

5

Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus

Stella Demesticha

The growing interest in the maritime cultural heritage of the Mediterranean, along with the gradual acknowledgement of the importance of field surveys for the study of maritime landscapes (or seascapes), has increased the number of systematic investigations of the coastal zone, i.e. in the shallow waters (up to -10m). During such surveys, many sites have been discovered, a fact that reflects the dynamic activity of the coastal zone—anchorage, shelters, harbours and shipwrecks map maritime landscapes— during all periods of antiquity (Westerdahl 2011).

Sites in shallow waters are particularly affected by waves and currents, as well as by looting and other sources of contamination, so the condition of the pottery is not often very informative for amphora studies (e.g. Garnett & Boardman 1961: 109). Benoit (1956: 23) characterized these sites as *cimetieres marins* (ships' graveyards), which 'lay in shallow water, and comprised a jumbled scatter of potsherds which is impossible to reduce to order.' Later on, Parker (1981: 312) discussed scattered wreck sites, where 'only fragments of the cargo survive, widely spread, and small finds or fragments of the hulls are only occasionally preserved'. In this article, Parker criticised Benoit's assumption that 'ships' graveyards in shallow waters are of no scientific concern, since the objects found there are at the mercy of the waves and lack any context', and he further suggested that 'underwater archaeology, can (and should) entertain additional or alternative goals (other than the study of ship's structures), and one of these is to elucidate the history of trade' (Parker 1981: 320). In this respect, he distinguished two groups of shallow sites: (i) sites of scattered but not contaminated material, and (ii) sites with observed associations of material despite contamination (Parker 1981: 316).

As an example of best practice when documenting such sites, Parker referred to the Oxford expeditions to Cape Andreas, Cyprus (**Fig. 1**), conducted during the summers of 1969 and 1970 by the Research Laboratory for Archaeology, Oxford (Green 1970, 1973). Ten possible shipwreck sites were found in waters deeper than 10m, and at most of them the pottery was concreted in a biogenic crust: 'site 19' was an area of heavily concreted sherds, mainly of classical Cypriot basket handled amphorae; 'sites 1, 14 and 18' were 'a little more than objects of spillage or jettison'; and the remaining six sites 'had interrelated material, thus it was difficult to decide whether they represented separate or associated events'. For the amphorae found scattered outside the 'observed associations' of possible shipwrecks, there is very little to know, despite the fact that the team recorded the position of the pottery finds, amphorae in particular. Thus, these scattered amphorae were never thoroughly studied and remained essentially 'out of context' in the archaeological record of the island.

Three underwater surveys were conducted in the 1970s, north east of Cape Kiti,



Figure 1. Map of Cyprus with the main sites mentioned in the text. The underwater sites are marked with numbers: 1. Kioni; 2. Lara Limnionas; 3. Thalassines Spilies; 4. Keratidhi; 5. Avdimou; 6. Cape Zeogari; 7. Dreamer's Bay; 8. Maroni-Tsaroukkas; 9. Cape Andreas

Larnaca (Fig. 2) and produced similar results. Clusters of anchors and amphorae were recorded only to confirm the broad timespan of maritime activity in the area. Since the publication of the survey results (see below), the finds have remained out of context, with no emphasis on their value for the study of Cypriot maritime trade. Today, almost no antiquities can be seen in this area's water due to touristic development and systematic looting since the last archaeological survey in 1980. In 2008, a team of the University of Cyprus located remains of three sites of scattered Roman amphorae on the windward side of the Cape. The purpose of this paper is to re-examine and contextualise the Roman amphorae found around Cape Kiti, and consider their different systemic contexts.

1 Cape Kiti surveys

The underwater archaeological surveys at Cape Kiti aimed to document the rich maritime activity associated with the existence of the Late Bronze Age harbours of Larnaca Bay, and in particular the site of Hala Sultan Tekke (Åström 1986; Knapp 2014; Devillers *et al.* 2015). During the years 1972–1973, 1977 and 1980 systematic underwater investigations were carried out at the eastern, usually lee, side of the Cape: this is a sandy beach that provides easy access to and from the sea, protected by the promontory from the prevailing southwest winds. The aim of the 1972–1973 surveys, conducted in collaboration with Gothenburg University's archaeological excavation team, then working on the Late Bronze Age land site of Hala Sultan Tekke, was to record underwater material associated with the possible nearby entrance of the Late Bronze Age harbour, the modern salt lake of Larnaca (Engvig & Åström 1975: 7). The 1977 survey, under the name of the 'Cape Kiti Marine Archaeological Excavations for the Swedish Cyprus Expedition', conducted under the direction of Dan McCaslin,

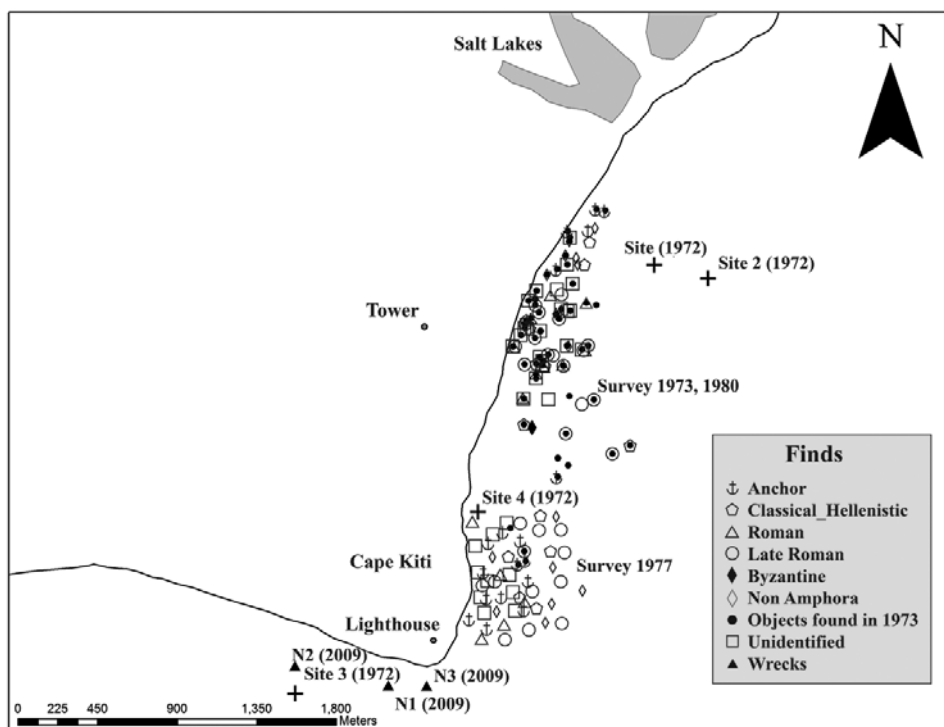


Figure 2. Map of the finds located during the underwater surveys at Cape Kiti (1972–2009) (drawn by M. Michael for MARELab, after Engvig & Åström 1975: figs 3 and 14 and McCaslin 1978: fig. 209; based on digital geological data from the Cyprus Geological Survey)

had similar objectives: ‘to determine what archaeological evidence might be found in the shallow waters right at the headland to further document the simple fact of the sea traffic around Cape Kiti in antiquity, and particularly in the Bronze Age’ (McCaslin 1978: 101). As a result of this research focus, particular emphasis was given to the stone anchors, dated to the Late Bronze Age, and much less to the pottery finds, most of which dated to the Roman period. In 1980, the previously surveyed areas were revisited and more finds were collected from the area and its vicinity (Engvig & Reichmann 1984).

Because of the high number of reefs in the bay (McCaslin 1978: 128), all located amphorae were initially considered as remains of shipwreck episodes (Engvig & Åström 1975: 19–20; Engvig & Beichmann 1984: 181). Later, Leonard (2005: 443–444) expressed doubts as to whether ‘a small number of morphologically and/or chronologically similar ceramic containers [...] constitute sufficient proof to identify positively an ancient shipwreck’ and suggested that the finds of the 1972–1980 surveys at Cape Kiti represent ‘typical anchorage evidence’. This interpretation is further supported by the presence of a significant number of anchors in the same area, mostly of stone (McCaslin 1978: 117–152).

The results of these four survey periods at Cape Kiti, can be summarized as follows:

During the 1972 survey, four ‘sites’ were located. At sites 1 and 2, located around reefs 500m and 900m, respectively, off the coast, amphorae dating to the Hellenistic and Roman periods were found. ‘Site 3’ was in fact an assemblage of finds shown to

the team by a local diver, i.e. not a site located by the team (Ingelman-Sundberg & Åström 1975). ‘Site 4’ (Hercher & Nyquist 1975) was not a defined site either, but a zone surveyed along the coast, north of the lighthouse, from which two assemblages of stone anchors and Roman sherds were reported.

