern Mediterranean ca. 1600-1050 BC*. *SIMA* 61. Göteborg: Paul Åströms Förlag.
- McClellan, M.C., M.L. Rautman, and I.A. Todd. 1993. "The Vasilikos Valley in Late Antiquity." In *The Sweet Land of Cyprus*, edited by A. Bryer and G.S. Georghallides, 423. Nicosia: Cyprus Research Centre.
- McFadden, G.H. 1946. "A Tomb of the Necropolis of Ayios Ermoyenis at Kourion." *AJA* 50 (4):449-89.
- _____. 1954. "A Late Cypriot III Tomb from Kaloriziki No. 40." *AJA* 58 (2):131-42.
- Megaw, A.H.S. 1964. *A Brief History and Description of Kolossi Castle*. Nicosia: Antiquities Department of the Republic of Cyprus.
- _____. 1971. "Excavations at 'Saranda Kolones', Paphos, 1966-67 and 1970-71." *RDAC*:117-46.
- _____. 1972. "Supplementary Excavations on a Castle Site at Paphos, Cyprus, 1970-1971." *DOP* 26:323-43.
- _____. 1979. "The Atrium of the Episcopal Basilica at Kourion: A Preliminary Report." *RDAC*:358-65.
- _____. 1986. "Betwixt Greeks and Saracens." In *Acts of the International Symposium "Cyprus between Orient and Occident," Nicosia 8-14 September 1985*, edited by V. Karageorghis, 505-19. Nicosia: Department of Antiquities.
- _____. 1988. "Reflections on Byzantine Paphos." In *Καθηγητρια: Essays Presented to Joan Hussey for Her 80th Birthday*, edited by J. Hussey, 135-50. Camberley: Porphyrogenitus.
- _____. 1993. "The Episcopal Precinct at Kourion and the Evidence for Re-Location."

- In *The Sweet Land of Cyprus*, edited by A. Bryer and G.S. Georghallides, 53-67. Nicosia: Cyprus Research Centre.
- Megaw, A.H.S., and R.E. Jones. 1983. "Byzantine and Allied Pottery: A Contribution by Chemical Analysis to Problems of Origin and Distribution." *BSA* 78:235-63.
- Meyza, H. 1995. "Cypriot Sigillata and Cypriot Red Slip Ware: Problems of Origin and Continuity." In *Hellenistic and Roman Pottery in the Eastern Mediterranean, Advances in Scientific Studies*, edited by H. Meyza and J. Mlynarczyk, 179-202. Warsaw: Polish Academy of Sciences.
- _____. 2000. "Cypriot Red Slip: Development of the Ware (An Attempt at Refinement)." In *Πρακτικά του τρίτου διεθνούς κυπριολογικού συνεδρίου*, edited by G. Ioannides and S. Hadjistyllis, 507-29. Nicosia: Society for Cypriot Studies.
- _____. 2004. "Kouriaka Again: Amphora Stamps from the Kourion Acropolis Excavations." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 273-84. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Michaelides, D. 1995. "Cyprus and the Persian Gulf in the Hellenistic and Roman Periods: The Case of *Pinctada Margaritifera*." In *Cyprus and the Sea*, edited by V. Karageorghis and D. Michaelides, 211-26. Nicosia: University of Cyprus.
- _____. 1996. "The Economy of Cyprus during the Hellenistic and Roman Periods." In *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day*, edited by V. Karageorghis and D. Michaelides, 139-52. Nicosia: University of Cyprus and Bank of Cyprus.
- Michaelides, P. 1988. "The Ancient Port of Amathus (Cyprus) – Its Construction, Foundation Conditions and Final Abandonment." In *The Engineering Geology of Ancient Works, Monuments and Historical Sites*, edited by P. Marinos and G. Koukis, 1597-603. Rotterdam: A.A. Balkema.
- Mitford, T.B. 1971. *The Inscriptions of Kourion*. Philadelphia: American Philosophical Society.
- Morhange, C., J.-P. Goiran, M. Bourcier, P. Carbonel, J. Le Campion, J.-M. Rouchy, and M. Yon. 2000. "Recent Holocene Peleo-Environmental Evolution and Coastline Changes of Kition, Larnaca, Cyprus, Mediterranean Sea." *Marine Geology* 170:205-30.
- Morris, C., and A. Peatfield. 1987. "Pottery from the Cyprus Underwater Survey, 1983."

RDAC:199-212.

Neuru, L. 1980. "Late Roman Pottery: A Fifth Century Deposit from Carthage." *AntAfr* 16:195-211.

Nibbi, A. 1991. "Five Stone Anchors from Alexandria." *IJNA* 20 (3):185-94.

