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Istanbuler Mitteilungen 74, 2024, § 1–69

https://doi.org/10.34780/cd5j-fba5

Herausgebende Institution / Publisher:
Deutsches Archäologisches Institut

IMPRESSUM

Istanbuler Mitteilungen
erscheint seit 1933/*published since 1933*

IstMitt 74, 2024 • 404 Seiten/*pages* mit 311 Abbildungen/*illustrations*

Peer Review
Alle für die Istanbuler Mitteilungen eingereichten Beiträge werden einem doppelblinden Peer-Review-Verfahren durch internationale Fachgutachterinnen und -gutachter unterzogen./*All articles submitted to the Istanbuler Mitteilungen are reviewed by international experts in a double-blind peer review process.*

Indices
Istanbuler Mitteilungen sind indiziert im/*Istanbuler Mitteilungen are indexed in the* European Reference Index for the Humanities and Social Sciences ERIHPLUS und in der/*and in the* Expertly Curated Abstract and Citation Database Scopus.

Redaktion und Layout/*Editing and Typesetting*
Gesamtverantwortliche Redaktion/*Publishing editor*:
Deutsches Archäologisches Institut, Redaktion der Abteilung Istanbul, İnönü Caddesi 10, 34437 Gümüşsuyu-Istanbul, Türkei
Kontakt für Manuskripteinreichung/*Contact for article submissions*: redaktion.istanbul@dainst.de
Redaktion/*Editing*: Martina Koch, Ulrich Mania
Satz/*Typesetting*: le-tex publishing services GmbH, Leipzig
Corporate Design, Layoutgestaltung/*Layout design*: LMK Büro für Kommunikationsdesign, Berlin
Umschlagfoto/*Cover illustration*: Ausschnitt aus Abb. 15 im Beitrag von Westbrook – Nowland (Grafik: Nigel Westbrook auf Basis von Melchior Lorck: http://hdl.handle.net/1887.1/item:2026523)/*Detail from fig. 15 in the article by Westbrook – Nowland (graphic: Nigel Westbrook based on Melchior Lorck:* http://hdl.handle.net/1887.1/item:2026523)

Druckausgabe/*Printed edition*

Druck und Vertrieb/*Printing and Distribution*: Dr. Ludwig Reichert Verlag, Tauernstraße 11, 65199 Wiesbaden • info@reichert-verlag.de, www.reichert-verlag.de

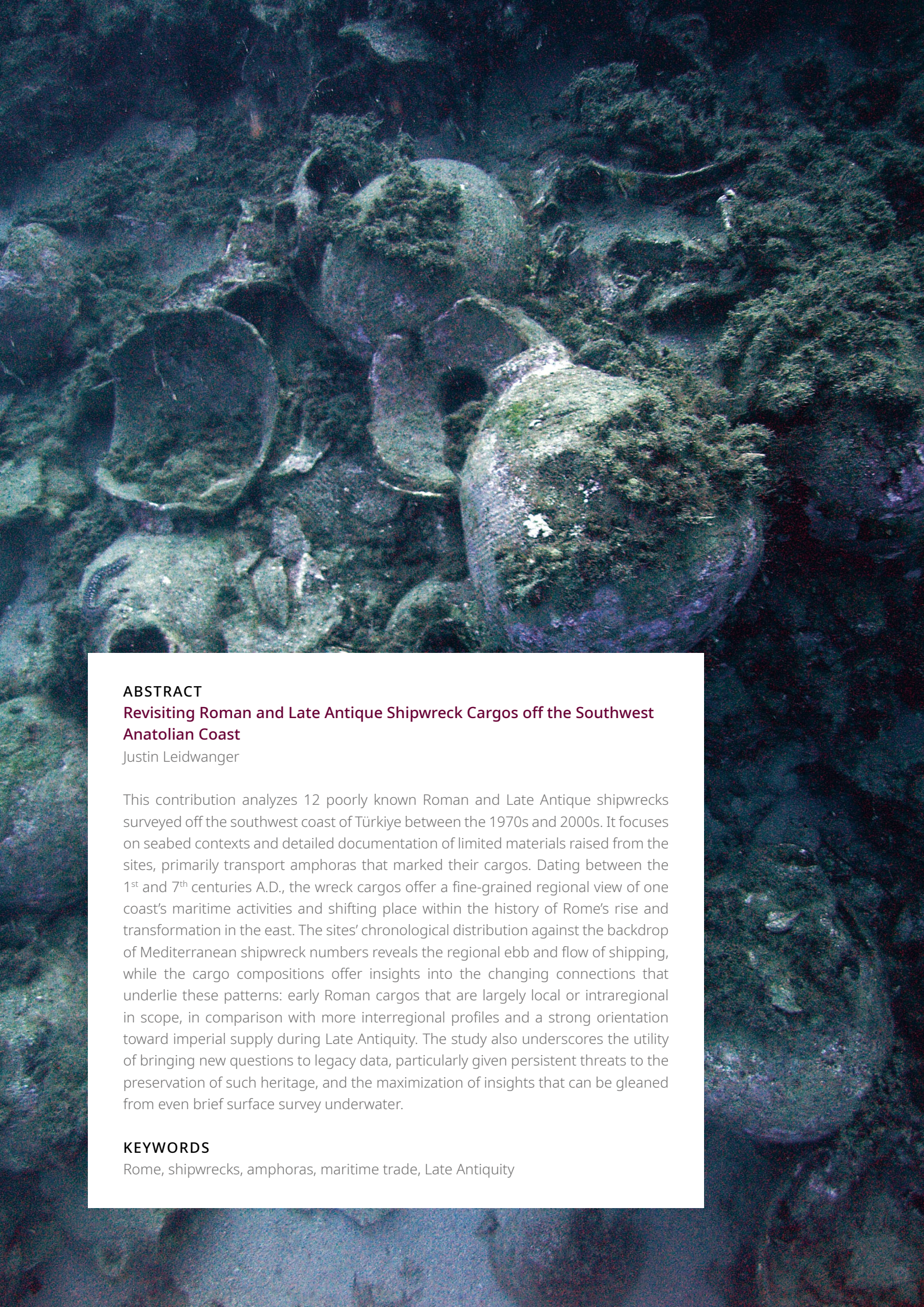
P-ISSN: 0341-9142 – ISBN: 978-3-7520-0870-8

Druck und Bindung in Deutschland/*Printed and Bound in Germany*

Digitale Ausgabe/*Digital edition*

Webdesign/*Webdesign*: LMK Büro für Kommunikationsdesign, Berlin
XML-Export, Konvertierung/*XML-Export, Conversion*: digital publishing competence, München
Programmierung Viewer-Ausgabe/*Programming Viewer*: LEAN BAKERY, München

E-ISSN: 2940-8202 – DOI: https://doi.org/10.34780/bwxtyg03
Zu den Nutzungsbedingungen siehe/*For the terms of use see*: https://publications.dainst.org/journals/index/termsOfUse



ABSTRACT

Revisiting Roman and Late Antique Shipwreck Cargos off the Southwest Anatolian Coast

Justin Leidwanger

This contribution analyzes 12 poorly known Roman and Late Antique shipwrecks surveyed off the southwest coast of Türkiye between the 1970s and 2000s. It focuses on seabed contexts and detailed documentation of limited materials raised from the sites, primarily transport amphoras that marked their cargos. Dating between the 1st and 7th centuries A.D., the wreck cargos offer a fine-grained regional view of one coast's maritime activities and shifting place within the history of Rome's rise and transformation in the east. The sites' chronological distribution against the backdrop of Mediterranean shipwreck numbers reveals the regional ebb and flow of shipping, while the cargo compositions offer insights into the changing connections that underlie these patterns: early Roman cargos that are largely local or intraregional in scope, in comparison with more interregional profiles and a strong orientation toward imperial supply during Late Antiquity. The study also underscores the utility of bringing new questions to legacy data, particularly given persistent threats to the preservation of such heritage, and the maximization of insights that can be gleaned from even brief surface survey underwater.

KEYWORDS

Rome, shipwrecks, amphoras, maritime trade, Late Antiquity

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1 Among all Mediterranean coasts, southwest Türkiye's was one of the first to be scientifically investigated by maritime archaeologists[1], and the flurry of subsequent work has resulted in extensive knowledge of the ancient shipwrecks in this region[2]. Interviews with sponge divers in the 1950s by P. Throckmorton brought about scientific interest, and early projects by G. F. Bass and his colleagues laid a foundation for decades to come[3]. For nearly a half-century, surveys by the Institute of Nautical Archaeology (INA), working from a base in Bodrum (ancient Halikarnassos), have assembled a large dataset of shipwrecks by combining systematic surveys with reports from local fishermen and divers; a few of these have been subsequently excavated and are now fundamental to our understanding of ancient seafaring. For example, excavation in the early 1960s of the 7th-century Yassıada A wreck off the western tip of the Bodrum Peninsula provides an unprecedentedly detailed picture of a shipment and the mechanisms, motivation, and individuals behind it: a cargo of mostly wine from the east Aegean, likely organized by the church in support of the military on campaign in the Levant during the late 620s[4]. Continued investigations at the same location over the next decade revealed another wreck – the excavation of which was never completed – with

1 This work was undertaken with the support of the Turkish Ministry of Culture and Tourism, the Bodrum Museum of Underwater Archaeology, and the Institute of Nautical Archaeology's Bodrum Research Center. For access to this material, particular thanks are due to Yaşar Yıldız, Emel Özkan, Tayfun Selçuk, Bahadır Beryaka, and Hande Savaş. I am immensely grateful to the directors of the INA surveys that brought these sites to light and allowed me to undertake this study, particularly Cemal Pulak and the late George F. Bass. INA's Tuba Ekmekçi Littlefield and Esra Altınanıt Bicer kindly provided assistance throughout the many years this restudy has taken; Horacio González Cesteros and Andrew Donnelly shared their expertise on certain finds or parts of the text, which was greatly improved thanks to Elizabeth S. Greene's editorial eye. Drawings included here were undertaken by Bilge Güneşdoğdu, Lana Radloff, Su Ün, Nicola Jago, and Jessie Simpson. I am grateful to Harun Özdaş for kindly allowing the use, as the start image here, of a photograph from his own survey of the Kekova Adası B wreck.

2 Parker 1992, 7 fig. 2; map 13.

3 See generally Frost 1963, 137–176; Bass 1966; Throckmorton 1969.

4 Bass – van Doorninck 1982; Carlson et al. 2015; especially van Doorninck 2015.

Title page: Amphoras from the Late Roman Kekova Adası B wreck

the cargo, hull, and shipboard wares pointing potentially to a commercial voyage of east Aegean and Cypriot or Cilician foodstuffs two centuries earlier[5].

2 Such early work focused primarily on identifying the most promising sites for excavation given the need to develop methods for this new discipline combined with the near total dearth, at the time, of direct material evidence for the history of ancient shipbuilding. Hence, surveys often sought sites with not only cargos and shipboard wares but the wooden vessels that carried them – both Yassıada wrecks contributed importantly to knowledge regarding the technological shift from »shell-based« to »skeleton-based« hull construction[6] – and subsequent survey focused on seabed types and depths that would offer better preservation. For some sites, distinctions between material deposition from shipwreck or jettison were difficult to ascertain[7]. Yet as the list of known wrecks grew and this narrative of ship technologies came into focus, work also naturally tended to prioritize investigations of wrecks from periods of maritime activity underrepresented in the scholarly literature and archaeological record. Most of the sites surveyed along this coast, however, were not as immediately promising for such intensive study, either because their equivocal identification or poor conditions of preservation limited the insights that could be drawn, or because they did not represent periods that would add most substantively to an emerging understanding of ancient seafaring. Especially prevalent among those sites surveyed and reported only in brief were Roman and Late Roman assemblages, reflecting periods for which evidence attesting generally to exchange and movement of goods was already copious and well-noted in busy harbor towns and through countless amphoras. As a result, many Roman and Late Antique wrecks along this coast are primarily – often exclusively – known from brief reports or unpublished notes and archives.

3 The growing interest over the past few decades in the long-term development of pre-modern Mediterranean economies, however, brought new emphasis on quantitative analysis of ancient shipwrecks. In this case, bulk data of any sort was helpful, and its long and material-rich history made Rome an ideal case study to which even poorly preserved and quickly documented sites could make a useful contribution[8]. Such databases had helped facilitate planning and management for national cultural heritage authorities, but K. Hopkins and A. J. Parker first drew attention to the vast potential of Mediterranean shipwreck numbers to answer macroeconomic questions[9]. Parker's monumental 1992 catalog – with its often reproduced bar graph of shipwrecks per century – delivered on that promise[10], and others followed on and built out from this work: the Digital Atlas of Roman and Medieval Civilizations compiled a dataset for the first millennium and a half (1–1500 A.D.) up to the Early Modern Era[11], and the long arc of Rome's empire (from earliest prehistory to 1500 A.D.) became the focus of the Oxford Roman Economy Project's shipwreck data[12]. These two sources have now been helpfully merged into a single dataset under the »Mapping Past Societies« Project at Harvard University. Flattening this data into a list of shipwrecks per century may help identify basic ebbs and flows of maritime activity and has the benefit of sidestepping the data's inherent unevenness – indeed, some errors and unevenness are smoothed out at this macro-scale and volume – but it also necessarily sacrifices detail that might help explain these historical trajectories. The compositions, origins, and sizes of assemblages have

5 Yassıada B: see Bass – van Doorninck 1971.

6 E.g., Steffy 1994, 79–85; Pomey et al. 2012.

7 See important work by Frost 1963, 158–163; also Muckelroy 1975; Parker 1979; Parker 1980; Parker 1981.

8 E.g., Gibbins 2001, 278 f. fig. 10, 2; McCormick 2001, 591–604; Wilson 2009, 219–229.

9 Hopkins 1980, 105 f. fig. 1.

10 Parker 1992.

11 https://darmc.harvard.edu/ (renamed »Mapping Past Societies«).

12 http://oxrep.classics.ox.ac.uk/databases/shipwrecks_database/; Strauss 2007.

become critical for understanding structure and change behind such trends, for positing and testing varied and increasingly diverse and complex models of interaction[13]. A growing recognition of the vastly different ways these broad trajectories played out in different corners of the Mediterranean, moreover, has increasingly brought to the fore the key regional datasets as indicators of different scales, geographies, and rhythms of past maritime activities[14].

4 Given the large concentration of wrecks brought to light off southwest Türkiye through INA surveys, and more recently also through ongoing work by Dokuz Eylül University and other institutions[15], this stretch of coast at the intersection of the eastern Mediterranean and Aegean offers a promising vantage point from which to examine regional and interregional dynamics in maritime activity over the long span between Imperial Rome and Late Antiquity. Views from the east are all the more important given the vast discrepancy between the comparatively large number of ancient (especially Roman) shipwrecks known (or published) in the western Mediterranean versus the eastern Mediterranean and Aegean[16]. The massive growth in research over the past few decades on amphora typologies and production dynamics – in no small part thanks to the quantitative interest in Roman economies noted above – promises more precise dates and identifications of connections within these assemblages. For instance, the various Late Roman forms produced across large areas of the eastern Mediterranean and Aegean have been the focus of sustained work, offering both better chronologies and refined geographies of production. Thanks to the efforts of the many INA survey campaigns to collect samples from the sites – generally representing their cargos – and the long-term storage in the Bodrum Museum of Underwater Archaeology, the finds can be reexamined with fresh eyes. This contribution provides the first detailed analysis of 12 Roman and Late Antique (1st–7th century A.D.) shipwrecks known from survey off the southwest coast of Türkiye, viewed in the broader context of diverse regional developments in maritime activity and against a backdrop of generic narratives of Roman economic development. Although a few of these sites have been counted among the various databases, little detail has been available for the finds or contexts, let alone discussion of their place in maritime interaction. Considered together, these sites offer a regional view of one coast's place amid shifting maritime connections over the long history of Rome's rise and transformation in the east.

Seabeds and Storerooms

5 The shipwrecks explored here came to light through INA investigations covering a broad area from the northern end of the Bodrum Peninsula to Cape Gelidonya, at the edge of the Bay of Antalya, between the 1970s and early 2000s, often following reports by divers. While surveys by INA have at times continued farther north along Türkiye's Aegean coast, the area of Caria and Lycia saw the most intensive and repeated investigations and yielded the most important sets of Roman and Late Antique sites. Most of these surveys raised at least a few artifacts, now stored in the Bodrum Museum of Underwater Archaeology, to facilitate better identification of the assemblages. The limited nature of such surface survey, however, meant that emphasis was placed on the more visible and accessible and the best-represented materials, especially the cargos;

13 Nieto 1997; Horden – Purcell 2000, 365–377; Arnaud 2005; Boetto 2012; Nantet 2016; Rice 2016; Leidwanger 2020; Harpster 2023.