During the following years (1973, 1977, 1980), the surveys were more systematic and catalogues of the recovered artefacts, mainly amphorae fragments and stone anchors, have been published. The amphorae can be roughly divided into the following groups, according to their date and types (**Table 1**): a significant percentage of the finds (31.4% of the total number of amphorae) could not be identified because a detailed description of their morphological features was virtually impossible, as the pottery had not been properly treated, nor were the marine incrustations removed from the surface of the vessels. The earliest recovered amphorae are dated to the Classical period and belong to two main types: Cypriot basket handled amphorae (Calvet 1986; Winther Jacobsen 2002; Leidwanger 2007) and various Phoenician types of the Persian period (Bettes 2003). The few amphorae that may be dated to the Hellenistic period belong to types that do not cluster either by type or date; most of them cannot be safely identified, with the exception of two possible Corinthian B types, nos S043c and S074c, and one Cnidian, no. S018c (Engvig & Åström 1975: 19–12). Roman amphorae formed the most numerous group (46.8%). The Early and Middle Roman amphorae in this group were very few and in bad condition, due to the lack of conservation. Out of a total of 14 vessel fragments, the type of only two can be tentatively identified (Engvig & Åström 1975: 19–12): no. S052c, a heavily conglomerated Dressel 2-4, and no. S011c, a possible Mid Roman 4 amphora (Riley 1979: 186–187). The best represented period in the recovered amphora material was Late Roman (34.7%), with a total of 43 identifiable amphora parts.

The predominant type is the Late Roman (LR) 1 amphora (Riley 1979: 212–216; for an extensive bibliography on the type see Pieri 2005: 9–81; Demesticha 2013), the most common type of transport container found in Late Roman sites in the eastern Mediterranean. Amphorae of this type were produced in a wide geographical zone (Empereur & Picon 1989), covering the Cilician coasts (Autret *et al.* 2010; Burrigato *et al.* 2007), Cyprus (Empereur & Verlinden 1987; Manning *et al.* 2000; Demesticha & Michaelides 2001) and the Dodecanese in the Aegean (Poulou-Papadimitriou & Didjoui 2010; Diamanti 2010). During the four centuries of their circulation, their form changed considerably. Although only the Cypriot workshops have been studied in detail (Demesticha 2002, 2003), it seems that similar morphological changes took

AMPHORAE	1973 survey	1977 survey	1980 survey	TOTAL
Classical/Hellenistic (fifth–second centuries BC)	20	5	3	28
Early/Mid Roman First century BC–third century AD)	8	3	3	14
Late Roman (fourth–seventh centuries AD)	26	9	8	43
Unidentified	25	12	2	39
Total	79	29	11	124

Table 1. Numbers of amphorae found during the Cape Kiti surveys of 1972–1980, compiled by the author

place in parallel in other regions' workshops that functioned during the same period. Thus, the basic typological evolution of LR 1 amphorae is now considered to have been developed in three 'generations', i.e. three phases of contemporary amphora production in various workshops with common morphological basic features (such as body and neck shape); in each generation, more 'forms' can be distinguished, i.e. amphora groups with similar morphological details (such as rim shape and formation of the handles—Demesticha 2014: 599). No analytical work has been conducted on the contents of LR 1 amphorae, but most scholars agree that they were mainly wine containers (Pieri 2005: 81–84).

Several first generation LR 1 amphorae, LR 1/A, dated to the fourth to first half of the fifth century AD, have been found in Cypriot contexts (personal observation, based mainly on previous work on the amphorae from the *agorai* of Amathus and Kourion) but mainly intact ones have been published from land sites: six examples from the earthquake house at Kourion, dated to the fourth century AD (Williams 1987: 237; Costello 2014: 16, 126) and two from a cistern at the Roman Agora of Kourion (Christou 2013: 58). Two necks have been located during underwater surveys: one at Aktoriri-Dreamer's Bay and one at Cape Zevgari (Leidwanger 2013a: figs 1, 8). At Cape Kiti, four LR 1 necks can be attributed to this form (**Table 2**). Their fabrics differ and are probably non-Cypriot: (i) the fabric of no. S029 is yellow-green with many red and brown inclusions. Fabrics with similar visual characteristics were analyzed petrographically in 1998 by Kostas Xenophontos of the Cyprus Geological Survey Department, as follows (Demesticha 2002: Appendix 2c): abundant marl with quartz, feldspar and pyroxene inclusions, abundant crustallite quartz and limestone (chalk), and sparse microcrystallite quartz, pyroxene, diabase, feldspar and serpentine; (ii) the fabrics of nos S076c and S0104c (**Fig. 3.1**): are red-yellow in colour, with many black inclusions, scarcer small red ones and medium size limestone (chalk). Their petrographic characteristics (according to Xenophontos' analyses) are: marl with few quartz and feldspar inclusions, and very rare pyroxene, diabase and lava pieces. Although the petrography of these fabrics could classify them as Cypriot, they are very different from the known local LR 1 fabrics. Although comparisons among petrographic analyses conducted by different teams remain difficult, it seems possible that these two fabrics can be associated with Cilician workshops (see e.g. Williams 2005; Leidwanger 2014).

The presence of the second LR 1 generation (dated to the end of the fifth and to the sixth centuries AD) is strong on Cyprus, and the Cape Kiti assemblage is indicative of this: out of 26 LR 1 amphora necks recovered during the surveys under discussion, 20 can be classified under this type (**Table 2**). Of these, eight belong to LR 1/B/form 1 (**Fig. 3.2**) and one to LR 1/B/form 2; their fabrics are similar to the two (most probably non-Cypriot) ones described above. Twelve necks belong to LR 1/B/form 3 amphorae (**Fig. 3.3**), most of which shared similar fabrics: red-brown clays with a lot of small black and white inclusions. Petrographic analysis (see above) showed a characteristic presence of crustallite and microcrystallite quartz, abundant chert and rare Troodos rock fragments. It is almost certain that they are local products, although their workshop has not been located yet, hence the conventional name 'workshop X' (Demesticha 2003: 470–471). Based on the petrographic analyses, the provenance of these amphorae is likely to be situated along the south coast, somewhere between Paphos and Amathus. Although Kourion has been suggested as a LR 1 production centre (Empereur & Picon 1989: 242), no kiln site has yet been located; this assumption was based on petrographic analysis of LR 1/A samples from the 'Earthquake House' at Kourion (Williams 2005: 166–167).

Kiti survey no.	LR 1 generation/form	Reference
S029c (i)	A	Engvig & Åström 1975: fig. 27
S029c (ii)	A	not published
S076c	A	Engvig & Åström 1975: 20
S104c	A	Engvig & Beichmann 1984: fig. 7
S033c	B/1	Engvig & Åström 1975: fig. 29
S054c	B/1	Engvig & Åström 1975: fig. 39
S102c	B/1	Engvig & Beichmann 1984: fig. 5
S103c,	B/1	Engvig & Beichmann 1984: fig. 6
S105c	B/1	Engvig & Beichmann 1984: fig. 8
N9011	B/1	McCaslin 1978: fig. 236
N9012	B/1	McCaslin 1978: 134
N9031	B/1	McCaslin 1978: fig. 260
S077c	B/2	Engvig & Åström 1975: 20
S078c	B/3	Engvig & Åström 1975: fig. 20
S024c	B/3	Engvig & Åström 1975: fig. 25
S030c	B/3	Engvig & Åström 1975: fig. 28
S041c	B/3	Engvig & Åström 1975: fig. 35
S057c	B/3	Engvig & Åström 1975: fig. 41
S100c	B/3	Engvig & Beichmann 1984: fig. 3
S101c	B/3	Engvig & Beichmann 1984: fig. 4
S108c	B/3	Engvig & Beichmann 1984: 182
N9013	B/3	McCaslin 1978: figs 238–239
N9014	B/3	McCaslin 1978: fig. 240
N9018	B/3	McCaslin 1978: fig. 247
N9029	B/3	McCaslin 1978: fig. 258
S020c	C	Engvig & Åström 1975: fig. 22

Table 2. LR 1 amphorae found during the Cape Kiti surveys of 1972–1980

The third generation of the LR 1 amphorae, LR 1/C, dated to the seventh century AD, is well attested in Cyprus (see Demesticha 2013: table 1) and LR 1 amphorae of this type were produced in at least three local workshops (Paphos, Amathous and Zygi-Petrini) (Demesticha 2003). During the Kiti surveys, however, only one of the recovered amphorae (no. S020c) could be classified under this type. Its fabric is similar to the yellow-green (see above), so most probably it was not a Cypriot product. It is interesting, also, that a LR 13 amphora neck was found, no. S103c, most probably coming from the Paphos workshop (Fig. 3.4).