_____. 1993. "Stone Anchors: The Evidence Re-Assessed." *Mariner's Mirror* 79 (1):5-26.

Nicolaou, I., and J.-Y. Empereur. 1986. "Amphores rhodiennes du musée de Nicosie." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur, and Y. Garlan, 515-33. *BCH* Suppl. 13. Athens: École française d'Athènes.

Nicolaou, K. 1967. "The Distribution of Settlements in Stone Age Cyprus." *Κυπριακαί σπουδαί* 31:37-52.

_____. 1976. *The Historical Topography of Kition*. *SIMA* 43. Göteborg: Paul Åströms Förlag.

_____. 1980-1981. "Archaeology in Cyprus 1976-80." *AR* 27:49-72.

Nissenbaum, A., I. Carmi, and G. Hadas. 1990. "Dating of Ancient Anchors from the Dead Sea." *Naturwissenschaften* 77:228-9.

Nørskov, V. 2004. "Amphorae from Three Wells at the Maussolleion of Halikarnassos: Something to Add to the Typology of Mushroom Rims?" In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 285-91. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.

Oked, S. 1996. "Patterns of the Transport Amphorae at Ostrakine during the 6th and 7th Centuries." *ARAM* 8:165-75.

_____. "'Gaza Jar,' a Chronicle and Economic Overview." In *Ashkelon, a City on the Seashore*, edited by A. Sasson, Z. Safrai, and N. Sagiv, 227-50. Ashkelon: Ashkelon Academic College. (table of contents and abstract in English)

Oliver, Jr., A. "Kourion: Ayios Ermoyenis Cemetery." In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 140-5. Nicosia: Department of Antiquities.

Opaiṭ, A. 1984. "Beobachtungen zur Entwicklung der zwei Amphoratypen." *Peuce*

9:311-27.

- _____. 2004a. "The Eastern Mediterranean Amphora in the Province of Scythia." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 293-308. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- _____. 2004b. *Local and Imported Ceramics in the Roman Province of Scythia (4th – 6th Centuries AD)*. BAR-IS 1274. Oxford: Archaeopress.
- Pacetti, F. 1995. "Appunti su alcuni tipi di anfore orientale della prima età bizantina: Centre di produzione, contenuti, cronologia e distribuzione." In *Agricoltura e commerci nell'Italia antica*, edited by L. Quilici and S. Quilici Gigli, 273–94. Rome: "L'Erma" di Bretschneider.
- Panella, C. 1973. "Anfore." In *Ostia*. Vol. 3, edited by A. Carandini, E. Fabbricotti, B. Palma, G. Pucci, and T. Semeraro, 463-624. *StMisc* 21. Roma: De Luca Editore.
- _____. 1993. "Merci e scambi nel Mediterraneo tardoantico." In *Storia di Roma*. Vol. 3, *L'età tardoantica*. Pt. 2, *I luoghi e le culture*, edited by A. Carandini, L. Cracco Ruggini and A. Giardina, 613-97. Turin: Einaudi.
- Papacostas, T. 2001. "The Economy of Late Antique Cyprus." In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 107-28. Oxford: Oxbow Books.
- Papadopoulos, J. 1989. "Roman Amphorae from the Excavations at Torone." *Αρχαιολογική εφημερίς* 128:67-103.
- Papageorghiou, A. 1993. "Cities and Countryside at the End of Antiquity and the Beginning of the Middle Ages in Cyprus." In *The Sweet Land of Cyprus*, edited by A. Bryer and G.S. Georghallides, 27-51. Nicosia: Cyprus Research Centre.
- Papuci-Wladyka, E. 1997. "A Research Report on Hellenistic Pottery: Cos Amphoras." *Studies in Ancient Art and Civilization* 8:47-54.
- Parker, A.J. 1992. *Ancient Shipwrecks of the Mediterranean & the Roman Provinces*. BAR-IS 580. Oxford: Tempvs Reparatum.
- Parks, D.A. 1999. "Burial Customs of Roman Cyprus: Origin and Development." Ph.D. diss., University of Missouri, Columbia.
- Parks, D.A., and N.E.M. Chapman. 1999. "Preliminary Report of the 1998 Excavations