14 See, for example, Parker 1992, map 1; also generally Leidwanger – Knappett 2018.

15 E.g., Özdaş 2007; Özdaş 2009; Özdaş 2010; Özdaş et al. 2012; Royal 2006; Royal 2008; Brennan et al. 2012.

16 Parker 1992, 9 fig. 2; Parker 2008; see also Leidwanger 2020, 111–117; Reinfeld 2022, 30–32. 34 fig. 4.

these account for overwhelming majority of finds raised, rather than rarer nautical equipment, galley ceramics, crew provisions, or other shipboard wares. Among those finds studied here, some 41 diagnostic ceramics were attributed to the 12 wreck assemblages[17]. Most sites are represented by two to four finds but objects from a given site range in number from one to nine, with more finds naturally coming from sites investigated over multiple survey campaigns. As expected, transport amphoras are usually identified as cargo, and reports indicate efforts to sample representative elements of these cargo assemblages. Crew provisions were also often contained in amphoras, and these need not be dissimilar to the types traveling as cargo, although their smaller numbers render them less likely to be found even when surveys aim to sample widely. A few instances of amphora types reported as rare are discussed below as potentially representing either crew provisions or cargo. Certain finds may represent galley or other shipboard wares, but the focus of survey work on cargos meant that such items were not systematically recovered for documentation or analysis; they are described here only in brief terms. The survey records occasionally note more details of such objects left in situ, along with general observations about the underwater contexts; when possible, the discussion below notes any such described materials and seabed environments. Only the two wrecks from Küçük Kiremit Adası (A and B) were located in shallow waters (up to ca. 10 m), while the rest were deeper but still within routine diving depths (less than ca. 50 m).

6 This systematic restudy of finds took place initially between 2008 and 2010[18], with additional work continuing intermittently up to and including a final effort in 2023. This study combined reviews of the archived survey notes and new documentation in full of the finds available through cataloging, drawing, photography, and (in some instances) fabric observation. While nearly all finds reported as raised were relocated in the museum storerooms, in a few instances individual items could not be found or their preservation or labeling did not allow secure association with a specific survey campaign or wreck site. This approach to re-documentation and review offered a chance to enter some unknown sites into the scholarly record and to update our understanding of other sites only preliminarily noted to date, including their cargo compositions, origins, and dates in light of more recent scholarship. It also allowed necessary clarifications and correlation of data across survey campaigns that in some instances had revisited individual sites several times. Survey and museum cataloging and storage systems had not previously facilitated finds from multiple campaigns to a single wreck to be evaluated together.

7 Preliminary data from these 12 sites had formed a component of broader research on economic networks in the eastern Mediterranean, where they were listed together with 55 other wrecks from these waters and from farther east along Türkiye's coast as well as from Cyprus and Syria[19]. These earlier efforts presented the cargos in summary tabular form, but current research trends that prioritize blending quantitative and qualitative analysis of larger datasets over individual assemblages have highlighted the need for the compilation of more robust and comprehensive data for wider ranges of sites. The present contribution therefore offers an opportunity to ›revisit‹ the assemblages in full several decades later. More complete documentation especially of the cargos – typological analysis, drawings, seabed contexts, preservation levels, and other details – allows this group of sites to speak more directly to long-term trends in regional maritime interaction. The comprehensive presentation of such well-preserved

17 Three of these 41 attributions are tentative, as discussed below: 86F-1, 73N-3, 82E-3.

18 Leidwanger 2011.

19 Leidwanger 2017; Leidwanger 2020.

and dated finds in closed contexts also offers a valuable point of comparison for the typically more fragmentary materials recovered on land.

8 Of these 12 wrecks examined here, Parker's catalog includes only five[20], with limited detail available at the time. The DARMC and OXREP database initiatives have improved the consistency and quality of the data reported by Parker, and the remaining seven wrecks are mentioned in the combined »Mapping Past Societies« dataset, albeit without much detail. Two of the wrecks were not known in the early 1990s when Parker's list was finalized[21]; the initial reports of others were seemingly overlooked[22]. Parker erroneously lists twice a pair of wrecks off the Datça Peninsula, which were surveyed over the course of several different field seasons and reported multiple times, including the İskandil Burnu B wreck discussed below[23]. Another site, representing the mixed remains of two shipwrecks off the western tip of the Bodrum Peninsula at Küçük Kiremit Adası (A and B), appears in Parker's catalog (and the other databases that follow) under the single label »Mandalya Gulf A« based on a misinterpretation of the original survey report's description of the location[24]. The current reappraisal also suggests that two sites Parker included as shipwrecks – at İassos and İnce Ada – are unlikely to represent actual wreck assemblages on the present evidence and should be removed from the various databases[25].

The Sites

9 The shipwreck cargos under analysis are discussed in general chronological order (see table Fig. 1; see also map Fig. 2). Since many of the sites have been incorporated preliminarily into databases with their own discrete numbering systems, no additional numbers have been introduced here and the corresponding site identifications for these databases are included in Fig. 1. The routine discovery of several sites in the same location – that is, near one topographical feature or town, such as Küçük Kiremit Adası below – necessitates appending letters to site names (e.g., Küçük Kiremit Adası A); this has been adopted throughout for consistency and to ensure precision should new sites come to light in these same areas in the future. For each shipwreck, a brief description of the site and seabed context is first given, followed by discussion of the assemblage's cargo components in order of their prevalence. The catalog is designed to present the material from each site separately for efficient consultation; diachronic and synthetic analyses emerge from examining the 12 sites together at the end.

10 The vast majority of finds are amphoras associated with the cargos. For these, brief macroscopic ceramic fabric descriptions are included to support certain identifications made on the basis of form, or to explain diversity within morphologically related groups. In a few cases the dates suggested here have been revised from preliminary

20 Two sites given Roman or Late Antique dates in Parker's catalog must now be reassigned to different periods. First, the »Bozburun« wreck (#111), which Parker tentatively dates to the 5th to mid-7th century, was subsequently excavated and revealed to belong in the 9th century: see Hocker 2005; cf. Bass 1974, 337 f.; Bass 1975, 34; Bass 1982a, 46 (where the date is described only as »Byzantine (exact date unknown)«. Second, the 3rd-century A.D. date suggested for wreck #1183, described by Parker only as being in »Turkey« (presumably meaning southwest Türkiye), is in fact an error of reporting on the part of the original survey, and should properly be read and dated rather to the 3rd century B.C.: see Frey 1982, 4. Note that all wreck numbers (e.g., #111 and #1183 above) refer to those assigned by Parker in his 1992 catalog.

21 Ragged Bay A; Yılan Ada A.

22 Kepez Tepe A: see Yıldız 1984; Kalkan A: see Bass 1982a; İnce Burun A: see Yıldız 1984; Kekova Adası B: see Yıldız 1984; Arap Adası B: see Pulak 1990.

23 Parker 1992, #518 (=#351) and #519 (=#353); see also Lloyd 1984.

24 Parker 1992, #642; see also Bass 1986, 214 f.

25 Parker 1992, #509 and #516; following Bass 1975, 33 f.

	Site	Database IDs[1]	Probable Date	Context[2]	Documented Cargo[3]	Artifact Numbers[4]	Major Reference(s)[5]
1	Küçük Kiremit Adası B	Parker #642[6]; DARMC-OXREP	1st c. A.D.	Shallow/ reef	wine(?) in amphoras: late Koan-style (Dressel 2-4; 2 or 3 types?)	85-7A, 85-7B, 86E-1, 86F-1(?)	Bass 1986
2	Küçük Kiremit Adası A	Parker #642[4]; DARMC-OXREP	1st (or early 2nd) c. A.D.	Shallow/ reef	oil(?) in amphoras: Dressel 24-related	85-8A, 85-8C, 86E-2, 86E-4, 85-8B(NI)	Bass 1986
3	Sancak Burun A	Parker #1026; DARMC-OXREP	mid- to late 1st c. A.D.	Mid-depth	wine(?) in amphoras: late Rhodian-style (2 types)	73T-1, 73T-2	Bass 1974; Bass 1975; Bass 1982a
4	Ragged Bay A	DARMC	mid- to late 2nd or early 3rd c. A.D.	Mid-depth	wine(?) in amphoras: late Rhodian-style, Knidian-style; unknown content (wine?) in Pamphylian amphoras	95C-2, 95C-3, 95C-4	Unpublished INA archives
5	İskandil Burnu B	Parker #519 (=#353[7]); DARMC-OXREP	mid- to late 3rd c. A.D.	Mid-depth	wine(?) in amphoras: Kapitän II, Forlimpopoli; oil or wine(?) in amphoras: MR5/Zeest 80; wine or resin in amphoras: late Dressel 24-related	73B-2, 82I-1, 82I-5, 82I-6, 87K-2, 73B-1(NI), 82I-2(NI), 82I-3(?,NI), 82I-4(NI)	Bass 1975; Bass 1982a; Pulak 1989; Köyağasıoğlu 2006
6	Gümüşlük A	Parker #491; DARMC-OXREP	4th to 5th c. A.D.	Mid-depth	unknown content in amphoras: Agora M273-related	80E-1, 80E-2, 4634(NI)[8]	Rosloff 1981; Bass – Rosloff 1985
7	Yılan Ada A	DARMC	4th to 5th c. A.D.	Mid-depth	unknown content in amphoras: San Lorenzo 7 (or similar), unidentified Aegean(?)	96C-1, 96C-3	Pulak 1998
8	Kepez Tepe A	DARMC	mid-4th to mid-5th c. A.D.	Mid-depth	wine or oil(?) in amphoras: LR1 (2 types), C Snp I; unknown content in amphoras: Agora M273-related, unidentified type	83/44, 83/45, 83/46, 83/47	Yıldız 1984; Varinlioğlu 2011a; Varinlioğlu 2011b
9	Kalkan A	DARMC	early to mid-5th c. A.D.	Mid-depth	wine or oil(?) in amphoras: LR1	73N-1, 73N-3(?,NI)	Bass 1982a
10	İnce Burun A	DARMC	5th c. A.D.	Mid-depth	wine(?) in amphoras: C Snp III	83/32, 83/33, 83/34	Yıldız 1984
11	Kekova Adası B	DARMC, OXREP[9]	6th c. A.D.	Mid-depth	wine(?) in amphoras: LR5	83/48	Yıldız 1984
12	Arap Adası B	DARMC	mid- to late 6th or early 7th c. A.D.	Mid-depth	wine in amphoras: LR1 (2 types)	82E-1, 82E-2, 82E-3(?)	Pulak 1990

1 Only identification numbers corresponding to Parker's 1992 catalog are specified here, but all sites that are present in the recently (2021) joined DARMC and OXREP database are indicated. Sites that align in both the DARMC and OXREP databases are indicated as »DARMC-OXREP«, while others are included in only the DARMC dataset or, in the case of the Kekova Adası B wreck (see note below), listed in each dataset under a separate entry. For the joined DARMC and OXREP datasets, see https://darmc.harvard.edu/data-availability.

2 Contexts are divided generally according to depth such that those in the often-disturbed dynamic zone are described as ›shallow‹ (sometimes situated on a reef) while those at diving depths beyond the shallows are considered here as »mid-depth«. There are no ›deep‹ wrecks beyond routine diving limits in this dataset.

3 The assignment of an amphora as cargo is based on its prevalence as generally observed by survey. Additional jars were sometimes documented on the seabed but may represent materials from the galley/ship's assemblage and so are not included here but may be discussed at the end of each section. The cargo was naturally the contents of the jars rather than the jars themselves, and any contents suggested without direct evidence are indicated as tentative with a question mark.

4 Any artifacts not illustrated in this study are indicated with »NI« in parentheses following the artifact number; a question mark in parentheses following an artifact number indicates the artifact's link to the site is not entirely secure, as discussed in the text.

5 For any wrecks reported in several publications, generally the most recent and/or most thorough is given here, sometimes with an update where relevant; unpublished material is cited according to archive.

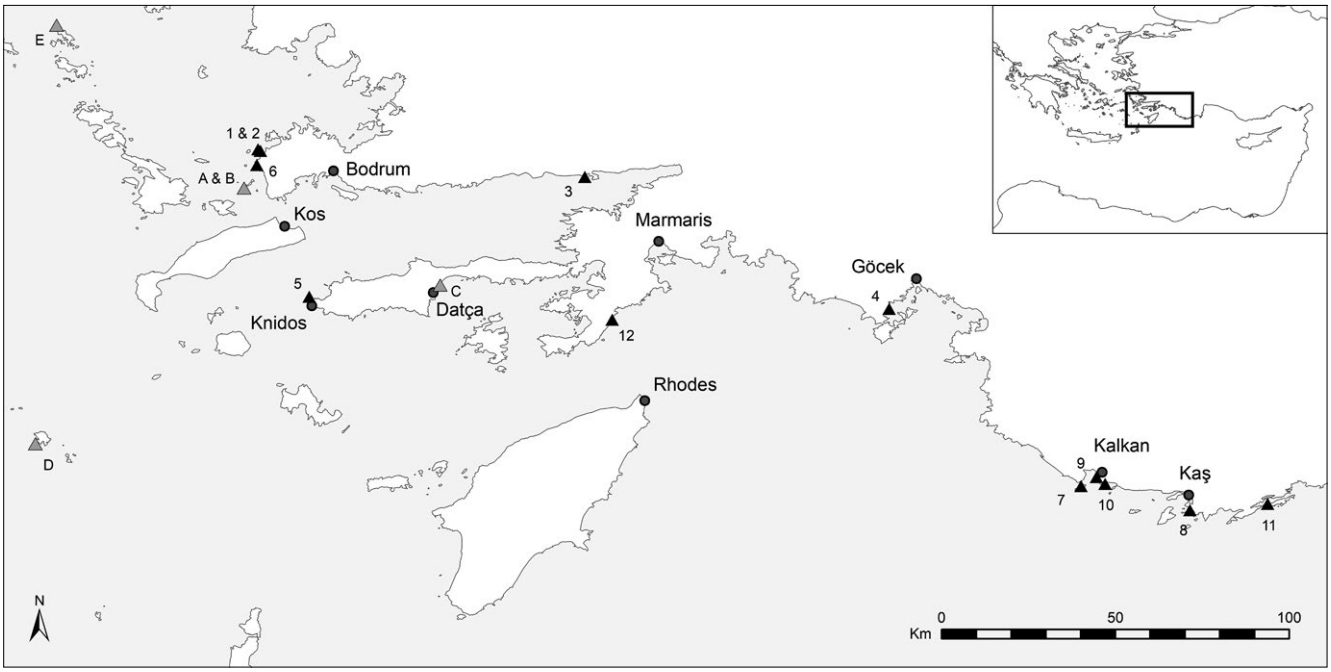
6 The designation by Parker as »Mandalya Gulf A« erroneously attributes the wrecks at Küçük Kiremit Adası, off the tip of the Bodrum Peninsula, to the body of water north of the peninsula. Note that the sites treated here as discrete wrecks were originally assumed to be one and grouped together by Parker and others who follow. See n. 20 above.

7 This wreck was reported with two different names on survey and, as a result, is entered twice (as #519 and #353 [»Datça C«]) in Parker's catalog, a duplication carried over also in the DARMC and OXREP datasets.

8 This artifact number refers to the museum inventory for a find brought into the Bodrum Museum not on survey but almost certainly from the same site given its registration description; it is therefore included alongside the survey finds 80E-1 and 80E-2.

9 This site's different name as given in the OXREP dataset (»Kekova Oludeniz«) reflects the description from Lloyd 1984, 85 n. 44; this should be understood as the same site.

Fig. 1: Shipwreck data from the study area



2

Fig. 2: Locations of the 12 shipwrecks under analysis (black triangles), numbered according to Fig. 1. Additional shipwrecks referenced in the discussion (gray triangles) are labeled with letters: A: Yassıada A; B: Yassıada B; C: Burgaz A; D: Syrna; E: Arkioi

suggestions made in earlier publications[26]. It was of course not the amphoras but their contents that were the actual products of interest for exchange, yet the links between the goods known to have been traveling and the amphora forms for their circulation remain insufficiently understood[27]. Roman types were often manufactured to contain a single major product like wine or oil, which Peña has described as »prime-use contents«[28]. Some forms, though, may have contained several different goods, especially during Late Antiquity when several large regional types dominate the carrying of presumably the wide variety of commodities from their regions. To complicate the situation further, amphoras discovered with unusual contents call into question the reliability of assumptions about normative contents, as does the extensive evidence for reuse of some amphoras for packaging and re-export of different contents[29]. Even so, reuse appears quite targeted and not all amphoras could be effectively repurposed for different contents; in many instances jars once emptied were simply discarded[30]. In a few instances below, direct evidence is available to help identify or at least narrow the range of goods contained in these amphoras, but most suggestions are based on associations of certain types (i.e., »prime-use contents«) or regions with one or more specific products.

11 By comparison, as noted above, the underwater surveys yielded few clues as to the non-cargo wares associated with the boats and their crews. Rarely are such materials as cooking and dining wares able to be identified during surface survey and even more rarely were they recovered. More challenging still to identify are amphoras that may not have been cargo, since shipboard provisions are likely to have been acquired and stored in these same containers. In a few cases where the survey notes report one or extremely limited numbers of an amphora type despite thorough

26 Cf. Leidwanger 2017; Leidwanger 2020.

27 See generally Panagou 2016; Bernal-Casasola et al. 2021; this is the case especially in the eastern Mediterranean: see Reynolds 2021.