2 The shipwrecks west of Cape Kiti

During the years 2008–2009 the area of Cape Kiti was selected for the practical training

5. Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus

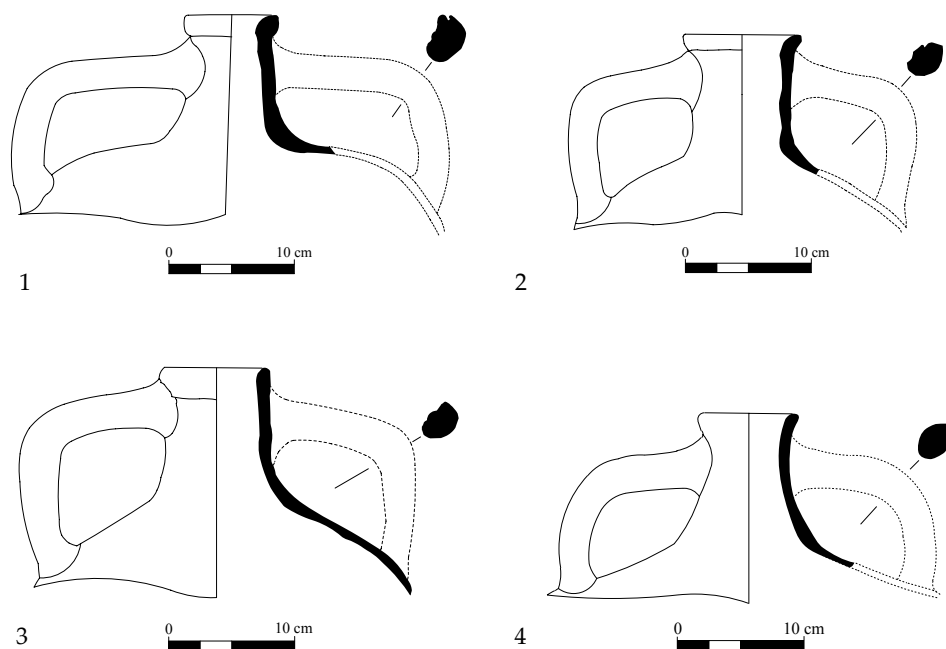


Figure 3. LR 1 amphorae recovered from the Cape Kiti survey in 1977: 1. S104c (type LR 1/A); 2. S102c (type LR 1/B/1); 3. S100c (type LR 1/B/3); 4. S103c (type LR 13) (drawings S. Demesticha, L. Papakosta)

of undergraduate students from the University of Cyprus in underwater archaeology. The members of the Scientific Committee of Cypriot Underwater Activities, who had supported these training courses over many ways, notified us of three different sites at the western, usually windward side of the Cape. During these surveys we were not permitted to remove any finds from the seabed. In most cases, however, recovering them was in any case impossible because the finds were conglomerated on the rocks.

Kiti N1 shipwreck

This is the largest site of the three, covering an area of about 50x20m of scattered amphora parts, conglomerated on the rocks (Fig. 4). Although many of these finds were non-diagnostic sherds, 35 amphora pieces have been identified, including six base fragments, four large body pieces and 24 necks (Table 3). All but two belong to the Dressel 6A amphora type (Dressel 1899; Riley 1979: 151–157, Early Roman Amphora 5; Peacock & Williams 1986: 98–101, Class 8). The location of all tagged finds was plotted and every find was photographed and measured. As no complete amphora was found, a whole vessel was reconstructed using the largest documented pieces, with rather good results (Fig. 5.1).

Dressel 6A amphorae, dated from the late first century BC to the first century AD, are one of the commonest Early Roman amphora types in the Mediterranean (Bezeczky 1998: 228–230; 2013: 120, type 30). The form is very similar to and often confused with its predecessor, the Lamboglia 2. Both types share a thick-walled, bag-shaped body ending in a solid spike and a long cylindrical neck with a thickened rim, but rims differ significantly among the numerous variants. Also, both amphorae

5. Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus

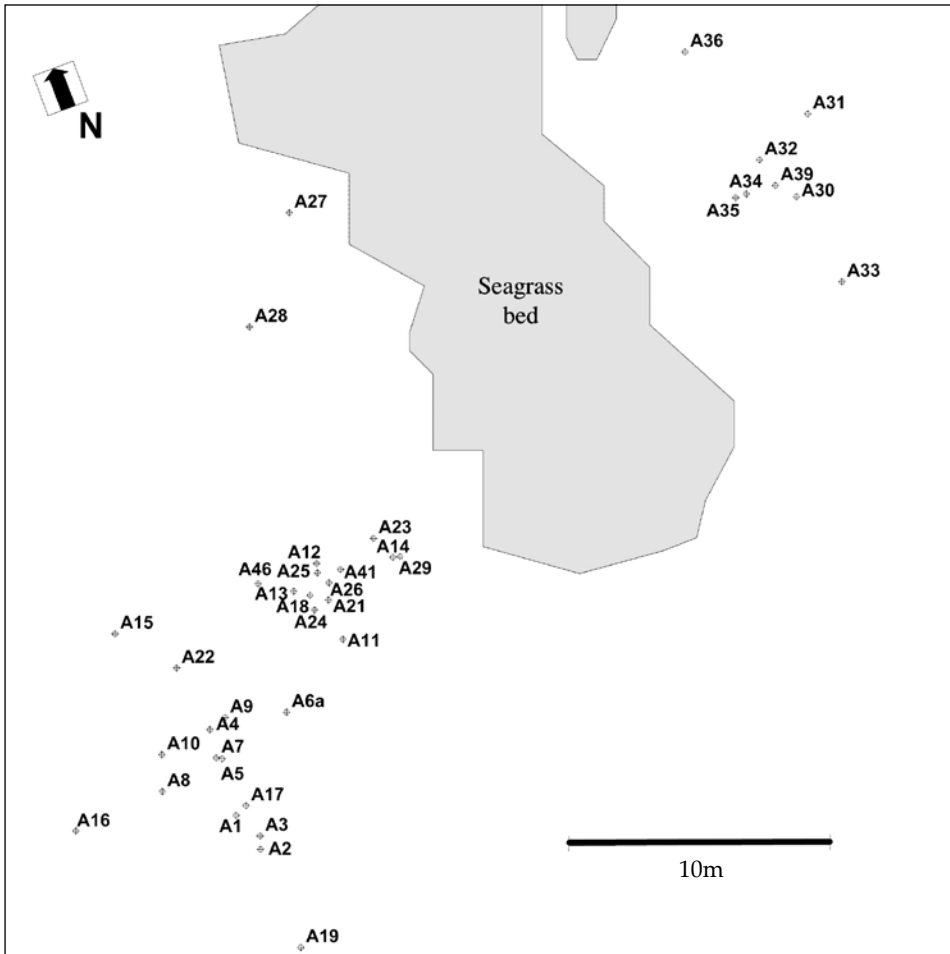


Figure 4. Distribution of finds at the site Kiti N1 (drawing by A. Neophytou)

contained wine, although other contents have also been suggested, such as olive oil for the Lamboglia 2 and *garum* for Dressel 6A, based on the evidence of *tituli picti* (Bezeczky 2013: 120). Their production has been attested on both coasts of the Adriatic: in Naronia, on the central Dalmatian coast (Lindhagen 2009) and at ten kiln sites and four possible production centres along the Italian coast (Baldacci 1969; Panella 1970; Carre 1985: 209–211; Van der Werff 1986; Carre *et al.* 2014; Bezeczky 2013: 122). Evidence for the production of Dressel 6A amphorae comes from five of the Italian sites: Sala Baganza in Parma, territory of Fermo, in Marche, territory of Potenza Picena, Porto Recanati and Citta Sant’ Angelo in Pescara (Carre *et al.* 2014: 419–423, fig. 1).