- at Kourion's Amathous Gate Cemetery." *RDAC*:259-67.
- Parks, D.A., C. Mavromatis, and N.K. Harper. 2000. "Preliminary Report of the 1999 Excavations at Kourion's Amathous Gate Cemetery." *RDAC*:305-16.
- _____. 2001. "Preliminary Report of Excavations at Kourion's Amathous Gate Cemetery, 2000." *RDAC*:233-45.
- der Parthog, G. 1995. *Byzantine and Medieval Cyprus: A Guide to the Monuments*. New Barnet: Interworld.
- Passi, S., M.C. Rothschild-Boros, P. Fasella, M. Nassaro-Porro, and D. Whitehouse. 1981. "An Application of High Performance Liquid Chromatography to Analysis of Lipids in Archaeological Samples." *Journal of Lipid Research* 22:778-84.
- Peacock, D.P.S. 1984. "The Amphorae: Typology and Chronology." In *Excavations at Carthage: The British Mission*. Vol. 1, pt. 2, edited by M.G. Fulford and D.P.S. Peacock, 116-40. Sheffield: University of Sheffield.
- Peacock, D.P.S., and D.F. Williams. 1986. *Amphorae and the Roman Economy*. London: Longman.
- Peltenburg, E. 1978. "The Sotira Culture: Regional Diversity and Cultural Unity in Late Neolithic Cyprus." *Levant* 10:55-74.
- _____. 1982. *Recent Developments in the Later Prehistory of Cyprus*. Göteborg: Paul Åströms Förlag.
- _____. 1990. "Chalcolithic Cyprus." In *Cyprus before the Bronze Age*, 5-22. Malibu: J. Paul Getty Museum.
- Petit, C. 1996. "Amathonte et son territoire à travers les âges." In *Guide d'Amathonte*, edited by P. Aupert, 173-82. Paris: École française d'Athènes.
- Peuch, E. 1980. "Inscriptions, incisions et poids." In *Tell Keisan (1971-1976): Une cite phénicienne en Galilée*, edited by J. Briend and J.-B. Humbert, 301-10. Fribourg: Editions Universitaires.
- Pieri, D. 1998. "Les importations d'amphores orientales en Gaule méridionale durant l'Antiquité Tardive et le Haut-Moyen Age (IVe – VIIe siècles après J.-C.): Typologie, chronologie et contenu." In *Acts du congrès d'Istres, 21-24 Mai 1998*, edited by L. Rivet, 97-106. Marseille: Société française d'étude de la céramique antique en Gaule.

- du Plat Taylor, J. 1934. "Medieval Graves in Cyprus." *Ars Islamica* 5:55-86.
- du Plat Taylor, J., and A.H.S. Megaw. 1981. "Excavations at Ayios Philon, the Ancient Carpasia. Part II, the Early Christian Buildings." *RDAC*:209-50.
- Pulak, C. 1999. "The Late Bronze Age Shipwreck at Uluburun: Aspects of Hull Construction." In *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 BC*, edited by W. Phelps, Y. Lolos, and Y. Vichos, 209-38. Athens: Hellenic Institute of Marine Archaeology.
- Pulak, C., and E. Rogers. 1994. "The 1993-1994 Turkish Shipwreck Surveys." *INA Quarterly* 21 (4):17-21.
- Raban, A. 1969-1971. "The Finds from the Undersea Site of Hof Hacarmel." *Sefunim* 3:62-9.
- _____. 1990. "Medieval Anchors from the Red Sea." *IJNA* 19 (4):299-306.
- _____. 2000. "Three-hole Composite Stone Anchors from a Medieval Context at Caesarea Maritima, Israel." *IJNA* 29 (2):260-72.
- Rao, S.R. 1985. *Lothal: A Harappan Port Town, 1955-62*. Memoirs of the Archaeological Survey of India 78. New Delhi: Archaeological Survey of India.
- Rao, S.R., S. Tripathi, and A.S. Gaur. 1992. "Marine Archaeological Exploration off Somnath." *Journal of Marine Archaeology* 3:13-6.
- Rasmussen, K.L., and J. Lund. 2004. "On the Clay Provenance of Rhodian Transport Amphorae." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 325-7. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Rauh, N.K. 2004. "Pirated Knock-offs: Cilician Imitations of Internationally Traded Amphorae." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 329-36. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Rauh, N.K., and K.W. Slane. 2000. "Possible Amphora Kilns in West Rough Cilicia." *JRA* 13:319-30.
- Rautman, M.L. 1995. "Neutron Activation Analysis of Cypriot and Related Ceramics at