28 Peña 2007, 64.

29 For several examples of unexpected and unusual contents appearing in Roman amphoras from shipwrecks, see Koutsouflakis 2021. On reuse of amphoras to contain and transport other products, see Peña 2007, 61–118.

30 Peña 2007, 69 f.

survey and documentation, these can be discussed as potential non-cargo items. But such instances are few and equivocal, and even one or several amphoras of a type can easily travel as a small cargo component. Positive attributions are nearly always impossible without thorough exploration of a site, and in most instances such judgements are based on spatial positioning and the complete assemblage profile, which is hardly the case in the present study limited to surface remains[31]. Where crew-related items are potentially identifiable below, these are discussed toward the end, typically in relation to establishing a date for the cargo.

Küçük Kiremit Adası B

12 Off the western end of the Bodrum Peninsula near Yalıkavak, a retired sponge diver brought to the attention of INA a wreck at Küçük Kiremit Adası, prompting investigation in the area during the 1985 survey[32]. A subsequent revisit the following year aimed to make better sense of the various artifact groups and to raise additional material for study. These surveys identified what appear to be two separate wrecks located a short distance apart (see also Küçük Kiremit Adası A below)[33]. The first, and possibly slightly earlier, of these is Küçük Kiremit Adası B, concentrated in two large and closely spaced clusters of broken amphoras with additional scattered material across the reef. The shallowness of the wreck – starting at just a few meters of depth – and the lack of intact jars suggest that many more may have been removed, although the site's location off a small and uninhabited island some distance from the mainland may have rendered it less accessible and therefore less appealing, at least in antiquity or for more recent casual or opportunistic salvors. No artifact counts are available, and only Koan-style (Dressel 2-4) amphoras are reported, although the various scattered artifacts across the reef may include other materials originally from this assemblage[34].

13 The assemblage includes an amphora type bearing a cylindrical neck that ends in a slightly flaring out-turned rim, and an offset ridge marking the transition to the shoulder (Fig. 3, 1: 85-7A). The simple bifid handles fall slightly inward to join the sloping shoulder. A second top raised from nearby is generally similar but exhibits a faintly bulging neck and higher offset ridge, and its handles fall slightly outward (Fig. 3, 2: 86E-1). Although no bodies that joined to these tops were recovered, the survey raised a simple, short peg toe that certainly belongs to the form (Fig. 3, 3: 85-7B). Such features are common for amphoras produced on Kos[35], including on jars from the very end of the 1st century B.C. and first half of the 1st century A.D. found at Ephesus[36]. Imported eastern amphoras of the type first appear at Ostia and Lyon in contexts of the Augustan era[37]. Other close and well-dated parallels come from Pompeii, where a stamped Type 3 jar records a consular date of 56 A.D.[38]. Panella compiles amphoras of a similar form throughout the western Mediterranean and northwest provinces in

31 Beltrame 2002, 6–8; Trego 2019.

32 The Küçük Kiremit Adası B and Küçük Kiremit Adası A sites discussed here are included together in Parker's catalog as a single site (»Mandalya Gulf A«, which was erroneously reported to be situated in the bay north of the Bodrum Peninsula rather than at its tip: Parker 1992, 257 (#642).

33 The overlapping date ranges these two assemblages and their locations in close proximity leave open the alternative possibility that they represent two parts of one shipwreck. The initial 1985 survey team reported and discussed the two sites as two shipwrecks, and especially the second of the assemblages (Küçük Kiremit Adası A) appears not to have additional materials mixed in with the one amphora type and ballast. As might be expected in such a shallow and dynamic environment, though, some additional Dressel 2-4 amphoras of different subtypes were recovered scattered throughout the area between the sites but are unlikely to belong to the Küçük Kiremit Adası B assemblage and so have not been included here.

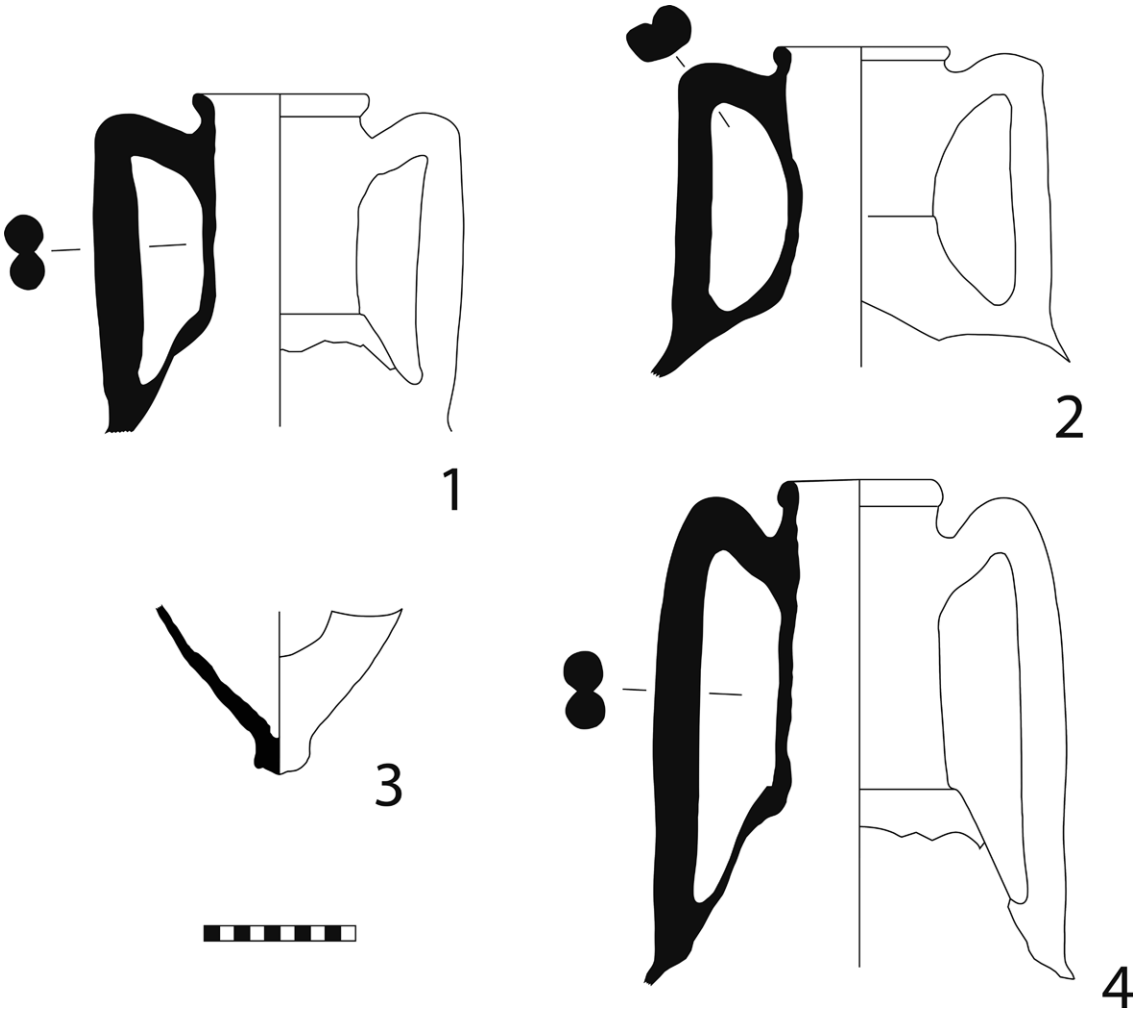
34 Bass 1986, 214 f.

35 Grigoropoulos 2020, 156 fig. 4 no. A1.

36 Bezeczky 2013, 56 pls. 6. 7 nos. 55. 70.

37 Panella – Fano 1977, 165 fig. 4; Hesnard 1980, 145. pl. 2 fig. 1; Becker et al. 1986, 70 fig. 6, 1; Desbat – Picon 1986, 644 fig. 6 nos. 7. 8; see also Farinas del Cerro et al. 1977.

38 Panella – Fano 1977, 151.



3

Fig. 3: Ceramics from the Küçük Kiremit Adası B site (scale 1 : 5)

contexts dated throughout the 1st century and perhaps even a bit later[39], and reasonable 1st-century A.D. comparanda can be distinguished among the finds at Augst, Sabratha, and Nijmegen[40]. The diversity of production of this common form beyond Kos complicates typological efforts, especially when most examples from the west, including most Type 3 jars at Pompeii, seem to be of local or at least non-eastern manufacture. Two of the wreck samples (85/7A and 85/7B) exhibit an identical hard, light brown fabric with a variety of black, red, and yellowish inclusions; the third (86E-1) shares a hard, light brown fabric with a similar range but more prominent inclusions in different proportions[41]. While many fabric descriptions have been put forward for the island of Kos[42], and these are not inconsistent with the samples from the Küçük Kiremit Adası B site, other sources such as nearby on the southwest Anatolian mainland cannot yet be ruled out[43].

14 The second survey campaign raised, from just to the west of the main clusters, examples of another Koan-style (Dressel 2-4) amphora that may derive from the same

39 Panella 1970, 135 f. 143–145 (e.g., 145 no. 32). See also examples from Augst: Martin-Kilcher 1994, 667. 669 f. ; pls. 113. 116. 117 ; nos. 2255. 2291. 2308.

40 Martin-Kilcher 1994, 667–670 ; pls. 113. 115–117 ; nos. 2250. 2255. 2281. 2288. 2291. 2308; Keay 1989, 37 fig. 11 no. 190; Panella 1970, 136. 145 nos. 34. 45.

41 This sample appears quite similar to the fabric typical of the production center at Halasarna on Kos: cf. Diamanti 2010.

42 Martin-Kilcher 1994, 621; Whitbread 1995, 95; Papuci-Władyka 1997, 48. 52; Lund – Nørskov 2002, 63; Briese 2005, 189–191; Bezeczky 2013, 58 f.

43 Empereur – Picon 1989, 225–229.

context; the nature of this shallow site, however, demands caution and additional work before such an attribution can be confirmed. The type shares many features with that described above but has a longer cylindrical neck and more sharply sloping shoulders (Fig. 3, 4: 86F-1). These features are known from early Imperial-era production on Kos, and generally similar jars are again common at Pompeii, where they were classified as Group 4 and sometimes carry inscriptions recording consular dates in the third quarter of the 1st century A.D.[44]. The northwest Roman provinces provide more tightly dated comparanda than local southeast Aegean contexts: for example, amphoras with a similar neck in a deposit of the mid-1st century A.D. at Hofheim and in contexts ranging from the mid-1st to late 1st or even early 2nd century at Augst[45]. The survey amphora's fabric is light brown but finer than those described above.

15 The Küçük Kiremit Adası B site is complex and requires further study, but the amphoras raised during survey suggest the involvement of multiple production centers, two of which are perhaps closely related. The presence of similar fabrics in a cargo marked by multiple variants has implications for understanding diversity in Koan-style (Dressel 2-4) amphoras, and the dating of their highly variable forms. A close correspondence in morphology, fabric, and stamping patterns has been noted by Panella and Fano within the types discussed here as comparanda (their Types 3 and 4)[46]. Unfortunately, the detailed chronology of jars produced during this period in the southeast Aegean is not well understood, so parallels from Pompeii and the west in general still provide the best (if tentative) indicators of date[47]. It is unclear how long after the third quarter of the 1st century A.D. these forms persisted, but a date for the Küçük Kiremit Adası B wreck in the 1st century seems best at present. The type is believed to have carried the wine for which the island was famous, and *dipinti* have confirmed liquid contents in some instances[48]. No traces of resin lining were preserved on the Küçük Kiremit Adası B finds, but it seems likely that these jars too were intended to be immediately recognizable as carriers of Koan-style wine, although extensive reuse has been documented in this type[49].

Küçük Kiremit Adası A

16 The 1985 and 1986 surveys revealed the presence of a second wreck at Küçük Kiremit Adası a short distance away from the first. Though situated near each other in shallow water, the two assemblages appear to represent distinct shipwrecks. More fieldwork is necessary to attribute any of the additional scattered material from the area to either site given the dynamic environment and likely movement and removal of material in recent times. Nonetheless, the concentrated mound of ceramics that marks the site appears free from intrusive material. Two tops and two bases were raised, all belonging to a single amphora type that seemingly comprises the bulk cargo of the Küçük Kiremit Adası A assemblage, which is densely interspersed with several piles of ballast stones.

17 These jars, the total number of which is unknown, belong broadly within the typological sequence of the Dressel 24 group and its predecessors, a loosely-defined class that spanned from the 1st century B.C. into the 2nd or 3rd century A.D.[50]. Opaiţ has

44 Panella – Fano 1977, 152 f.

45 See Panella 1970, 136. 144 no. 31 (Hofheim); Martin-Kilcher 1994, 667. 669–670; pls. 113. 116. 119 nos. 2248. 2285(?). 2294(?). 2325 (Augst).

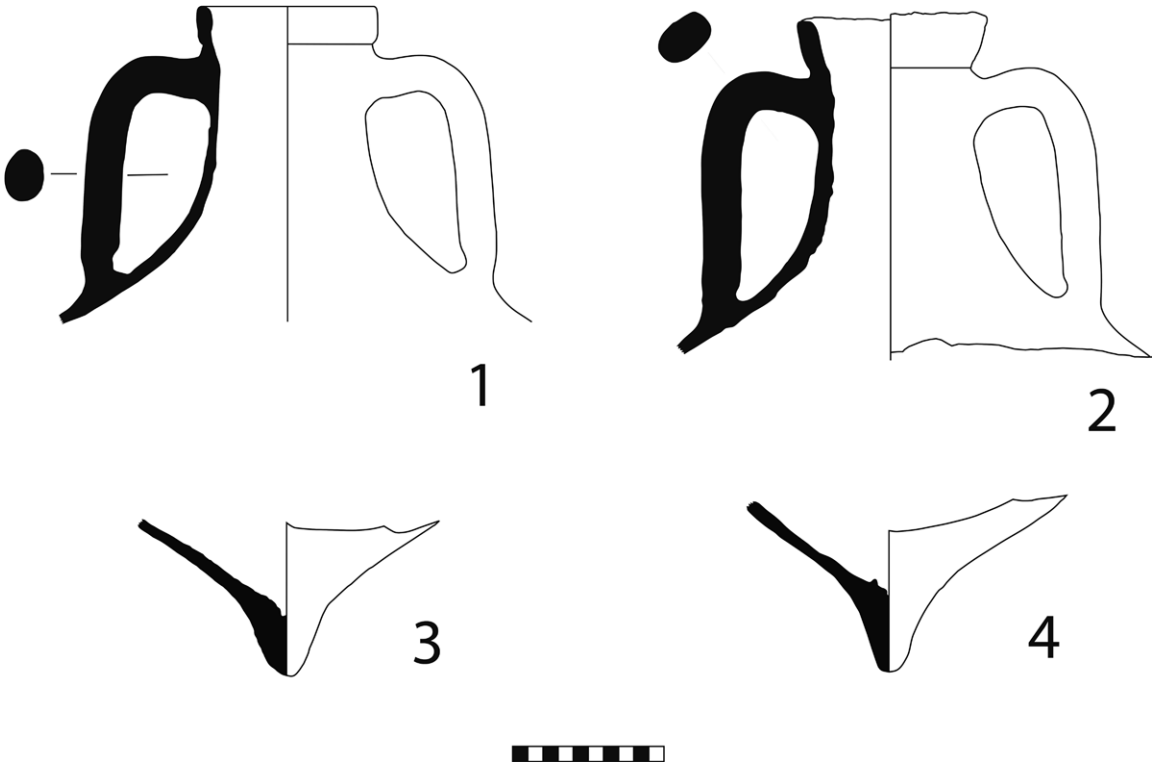
46 Panella – Fano 1977, 150 f.

47 Note, however, Freed's assertion that Italian (and generally western) Dressel 2-4 amphoras evolved independently of the Aegean Koan-style jars after the initial copying during the late 1st century B.C., in which case these widely separated productions may not run in parallel: Freed 2000, 462.