Dressel 6A amphorae are known from various Roman sites at Paphos. They were predominant among the ‘western’ amphora types found in the House of Dionysus, ‘... in the extremely thick, smooth, pale creamy fabric typical of Istrian products’ (Hayes 1991: 88), and were attested in the Villa of Theseus (Meyza & Bagiska 2013: 137–138). Some had stamped rims with the letters T•H•B, a very common stamp on Dressel 6A amphorae: several scholars have suggested that it represents the initials of *Titus*

5. Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus

Description		Dimensions (m)
1	Large body fragment of Dressel 6A, with foot, parts of belly and shoulder; many sherds of the same vessel conglomerated next to it	Max. H 0.55; Foot H 0.21
2	Neck of Dressel 6A	Neck H 0.22; Ext. rim D 0.12
3	Body of Dressel 6A (handles and part of foot missing). A neck conglomerated next to it, possibly from same vessel	Max. H 0.59; Max. D 0.39; Foot H 0.23 (Neck H 0.24)
4	Upper part of Dressel 6A	Neck H 0.27; Ext. rim 0.15
5	Neck of Dressel 6A with conglomerated sherds	Neck H 0.27; Ext. rim D 0.14
6	Conglomerated sherds with upper part of Dressel 6A neck	Ext. rim D 0.17
7	Conglomerated sherds with partly preserved Dressel 6A neck	Neck H (preserved) 0.24; Ext. rim D 0.17
8	Dressel 6A neck, conglomerated upside down	Neck height 0.20
9	Lower part of a Dressel 6A with foot	Foot H 0.25; Max. H 0.56
10	Conglomerated sherds, probably from <i>in situ</i> broken amphora	
11	Partly preserved Dressel 6A neck (handles missing)	Neck H 0.26; Ext. rim D 0.15
12	Upper part of Dressel 6A (part of rim missing)	Neck H 0.27; Ext. rim D 0.15
13	Conglomerated sherds with partly preserved Dressel 6A neck (one handle missing)	Neck H 0.25; Ext. rim D 0.15
14	Partly preserved Dressel 6A neck (handles missing)	Neck H (preserved) 0.19; Ext. rim D 0.146
15	Partly preserved neck of Dressel 6A with conglomerated sherds	Max. H 0.25
16	Lower part of a Dressel 6A with foot partly preserved	Max. H 0.32
17	Partly preserved neck of Dressel 6A	Neck H 0.26
18	Partly preserved Dressel 6A neck (handles missing) and part of shoulder	Max. H 0.36; Ext. rim D 0.17
19	Heavily conglomerated sherds with partly preserved diagnostic parts rims and handles of Dressel 6A	
20	Dressel 6A neck (part of rim and handles missing)	Neck H 0.25; Ext. rim D 0.14
21	Dressel 6A neck, conglomerated upside down	not measured because of the position on the seabed
22	Dressel 6A neck (handles missing)	Max. H 0.28; Ext. rim D 0.14
23	Heavily conglomerated sherds with partly preserved diagnostic rims and handles, possibly of Dressel 6A	
24	Amphora stopper	Max. D 8–9
25	Dressel 6A neck with stopper <i>in situ</i>	Neck H 0.27; Ext. rim D 0.16

Table 3. Catalogue of finds from the Kiti N1 shipwreck

5. *Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus*

26	Partly preserved Dressel 6A neck with stopper	Max. D 0.20
27	Dressel 6A body with foot (found in the posidonia field)	Max. H 0.55; Foot H 0.22; Max. D 38
28	Dressel 6A(?) body, preserving part of neck and base (handles missing) (found in the posidonia field)	Max. H 0.57; Max. D 38
29	Dressel 6A neck, upside down, with sherds conglomerated around it	not measured because of the position on the seabed
30	Neck and handles of a Dressel 2-4	Max. H 0.201; Neck H 0.15; Ext. rim D 0.12
31	Upper part of an amphora; ring rim, concave high neck, cylindrical handles	Max. H 0.33; Neck H 0.26; Ext. rim D 0.13
32	Heavily conglomerated Dressel 6A(?) neck with two handles	Max. H 0.35
33	Part of a Dressel 6A(?) body	Max. H 0.60; Max. D 38
34	Upper part of a variant (or very worn) Dressel 6A, among many other body fragments	Neck H 0.30; Ext. rim D 0.17
35	Large body fragment, preserving part of foot	Max. H 0.63; Max. D 0.32; Foot H (preserved) 0.12
36	Partly preserved neck of unidentified amphora type	not measured because of the position on the seabed
37	Body fragment with one double handle (probably Dressel 2-4)	Max. H 0.30
38	Partly preserved Dressel 6A(?) base	Max. H 0.32
39	Dressel 6A(?) base fragment among conglomerated sherds	

Table 3. *Catalogue of finds from the Kiti N1 shipwreck (continued)*

Helvius Basila, governor of Galatia in AD 36–37 and legate of Tiberius, or possibly his father (Callender 1965: 258, no. 1717; Lindhagen 2009: 102; Meyza & Bagiska 2013: 138; Carre *et al.* 2014: 425). Interestingly, an almost intact Dressel 6A amphora (no. S130c), stamped with the same initials (T•H•B) on the shoulders was delivered to the Larnaca Museum by the Swedish Team (**Fig. 5.2**) after the 1980 survey, with the note that it ‘belongs to the area south-west of the lighthouse’ (Envig & Beichmann 1984: 181–182, fig. 16); there is no doubt that it comes from the shipwreck Kiti N1. The fabric (only macroscopically inspected) is light brown to yellow, with large and medium size red-brown and small white inclusions (**Fig. 5.3**). No other examples of this type have been published from Cyprus so far. Anthi Kaldeli has kindly informed me, however, that she has identified three sherds from the House of Orpheus and four from the Agora of Amathous.

Kiti N2 site

This site covers an area of approximately 20x20m with scattered amphora pieces. No systematic survey was conducted, but the vast majority of the pottery finds are amphorae and belong to the second generation of LR 1 (**Fig. 6**), dated to the sixth century AD (see above). Several different forms were found but the majority

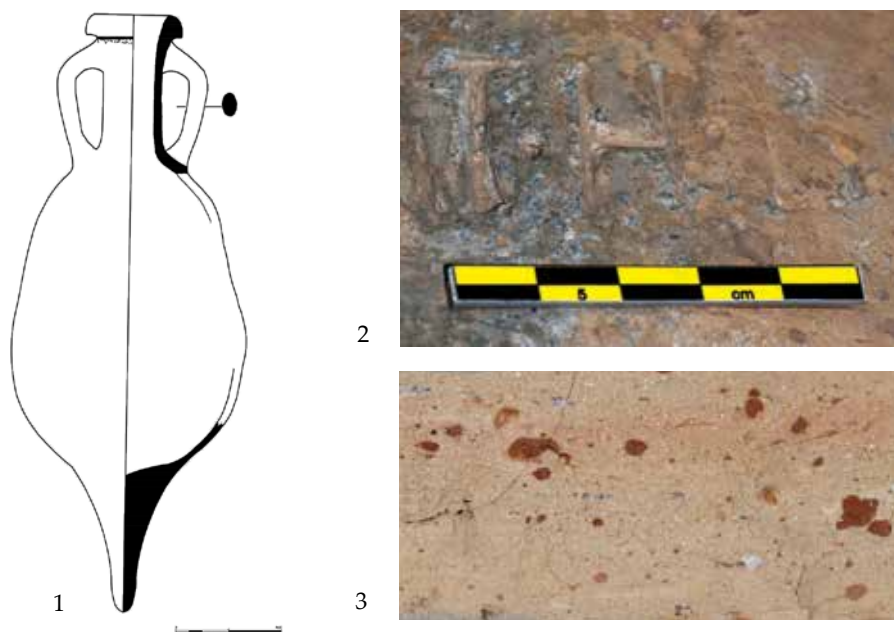


Figure 5. 1. Reconstructed Dressel 6A amphora from Kiti N1; 2. The stamp on amphora no. S130c; 3. Fabric of amphora no. S130c

belonged to LR 1/B/Form 3, which was also produced in local workshops (see above). The fragmentary nature of the material does not allow any sound conclusions related to the nature of this site: it may only be a jettisoned cargo or the scattered remains of a shipwreck.

Kiti N3 site

One almost intact amphora and a few necks were found conglomerated on the rocks at a site close to Cape Kiti. The amphorae of this assemblage clearly belong to the LR 1 amphora type (Fig. 7), most probably to the third generation, dated to the seventh century AD (Pieri 2005: 76, Demesticha 2013: 173–176). Their form is similar to LR 1 amphorae published from Pella and Beirut (Fitzgerald 1931: 37, pl. XXXI.27; Watson



Figure 6. LR 1/B amphorae from site Kiti N2



Figure 7. LR 1/B amphora from site Kiti N3

1992: 240, fig. 10.75; Saghieh 1996: 23–24). Although close inspection of the fabric was not possible, as no amphorae were recovered from the site, their morphological characteristics seem very similar to those of the Type D Snp I amphorae from Sinope (Kassab-Tesgör 2011: 200–201, pl. III.2). Moreover, according to *in situ* macroscopic observations, the fabric is reddish with black, red and white inclusions; this description is very similar to the ‘reddish’ fabric of the Dimirci workshop (Erten *et al.* 2004: 104, fig. 1f).