- the University of Missouri.” In *Hellenistic and Roman Pottery in the Eastern Mediterranean: Advances in Scientific Studies*, edited by H. Meyza and J. Mlynarczyk, 331-49. Warsaw: Polish Academy of Sciences.
- _____. 2000. “The Busy Countryside of Late Roman Cyprus.” *RDAC*:317-31.
- _____. 2001. “Rural Society and Economy in Late Roman Cyprus.” In *Urban Centers and Rural Contexts in Late Antiquity*, edited by T.S. Burns and J.W. Eadie, 241-62. East Lansing: Michigan State University Press.
- _____. 2003. *A Cypriot Village of Late Antiquity: Kalavastos-Kopetra in the Vasilikos Valley*. *JRA Suppl.* 52. Portsmouth: Journal of Roman Archaeology.
- Rautman, M.L., H. Neff, B. Gomez, S. Vaughan, and M.D. Glascock. 1999. “Amphoras and Roof-tiles from Late Roman Cyprus: A Compositional Study of Calcareous Ceramics from Kalavastos-Kopetra.” *JRA* 12:377-91.
- Reynolds, P. 1995. *Trade in the Western Mediterranean, AD 400-700: The Ceramic Evidence*. *BAR-IS* 604. Oxford: Tempvs Reparatum.
- _____. 2000. “The Beirut Amphora Type, 1st Century BC – 7th Century AD: An Outline of Its Formal Development and Some Preliminary Observations of Regional Economic Trends.” *Rei Cretariae Romanae Favtorvm Acta* 36:387-95.
- _____. 2005. “Levantine Amphorae from Cilicia to Gaza: A Typology and Analysis of Regional Production Trends from the 1st to 7th Centuries.” In *LRCW I. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean, Archaeology and Archaeometry*, edited by J.Ma. Gurt i Esparraguera, J. Buxeda i Garrigós and M.A. Cau Ontiveros, 563-611. *BAR-IS* 1340. Oxford: Archaeopress.
- Riley, J.A. 1975. “Pottery from the First Season of Excavations in the Caesarea Hippodrome.” *BASOR* 218:25-63.
- _____. 1979. “Coarse Pottery.” In *Excavations at Sidi Khrebish Benghazi (Berenice)*. Vol. 2, edited by J.A. Lloyd, 91-467. *LibAnt Suppl.* 5. Tripoli: Department of Antiquities.
- _____. 1981. “The Pottery from the Cisterns 1977.1, 1977.2, 1977.3.” In *Excavations at Carthage, Conducted by the University of Michigan*, Vol. 6, edited by J.H. Humphrey, 85-124. Ann Arbor: Kelsey Museum.
- Robinson, H.S. 1959. *Pottery of the Roman Period: Chronology*. *Agora* 5. Princeton: American School of Classical Studies at Athens.

- Robinson, R.C.W. 1985. "Tobacco Pipes of Corinth and of the Athenian Agora." *Hesperia* 54 (2):149-203.
- Rosloff, J. 1981. "INA's 1980 Turkish Underwater Survey." *IJNA* 10 (4):277-86.
- Rothschild-Boros, M.C. 1981. "The Determination of Amphora Contents." In *Archaeology and Italian Society: Prehistoric, Roman and Medieval Studies*, edited by G. Barker and R. Hodges, 79-89. *BAR-IS* 102. Oxford: B.A.R.
- Rupp, D.W. 1978. "A Hellenistic Black and White Pebble Mosaic from Kourion." *RDAC*:254-65.
- Rupp, D.W., S.C. Fox, E. Herscher, M.C. McClellan, J.T. Clarke, C. d'Annibale, T.E. Gregory, and J. Critchley. 1999. "Prastio-Agios Savvas tis Karonis Monastery (Pafos District, Cyprus): 1994-1995 Field Season and 1992-1995 Artifact Analyses." *BASOR* 316:23-88.
- Sagona, A. 1982. "Levantine Storage Jars of the 13th to 4th Century B.C." *OpAth* 14:73-110.
- Santamaria, C. 1995. *L'épave Dramont "E" à Saint-Raphaël (Ve siècle ap. J.-C.)*. *Archaeonautica* 13. Paris: CNRS.
- Sazanov, A. 1997. "Les amphores de 'Antiquité Tardive et du Moyen Age: Continuité ou rupture? Le cas de la Mer Noire.'" In *La céramique médiévale en Méditerranée: Actes du 6e congrès de l'AIECM2, Aix-en-Provence (13-18 Novembre 1995)*, edited by G. Démain d'Archimbaud, 87-102. Aix-en-Provence: Narration.
- _____. 1999. "Les amphores 'LA 1 Carthage' dans la région de la Mer Noire." In *Production et commerce des amphores anciennes en Mer Noire*, edited by Y. Garlan, 265-79. Aix-en-Provence: Université de Provence.
- Scorpan, C. 1977. "Contribution à la connaissance de certains types céramique romano-byzantins (IVe-VIIe siècles) dans d'espace istro-pontique" *Dacia* 21:269-97.
- Şenol, G.C., A.K. Şenol, and E. Doğer. 2004. "Amphora Production in the Rhodian Peraea in the Hellenistic Period." In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 353-9. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.