48 Sherwin-White 1978, 236–241; Peacock – Williams 1986, 106.

49 Pecci et al. 2017; Muslin 2019. See also more generally Peña 2021.

50 Also classified sometimes with Zeest 90, Knossos 15 and 18, Peacock and Williams 57; see also Dobreva 2017, 224–237.



4

Fig. 4: Ceramics from the Küçük Kiremit Adası A site (scale 1 : 5)

identified a series of Dressel 24-related jars from the early 1st century A.D. that are distinguished by conical necks topped with an upright and slightly cupped rim, simple oval handles, and oval bodies terminating in a tapered spike toe[51]. Among the samples raised from the Küçük Kiremit Adası A site, one (Fig. 4, 1: 85-8A) is marked by a comparatively thin and slightly cupped rim, while the other (Fig. 4, 2: 86E-2) has a slightly thicker and more everted rim. The two bases (Fig. 4, 3: 85-8C; Fig. 4, 4: 86E-4) end in a blunt spike. Though not wholly identical, the examples from Küçük Kiremit Adası A appear to belong to this early series, each bearing the clearly delineated rim that Opaiţ associates with the latter 1st century A.D. onward, including comparanda from Pompeii and Kalos Limen in the northern Pontic region[52]. On the present evidence, the wreck assemblage is best dated to the 1st century, perhaps the latter half, leaving a margin of error of a half-century earlier or later. Dressel 24 production has been suggested across the central east Aegean area[53]. The best evidence to date comes from Chios and the adjacent Anatolian mainland, where the fabrics bear similarities to the red-brown, medium grain fabric from Küçük Kiremit Adası A[54]. No traces have survived that might shed light on the contents of these particular examples, but oil is a possibility given rare *dipinti* on finds from Dacia and Monte Testaccio and in light of recent analysis[55].

51 Opaiţ 2007a.

52 Manacorda 1975, pl. XCVII.2. 3; Opaiţ 2007a, 628 f. 635 fig. 1, 3 a. b. Note, however, the different handle stance.

53 Auriemma – Quiri 2004, 49 f.; Bezeczky 2013, 72–74.

54 Opaiţ – Tsaravopoulos 2011, 293–295. See also Bezeczky 2013, 73 f.

55 Carreras Monfort 1999, 97 f.; Opaiţ 2007a, 633; Polla et al. 2021, 156. See also Reynolds 2021, 327–329. Opaiţ has also suggested that formal development of a cupped rim is a function of the need to fill and pour carefully such thick contents as oil: see Opaiţ 2007b, 101.

Sancak Burun A

18 Bass's 1973 survey brought to light a shipwreck assemblage at 36 m of depth along the north shore of the Gulf of Gököva at Sancak Burun[56]. Only limited details are available for this site, which had evidently been heavily disturbed but included traces of a possible wooden hull exposed in the sand[57]. Two amphoras were raised and available for study, representing distinct variants of late Rhodian-style amphoras[58]. The site's condition precludes any vessel counts, and no information is available regarding any other ceramic or non-ceramic finds.

19 The first variant (Fig. 5, 1: 73T-1) is characterized by a tall and smooth cylindrical neck, a simple but well delineated rolled rim that is slightly flattened on the exterior, handles that rise to a distinctive peak before curving out and back to the shoulders, and a narrow body that likely tapered to a peg toe[59]. This late Rhodian-style form is common in Mediterranean contexts and as far afield as northwestern Europe and Britain[60]. It is found in considerable numbers, for example, at Berenike in contexts from the Augustan period to the mid-1st century, falling off sharply in the latter 1st century[61]. At Ostia, by contrast, the type appears frequently in the 1st and early 2nd century, with imports ceasing in the latter 2nd century[62]. Roman military contexts in the northwest provinces provide good comparanda of the early to mid-1st century A.D.[63]. Several amphoras from Augustan deposits at Ostia and Lyon also provide useful comparisons[64]. Jars from the Dramont D wreck of ca. 40–50 A.D. show a slightly wider stance in the handles but otherwise exhibit a similar appearance[65]. No traces of resin lining or other clues survive that might suggest the product contained in these jars, but *tituli picti* in the west have sometimes indicated sweet wine (*passum*)[66]. Some evidence is also available for figs as contents[67]. The long association of Rhodes with wine makes this commodity the most likely, especially if the adoption of a Rhodian-style jar outside the island paralleled a growing interest in Rhodian varietals[68].

20 The second variant of Rhodian-style amphora (Fig. 5, 2: 73T-2) shows the same tall and smooth cylindrical neck and probably also body shape. The rim is larger and well-rounded, while the handles reach a marked peak and curve outward prominently before turning back inward toward the shoulders, creating a bulging appearance. Examples from a pre-eruption context at Pompeii and from mid- to late 1st-century A.D. Augst, Ventimiglia, and Valentia offer particularly close features to the survey jar[69]. So

56 Parker 1992, 382 (#1026).

57 Bass 1974, 337 (site 5); Bass 1975, 34 (site G); Bass 1982a, 47 (site 18). The site is not discussed in Cowin's 1986 analysis of the finds from the 1973 and 1980 surveys.

58 An image published in Bass's report shows a nearly complete jar (missing only the toe) of a similar type to one of these two: see Bass 1975, 37 fig. 8. It is unclear whether this example studied here (73T-1) is the same jar – if now in more fragmentary condition – or if Bass's illustration represents a third example raised from the same site that is no longer available for study.

59 For this type, see also below, Ragged Bay A.

60 Hesnard 1986, 72–75; Schimmer 2009, 42 f.; van den Berg 2017, 136–138; González Cesteros – Berni Millet 2018, 54 tab. 6.

61 Riley 1979, 148.

62 Panella 1973, 556. Some examples of the early 3rd century appear at Lyon: see Lemaître 2000, 468. For potential production into the 3rd century on Rhodes, see Zervoudaki 1985.

63 E.g., Martin-Kilcher 1994, 348 f.; Schimmer 2009, 42 f.; González Cesteros – Berni Millet 2018, 55 f. 59 fig. 9, 1.1; van den Berg 2017, 137 figs. 4. 5.

64 Hesnard 1980, 145. pl. 2 figs. 2. 3; Becker et al. 1986, 72 fig. 8; 74.

65 Joncheray 1973, 22 (Type II, center, right).

66 Sealey 1985, 56–58; Martin-Kilcher 1994, 348 f.

67 Dugonjić 2015, 249.

68 Peacock – Williams 1986, 103. Some jars from the Dramont D wreck also appear to have contained fig seeds, and a range of other contents cannot be eliminated without more detailed study: see Joncheray 1973, 27.

69 Hesnard 1986, 73 fig. 1, 1 (Pompeii); Panella 1986, 614 fig. 6 (Pompeii); Martin-Kilcher 1994, 349. pls. 123. 125, nos. 2370. 2377. 2394. 2396 (Augst); Panella 1970, 139. 154 no. 117 (Ventimiglia); Pascual Berlanga – Ribera i Lacomba 2015, 275 fig. 5 (Valentia, in a deposit closed seemingly later, in the first half of the 2nd century).

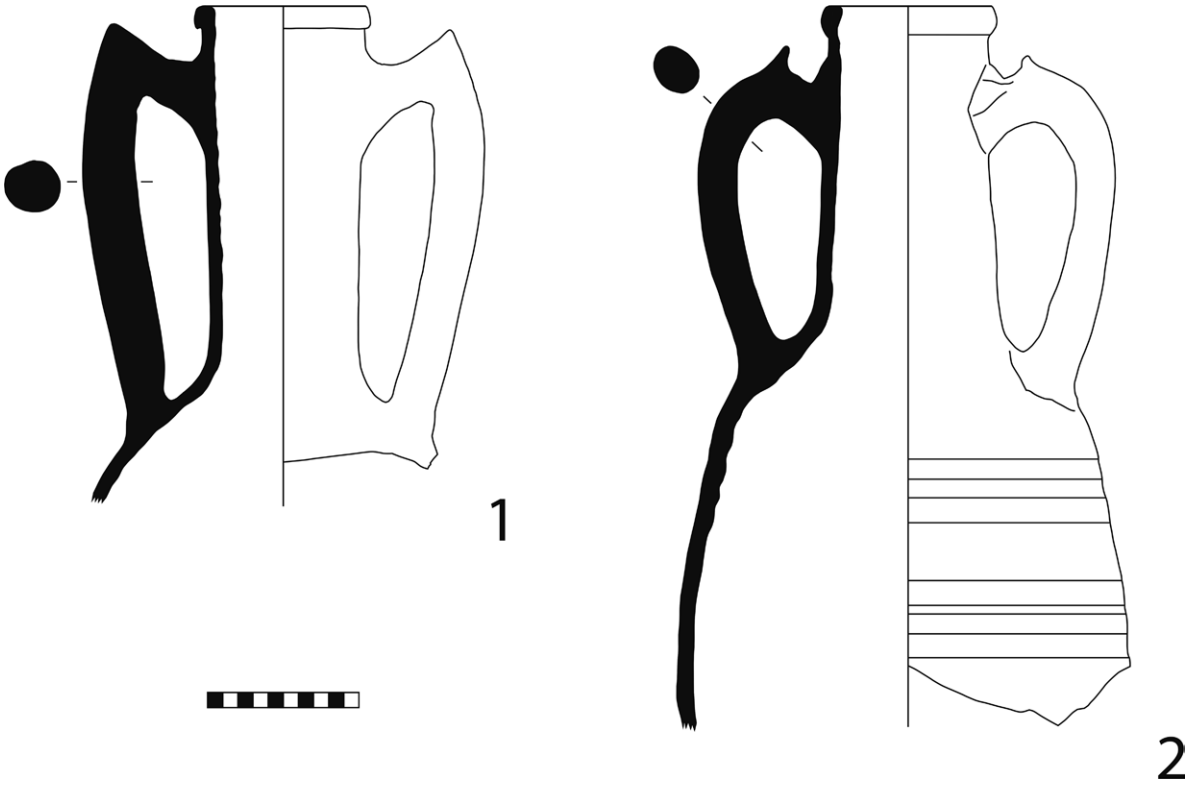


Fig. 5: Ceramics from the Sancak Burun A site (scale 1 : 5)

too, though, do certain finds from among the cargo of the Dramont D wreck (ca. 40–50 A.D.), at mid-1st-century (43–60/61 A.D.) Colchester Sheepen, and in a Flavian-era context at the Kerameikos of Athens[70]. On the whole, it would appear that this second Rhodian-style group has its best closely dated comparanda toward the middle or latter part of the 1st century. As with the first type of Rhodian-style jars in the assemblage, there is no direct evidence for content, but wine seems most likely.

21 The presence of two distinct but related types, most likely of the mid- or late 1st century A.D., suggests the involvement of multiple producers or products in the assembly of this cargo, supported as well by the contrasting fabrics of the two samples available for study[71]. The forms' wide variety of documented fabrics attests to manufacture not only on Rhodes itself, but around the neighboring southeast Aegean mainland and potentially beyond[72]. Such an origin and regional circulation would hardly be surprising in light of the location of the wreck within the Gulf of Gököva.

Ragged Bay A

22 In the Gulf of Fethiye southwest of Göçek, a shipwreck reported to INA during the 1995 survey was investigated in a sheltered area known as »Ragged Bay« (according to Heikell's pilot guide)[73]. Situated along the seabed at ca. 15–33 m of depth, the site is comprised of a number of amphora groups, some clumped and concreted in several areas toward the shallower end and others spread along rocky ledges toward the deeper

70 Joncheray 1973, 22 (Type II, left, but with a seemingly different rim; Dramont D); Sealey 1985, 58. 52 fig. 6 no. 61 (Colchester Sheepen); Böttger 1992, 369. pl. 99, 1 no. 52 (Athens). Many good comparanda can also be found among the (unfortunately undatable) underwater survey materials documented along the eastern Adriatic: see Dugonjić 2015.

71 The first jar (73T-1) presents a coarser fabric with more and larger inclusions, whereas the second (73T-2) is marked by a finer yellowish-red fabric.

72 Peacock 1977, 266–269; Desbat – Picon 1986; Tomber – Dore 1998, 112 f.; Empereur – Picon 1989, 226 fig. 1; Lemaître 2002, 221.

73 Heikell 2006, 241–243.

end. Over 60 amphoras were counted, including the samples raised for study. Parts of the seabed between and beyond the rock ledges are quite sandy, suggesting that additional material may still be buried; other finds surely have been removed from this accessible site. The amphoras belong to three types that seemingly represent the remains of a single cargo, most of which belong to the first (Rhodian-style) group; the remaining two types are less common and represented in roughly similar numbers according to counts taken on the seabed.

23 The majority of amphoras belong to the common late Rhodian style[74]. A single sample was raised (Fig. 6, 3: 95C-3) of approximately 40 similar jars counted on the seabed. Its handles are marked by well-defined pinched peaks situated below a slightly out-turned rolled rim over a tall and grooved cylindrical neck. The body is wider than many such late Rhodian-style forms, with the maximum diameter located just below the midsection. The sample is no longer intact, with only the top and half of the body available for study, but a simple peg toe was evident during the initial underwater survey and field documentation. The rim form and the pinched peak and stance of the handles compare well with jars in the later part of this long-lived series. Comparanda at Augst show similar forms in contexts ranging from the mid-1st to the mid-2nd century[75], while some examples dated to the end of the 2nd and into the early 3rd century at Lyon continue to share these features[76]. Examples of the 3rd century from the probable production center on Rhodes share certain similarities in the grooved neck, but the jar's center of gravity here seems lower[77]. The general type's popularity can be gleaned from Ostia, where it is common especially during the early 2nd century before dropping off in the latter part of the century[78]. The wreck amphora's medium-fine and hard fabric, with generally small opaque, light colored and darker grey sandy bits, as well as some small reddish stony bits, fits reasonably within descriptions of Rhodian jars from the island and neighboring mainland, where the form is thought also to have been produced[79]. Rhodian-style wines seem to be the most likely content given the type's association, although this is impossible to confirm at present and other contents have been reported[80].

24 Two non-joining fragments were raised that allow the reconstruction of a nearly complete profile for one of the two less common types within the assemblage, a late Knidian-style amphora, of which 12 were recorded on the seabed. Only available for study was the upper fragment (Fig. 6, 1: 95C-2)[81], which exhibits a small conical neck surmounted by a simple thickened rim offset by a ridge, small and close-set arched handles that curve inward toward the upper shoulder, and a faintly grooved body. That the body was egg-shaped and terminated in an elongated and tapering toe with a prominent ring is apparent from the survey notes. The ringed toe was an instantly recognizable marker of geographical association with Knidos[82], though the degree to which production of Knidian-style amphoras was limited to the Datça Peninsula itself or extended beyond is unclear. Multiple workshops seem likely, given the evident extent of production throughout the peninsula in the Hellenistic Era[83], and many studies

74 For this type, see also above, Sancak Burun A.

75 Martin-Kilcher 1994, 348 f. 522 f.; pls. 123–125.

76 Lemaître 2000, 468.

77 Zervoudaki 1985.

78 Panella 1973, 556.

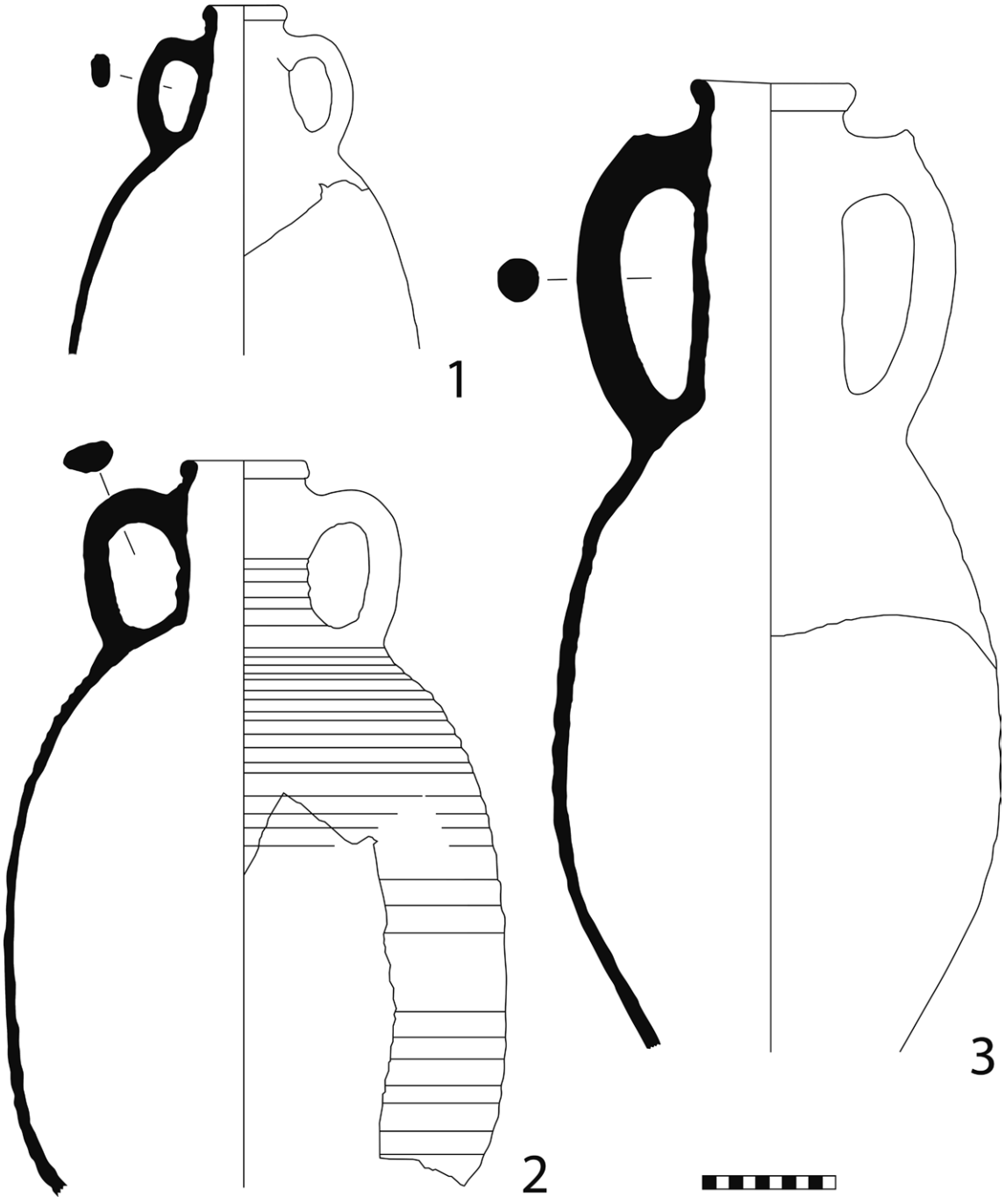
79 Cf. Peacock 1977, 266–269; Tomber – Dore 1998, 112 f.; Bezeczky 2013, 40–44. Distinguishing between the productions on Rhodes and from the neighboring mainland remains difficult in many cases.