3 The systemic context of anchorages

In order to understand the archaeological material better, we have to link it to behavioural and organizational hypotheses about artefacts in systemic context (Schiffer 1972). Transport amphorae had a very distinctive prime use, as containers for distribution over some appropriate distance, indicative of trade connections and mechanisms in antiquity. However, as they were transported in considerable quantities, especially during the Roman period, when emptied of their prime use content, they were often recycled or reused. In his extensive discussion of amphorae life histories, Peña (2007: 61–192) has distinguished three main kinds of reuse: Type A, reuse of amphorae as packaging containers; Type B, applications other than packaging without modifying the vessel; and Type C, involving the physical

modification of the vessel. In this respect, he stressed the difference between transport and storage, the latter being a form of reuse of the amphorae in a way different than that of their prime use (Peña 2007: 63). The extensive reuse of transport containers as temporary storage jars may have an impact on the conclusions we draw today about the trade connections of an excavation or survey site, even when finds are quantified. Lawall (2011) refined Peña's flow diagrams about the life history of amphorae, based on data from the Classical and Hellenistic Aegean, taking into consideration both underwater and land archaeological records, and discussing the diverse trade, prime use and reuse patterns in areas with different scales of amphora production. It became evident that, regardless of the chronological period, not only economic but also behavioural trends should be taken into consideration, as for example in large consumption centres, where the vast majority of Roman amphorae were discarded or employed for other uses. In rural areas, however, where the import of amphorae was less regular, their reuse was more extensive (Vnukov 2013: 58).

Anchorage without any associated land settlement and often located behind promontories, as is the case with Cape Kiti, have multiple maritime capacities, as they were used as shelters from bad weather during long or short-distance voyages, overnight stops during sails longer than one day, or regular stops during fishing activities away from home anchorages (Morton 2001: 110–114). Thus, their use is occasional (or opportunistic: Leidwanger 2013b) and, accordingly, the fragmented nature of recovered amphora material may indicate possible cargo jettisons from merchantmen transporting containers during their prime use, and/or episodes of on-board ceramics' dumping, after their reuse as multiple-use containers for wine, water or non-food substances. Thus, it is impossible to determine which pottery finds in shallow waters were reused or not, i.e. if their systemic context is related to long distance trade or short distance coastal trips of small- and medium-size fishing vessels or other carriers, especially when their surface is damaged as a result of sea environment dynamics. As the use of such sites was different from that of anchorages associated with lading activities, imported amphora types found in their waters, represented by one or two containers, may testify to prime use transport in the region sometime in their life history. Any further conclusions about their significance as markers for exchange patterns at their find spot, however, should be treated with caution and can only be valid if compared with finds from land sites. Even so, quantified and qualified analyses can provide some interesting insights into times of intense maritime activity, such as the Late Roman period on Cyprus, during which the numbers of deposited amphorae are higher.

4 The *amphorascape* of Cape Kiti

Cape Kiti is a prominent headland along the south coast of Cyprus, marking the southwestern extremity of Larnaca Bay, an important seascape feature of the south coast. Since the Late Bronze Age, important port cities have given the area a significant position in the seaborne trade of Cyprus, at an international, regional and local level. Thus, Cape Kiti was and remains an important landmark of the nautical geography of Cyprus, especially for ships sailing between the Akrotiri peninsula and Cape Greco; the lighthouse which has stood there since 1864 further testifies to this.

The small cove at the lee site of the Cape (i.e. east of it) has been used as an anchorage since the second millennium BC, as the 22 stone anchors found there

suggest (McCaslin 1978: 137–138). Apart from the anchors, and a few ceramic tubes and tiles, the vast majority of the finds are amphorae. The map of the spatial distribution of the finds shows none of Parker's (1981) categories of 'shallow waters contaminated material', because (a) no 'putative associations or groups of distinctive material' can be distinguished, despite the 'sites' mentioned in the 1972 survey, and (b) no observed and closely recorded associations exist. It is an underwater cultural landscape defined mainly by amphorae, or an *amphorascape*. Although Leonard (2005) remarked that the surveyed area has been used as an anchorage, and hence the amphorae do not necessarily form a shipwreck site, part of the 1977 survey was conducted very close to the Cape, so at least these finds may be connected with nautical accidents. Moreover, the cove is only partly protected from the wind, so only small craft could actually find shelter there.

The predominance of LR 1 amphorae at the Cape Kiti anchorage comes as no surprise, since this amphora type is the commonest in all Cypriot urban and country sites of the period, such as Salamis (Diedrichs 1980: 55–57), Amathous (Touma 1989, 2001), Kalavassos *Kopetra* (Rautman 2000, 2013), Maroni (Tomber 2002) and Panayia Ematousa (Winther Jacobsen 2006: 306). The fact, however, that it is amphorae of the second LR 1 generation that predominate at the site is indicative of an intense use of the shelter during the sixth century AD in particular. Amphorae of the same type are scattered all along the southern coast of the island, from Akrotiri-Dreamer's Bay (Leonard & Demesticha 2004: 199; Leiwanger 2005) to Cape Kiti (personal observation; see also Manning *et al.* 2002: 119, fig. 14) and are the most common LR 1 amphora form in the Late Roman layers of the Agora of Amathous (Demesticha 2002). The presence of LR 1 amphorae in anchorages west of Akrotiri, however, presents a slightly different picture: although the type was predominant at West Akrotiri bays (no quantities are known), only scattered LR 1s were located at the anchorage of Avdimou Bay (Leiwanger 2005, 2013a). On the southwestern coast of the island, LR 1s were found in three surveyed anchorages: Keratidhi, Thalassines *Spilies* and Lara *Limnionas* (Morris & Peatfield 1987) but no particular reference is made to the LR 1 predominance among the recovered finds, all of which fall into four broader chronological groups: Hellenistic/Early Roman, Late Roman, Crusader/Byzantine and Late Ottoman. Moreover, in the anchorage of Kioni, Akamas, on the western coast, no Late Roman finds were located (Leonard 1995: 147).

Although we lack a comprehensive documentation of pottery along the ancient anchorages of the island, a preliminary comparative analysis of the surveys conducted thus far may be indicative of the different mechanisms involved in the transport of amphorae around Cyprus during the Late Roman period. The predominance of the LR 1 amphorae along the south but not along the western coast is probably indicative of changes in the maritime landscape of the island during the sixth century, when it was involved in the supply networks of the Eastern Empire. In 536 AD, a new praetorian diocese, the *Questura Exercitus*, was created by Justinian (Nov. XLI, VIII cap. V, cp. L. H), which included the provinces of Scythia Minor, Moesia Secunda, Caria, Cyclades and Cyprus; the purpose of this reform was to enhance the military *annona*, i.e. the supply of the army, in the north provinces (Mitford 1980: 137; Lokin 1986: 7; Turbatov 1997; Gkoutzioukostas 2008). Since this administrative change must have had an immediate impact on agricultural production and maritime contacts, it is plausible to presume that the existing coastal networks were enhanced to serve the transportation both of the empty containers to their filling points and the shipments of filled containers outside the island.

Along the south coast of Cyprus the prevailing winds blow from the west-

southwest (Murray 1995; Arnaud 2005: 212; Demesticha 2012), thus facilitating sea travel towards the east. Sailing towards the west along the south coast of the island is often possible only early in the morning during the summer or with the easterlies that blow more often in the winter (Heikell & Heikell 2013: 344–345). For destinations such as the north coast of the island, or Syria and Cilicia, the obvious choice would be to follow the sea along the coast, turn northeastwards after Cape Greco until Cape Andreas, i.e. not circumnavigating the island in the opposite direction. Thus the prevailing sailing patterns may indicate exchange trends both within the coastscape of Cyprus and beyond, to inter-regional spheres of interaction (Tartaron 2013: 185–203).

If the hypothesis that ‘workshop X’, the main production centre for LR 1/B/form 3, was located west of Paphos is correct, then the abundance of such amphorae along the south coast could be explained within the systemic context of Cypriot wine export, enhanced significantly after the rise in demand that the *Questura Exercitus* must have entailed. The rarity of LR 1 amphorae in the anchorages of the west coast corroborates the sailing patterns mentioned above, but also suggests that LR 1s’ exports from Cyprus were not directly sent to the Aegean or the Black Sea but instead were transhipped in one of the main harbours of the mainland, perhaps in Syria as the Seleucia port inscription indicates (Dagron 1985).