- Sherratt, S., and A. Sherratt. 1993. "The Growth of the Mediterranean Economy in the Early First Millennium BC." *WorldArch* 24 (3):361-78.
- Sherwin-White, S.M. 1978. *Ancient Cos: An Historical Study from the Dorian Settlement to the Imperial Period*. Hypomnemata 51. Göttingen: Vandenhoeck and Ruprecht.
- Sibella, P. 2002. "The George McGhee Amphora Collection at the Alanya Museum, Turkey." *INA Quarterly* 29. Suppl. 1.
- Simmons, A.H. 1999. *Faunal Extinction in an Island Society: Pygmy Hippopotamus Hunters of Cyprus*. New York: Kluwer Academic/Plenum.
- _____. 2001. "The First Humans and Last Pygmy Hippopotami of Cyprus." In *The Earliest Prehistory of Cyprus: from Colonization to Exploitation*, edited by S. Swiny, 1-18. American Schools of Oriental Research Archaeological Report 5. Cyprus American Archaeological Research Institute Monograph 2. Boston: American Schools of Oriental Research.
- Simmons, A.H., M. Neeley, and D.S. Reese. 1999. "Additional Archaeological Investigations on the Akrotiri Peninsula." In *Faunal Extinction in an Island Society: Pygmy Hippopotamus Hunters of Cyprus*, by A.H. Simmons, 239-58. New York: Kluwer Academic/Plenum.
- Simpson, St. J. 2000. "The Clay Pipes." In *Belmont Castle: The Excavation of a Crusader Stronghold in the Kingdom of Jerusalem*, edited by R.P. Harper, D. Pringle, A. Grey and R. Will, 147-71. Oxford: Oxford University Press.
- _____. 2002. "Ottoman Pipes from Zir'in (Tell Jezreel)." *Levant* 34:159-72.
- Singer-Avitz, L. 1989. "Local Pottery of the Persian Period (Strata XI-VI). In *Excavations at Tel Michal, Israel*, edited by Z. Herzog, G. Rapp, Jr. and O. Negbi, 115-44. Tel Aviv University Publications of the Institute of Archaeology 8. Minneapolis: University of Minnesota Press.
- Solomidou-Ieronymidou, M. 1998. "The Production of Sugar in Medieval Cyprus." In *Byzantine Medieval Cyprus*, edited by D. Papanikola-Bakirtzis and M. Iacovou, 65-71. Nicosia: Bank of Cyprus Cultural Foundation.
- Soren, D. 1981. "Earthquake: the Last Days of Kourion." In *Studies in Cypriote Archaeology*, edited by J. Biers and D. Soren, 117-34. *UCLAMon* 18. Los Angeles: University of California Press.

- Soren, D., and J. James. 1988. *Kourion: The Search for a Lost Roman City*. New York: Anchor.
- Sørensen, L.W. 1993. "General Conclusions." In *The Land of Paphian Aphrodite*. Vol. 2, *Artifact and Ecofactual Studies*, edited by L.W. Sørensen and D.W. Rupp, 185-97. *SIMA* 104:2. Göteborg: Paul Åströms Förlag.
- Souter, C. 1998. "Stone Anchors near Black Fort, Galle, Sri Lanka." *IJN A* 27 (4):331-42.
- Sparkes, B.A., and L. Talcott. 1970. *Black and Plain Pottery of the 6th, 5th and 4th Centuries B.C. Agora 12*. Princeton: American School of Classical Studies at Athens.
- Stager, L.E. 1991. *Ashkelon Discovered: From Canaanites and Philistines to Romans and Moslems*. Washington: Biblical Archaeology Society.
- Stanley Price, N. 1979. *Early Prehistoric Settlement in Cyprus, 6500-3000 B.C.* *BAR-IS* 65. Oxford: B.A.R.
- Steckner, C. 1989. "Les amphores LR 1 et LR 2 en relation avec le pressoir du complexe ecclésiastique des thermes de Samos." In *Recherches sur la céramique byzantine*, edited by V. Déroche and J.-M. Spieser, 57-71. *BCH Suppl.* 18. Athens: École française d'Athènes.
- Steel, L. 1996. "Transition from Bronze to Iron at Kourion." *BSA* 91:287-300.
- _____. 2004. *Cyprus before History: From the Earliest Settlers to the End of the Bronze Age*. London: Duckworth.
- Steffy, J.R. 1985. "The Kyrenia Ship: An Interim Report on Its Hull Construction." *AJA* 89 (1):71-101.
- _____. 1994. *Wooden Ship Building and the Interpretation of Shipwrecks*. College Station: Texas A&M University Press.
- Stern, E. 1982. *Material Culture of the Land of the Bible in the Persian Period 538-332 B.C.* Jerusalem: Israel Exploration Society.
- Stylianou, A., and J. Stylianou. 1980. *The History of the Cartography of Cyprus*. Publications of the Cyprus Research Centre 8. Nicosia: Cyprus Research Centre.
- Swan, V.G. 2004. "Dichin (Bulgaria) and the Supply of Amphorae to the Lower Danube