80 E.g., Dugonjić 2015, 249.

81 The lower body and toe, 95C-1, could not be located.

82 E.g., the feature appears prominently on an otherwise schematic amphora depicted on a stamped Knidian amphora handle of ca. 100 B.C.: see Empereur – Hesnard 1987, 56 f. pl. 1, 1.

83 Empereur – Tuna 1989; Empereur et al. 1999.



6

Fig. 6: Ceramics from the Ragged Bay A site (scale 1 : 5)

have underscored the wide range of fabric variants among Knidian-style amphoras[84]. It is no surprise, then, that the formal development of the type in the Roman period is not wholly clear, at least in comparison with its better-studied Classical and Hellenistic precursors[85]. Knidian-style amphoras of the 1st and into the 2nd century A.D. tend to be marked by a tall neck and slightly pointed handles, a rolled rim, a carination at the shoulders below the handle attachments, a generally sagging body with a maximum diameter below midsection, and an elongated pointed spike toe with well-defined ring[86].

84 Empereur et al. 1999; Briese 2005, 187; Bezeczky 2005, 53.

85 E.g., Grace – Savvatianou-Pétropoulakou 1970, 317–354; Empereur – Hesnard 1987, 20 f.

86 E.g., Grace 1979, fig. 64 right (Athens); Panella 1976, 152 fig. 3 (Pompeii); Scorpan 1977, 284 fig. 27, 1. 2 (Black Sea); Panella 1986, 621 fig. 18 (Ostia). See also Bezeczky 2013, 53–56.

From perhaps the mid-2nd century, the neck is reduced to a shorter and narrower, cylindrical or slightly conical shape, and the carination at the shoulder disappears while ridging sometimes covers the body, and the pointed handles eventually soften to an arch[87]. Conspicuous spiked toes in 3rd-century contexts indicate that the form continued to travel[88], and Opaiţ argues for production into the 4th or even the 5th century[89]. A close (but more prominently ridged) comparandum from the Kythera Museum matches the general shape, handles, slightly conical neck and rim of the Ragged Bay A example; it is unfortunately without context, but Opaiţ suggests a 3rd-century date[90]. The Ragged Bay A sample has a medium brown fabric with medium sandy quartz-like bits, medium and some larger white chalky inclusions, and some small and occasionally larger dark grey and reddish grey bits, placing it within the general range of published fabrics and comparing reasonably well with descriptions of known or suspected Knidian-style amphora production of earlier periods[91]. The jars are often presumed to have carried the wine for which Knidos gained a reputation in antiquity[92], though no direct evidence of content is available from the survey sample.

25 At least 10 examples of the final amphora type were recorded on the seabed, and one (Fig. 6, 2: 95C-4) was raised for study that preserves the top and much of the body. It shows a nearly cylindrical neck with a well-defined rolled rim and slightly arching handles that curve in toward the shoulder. The shoulders and upper body, and seemingly also the lower part, are marked by prominent grooves that grow fainter and more widely spaced near the midsection. Unlike the other two forms at Ragged Bay, this jar reflects a less well-known type, with striking similarities to a loose group of amphoras that have been attributed tentatively to Pamphylia. Grace was the first to suggest a Pamphylian production based on Late Hellenistic stamp epigraphy of the 1st century B.C., but she then traced a likely morphological development into the next centuries[93]. The closest two parallels to the Ragged Bay A example come from Knossos, in a context of the latter 2nd or 3rd century, and Athens, in a context closed during the mid-3rd century[94]. Opaiţ argues for the form's continued development into the 5th century[95], when it forms one of a number of broadly similar types prevalent throughout the east Aegean and southwest Anatolia. The reddish-brown fabric of the wreck sample matches well the descriptions by Grace and Opaiţ[96], and certainly a group of Pamphylian amphoras makes sense within the geographical profile of the assemblage. Most of the known findspots for the type are also marked by many Rhodian- and Knidian-style jars, suggesting common consumption patterns and mechanisms of regional distribution. The lone survey amphora provides no direct evidence of content, but Grace suggests wine based largely on the presumed needs of these known destination markets[97].

26 The conditions of the Ragged Bay A wreck site seem promising for further investigations. The sandy seabed on which parts of the wreck came to rest may contain additional material, and its depth would have left it below the destructive natural effects

87 E.g., Auriemma 2000, 40 fig. 12 (Grado); Leblanc – Desbat 1992, 148 f. fig. 15, 1 (Saint-Romain-en-Gal). Ridging seemingly becomes more common in later periods: see Grace 1979, 66 right.

88 E.g., Martin-Kilcher 1994, 782. pl. 239 no. 5477 (Augst); Lemaître 2000, 468. 471 fig. 6, 1. 2 (Lyon).

89 Opaiţ 2014, 441 f.

90 Opaiţ 2014, 447 figs. 1. 2.

91 Martin-Kilcher 1990, 200; Bezeczky 2005, 43; Sauer 2005, 116. For fabrics of earlier Knidian-style production, see Whitbread 1995, 109–116.

92 Bezeczky 2005, 42.

93 Grace 1973; see also Brixhe 2012.

94 Hayes 1983, 151 (Type 26), 152 fig. 24 no. 67 (Knossos); Grace 1973, 196 fig. 8; 197 fig. 9 no. 18 (Athens). See also Reynolds 2021, 313 fig. 5.

95 Opaiţ 2014, 442 f.

96 Grace 1973, 187. 206 f. nos. 17. 18; Opaiţ 2014, 442.

97 Grace 1973, 195–198; also Reynolds 2021, 311.

of the dynamic surf zone. Even if no complete examples remain visible – likely the result of removal in modern times – the 60 amphoras counted probably represent only a part of the original load but seemingly its overall scope. The origins of the types indicate that the shipment was assembled locally, potentially part of an intraregional distribution. A date in the middle or latter 2nd century or even the earlier 3rd century seems appropriate. That window offers good parallels for the (admittedly still poorly understood) Pamphylian type, and the Knidian-style jar is comfortably situated in this same range, perhaps best in the middle or latter half of the 2nd century, or potentially even into the early 3rd century. The long-lived Rhodian-style was clearly still in production in this corner of the Mediterranean throughout the 2nd and into the 3rd century, so such a late date for this form is possible, particularly for local circulation in the southeast Aegean.

İskandil Burnu B

27 The remains of at least two shipwrecks are preserved near İskandil Burnu, off the northern shore of the Datça Peninsula near its western end. Initially discovered and reported by a sponge diver, the sites were subsequently investigated over the course of several survey campaigns by INA[98]. The İskandil Burnu B wreck, the older of the two sites, first appears in reports from the 1973 INA survey, when a scatter, extending from the shallows up to 15 m of depth, was preliminarily identified as the remains of a 3rd-century vessel carrying two amphora types[99]. One sample of each type was raised for further study, which was undertaken some years later by Cowin[100]. The site was subsequently revisited as part of the 1981 and 1982 INA surveys, when additional finds were raised, including certain better-preserved examples, along with a previously unrecognized third amphora type and what may be a piece of galley ware. The 1987 INA survey investigated the wreck once more, discovering in addition to the shallower site a smaller assemblage of better-preserved materials at 37 m of depth that seemingly represent related cargo and potentially also the ship's final resting place in sand, where more promising preservation for wood and organics was noted[101]. At that time, the survey lifted new finds for further documentation and analysis, including yet another amphora type and additional non-cargo materials, for which Pulak suggested again a date in the 3rd century[102]. The site was visited also as part of the 2004 survey, offering an opportunity to monitor and further evaluate the assemblage[103]. Not all of these raised finds were available for study, but they are sufficient to provide a consistent picture of the mixed cargo and glimpses into the galley assemblage from a wreck of the 3rd century.

28 Among the finds raised on the various surveys, Kapitän II amphoras seem particularly common, and Pulak indicates this was the most numerous cargo component visible on the seabed[104]. The type dates from perhaps as early as the latter 2nd century but seems to have been most prevalent in the 3rd and 4th centuries[105]. Its origin remains unclear, with many favoring an Aegean source given its prevalence there[106], and a case

98 İskandil Burnu A was previously studied and published as a late 6th- or early 7th-century wreck: Lloyd 1984; Lloyd 1985; see Parker 1992, 217 (#518).

99 Bass 1975, 35 (site J); Bass 1982a, 46 (site 2); Parker 1992, 217 (#519). See also table (Fig. 1), table n. 7.

100 Cowin 1986, 15–19.

101 Pulak 1988. Cf. Parker 1992, 159 (#353), who erroneously listed this site as a new one (»Datça C«), separately from İskandil Burnu B.

102 Pulak 1988, 11 fig. 4; Pulak 1989, 4 f. 9 f. figs. 6–8 (site K).

103 Köyağasioğlu 2006, 105 (site 7).

104 Pulak unpbl. Notes from the survey diary of C. Pulak from the 1982 campaign, p. 45–47.

105 Panella 1973, 596 f.; Parker – Squire 1974, 29; Riley 1979, 190 f.; Negru et al. 2003. See also examples from Wreck 15 in the Fournoi Archipelago: Viglaki-Sofianou et al. 2019, 192 f. fig. 265.

106 Grace 1971, 72 n. 51; Hayes 1983, 155; Keay 1984, 137; Abadie-Reynal 1999, 262 f.; Opaiţ 2004, 13; Slane 2004, 364.

has been made mineralogically for some production in the area of Ephesus[107]. Others have argued for a Black Sea or other eastern Mediterranean origin[108]. The examples from İskandil Burnu B have a hard reddish tan to brown fabric with a slightly smooth break and prominent inclusions that are principally small to medium and some larger crumbly yellowish and red chunks, small black bits, small to medium off-white and grey inclusions, as well as some fine mica[109]. The slightly conical neck terminates in a rim that is less grooved and ridged than is typical (Fig. 7, 1: 82I-5; 2: 82I-6; 3: 73B-2–3). The handles do not rise above this rim, and the bottom is largely flat rather than projecting down into the cylindrical base. Opaiţ has asserted that the earliest examples are larger, 0.75–0.80 m in height, and that the size diminishes in its later development, with a 5th-century jar from the Athenian Agora reaching only 0.43 m[110]. At just over 0.65 m in height in general, the İskandil Burnu B amphoras seem typical of those circulating in the 3rd and 4th centuries. Parallels for the size and features can be found in a mid-3rd-century context at Athens and another of ca. 250–280 at Corinth[111]. The wreck amphoras, however, display little (or in some instances no) articulation of the ridge below the rim that is one of the type's distinctive features. While this may often indicate heavy wear – and indeed some of the site's jars display wear around the rim – it may also be morphologically significant. Identical rims can be found on one example from Singidunum[112], and another at Jerash that was recovered in a context of the second half of the 3rd century[113]. What appear to be traces of resin lining the interior of one of the İskandil Burnu B examples may reveal that this amphora contained wine, as has been suggested for the type more generally[114].

29 Survey reports indicate that Forlimpopoli amphoras are next most common among the wreck assemblage. Originating in the western Adriatic region of Emilia-Romagna in and around the areas of Forlimpopoli and Rimini[115], the type achieved considerable circulation in the eastern Mediterranean and Aegean, throughout the Danube region and into the western and northern Black Sea[116]. Aldini suggests they were manufactured from the last quarter of the 1st century through the middle or third quarter of the 3rd century[117]. Aldini's four types, however, are not entirely chronologically successive, and the involvement of multiple producers seems to have resulted in some variation in the neck, rim, and base[118]. With their tall and gently conical necks, simple everted rolled or tapering rims, elongated bodies, and flat and slightly recessed bottoms that are barely articulated in profile from the lower body, the jars from İskandil Burnu B clearly belong to Aldini's Type D, the latest in the series, dated to the late 2nd to mid-3rd century (Fig. 7, 4: 87K-2), although they are perhaps slightly larger than normal for this type[119]. At Tanais on the northern Black Sea, at least one jar in a context almost certainly of the first half of the 3rd century shows the same distinctive neck and the rounded shoulders

107 Sauer 2005, 117 f.; Bezeczky 2013, 149 f.

108 Lemaître 2000, 473; Reynolds 2010, 91. 105 fig. 2 a. b.

109 Cf. Tomber – Dore 1998, 109.

110 Opaiţ 2004, 13.

111 Robinson 1959, pl. 15 no. K 113 (Athens); Slane 2004, 365 fig. 3 (Corinth).

112 Bjelajac 1996, 43 f. pl. 13 no. 56.

113 Fisher – McCown 1929/1930, 31 fig. 3. See also a possible 4th-century example from Olympia: Martin 2000, 431 fig. 1, 4.

114 Panella 1973, 599; Tchernia 1980, 306 f.; Keay 1984, 137; Peacock – Williams 1986, 194. But see also potential analytical evidence for oil as an occasional product: Polla et al. 2021, 155.

115 Aldini 1978; Aldini 1989; Aldini 1995; Aldini 1999. Additional secondary production centers have been suggested: see Hayes 1983, 145.

116 Bezeczky 1995, 165; Bjelajac 1996, 22–25; Dyczek 2001, 79 f.; Paczyńska – Naumenko 2004, 310 f.

117 Aldini 1978, 245; Aldini 1995, fig. 1.

118 Maioli – Stoppioni 1989, 574; Dyczek 2001, 80.

119 Aldini 1989, 400 f.; Aldini 1995, fig. 1.

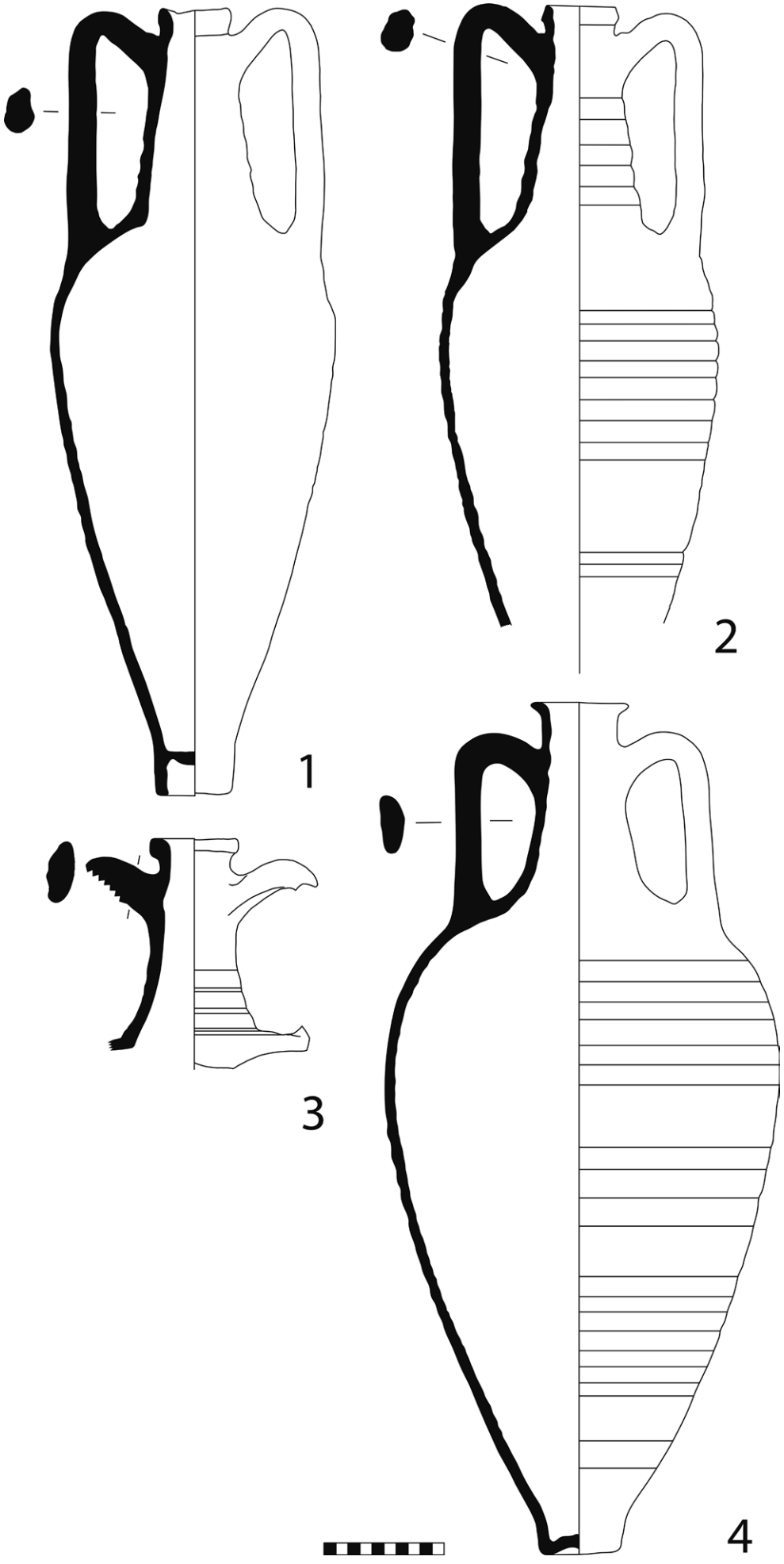


Fig. 7: Ceramics from the İskandil Burnu B site (scale 1 : 5)

8

Fig. 8: Ceramic from the İskandil Burnu B site

as examples from the İskandil Burnu B site[120]. Some of the best parallels for this specific form come from the contexts at Athens and Corinth mentioned above, dating to the middle or third quarter of the 3rd century[121]. The sandy tan to light pink, hard and slightly smooth fabric of the İskandil Burnu B examples may be best situated in the western Adriatic, where rolled rims are generally associated with the Forlimpopoli area rather than the rectangular rims of the Rimini region[122]. Wine and garum have been suggested as primary contents of Type D jars[123]. Resin lining in examples from several sites – including Aquileia, Singidunum, and Viminacium – would favor wine[124], and a complete jar raised on the 1987 survey (87K-2) contains such traces.