Cape Kiti is located right on this sea route and some of the LR 1 amphorae found west of it, at the sites Kiti N2–3, may well have been discarded there during their prime use-life. Kiti N3 site might represent the remains of a long distance trading wreck-episode, if the amphorae actually originate from Sinope; its fragmented nature, however, does not allow for sound conclusions. The possible Cypriot provenance of the Kiti N2 amphorae and the location of the site in the shallow waters close to the coast, are indicative of a coastal sail, along the anchorages and harbours of the south coast. But the LR 1/B amphorae from the anchorage of Cape Kiti, both Cypriot and imported, may also reflect another aspect of the large numbers of containers transported during the sixth century: the provision of the local communities with numerous empties, which obviously were extensively reused after their prime use-life, especially on local boats sheltered at such anchorages. Similarly, the fact that local LR 1/C, i.e. the third generation of the type dated to the seventh century AD, are almost absent from the Cape Kiti anchorage assemblage, is also indicative of a change in local production or distribution mechanisms. Despite the fact that at least three different kiln sites of LR 1/C amphorae were in operation along the south coast during the seventh century AD (see above), perhaps these containers were either produced in lower quantities than their predecessors or else the duration of their production was short and thus did not allow for reuse practices, which would be reflected in the Cape Kiti anchorage assemblage. A wreck site of LR 1/Cs, however, was found during the Cape Andreas surveys (site 17: Green 1973: 161, figs 19, 21) and testifies further to the use of the sea route for exports.

Kiti N1 site is clearly a homogeneous cargo of Italian containers. The fact that Dressel 6A amphorae are not well represented on the island in sites east of Paphos creates interesting questions about the interpretation of amphorae in the underwater archaeological record. Unlike the 26 scattered LR 1s found in the Cape Kiti anchorage (Table 2) or the ones located at sites Kiti N2–3, the 30 Dressel 6A amphorae of Kiti 6A are barely comparable with any other pottery assemblage on Cyprus. Kaldeli (2013) has argued that, during the Early Roman period, Paphos had stronger connections with Rome and Italy than other cities, as suggested by the predominance of Italian examples among the imported containers found in various sites of the city. This trend

in the Paphos amphora record is explained not only by the fact that the city was the capital of Roman Cyprus, but also by its strategic location on the sea routes of the ships travelling from Rome to Egypt to provide Rome with grain, i.e. serving the civil *annona*. In other words, Paphos was not the final destination of these amphora cargoes but some of them were traded during the ship's stopover, on their way to Egypt. The Kiti N1 wreck fits into this pattern only as an accident, i.e. as a ship heading for Egypt (or even the Levant) but dragged well out of its route and crushed on the reefs of Cape Kiti by strong southwest winds; the rarity of Dressel 6As on the island seems to corroborate such a hypothesis.

5 Conclusions

Amphorae are found during underwater surveys in shallow waters at sites of diverse character, such as anchorages, promontories or shipwrecks. Cape Kiti can be considered as a dangerous point of navigation for ships coming from the west, but its eastern side had a long use as an anchorage during antiquity. The interpretation of the sites around the Cape, defined by scattered, unstratified material, can be achieved only through detailed study of both the typology and the fabric of the amphorae, as well as through quantitative and spatial documentation, even of the conglomerated finds that remain on the seabed.

The diachronic use of the Cape Kiti anchorage is evidenced by the presence of diverse amphora types deposited there over a long period of time, from the Classical to the Late Roman period. Reconsideration of older survey results, in conjunction with those from more recent surveys in the area, has revealed a very interesting *amphorascape*, especially regarding the Roman period.

The Early and Middle Roman periods are hardly represented in the anchorage finds, with the conspicuous exception of a shipwreck site with Dressel 6A amphorae. Given the scarcity of Italian amphorae in general, and of this type in particular, on Cypriot sites east of Paphos, the location of the wreck may be outside of the ship's original route. If this is the case, then this assemblage adds 30 Dressel 6A to the Cape Kiti amphora record, but the systemic context of these containers should be placed elsewhere, in Egypt or the Levant. The low quantities of Early and Middle Roman amphorae found at the anchorage seem to belong to the same systemic context as those known from other surveyed anchorages of the island: that of reuse or random jettisons, during various episodes of circumstantial sheltering.

The Late Roman period is much better represented both in the anchorage and on the windward side of the Cape, especially through LR 1 amphorae. Although some of these amphorae may have been jettisoned during their prime use-life, it is very probable that some others were reused on board local small fishing boats that frequented the shelter. Their predominance, which differentiates Cape Kiti from anchorage assemblages on the west coast of the island, could be associated both with the location of the Cape on the busy coastscape of the Late Roman period, and with the abundant quantities of such amphorae, local and imported, in the terrestrial archaeological record of Late Roman Cyprus, where they must have been extensively reused. The distinction among the different variants of LR 1 amphorae was of key importance for the specification of the duration of this phenomenon: the percentages of the LR 1/A and C, i.e. of the first and the third LR 1 generations, are similarly low compared to those of amphora types of previous periods, which were represented at the site with nothing more than few examples per type.

A more comprehensive study of the anchorages around the Cyprus coast would definitely moderate significantly the conjectural character of these ideas. It is certain, however, that such *amphorascaepes* played an integral role in the shaping of maritime landscapes, on a local and regional level, *per terram per mare*.

Acknowledgements

The fieldschools and surveys at Cape Kiti in 2008–2009 were conducted with the full financial support of the Thetis Foundation, which I sincerely thank. Thanks are also owed to the members of the Cypriot Federation of Underwater Activities, who notified us of the sites Kiti N1–3 and assisted with the surveys, and also to the students of the Department of History and Archaeology of the University of Cyprus, who attended the fieldschools. I would like to express my gratitude to Professor Karen Nys for allowing me to study the amphorae from the Kiti surveys of 1973–1980, as well as to the staff of the Larnaca Museum for making the study in the storerooms easier. I am also grateful to Andonis Neophytou, Maria Michael, Irini Katsouri, Lefki Papakosta and Evi Karyda for their help with the maps and plans for this paper. I am also indebted to the referees who offered insightful comments on the text.

Bibliography

- Arnaud, P. 2005: *Les routes de la navigation antique: itinéraires en Méditerranée*, Paris
- Åström, P. 1986: Hala Sultan Tekke—an international harbour town of the Late Cypriote Bronze Age, *Opuscula Atheniensia* 16, 7–17
- Autret, C., R. Yağcı & N.K. Rauh 2010: A LRA 1 amphora kiln site at Soli-Pompeipolis, *ANMED Anadolu Akdenizi Arkeoloji Haberleri* 8, 203–204
- Baldacci, P. 1969: Alcuni aspetti dei commerci nei territori cisalpini, in *Atti del centro di studi e documentazione sull'Italia Romana*, 7–50, Roma
- Benoit, F. 1956: Épaves de la côte de Provence. Typologie des amphores, *Gallia* 14, 24–34
- Bettles, E. 2003: *Phoenician Amphora Production and Distribution in the Southern Coastal Levant: A Multi-disciplinary Investigation into Carinated-shoulder Amphorae of the Persian Period (539–332 BC)* (British Archaeological Reports International Series 1183), Oxford
- Bezeczky, T. 1998: Amphora types of Magdalensberg, *Arheoloski Veštnik*, 225–242
- Bezeczky, T. 2013: *The Amphorae of Roman Ephesus* (Forschungen in Ephesos 15/1), Wien
- Burrigato, F., M. di Nezza, F. Ferrazzoli & M. Ricci 2007: Late Roman 1 amphora types produced at Elaiussa Sebaste, in M. Bonifay & J.-C. Tréglià (eds), *LRCW 2. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry* (British Archaeological Reports International Series 1662), 697–700, Oxford
- Callender, M.H. 1965: *Roman Amphorae*, Oxford
- Calvet, Y. 1986: Les amphores chypriotes et leur diffusion en Méditerranée orientale, in J.-Y. Empereur & Y. Garlan (eds), *Recherches sur les amphores grecques* (Bulletin de Correspondance Hellénique Supplément 13), 505–514, Athens, Paris