- in the Late Roman-Early Byzantine Period.” In *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the International Colloquium at the Danish Institute at Athens, September 26-29, 2002*, edited by J. Eiring and J. Lund, 371-82. Monographs of the Danish Institute at Athens 5. Athens: Danish Institute at Athens.
- Swiny, H.W. 1982a. “Other *Kourion* Cemeteries.” In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 146-7. Nicosia: Department of Antiquities.
- _____. 1982b. “Other Medieval Remains.” In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 160-1. Nicosia: Department of Antiquities.
- _____. 1982c. “*Sotira Teppes*: Neolithic settlement.” In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 12-9. Nicosia: Department of Antiquities.
- Swiny, H.W., and M. Katzev. 1973. “The Kyrenia Shipwreck: A Fourth-century B.C. Greek Merchant Ship.” In *Marine Archaeology*, edited by D. Blackman, 339-59. Hamden: Archon Books.
- Swiny, S. 1980. “Bronze Age Gaming Stones from Cyprus.” *RDAC*:54-78.
- _____. 1981. “Bronze Age Settlement Patterns in Southwest Cyprus.” *Levant* 13:51-87.
- _____. 1982. “News from CAARI.” *ASOR Newsletter* 7:4-10.
- _____. 2003a. “The Metal.” In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 369-84. American Schools of Oriental Research Archaeological Reports 8. Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.
- _____. 2003b. “The Settlement.” In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 9-101. American Schools of Oriental Research Archaeological Reports 8. Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.
- Swiny, S., and E. Herscher. 2003. “The Cemetery.” In *Sotira Kaminoudhia: An Early Bronze Age Site in Cyprus*, edited by S. Swiny, G. Rapp, Jr. and E. Herscher, 103-44. American Schools of Oriental Research Archaeological Reports 8.

Cyprus American Archaeological Research Institute Monograph 4. Boston: American Schools of Oriental Research.

Swiny, S., and C. Mavromatis. 2000. "Land behind Kourion: Results of the 1997 Sotira Archaeological Project Survey." *RDAC*:433-52.

Tchernia, A. 1969. "Informations archéologiques: Direction des recherches archéologiques sous-marines." *Gallia* 27:465-99.

Teall, J. 1959. "The Grain Supply of the Byzantine Empire, 330-1025." *DOP* 13:87-139.

Θεοδούλου, Θ., and Δ. Κουρκουμέλης. 2002. "Το Ναυάγιο της Αντιδραγονέρας στα Κύθηρα (4ος Π.Χ. Αιώνας)." In *Tropis VII: 7th International Symposium on Ship Construction in Antiquity*, edited by H. Tzalas, 725-40. Athens: Hellenic Institute for the Preservation of Nautical Tradition.

Tomber, R.S. 1996. "Provisioning the Desert: Pottery Supply to Mons Claudianus." In *Archaeological Research in Roman Egypt: The Proceedings of The Seventh Classical Colloquium of The Department of Greek and Roman Antiquities, British Museum, Held on 1-4 December, 1993*, edited by D.M. Bailey, 39-49. *JRA* Suppl. 19. Ann Arbor: Journal of Roman Archaeology.

_____. 1998. "The Pottery." In *Berenike 1996*, edited by S.E. Sidebotham, W. Wendrich and F.Aldsworth, 163-80. Leiden: Research School, CNWS.

_____. 1999. "Pottery from the Sediments of the Inner Harbour." In *Caesarea Papers*, Vol. 2, edited by K. Holum, A. Raban and J. Patrich, 295-322. *JRA* Suppl. 35. Portsmouth: Journal of Roman Archaeology.

Touma, M. 1989. "La céramique protobyzantine d'Amathonte: Remarques sur le matériel trouvé en 1988" *BCH* 113:871-5.

_____. 2001. "Quelques témoignages de la céramique sur les échanges syro-chyprites à la période byzantine." In *La céramique byzantine et proto-islamique en Syrie-Jordanie (IVe-VIIIe siècles apr. J.-C.)*, edited by E. Villeneuve and P.M. Watson, 49-58. Beyrouth: Institut Français d'Archéologie du Proche-Orient.

Tripathi, S., and A.S. Gaur. 1997. "Stone Anchors from Sindhudurg Fort on the West Coast of India." *IJNA* 26 (1):51-7.