30 The two remaining amphora types from the wreck are less common, but they provide important additional information on the assemblage's date and profile. These include a single top (Fig. 8: 82I-1) raised in 1982, which belongs to the Mid-Roman 5 (MR5) or Zeest 80 form. It is identifiable by its stocky neck, heavy flattened rim with deep groove underneath, and thick widely swung handles[125]. The type's formal development, and even its general dates, remain poorly understood. Riley's typology focused on examples of the late 2nd and 3rd centuries[126], while Opaiţ sees a much longer trajectory lasting from the 1st into the 6th century[127]. Within this development, Opaiţ argues that examples from the second half of the 4th century and later lack the distinctive deep groove below the rim, the presence of which suggests a date for this amphora on the wreck broadly before this formal shift[128]. Parallels include an identical rim from a mid-3rd-century or slightly later context at Knossos, published by Hayes[129]. At Olbia on the Black Sea, Krapavina notes the presence of jars with similarly defined rims in dated deposits from the end of the 2nd into the third quarter of the 3rd century[130]. A northern Aegean, Sea of Marmara, or Black Sea origin has long been asserted and seems likely also based on distribution, but no production center has come to light, nor any direct evidence for contents (although a wide range of products have been suggested, including oil)[131]. The İskandil Burnu B survey example exhibits a hard red-brown fabric with a rough break and prominent inclusions of transparent to dark grey shiny bits, some reddish bits, and numerous small cracks and voids. It preserves no traces of resin lining or other clues as to contents[132].

31 The final type is represented by a single intact jar (Fig. 9: 87K-1) recovered during the 1987 survey. Although the sample could not be identified among the survey finds in the Bodrum Museum, photographs of the amphora allow some suggestions[133].

120 Paczyńska – Naumenko 2004, 311 fig. 5.

121 Robinson 1959, pl. 15 no. K 114 (Athens); Slane 2004, 367 fig. 8 (Corinth).

122 Maioli – Stoppioni 1989, 574.

123 Cacciaguerra 1991, 30.

124 Carre 1985, 231 (Aquileia); Bjelajac 1996, 23 (Singidunum, Viminacium). But see also reuse of this type to carry fish products in the cargo of the mid-2nd century at Grado: Auriemma 2000.

125 The MR5/Zeest 80 example studied and photographed for Fig. 9 could not be located during the subsequent documentation so no drawing is available.

126 Riley 1979, 188 f., figs. 83. 84.

127 Opaiţ 2004, 26. For such late examples, see also Swan 2010, 112–115.

128 Opaiţ 2004, 26.

129 Hayes 1983, 154 fig. 25 no. 90.

130 Krapavina 2010, 70. pl. 37, 14–16.

131 Riley 1979, 188; Opaiţ 2004, 26; Krapavina 2010, 70; Reynolds 2021, 321; Opaiţ 2023, 160.

132 Unlike the Kapitän II and Forlimpopoli types, though, the MR5/Zeest 80 studied reflects a highly fragmentary find, which may not preclude the possibility that this jar too was once lined.

133 Pulak 1989, 10 fig. 8. An amphora on display at the time of study looks distinctly like the survey jar, though this could not be confirmed: potentially Alpözen et al. 1995, 111.

This globular jar exhibits broad shoulders and prominent ridging, and a base terminating in a small peg toe. The handles arch from a low conical neck surmounted by a high funnel-shaped rim. The jar belongs within the long evolution of globular forms that Opaiţ has suggested spans from a more elongated Dressel 24 to the well-known Late Roman 2 (LR2), although this typological trajectory still requires firm grounding[134]. Particularly close comparanda come from a context of the third quarter of the 3rd century at Athens and from Dobrudja[135]. Both Dressel 24 and its relatives as well as LR2 were evidently produced in a number of fabrics which point to various different centers, including a Dressel 24 workshop investigated on Chios[136]. A center for early LR2 amphora production has been reported at Dilesi in Boeotia and at Porto Cheli in the Argolid, and it seems that the earlier (pre-6th-century?) phases of LR2 production may have been restricted to mainland Greece unlike the later phases that extended across the Aegean[137]. Several *dipinti* mention »oleum« and the morphology of the articulated cup-shaped rim has been taken as a functional adaptation to allow the precise pouring of this content[138]. For Chios, and for the Aegean more generally, the possibility of wine remains, and notes from the 1987 survey indicate that the particular jar raised from the İskandil Burnu B site was »resin filled«. Although this may allude to the resin lining often associated with wine-filled jars, perhaps in this instance it instead indicates that the content was resin itself, another important product of known Chian origin that is attested by *dipinti* on slightly later jars[139]. Some LR2 amphoras filled with resins have also been found at Constanţa in Romania[140].

9

Fig. 9: Cermaic from the İskandil Burnu B site

32 A few additional finds may represent part of the İskandil Burnu B vessel's galley assemblage. These include an intact squat jug with a trefoil rim that was not available for study (87K-4)[141], the neck and partial handle of a pitcher (82I-3) produced in a dark brownish grey to black fabric, and a pithos fragment (87K-8) that, given its relatively small size (rim diameter of ca. 0.65 m and height less than 1.00 m), seems as likely to have been a water jar for the crew as a container for bulk shipment. The relationship of a final find (87K-5), a rectangular stone plaque, to the wreck assemblage is less clear, but similar ones found on Roman wrecks in the western Mediterranean have been suggested as touchstones for testing coins or plaques for processing cosmetics and medicines[142].

33 The İskandil Burnu B wreck offers an intriguing cargo that, as far as can be determined, was carried primarily in Kapitän II amphoras of potential Aegean origin and Adriatic Forlimpopoli jars. The additional amphora types seem to be present in more limited numbers and may reflect a smaller secondary cargo component or provisions for the crew, in which case their origins around the Aegean or Sea of Marmara

134 Auriemma – Quiri 2004, 50; Opaiţ 2007a. See also Pieri 2005, 85; Dobreva 2017, 231–233.

135 Opaiţ 2007a, 632 f. fig. 9 nos. 49 (Dobrudja) and 50 (Athens).

136 On the Chian workshop, see Opaiţ – Tsaravopoulos 2010; Opaiţ – Tsaravopoulos 2011. See also Arthur 1998, 168 f. For an example stamped with the name Erythrai on the opposite Anatolian coast, see Dyczek 2001, 183.

137 On Dilesi, see Gerousi 2014. For the shifting geography of production during different phases, see Reynolds 2021, 335–338. For various fabrics, see also Opaiţ 2007a, 629; Bezeczky 2013, 73 f.; also »Roman Amphorae: A Digital Resource«.

138 Opaiţ – Tsaravopoulos 2010, 28; Reynolds 2021, 336.

139 Dyczek 2001, 192 f.; Panagou 2016, 320 f.

140 Rădulescu 1973, 194–198; Peña 2007, 131 considers these jars as reused for storage, but certainly the possibility remains that resin was exported for trade in local (e.g., Chian) jars normally associated with wine or oil as »prime-use contents«.

141 For an illustration of the jug, see Pulak 1989, 9 fig. 7 (center).

142 Pulak 1989, 9 fig. 7 (left); cf. Beltrame 2002, 41. fig. 58.

may help to indicate an area of routine operation for the ship. The few galley ware clues point to serving and dining practices on board, even if no evidence is yet available for cooking. The surveys reported a large number of olive pits, which may be related to the cargo ceramics (i.e., olives as contents for some amphoras) or another (unpackaged) bulk cargo or simply staples for the crew. The amphoras are best situated in the 3rd century, perhaps its middle decades or latter half, although a slightly later date cannot be ruled out[143].

Gümüşlük A

34 The remains of a shipwreck near Gümüşlük, ancient Myndos, at the tip of the Bodrum Peninsula, were first reported to and investigated by an INA survey team in 1980[144]. By that time, the visible assemblage included only about 10 amphoras despite its depth at around 30 m, suggesting that much material had been removed by divers. One complete example deemed representative of the overall homogenous cargo was raised, along with a second toe from a seemingly identical amphora[145]. Another amphora (Inv. 4634), brought to the Bodrum Museum and reportedly from a wreck off the end of the peninsula, is identical in form and details, and almost certainly came from the same site[146].

35 The complete survey example (Fig. 10, 1: 80E-2) exhibits a sagging shape with a maximum diameter in the lower half of the body. A band of prominent and closely spaced ridging marks the area just below the shoulder, while a wider band of more widely spaced ridging can be seen around the middle of the body. The neck – slightly bulging where the oval and slightly grooved handles attach – is marked by a thickened rolled rim and delineated from the shoulder by an offset ridge. The base terminates in a solid blunt spike, a second example of which was raised on survey (Fig. 10, 2: 80E-1). The form belongs to a group of regional Aegean amphoras, sometimes gathered under the name Agora M273[147], but often poorly defined or confused through the attributions of subtypes on different grounds without systematic accounting of both fabric and morphology[148]. Opaiţ has suggested a general progression from more ovoid to more sagging shapes, but the Late Roman Yassıada B shipwreck (ca. 400 A.D.) also clearly indicates that such different shapes were in circulation together[149]. Pieri includes a group that features clear 4th-century examples with the distinctive sagging shape of the Gümüşlük A jar along with its comparatively tall and bulging neck, handle stance, and spike toe[150]. The form compares well with other known 4th-century examples, including one at Eleutherna and another dated more precisely to the third quarter of the 4th century at Kourion[151], although similarities also exist with some 5th-century examples and the date must remain broad at present. The complete amphora and the additional toe raised on survey show a relatively consistent fabric: pink-brown, with a core closer to tan-brown, medium fine with slightly rough and sandy texture, and significant quantities of fine

143 For previous discussions of the date, see Bass 1975, 34; Pulak 1989, 5.

144 Rosloff 1981, 281; Bass – Rosloff 1985, 24; Parker 1992, 208 (#491). For more recent underwater surveys near Myndos that mention this wreck, see Şahin et al. 2008, 1 f.

145 Rosloff 1981, 281 fig. 6; Cowin 1986, 61 fig. 23; 163 f. pls. 16. 17.

146 Inv. no. 4634; thanks to Hande Savaş for assistance in the study of this jar, which includes an identical inscription to the survey amphora discussed here.

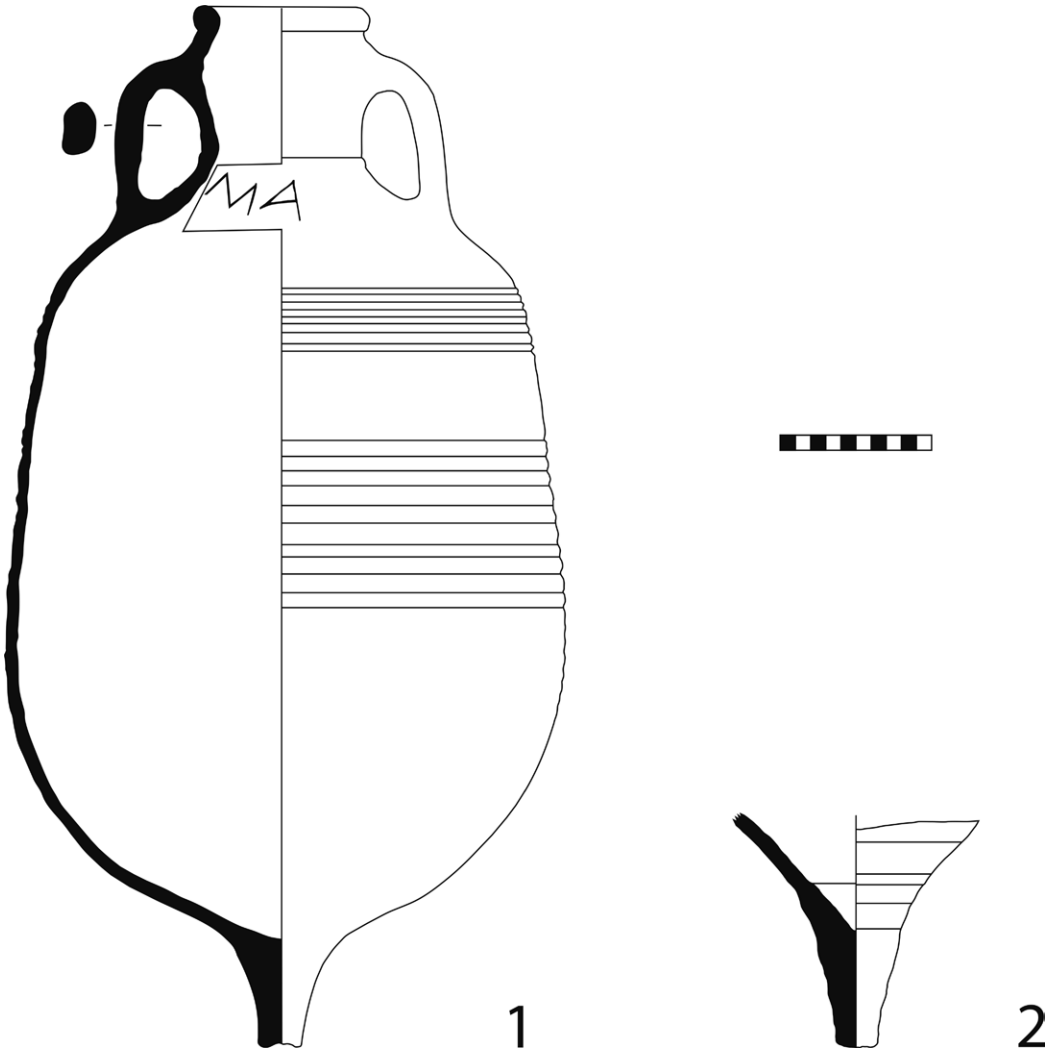
147 Robinson 1959, pl. 29 no. M273. See also Arthur 1989; Papadopoulos 1989; Opaiţ 2004.

148 For a critique, see Bonifay – Piéri 1995, 114. See also Opaiţ 2014, 443 f.

149 Opaiţ 2004, 18; Bass – van Doorninck 1971, 34 and pl. 2 figs. 8. 9.

150 Pieri 2005, 134 fig. 88 left; see also, with further discussion below, Laganara Fabiano – Volpe 1985, 507 fig. 2, 3. The type seemingly shows a gradual reduction in the height of the neck and broadening of the handle stance from the 4th century onward.

151 Yangaki 2005, 207. 442 fig. 53 k (Eleutherna); Williams 1987, 235 fig. 1 (Kourion). See also a similarly bulging, if slightly shorter, neck assigned to the 4th century at Brijuni: Bezeczky et al. 2015, 192 f. fig. 3, 5.