- Carre, M.-B. 1985: Les amphores de la Cisalpine et de l'Adriatique au debut de l'Empire, *Mélanges de l'École française de Rome. Antiquité* 97, 207–245
- Carre, M.-B., P. Monsieur & S. Pesavento Mattioli 2014: Transport amphorae Lamboglia 2 and Dressel 6A: Italy and/or Dalmatia? Some clarifications, *Journal of Roman Archaeology* 27, 417–428
- Christou, D. 2013: *Excavations at Kourion 1975–1988*, Nicosia (in Greek)
- Costello, B. IV 2014: *Architecture and Material Culture from the Earthquake House at Kourion, Cyprus. A Late Roman Non-Elite House Destroyed in the 4th Century AD (British Archaeological Reports International Series 2635)*, Oxford
- Dagron, G. 1985: Un tarif des sportules à payer aux Curiosi du port de Séleucie de Piérie (VIe siècle), *Travaux et Mémoires* 9, 435–451
- Demesticha, S. 2002: The Cypriot Amphorae of the Late Roman Period. Unpublished PhD Dissertation, University of Cyprus (in Greek)
- Demesticha, S. 2003: Amphora production on Cyprus during the Late Roman period, in Ch. Bakirtzis (ed), *Actes du VIIe Congrès international sur la céramique médiévale en Méditerranée, Thessaloniki, 11–16 October 1999*, 469–476, Athens
- Demesticha, S. 2012: Harbours, navigation and trade, in D. Pilides & N. Papadimitriou (eds), *Ancient Cyprus: Cultures in Dialogue. Exhibition Organized by the Department of Antiquities, Cyprus, on the Occasion of Cyprus' Presidency of the Council of the European Union 2012. Royal Museums of Art and History, Brussels October 31, 2012–February 17, 2013*, 80–83, Nicosia
- Demesticha, S. 2013: Amphora typologies, distribution, and trade patterns: the case of the Cypriot LR1s, in J. Lund & M. Lawall (eds), *The Transport Amphorae and Trade of Cyprus (Gosta Enbom Monographs 3)*, 169–178, Aarhus
- Demesticha, S. 2014: Late Roman amphora typology in context, in N. Poulou-Papadimitriou, E. Nodarou & V. Kilikoglou (eds), *LRCW 4. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean, Archaeology and Archaeometry. The Mediterranean: a Market without Frontiers (British Archaeological Reports International Series 2616.I)*, 599–606, Oxford
- Demesticha, S. & D. Michaelides 2001: The excavation of a Late Roman 1 amphora kiln in Paphos, in E. Villeneuve & P. Watson (eds), *Actes du Colloque: La céramique byzantine et proto-islamique en Syrie-Jordanie (IVe–VIIIe siècles apr. J.-C.)*, Amman, 3–5 Décembre 1994, 289–296, Beyrouth
- Devillers, B., M. Brown & C. Morhange 2015: Paleo-environmental evolution of the Larnaca Salt Lakes (Cyprus) and the relationship to second millennium BC settlement, *Journal of Archaeological Science: Reports* 1, 73–80
- Diamanti, Ch. 2010: *Local Production and Import of Amphorae at Halasarna of Kos Island (5th–7th c.). Contribution to the Research of the Production and Distribution of the Late Roman/Proto-Byzantine Amphorae of the Eastern Mediterranean*, Athens (in Greek)
- Diedrichs, C. 1980: *Céramiques hellénistiques, romaines et byzantines (Salamine de Chypre IX)*, Paris
- Dressel, H. 1899: *Inscriptiones Urbis Romae Latinae. Instrumentum Domesticum (Corpus Inscriptionum Latinarum XV. 2)*, Berlin
- Empereur, J.-Y. & M. Picon 1989: Les régions de production d'amphores impériales en Méditerranée orientale, in *Amphores romaines et histoire économique: dix ans de recherche. Actes du colloque de Sienne (24–25 mai 1986) (Collection de l'École française de Rome 114)*, 223–248, Rome

5. *Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus*

- Empereur, J.-Y. & C. Verlinden 1987: The underwater excavation at the ancient port of Amathus in Cyprus, *The International Journal of Nautical Archaeology and Underwater Exploration* 16(1), 7–18
- Engvig, O.T. & P. Åström 1975: *Hala Sultan Tekke 2. The Cape Kiti Survey (SIMA 45.2)*, Göteborg
- Engvig, O.T. & M. Beichmann 1984: Underwater activities and the situation at Cape Kiti, Cyprus, *Opuscula Atheniensia* 15 (16), 181–186
- Erten, H.N., D. Kassab Tezgör, I.R. Türkmen & A. Zararsiz 2004: The typology and trade of the amphorae of Sinope. Archaeological study and scientific analyses, in J. Eiring & J. Lund (eds), *Transport Amphorae and Trade in the Eastern Mediterranean, Acts of the International Colloquium at the Danish Institute at Athens, September 26–29, 2002 (Monographs of the Danish Institute at Athens 5)*, 103–115, Aarhus
- Fitzgerald, G.M. 1931: *Beth-Shan Excavations 1921–23. The Arab and Byzantine Levels*, Philadelphia
- Garnett, R. & J. Boardman 1961: Underwater reconnaissance off the island of Chios, 1954, *Annual of the British School at Athens* 56, 102–113
- Gkoutzioukostas, A. 2008: Published lead seals concerning *Quaestura Exercitus*, in I. Jordanov, Z. Zekova, T. Todorov & M. Georgieva (eds), *Proceedings of the International Symposium Dedicated to the Centennial of Dr. Vassil Haralanov, held in Shumen in September the 13th–15th 2007*, 108–118, Shumen
- Green, J. 1970: *Cape Andreas Expedition 1969*, Oxford
- Green, J. 1973: An underwater archaeological survey of Cape Andreas, Cyprus, 1969–70: a preliminary report, in D.J. Blackman (ed), *Marine Archaeology (Colston Papers 23)*, 141–178, London
- Hayes, J.W. 1991: *Paphos III: The Hellenistic and Roman Pottery*, Nicosia
- Heikell, R. & L. Heikell 2013: *Turkish Waters & Cyprus Pilot. A Yachtsman's Guide to the Mediterranean and Black Sea Coasts of Turkey with the Island of Cyprus* (9th edition), St Ives
- Hercher, N. & A. Nyquist 1975: The underwater survey at Cape Kiti in 1972, in O.T. Engvig & P. Åström, *Hala Sultan Tekke 2. The Cape Kiti Survey (SIMA 45.2)*, 22, Göteborg
- Ingelman-Sundberg, C. & P. Åström 1975: The underwater survey at Cape Kiti in 1972, in O.T. Engvig & P. Åström, *Hala Sultan Tekke 2. The Cape Kiti Survey (SIMA 45.2)*, 21, Göteborg
- Kaldeli, A. 2013: Early Roman amphorae from Cyprus as evidence of trade and exchange in the Mediterranean, in J. Lund & M. Lawall (eds), *Transport Amphorae and Trade of Cyprus: Proceedings of a Seminar at the Danish Institute at Athens, 23–24 April 2007*, 124–132, Aarhus
- Kassab Tezgör, D. 2011: Types amphoriques romains tardifs produits simultanément à Demirci près de Sinope et dans d'autres centres, in Ch. Tzochev, T. Stoyanov & A. Bozkova (eds), *PATABS II. Production and Trade of Amphorae in the Black Sea. Acts of the International Round Table held in Kiten, Nessebar & Sredetz, September 26–30 2007*, 259–264, Sofia
- Knapp, A.B. 2014: Seafaring and seafarers: the case for Late Bronze Age Cyprus, in J.M. Webb (ed), *Structure, Measurement and Meaning. Studies on Prehistoric Cyprus in Honour of David Frankel (SIMA 143)*, 79–93, Uppsala