Tzalas, H. 2002. "An Unusually Large Concentration of Stone Anchors, East of Cape Lochias, Alexandria, Egypt: A Preliminary Evaluation." In *Tropis VII: 7th International Symposium on Ship Construction in Antiquity*, edited by H. Tzalas, 791-6. Athens: Hellenic Institute for the Preservation of Nautical Tradition.

- Vandermersch, C. 1986. "Productions magno-grecques et siciliotes du IVe S. avant J.-C." In *Recherches sur les amphores grecques*, edited by J.-Y. Empereur and Y. Garlan, 567-80. *BCH Suppl.* 13. Athens: École française d'Athènes.
- _____. 1994. *Vins et amphores de Grande Grèce et de Sicile IVe-IIIe s. avant J.-C.* Naples: Centre Jean Bérard.
- Vichos, Y. 1999. "The Point Iria Wreck: The Nautical Dimension." In *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 BC*, edited by W. Phelps, Y. Lolos and Y. Vichos, 77-98. Athens: Hellenic Institute of Marine Archaeology.
- di Vita, A., and A. Martin. 1997. *Gortina*, Vol 2. Padova: Bottega d'Erasmus.
- Wachsmann, S. 1985. Review of *Stone Anchors in Antiquity: Coastal Settlements and Maritime Trade-Routes in the Eastern Mediterranean ca. 1600-1050 B.C.*, by D.E. McCaslin. *Mariner's Mirror* 71 (4):483-5.
- _____. 1996. "A Cove of Many Shipwrecks: The 1995 INA/CMS Joint Expedition to Tantara Lagoon." *CMS News* 23:17-21.
- _____. 1998. *Seagoing Ships and Seamanship in the Bronze Age Levant*. College Station: Texas A&M University Press.
- Wachsmann, S., and Y. Kahanov. 1997. "Shipwreck Fall: The 1995 INA/CMS Joint Expedition to Tantara Lagoon, Israel." *INA Quarterly* 24 (1):3-18.
- Wachsmann, S., and K. Raveh. 1980. "Underwater Work Carried out by the Israel Department of Antiquities." *IJNA* 9 (3):256-64.
- Ward-Perkins, B. 2001. "Specialisation, Trade, and Prosperity: An Overview of the Economy of the Late Antique Eastern Mediterranean." In *Economy and Exchange in the East Mediterranean during Late Antiquity*, edited by S. Kingsley and M. Decker, 167-78. Oxford: Oxbow Books.
- von Wartburg, M.-L. 1995. "Design and Technology of the Medieval Cane Sugar Refineries in Cyprus: A Case Study in Industrial Archaeology." In *Paisajes del azúcar. Actas del quinto seminario internacional sobre la caña de azúcar*, edited by A. Malpica, 81-116. Granada: Diputación Provincial de Granada.
- _____. 2000. "Cane Sugar Production Sites in Cyprus: Real and Imagined." *RDAC*:381-401.

- _____. 2001. "The Archaeology of Cane Sugar Production: A Survey of Twenty Years of Research in Cyprus." *AntJ* 81:305-35.
- Weinberg, S. 1983. *Bamboula at Kourion: The Architecture*. University Museum Monograph 42. Philadelphia: University Museum.
- Wessex Archaeology. 2002. "Proposed Antennae Development, Salt Lake, The British Sovereign Base at Akrotiri, Cyprus. Archaeological Desk-Based, Geophysical and Geological Assessment." Report 51134.01. Salisbury: Trust for Wessex Archaeology.
- Whitbread, I. 1995. *Greek Transport Amphorae: A Petrological and Archaeological Study*. Fitch Laboratory Occasional Paper 4. Athens: British School at Athens.
- Whitehouse, D., L. Costantini, F. Guidobaldi, S. Passi, P. Pensabene, S. Pratt, R. Reece, and D. Reese. 1985. "The Schola Praeconum II." *PBSR* 53:163-210.
- Whittaker, C.R. 1983. "Late Roman Trade and Traders." In *Trade in the Ancient Economy*, edited by P. Garnsey, K. Hopkins and C.R. Whittaker, 163-80. London: Hogarth Press.
- Whittingham, D. 1982a. "The *Small Basilica*: 'At Meydan.'" In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 80-5. Nicosia: Department of Antiquities.
- _____. 1982b. "The *Theatre* – Area V." In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 125-31. Nicosia: Department of Antiquities.
- Wigand, P., and A.H. Simmons. 1999. "The Dating of Akrotiri *Aetokremnos*." In *Faunal Extinction in an Island Society: Pygmy Hippopotamus Hunters of Cyprus*, by A.H. Simmons, 193-215. New York: Kluwer Academic/Plenum
- Wikander, Ö. 1986. "Two Cypriote Pan-tiles in Stockholm." *MedMusB* 21:44-8.
- Will, E.L. 1982. "Greco-Italic Amphoras." *Hesperia* 51 (3):338-56.
- Williams, C. 1989. *Anemurium: The Roman and Early Byzantine Pottery*. Toronto: Pontifical Institute of Mediaeval Studies.
- Williams, D.F. 1982. "The Petrology of Certain Byzantine Amphorae: Some Suggestions as to Origins." In *Actes: Colloque sur la céramique antique, Carthage 23-24 Juin 1980*, edited by Centre d'Études et de Documentation

Archéologique de la Conservation, 99-108. Carthage: Centre d'études et de documentation archéologique de la conservation.