10

Fig. 10: Ceramics from the Gümüşlük A site (scale 1 : 5)

mica[152]. This appears closest to certain east Aegean fabrics described for this group[153]. It is worth noting that Scorpan and Abadie-Reynal have suggested an origin on Samos for jars of this shape and the later Samos Cistern type, and it seems likely that the form should be understood as one of multiple regional variants[154]. The complete survey sample bears an inscription (in Greek, »MA«) that may indicate a name or perhaps a capacity of 41 units (presumably ξέσται/*sextarii*)[155]. The same lettering appears on a second, identical jar in the Bodrum Museum, the inventory documentation for which unfortunately lacks full provenance but seems to indicate a source around the peninsula and therefore a possible origin in this cargo[156]. A morphologically similar example from Thasos, dated to the 4th century, bears letters again suggesting a 41-*sextarius* capacity[157]. Such volumetric

152 Cf. Cowin 1986, 60.

153 Pieri 2005, 132.

154 Scorpan 1977, 272; Abadie-Reynal 1999, 263.

155 For additional possible readings of »MA«, including »Markos« and »mation«, see Cowin 1986, 124 f. n. 99. These readings seem less likely given the considerable epigraphic record of volumetric measures inscribed on jars of precisely this type.

156 See above, n. 146

157 Abadie-Reynal – Sodini 1992, 58 f. fig. 25 no. CC343.

inscriptions, ranging generally between 43.5 and 47 *sextarii*, appear to be common on jars of 4th- and 5th-century date[158].

36 Two additional items may provide some insight into the assemblage beyond the cargo. A flat-bottomed closed ceramic vessel with strong shoulder carination was identified by Cowin as probably representing galley ware (80E-4), though its form is unusual and lacks good comparanda[159]. It is unclear whether it may have functioned for cooking or storage. A small stone weight also recovered on survey has a single piercing near its narrower end, likely for the attachment of a line[160]. Too light for an anchor, it may have served as a simple fishing weight[161]. The lack of diagnostic features make it uncertain whether this common object is intrusive or associated with the wreck assemblage. The scant remains at the Gümüşlük A site suggest a regional cargo from the 4th or 5th century.

Yılan Ada A

37 The 1996 INA survey brought to light a wreck at Yılan Ada, not far from Kalkan[162]. The site is described as extensive, with much material concreted to the seabed and nestled into sandy pockets among the rocks and reef between 16 and 35 m deep. Three amphora samples were raised representing two forms distinguished on site. These are only partially preserved and reflect poorly understood types, so the date and origin of the cargo remain broad. Tile fragments were also reported and may be associated with a ship's galley used for food preparation, as reconstructed for the 7th-century Yassıada A shipwreck[163].

38 The survey raised two samples of the first type but only one was relocated and available for study (Fig. 11, 1: 96C-1). This amphora is characterized by a concave neck with a cupped rim set off by ridges. The lower neck curves continuously to the shoulder. The handles, which attach directly to the top of the rim, are thick and oval in section and incised with one deep groove along their exterior. The second top appears to have a narrower cupped rim and handles that fall outward toward the shoulder, suggesting some formal variation[164]. These distinctive jars appear to be related to the San Lorenzo 7 type, which was circulated in limited quantities primarily in Italy, the eastern Mediterranean, and the Black Sea from the 3rd and 4th centuries and potentially as late as the 6th entury[165]. A jar identified by Hayes at Knossos in a late 2nd-century context may represent a precursor or otherwise related form, and Opaiţ has drawn attention to similar examples in Black Sea contexts of the 3rd and 4th centuries[166]. This form can exhibit a conical neck and deeply grooved handles that adjoin the rim, although the rim is often quite thick and widely grooved on the interior rather than more fully cup-shaped as with the Yılan Ada A jar under study[167]. The particular features of the wreck examples and the poor state of knowledge about the San Lorenzo 7 type make it impossible to narrow the date. Although it bears some formal similarities to certain Iberian types (e.g., Almagro 50), San Lorenzo 7 is generally considered to be of eastern Mediterranean

158 Laganara Fabiano – Volpe 1985, 510; Remolà 1989, 279 f. 281 fig. 146; Opaiţ 2004, 18; Pieri 2005, 135 fig. 90; 136 f.

159 Cowin 1986, 60 f. fig. 24.

160 80E-3: see Cowin 1986, 174 pl. 27.

161 Cowin 1986, 63.

162 Pulak 1998, 311 f.

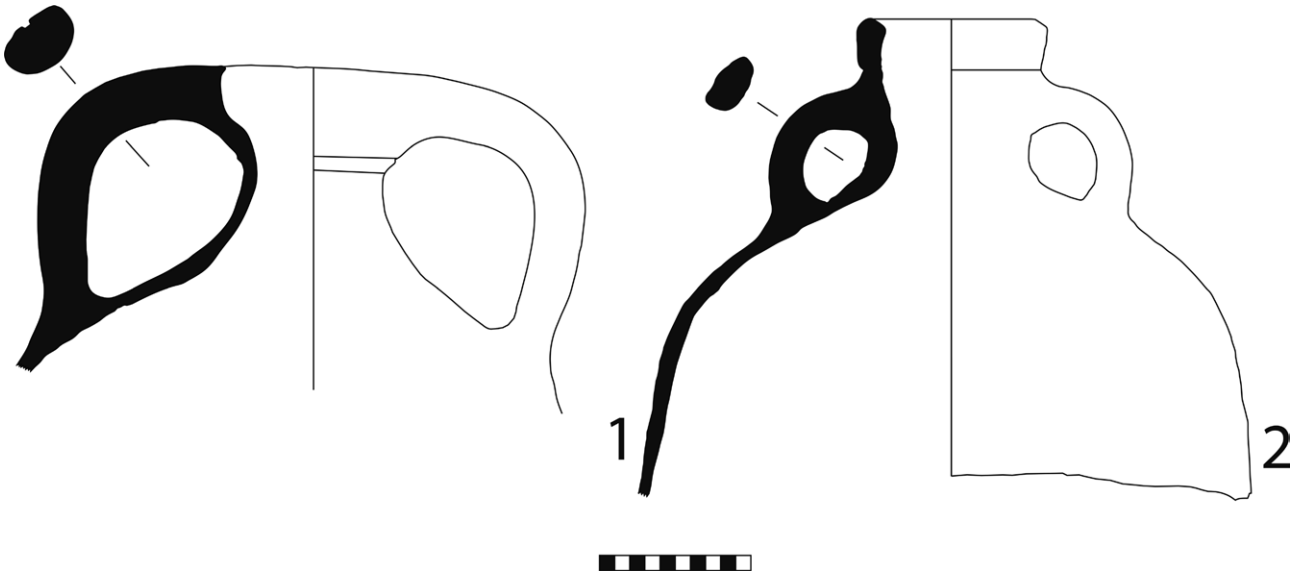
163 van Doorninck 1982, 110–120; see also Beltrame 2002, 91–97.

164 See Pulak 1998, 318 fig. 3 (right).

165 Villa 1994, 382–386; Arthur 1998, 171 f.; Belotti 2004, 82–84.

166 Hayes 1983, 143 fig. 20a.37; 147 Type 13; Opaiţ 2023, 158–160.

167 Scorpan 1977, 284 figs. 24, 3; 42, 4. 5; Riley 1979, fig. 88 nos. 298. 299; Villa 1994, 383 pl. 6, 4–6, 11; Arthur 1998, 173 fig. 9, 2; Arthur – Oren 1998, 200 fig. 5, 4. 5.



11

Fig. 11: Ceramics from the Yılan Ada A site (scale 1 : 5)

origin[168]. A source in the Aegean has been suggested based on petrographic study[169]. Whitehouse grouped some 5th-century San Lorenzo 7 jars from the Schola Praeconum in Rome within the same fabric as his LR1 amphoras, the primary production center for which was almost certainly Cilicia during this period[170]. An Aegean or eastern Mediterranean origin would fit well the form's distribution[171]. Opaiţ has connected the form to oil transport, and certainly oil (or wine) would make sense for a production center in these regions, although the form's typological similarities to other containers known to have carried fish products complicates this still further[172].

39 The second amphora type from the Yılan Ada A wreck exhibits a slightly bulging cylindrical neck with a tall, thickened collar rim and oval handles (Fig. 11, 2: 96C-3). The shoulders point to a wide-bodied, likely cylindrical jar with light grooving, probably falling broadly within the diverse group of 4th- and 5th-century cylindrical, ovoid, and bag-shaped forms manufactured around the Aegean and collected by Opaiţ and Pieri[173]. The slightly bulging neck is not dissimilar to that on the survey amphora from the Gümüşlük A wreck, or on various examples that Opaiţ assigns to the 4th century and first half of the 5th century[174]; the collar rim, however, contrasts with their more common rolled rims[175]. His type CII-2 in 4th-century contexts shows a similar wide cylindrical neck, thick but small handles, and taller and more similar collar rim with a ridge below, along with an ovoid grooved body[176]. The Yılan Ada A jar is made from a reddish-brown clay, lighter at the exterior surface, with opaque sandy and off-white to yellowish inclusions, some brick red and black stony bits, and some possible shell. No clues survive that might offer insights into its original contents. Broad comparanda

168 Villa 1994, 382; Arthur 1998, 172; Belotti 2006, 19 f.

169 Villa 1994, 386; Arthur – Oren 1998, 203; Auriemma – Pesavento Mattioli 2016, 423 f.

170 Whitehouse et al. 1982, 69 (fabric 14), 77 fig. 11 nos. 145. 154.

171 E.g., Rendini 1997, 375; Johnson 2008, 169.

172 Opaiţ 2023, 160; cf. Reynolds 2021, 318–321.

173 Opaiţ 2004, 15–18; Pieri 2005, 132–137. 139.

174 Opaiţ 2004, 15 f. The author suggests that »this amphora type might be an eastern Mediterranean imitation of a N. African amphora«.

175 An undated amphora from the Bodrum Museum shows what may be one such collared rim: see Alpözen et al. 1995, 110.

176 Opaiţ 2004, 17. 131 pl. 11, 1 A.

to the vague groups outlined by Opaiţ and Pieri suggest a probable date in the 4th or 5th century, in general alignment with the chronology of the first type.

Kepez Tepe A

40 Lying on rock at nearly 40 m of depth, the shipwreck at Kepez Tepe near Kaş was located and first explored by the 1983 INA survey[177]. More recent efforts to document underwater cultural heritage along this coast have also visited this assemblage and documented finds in situ[178]. The cargo is reportedly comprised of a variety of amphora types – perhaps as many as six to seven or even more – of which four were documented. Of the five artifacts raised, three belong to the first amphora type and two to the second, while two additional types were recorded only in sketches; any other potential types remain unknown. The limited surface explorations in the 1980s counted 80–90 amphoras, including some complete jars, although systematic documentation here in more recent years suggests a higher count of more than 250 jars[179]. Pockets of sand may conceal a few additional finds, but the generally rocky seabed here makes it unlikely that these would add substantially to the total or change the overall impression. On the other hand, the impact of removal of material is difficult to gauge, and the wreck in antiquity was likely larger.

41 One component of the assemblage – presumably a major component given that three examples were raised – is the common Late Roman 1 (LR1) type (Fig. 12, 3. 4: 83/45 and 83/46)[180]. The two amphoras available for study exhibit minor variations that may be characteristic of production across different workshops. They vary slightly in diameter and height, one having a more attenuated and narrower shape and the other a wider maximum diameter and fuller lower body. Their necks taper from conical to narrow and cylindrical with a thickened band rim, while the bases terminate in a simple rounded toe. Generally good comparanda for this particular body shape come from contexts of the latter 4th and earlier 5th century at Kellia, on the Yassıada B vessel of ca. 400 A.D., in contexts of the early to mid-5th century at Elaiussa Sebaste, and in a destruction level dated to 365 A.D. at Kourion[181]. Such a date would seem to align with Pieri's observation that rim diameter increases over time[182], and to fit both the single handle groove and well-defined button toe characteristic of this period from the mid-4th through the mid-5th century[183]. The rough, red-brown fabric features white and light grey as well as shiny black and rarer red inclusions, comparing well with known fabrics from this early production series dominated (seemingly exclusively) by Cilician, and potentially also Cypriot, workshops[184]. Ample evidence has been provided for both wine and oil as contents for LR1 amphoras in general but known examples of other dry goods and reuse complicate any simple answers[185]. Such a long-lived and widely

177 Yıldız 1984, 23 f.

178 Varinlioğlu 2011a; Varinlioğlu 2011b.

179 Varinlioğlu 2011a, 185.

180 A third example of this type mentioned in the notes could not be relocated for study.

181 Egloff 1977, 111. pl. 58 no. 2 (Kellia); Bass – van Doorninck 1971, 34. pl. 2 fig. 11 (Yassıada B); Ferrazzoli – Ricci 2008, 525 fig. 7 (Elaiussa Sebaste); Williams 1987, 237, fig. 5 (Kourion). See also generally Pieri 2005, 70–74; Reynolds 2008, 70–72; Opaiţ 2010a.

182 Pieri 2005, 70; Pieri 2007, 314 fig. 2.

183 Sazanov 1999, 275 fig. 4.

184 Cf. Williams 1987, 237; Pieri 2005, 81; see also the fabric description and image at »Roman Amphorae: A Digital Resource« (https://doi.org/10.5284/1028192). For Cilician production, see Empereur – Picon 1989, 236–243; Reynolds 2005, 565–567; Ferrazzoli – Ricci 2008; Şenol – Alkaç 2017.

185 Bass 1982b, 164 f.; Bonifay – Piéri 1995, 109; Decker 2001, 78–80; Pieri 2005, 81–85; Pieri 2007, 302–304. On the various agricultural products of the region packaged in the jars, see Liebeschuetz 1972, 79–81; Elton 2005; also the many papers in Aydinoğlu – Şenol 2010. For other contents attested by *tituli picti*, see Riley 1979, 215; Hautumm 1981, 62–64; Hayes 1992, 434 n. 7; Fournet 2021, 64–67. On reuse, see van Alfen 1996, 202 f.

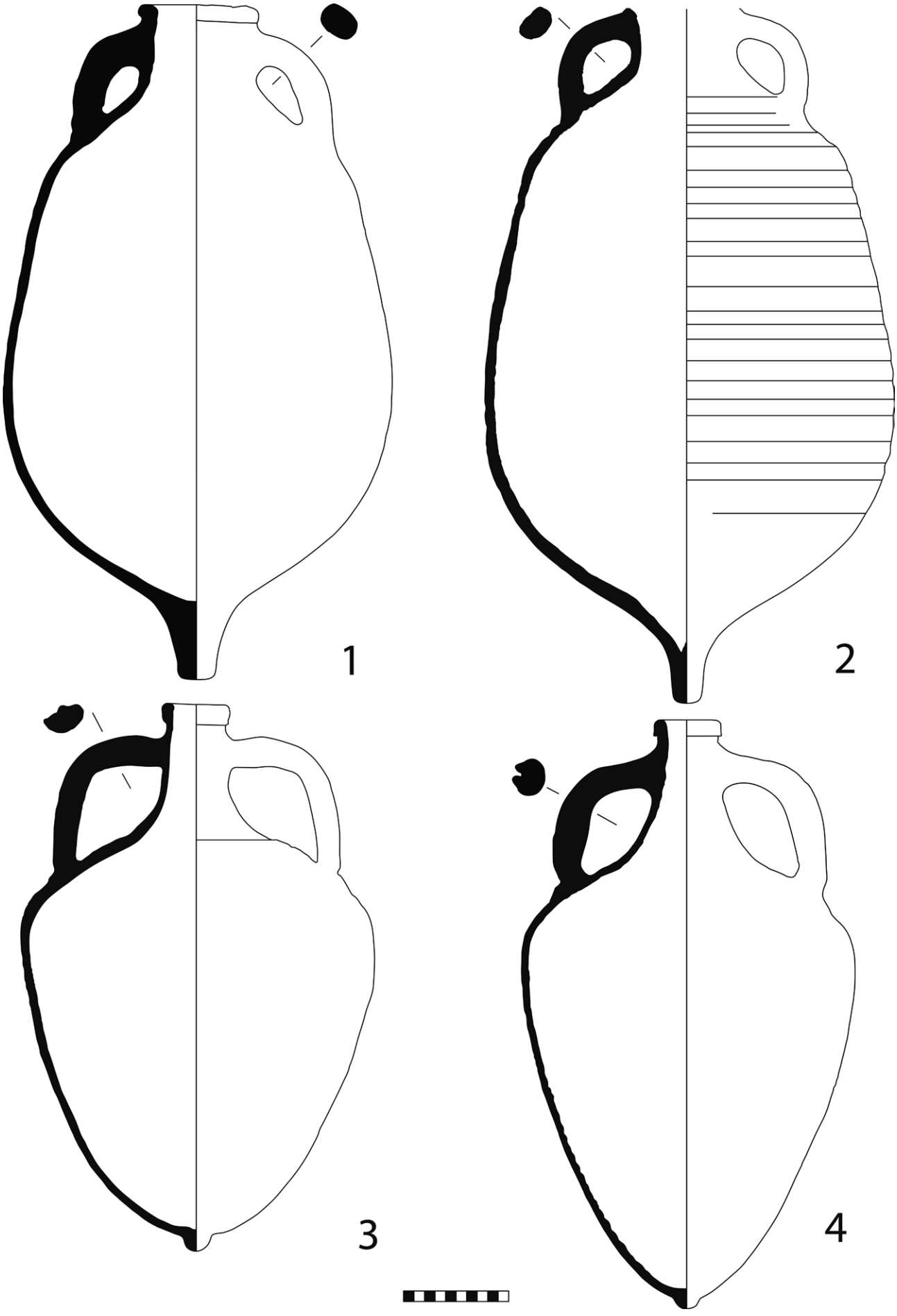


Fig. 12: Ceramics from the Kepez Tepe A site (scale 1 : 5)

adopted form might be expected to have contained several commodities, and no direct evidence is available from the Kepez Tepe A examples that might narrow this.