- Lawall, M.L. 2011: Greek amphorae in the archaeological record, in M.L. Lawall & J. Lund (eds), *Pottery in the Archaeological Record: Greece and Beyond*, 37–50, Aarhus
- Leidwanger, J. 2005: The underwater survey at Episkopi Bay: a preliminary report on the 2004 field season, *Report of the Department of Antiquities, Cyprus*, 269–277
- Leidwanger, J. 2007: The Cypriot transport amphora. Notes on its development and distribution, *Skyllis* 7.1–2, 24–31
- Leidwanger, J. 2013a: Amphorae and underwater survey: making sense of Late Roman trade from scattered sherds and shipwrecks, in J. Lund & M. Lawall (eds), *The Transport Amphorae and Trade of Cyprus: Proceedings of a Seminar at the Danish Institute at Athens, 23–24 April 2007*, 180–190, Aarhus
- Leidwanger, J. 2013b: Opportunistic ports and spaces of exchange in Late Roman Cyprus, *Journal of Maritime Archaeology* 8, 221–243
- Leidwanger, J. 2014: A preliminary archaeometric analysis of the Late Roman 1 amphoras from the cargo of the seventh-century Yassiada shipwreck, Turkey, in N. Poulou-Papadimitriou, E. Nodarou & V. Kilikoglou (eds), *LRCW 4. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Achaometry. The Mediterranean: a Market without Frontiers (British Archaeological Reports International Series 2616.I)*, 897–906, Oxford
- Leonard, J.R. 1995: The anchorage at Kioni, in J. Fejfer (ed), *Ancient Akamas I. Settlement and Environment*, 133–170, Aarhus
- Leonard, J.R. 2005: Roman Cyprus: Harbors, Hinterlands, and “Hidden Powers”. Unpublished PhD Dissertation, Faculty of the Graduate School of the State University of New York at Buffalo, Department of Classics
- Leonard, J.R. & S. Demesticha 2004: Fundamental links in the economic chain: local ports and international trade in Roman and Early Christian Cyprus, in J. Eiring & J. Lund (eds), *Transport Amphorae and Trade in the Eastern Mediterranean, Acts of the International Colloquium at the Danish Institute at Athens, September 26–29, 2002 (Monographs of the Danish Institute at Athens 5)*, 189–202, Aarhus
- Lindhagen, A. 2009: The transport amphoras Lamboglia 2 and Dressel 6A: a central Dalmatian origin?, *Journal of Roman Archaeology* 22, 83–108
- Lokin, J.H.A. 1986: Administration and jurisdiction in Cyprus, in the sixth century AD, in Th. Papadopoulos & B. Egglezakis (eds), *Acts of the Second International Conference on Cypriot Studies II: Medieval Part*, 1–9, Nicosia
- Manning, S.W., D.A. Sewell & E. Herscher 2002: Late Cypriot IA maritime trade in action: underwater survey at Maroni Tsaroukkas and the contemporary east Mediterranean trading system, *Annual of the British School at Athens* 97, 97–162
- Manning, S.W., S.J. Monks, D.A. Sewell & S. Demesticha 2000: Late Roman Type 1a amphora production at the Late Roman site of Zygi-Petrini, Cyprus, *Report of the Department of Antiquities, Cyprus*, 233–257
- McCaslin, D.E. 1978: The 1977 underwater report, in P. Åström (ed), *Hala Sultan Tekke 4 (SIMA 45.4)*, 98–157, Göteborg
- Meyza, H. & D. Bagiska 2013: Roman amphorae from the Polish excavations at Paphos, Maloutena, in J. Lund & M. Lawall (eds), *The Transport Amphorae and Trade of Cyprus: Proceedings of a Seminar at the Danish Institute at Athens, 23–24 April 2007*, 133–154, Aarhus
- Mitford, T.B. 1980: *Roman Cyprus. Aufstieg und Niedergang der Römischen Welt II, Principat VII.2*, Berlin, New York

5. *Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus*

- Morris C.E. & A.D. Peatfield 1987: Pottery from the Cyprus underwater survey, 1983, *Report of the Department of Antiquities, Cyprus*, 200–214
- Morton, J. 2001: *The Role of the Physical Environment in Ancient Greek Seafaring (Mnemosyne Bibliotheca Classica Batava, Supplementum 213)*, Leiden, Boston, Köln
- Murray, W. 1995: Ancient sailing winds in the eastern Mediterranean: the case for Cyprus, in V. Karageorghis & D. Michaelides (eds), *Proceedings of the International Symposium "Cyprus and the Sea" organized by the Archaeological Research Unit of the University of Cyprus and the Cyprus Ports Authority, Nicosia 25–26 September 1993*, 33–44, Nicosia
- Panella, C. 1970: Anfore, in *Ostia II: Le terme del Nuotatore: scavo dell ambiente 1 (Studi miscellanei 16)*, 102–156, Roma
- Parker, A.J. 1981: Stratification and contamination in ancient Mediterranean shipwrecks, *The International Journal of Nautical Archaeology and Underwater Exploration* 10(4), 309–335
- Peacock, D.P.S. & D.F. Williams 1986: *Amphorae and the Roman Economy. An Introductory Guide*, London, New York
- Peña, J.T. 2007: *Roman Pottery in the Archaeological Record*, Cambridge
- Piéri, D. 2005: *Le commerce du vin oriental à l'époque byzantine (Ve–VIIe siècles). Le témoignage des amphores en Gaule (Bibliothèque Archéologique et Historique 174)*, Beirut
- Poulou-Papadimitriou, N. & S. Didioumi 2010: Nouvelles données sur la production de l'atelier céramique protobyzantin à Kardamaina (Cos-Grèce), in S. Menchelli, S. Santoro, M. Pasquinucci & G. Guiducci (eds), *LRCW 3. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry. Comparison between Western and Eastern Mediterranean (British Archaeological Reports International Series 2185.II)*, 741–748, Oxford
- Rautman, M. 2000: The busy countryside of Late Roman Cyprus, *Report of the Department of Antiquities, Cyprus*, 317–331
- Rautman, M. 2013: Late Roman amphorae and trade in the Vasilikos Valley, in M. Lawall & J. Lund (eds), *Transport Amphorae and Trade of Cyprus: Proceedings of a Seminar at the Danish Institute at Athens, 23–24 April 2007*, 191–199, Aarhus
- Riley, J.A. 1979: The coarse pottery from Berenice, in J.A. Lloyd (ed), *Excavations at Sidi Khrebish, Benghazi (Berenice) II (Supplements to Libya Antiqua V)*, 91–467, Tripoli
- Saghieh, M. 1996: BEY 001 and 004 preliminary report, *Bulletin d'Archéologie et d'Architecture Libanaise* 1, 23–59
- Schiffer, M. 1972: Archaeological context and systemic context, *American Antiquity* 37, 156–165
- Tartaron, T. 2013: *Maritime Networks in the Mycenaean World*, Cambridge, New York
- Tomber, R. 2002: The ceramic finds from Maroni *Petrea*, in S. Manning, A. Manning, R. Tomber, D. Sewell, S.J. Monks, M.J. Ponting & E.C. Ribeiro (eds), *The Late Roman Church at Maroni Petrea*, 41–55, Nicosia
- Torbatov, S. 1997: Questura Exercitus: Moesia Secunda and Scythia under Justinian, *Archaeologia Bulgarica* 3, 78–87
- Touma, M. 1989: La céramique protobyzantine d'Amathonte: remarques sur le matériel trouvé en 1988, *Bulletin de Correspondance Hellénique* 113, 871–875
- Touma, M. 2001: Quelques témoignages de la céramique sur les échanges syro-

5. *Gone with the waves: scattered Roman amphorae in shallow waters around Cape Kiti, Cyprus*

- chypriotes à la période byzantine, in E. Villeneuve & P. Watson (eds), *Actes du Colloque: La céramique byzantine et proto-islamique en Syrie-Jordanie (IVe–VIIIe siècles apr. J.-C.)*, Amman, 3–5 Décembre 1994, 49–58, Beyrouth
- Van der Werff, J.H. 1986: The amphora wall in the House of the Porch, Ostia, *Bulletin Antieke Beschaving* 61, 96–137
- Vnukov, S.Y. 2013: The use life of wine amphorae, in L. Buzoianu, P. Dupont & V. Lungu (eds), *PATABS III. Production and Trade of Amphorae in the Black Sea— Production et commerce amphoriques en Mer Noire. Actes de la table ronde internationale de Constanta*, 6–10 octobre 2009, 57–66, Constanta
- Watson, P.M. 1995: Ceramic evidence for Egyptian links with northern Jordan in the 6th–8th centuries AD, in S. Bourke & J.-P. Descoeurdes, *Trade, Contact, and the Movement of Peoples in the Eastern Mediterranean. Studies in Honour of J. Basil Hennessy*, 303–320, Sydney
- Westerdahl, C. 2011: The maritime cultural landscape, in A. Catsambis, B. Ford & D.L. Hamilton (eds), *The Oxford Handbook of Maritime Archaeology*, 733–762, Oxford, New York
- Williams, D.F. 1987: Roman amphorae from Kourion, Cyprus, *Report of the Department of Antiquities, Cyprus*, 236–238
- Williams, D.F. 2005: Late Roman amphora 1: a study of diversification, in M. Berg Briese & L.E. Vaag (eds), *Trade Relations in the Eastern Mediterranean from the Late Hellenistic Period to Late Antiquity: The Ceramic Evidence (Halicarnassian Studies III)*, 157–168, Odense
- Winther Jacobsen, K. 2002: Cypriot transport amphorae in the Archaic and Classical period, in A. Rathje, M. Nielsen & B. Bundgaard-Rasmussen (eds), *Pots for the Living Pots for the Dead (Acta Hyperborea 9)*, 169–184, Copenhagen
- Winther Jacobsen, K. 2006: Transport amphorae, in L. Wriedt Sørensen & K. Winther Jacobsen (eds), *Panayia Ematousa I. A Rural Site in South-eastern Cyprus (Monographs of the Danish Institute at Athens 6)* 303–337, Athens