- _____. 1987. "Roman Amphorae from Kourion, Cyprus." *RDAC*:235-8.
- _____. 2005. "An Integrated Archaeometric Approach to Ceramic Fabric Recognition. A study case on Late Roman Amphora 1 from the Eastern Mediterranean." In *LRCWI. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean, Archaeology and Archaeometry*, edited by J.Ma. Gurt i Esparraguera, J. Buxeda i Garrigós and M.A. Cau Ontiveros, 613-24. *BAR-IS* 1340. Oxford: Archaeopress.
- Winter, N. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period*. Oxford: Clarendon Press.
- _____. 1996. "The Terracottas." In *The Sanctuary of Apollo Hylates at Kourion: Excavations in the Archaic Precinct*, edited by D. Buitron-Oliver, 89-137. *SIMA* 109. Jonsered: Paul Åströms Förlag.
- Wiseman, J. 1967. "Excavations at Corinth: The Gymnasium Area, 1966." *Hesperia* 36 (4):402-28.
- WSBA Archaeological Society. n.d. *The Akrotiri Archaeological Trails*. Unpublished guide on file at Western Sovereign Base Area Archaeological Society, Akrotiri, Cyprus.
- Xenophontos, C. 1991. "Picrolite, Its Nature, Provenance, and Possible Distribution Patterns in the Chalcolithic Period of Cyprus." *BASOR* 282/283:127-38.
- Young, J., and S. Young. 1955. *Terracotta Figurines from Kourion in Cyprus*. Philadelphia: University Museum.
- Young, S. 1982. "Episkopi Serayia: The Medieval Manor and the Sugar Industry of Cyprus." In *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, edited by H.W. Swiny, 153-9. Nicosia: Department of Antiquities.
- Zemer, A. 1977. *Storage Jars in Ancient Sea Trade*. Haifa: National Maritime Museum Foundation.
- Zimmerman Munn, M.L. 1985. "A Late Roman Kiln Site in the Hermionid, Greece." *AJA* 89 (2):342-3.

VITA

Justin Ryan Leidwanger

Address: Institute of Nautical Archaeology
Texas A&M University
P.O. Drawer HG
College Station, TX 77841-5137

Education:

2005-present University of Pennsylvania
2001-2005 Texas A&M University – M.A. in Anthropology (Nautical Archaeology Program)
1997-2001 Loyola University Chicago – B.A. Classics in History, Latin, and Greek

Archaeological Fieldwork:

2003-present Episkopi Bay Marine Survey, Episkopi, Cyprus. Director.
2005 Cyprus Underwater Project, Paphos-Kouklia, Cyprus. Crew Supervisor.
2002, 2003 *Kadirga* Project, Istanbul Naval Museum, Turkey. Research Assistant.
2002 *Uluburun* Shipwreck Project, Bodrum Museum of Underwater Archaeology, Turkey. Research Assistant.

University Teaching:

2002-2005 Instructor in Classics, Department of European and Classical Languages and Cultures, Texas A&M University. Taught Beginning Latin I, Beginning Latin II, Beginning Greek I, and Beginning Greek II.

Publications:

Forthcoming “Episkopi Bay and Beyond: Recent INA Fieldwork and New Prospects on Cyprus.” *INA Quarterly*. (with D. Howitt-Marshall)
“The Maritime Face of Southwest Cyprus: Recent Investigations and Future Potential.” In *Tropis IX: Proceedings of the 9th Conference on Ship Construction in Antiquity*. (with D. Howitt-Marshall)
“The Underwater Survey at Episkopi Bay: A Preliminary Report on the 2004 Field Season.” *Report of the Department of Antiquities Cyprus*.
“Ottoman Pipes from Akrotiri, Cyprus.” *Newsletter of the Society for Clay Pipe Research*.
2005 “Episkopi Bay Survey, Cyprus, 2004.” *INA Quarterly* 32 (1):9-14.
2004 “Episkopi Bay Survey, Cyprus, 2003.” *INA Quarterly* 31 (2):17-27.