42 The second type of amphora raised by the 1983 survey is represented by two examples: one intact (Fig. 12, 1: 83/44), and another missing part of its neck, all of its rim, one handle, and one side of its lower body (Fig. 12, 2: 83/47). The short cylindrical neck features a rolled rim and two short, thick handles, while the bulky body has a maximum diameter well below the midsection before tapering to a short spike toe. The two vary slightly in size: 64 cm in height and 37 cm in diameter for 83/44, compared to 66 cm preserved (but originally perhaps 1–2 cm taller) high and 39 cm in diameter for 83/47. They also vary in surface treatment – the body of one is prominently ridged but the other lacks this treatment – and in fabric. Even so, they clearly belong together within the broad and still only preliminarily delineated group of Late Roman amphoras of Aegean manufacture, Agora M273 and its related forms[186]. The light brown to reddish fabrics fit well alongside those assigned generally to the east Aegean[187], where some Agora M273 forms are clearly connected to the later Samos Cistern type and its own relatives manufactured on the island and neighboring mainland[188]. Formally, the Kepez Tepe A examples compare best to certain vessels included in Opaiţ's CIII-1 and Pieri's rather loose Late Roman 8 groups. Opaiţ has outlined a general shift from more cylindrical to more bag-shaped forms between the 4th and 5th centuries, while Pieri has argued for bag-shaped examples already in the 4th century[189], and this family of forms clearly features broad variation. The gradual proportional reduction in the height of the neck between the 4th and 6th centuries would seem to indicate a late 4th- or 5th-century date[190], fitting well with certain morphological similarities between these jars and those of the Yassıada B wreck[191]. Amphoras from the late 4th-century wreck 7 in the Pagasetic Gulf share an overall morphology and neck shape[192]. Wine or oil would seem the most obvious content, but a fish hook reportedly found on survey inside 83/44 complicates this suggestion if it is indeed contextually related.

43 The third and fourth amphora types are known only from sketches since no examples were raised[193], but the tall pear-shaped body of one leaves little doubt that it belongs to a series of Pontic amphoras. This distinctive shape is characteristic of certain Black Sea productions spanning from the Hellenistic Period to Late Antiquity[194]. Many centers may have produced comparable forms, but amphoras of this shape can be linked with certainty to the vicinity of Sinope, where kilns provide evidence for their manufacture during the 4th and 5th centuries[195]. Kassab Tezgör's C Snp I jars are marked by the same elongated pear-shaped bodies that terminate in a toe spike, and Demirci amphoras of this shape appear to extend broadly from the 4th to the 5th century[196]. Opaiţ, on the other hand, attributes the appearance of this form only from the early 4th century into perhaps the beginning of the 5th century[197]. Without evidence for fabrics the Kepez

186 Cf. Gümüşlük A above.

187 Cf. published descriptions of two major fabrics, one pale brown or beige and the other a dark or dull red: Opaiţ 2004, 18; Pieri 2005, 132 (cf. Pieri's description of his LR11 group: Pieri 2005, 139); see also »Roman Amphorae: A Digital Resource« (https://doi.org/10.5284/1028192).

188 Arthur 1998, 167; Bezeczky 2013, 156–158.

189 Opaiţ 2004, 18; Pieri 2005, 132. 134 fig. 88.

190 Pieri 2005, 134 fig. 89; cf. Williams 1987, 235 fig. 1.

191 Bass – van Doorninck 1971, pl. 2 fig. 8.

192 Demesticha 2010, 141 fig. 5.

193 Recorded also in Varinlioğlu 2011a, 184 fig. 2; Varinlioğlu 2011b, 239 figs. 1. 2.

194 E.g., Colchian amphoras: Tsetskhladze – Vnukov 1992, 364 fig. 7; 365 f; Abadie-Reynal 1999, 258; Vnukov 2010.

195 Kassab Tezgör 1999; Erten et al. 2004; Kassab Tezgör 2010b; see also generally Kassab Tezgör 2020.

196 But see also earlier production of similar jars in the northern Black Sea region, where the type is attested as early as the mid-3rd century: Zubarev 2002, 120. 129 fig. 3.

197 Opaiţ 1991, pls. 21, 4; 23, 1; Opaiţ 2004, 29 f.; Opaiţ 2011.

Tepe A wreck examples cannot be linked more specifically within this region. In terms of contents, wine and oil have both been suggested, but matching specific regional Pontic containers with individual contents remains challenging and potentially problematic[198].

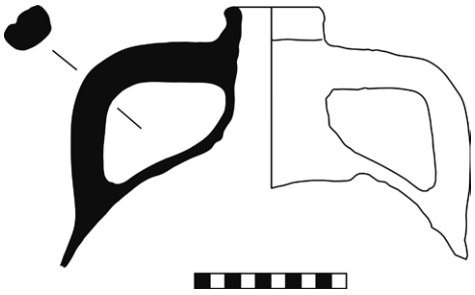
44 The final amphora type documented at the Kepez Tepe A site is known only from a short description and quick sketch. It exhibits a tall cylindrical body with some ridging, a tapered or slightly conical neck with handles showing a generally square stance, and a ring toe that is unusual among the major cylindrical types. Jars with a cylindrical shape are common during Late Antiquity, not only among the well-known African series, but also in the Aegean, where some of Opaiţ's large Aegean forms related to Agora M273 may have been manufactured[199]. The Yassıada B wreck (ca. 400 A.D.) has two broadly similar amphoras that are thought to have formed a part of the ship's galley supplies[200], providing a date roughly comparable to other finds from the Kepez Tepe A wreck.

45 It is difficult to draw substantial conclusions when the recording of several amphora types is limited, the overall number of additional types is unknown, and no counts are available for those types that were recorded in the survey notes. Yet the materials most consistently reported and raised in multiples were likely among those best represented, reflecting perhaps a major part of the cargo. Available clues seem to indicate an assemblage drawn broadly from the Aegean, Cilicia or perhaps Cyprus, and potentially the southern Pontic coast. A date between the mid-4th and mid-5th century seems most likely.

Kalkan A

46 Brought to light during the 1973 survey, the Kalkan A shipwreck appears just once in survey publication, and with the non-specific location of »near Kalkan«[201]. Only fragmentary amphoras were visible, probably reflecting a considerably larger site that was much reduced by looting, and Bass posits potential material under the sand at nearly 40 m of depth[202]. Two partial jars were raised on survey, but the shape of one suggests a storage vessel rather than a transport amphora and may reflect the ship's galley wares. No counts were taken.

47 The sole raised cargo amphora belongs to the LR1 type (Fig. 13: 73N-1). The neck is quite short, slightly conical and generally narrow, with a simple thickened rolled rim. Opaiţ suggests a general trajectory within the early LR1 forms toward shorter necks over the course of the 4th and 5th centuries, and the Kalkan A jar appears closest to his LRA 1A3 form, which he dates generally to the 5th century[203]. The example matches well Pieri's LRA 1A, for which he notes a shift from narrower (5–7.5 cm) to wider (up to 9 cm) rim diameters from the mid-5th century[204]. The comparatively narrow (6.6 cm) neck here would then best fit earlier in the 5th century, or in the early to mid-5th century according to Reynolds's outline of LR1 evolution and in comparison with examples excavated at Elaiussa Sebaste[205]. A wide geography of production is evident for the LR1 type, although the earlier



13

Fig. 13: Ceramic from the Kalkan A site (scale 1 : 5)

198 Opaiţ 2004, 30; Kassab Tezgör 2010a, 172 f.

199 Opaiţ 2004, 15; see also Böttger 1992, 104. pl. 11 c.

200 Bass – van Doorninck 1971, 36. pl. 3 fig. 29.

201 Bass 1982a, 47 site 13. There may be some confusion here regarding the identity and date of this wreck, which arose from another preliminary publication (Bass 1974, 34), where »site 13« is described as follows: »Near Kalkan a large number of scattered amphora sherds were found, including a seventh-century B.C. handle, at a depth of 40 meters«. It is presumably the mention of a 7th-century B.C. handle that Parker picks up in describing this for an unnumbered entry into his catalog: see Parker 1992, 223.

202 Bass 1982a, 47.

203 Opaiţ 2004, 8.

204 Pieri 2005, 70–74.

205 Reynolds 2005, pl. 4 figs. 31; 33 a. b; Reynolds 2008, 70 f. fig. 3 l. m; Ferrazzoli – Ricci 2008, 525 fig. 7.

forms in this series have been linked to certain areas of Cilicia and perhaps Cyprus[206]. The survey jar has a light brown to red-brown fabric with sandy inclusions typical of the broad range described by Williams for the Cilician region[207]. Wine and oil have normally been suggested as contents and one might expect a widely produced type to find service for multiple purposes[208], but no direct evidence is available from the survey jar itself.

48 The other survey find recovered, the top of a storage vessel with two strap handles (73N-3), does not belong to a common transport amphora type, and cannot be identified in its present fragmentary (rim-less) condition. It is not obviously intrusive, and certain features would seem to agree broadly with a Late Antique date, but this cannot prove that the jar is contextually related. The brown fabric is dominated by small and some larger white inclusions. Little material is available for study from the Kalkan A site, but the ship appears to have been carrying a cargo that included LR1 amphoras when it sank, likely during the early to mid-5th century.

İnce Burun A

49 Not far from Kalkan, a wreck at İnce Burun was first investigated during the 1983 survey following a tip from a sponge diver and then reinvestigated the following year[209]. It is situated on a rocky slope that extends from just beyond 30 m deep to sand at nearly 40 m. The survey notes estimate the site at about 200–300 amphoras, nearly all broken and mostly concreted. Pulak suggests intact jars have been removed in recent times, making the original cargo more substantial. The wreck rests primarily on rock, so little can be expected to have survived beyond the visible unless the site extends further down slope and into the sand. Five artifacts were raised during the 1983 survey, which, together with observations from the following year's visit to the site, provide some insights into the assemblage.

50 The primary – perhaps sole – cargo is represented by the well-known »carrot-shaped« amphora. Three samples were raised, including one nearly complete jar (Fig. 14, 1: 83/32, missing part of its lower body and toe) along with another top (Fig. 14, 2: 83/33) and a separate base (Fig. 14, 3: 83/34)[210]. They exhibit an elongated conical shape with a slightly concave lower body that tapers to a blunt point, approximately 75–78 cm in height overall and with a maximum diameter of ca. 22.5 cm. A pair of close-set handles mark the shoulders. These curve to the tall cylindrical neck, which ends in a rim that is flattened on top and rounded on the exterior, either in one simple roll (83/32) or a double roll (83/33). This immediately recognizable form was in circulation throughout the Black Sea and is also well represented in the eastern Mediterranean[211]. It has long been associated with the Sinope area on the southern shore of the Black Sea, where recent excavations at the Demirci workshop have provided confirmation that this was at least one origin of the form[212]. Like the minor variations in rims, the orange-red fabrics of the three samples exhibit slight differences in color and proportions of inclusions: primarily medium dark grey to black, generally shiny stony bits, some bright orange crumby fragments, and medium sandy bits. They are, however, sufficiently similar to indicate a common geological source likely along the southern Pontic shore and potentially among producers in the general vicinity of Sinope itself[213]. According to the typology established

206 See above, n. 184

207 Williams 2005a, 618; Williams 2005b, 163–166; see also Tomber – Dore 1998, 108.

208 See above, n. 185

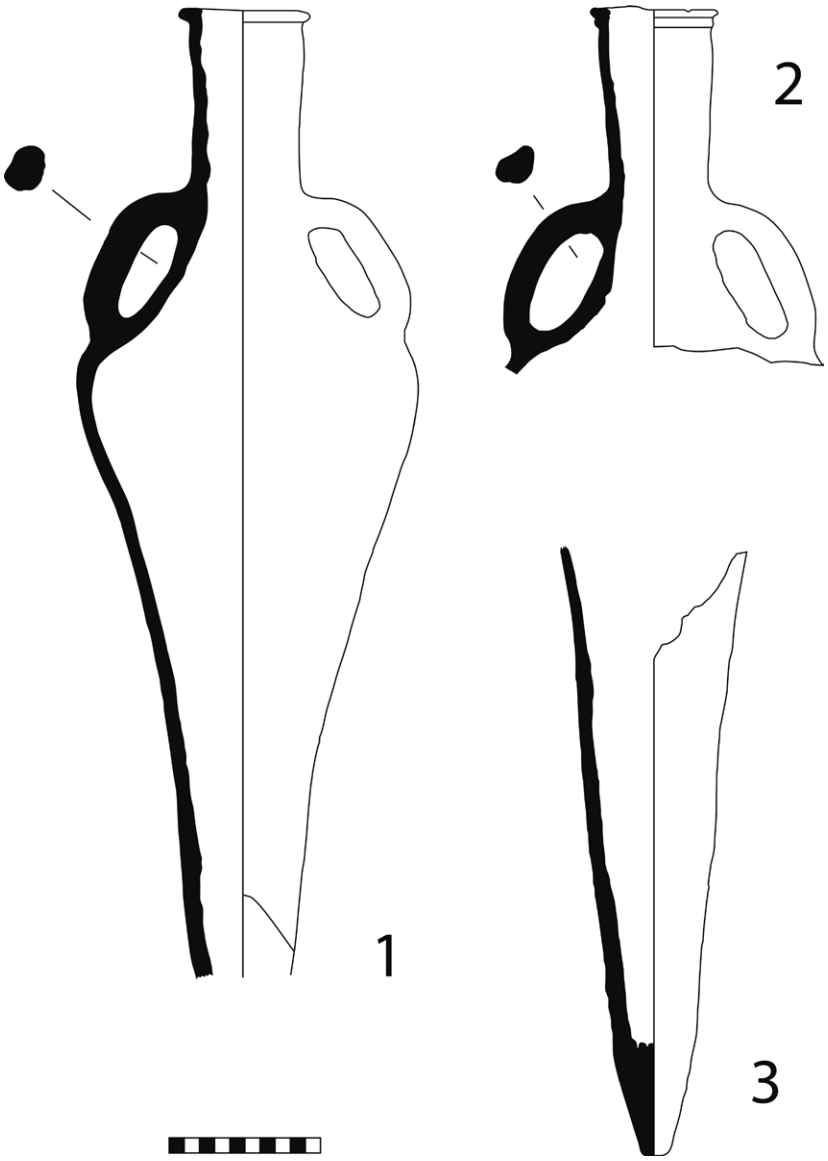
209 Yıldız 1984, 23.

210 Yıldız 1984, 28 figs. 5. 6.

211 Opaiţ 2004, 23. 30; Kassab Tezgör 2010a; Reynolds 2005, 566. See also similar jars from shipwreck contexts near Sinope: Ballard et al. 2001, 616–618 figs. 16–18; Ward – Ballard 2004, 4–6. Wreck 3 in the Fournoi Archipelago presents a similar cargo: Viglaki-Sofianou et al. 2019, 196–200.

212 Kassab Tezgör 2010b.

213 Kassab Tezgör associates shiny black inclusions with the Sinope region and Demirci workshop products in



14

Fig. 14: Ceramics from the İnce Burun A site (scale 1 : 5)

at Demirci by Kassab Tezgör, the İnce Burun A jars belong to both subtypes a and b of form C Snp III-2, dated only broadly to the 4th and 5th centuries[214]. Opaiţ places this form in the 5th century based on contexts around the Black Sea and at Athens[215]. Kassab Tezgör has put forth good evidence in favor of both oil and wine as contents[216], but no traces of resin lining or other clues from the survey finds offer clarity on this issue.

51 Two partial amphoras offer additional insights into the assemblage; without further survey, we cannot know whether these reflect a small cargo or supplies for the crew. An LR1 amphora top – reported as unique among the visible remains – was sketched and raised during the 1983 survey but could not be relocated. While specific typological details are difficult to distinguish, the sketch suggests parallels to jars in Pieri's LRA 1A series, dated broadly to the late 4th and 5th centuries, and perhaps for

particular, although similar pyroxene is common along much of this shore: see Kassab Tezgör 2010b, 127; also Erten et al. 2004, 105.

214 Kassab Tezgör 2010b, 130–134.

215 Opaiţ 2010b, 114. 127 fig. 14; Opaiţ 2011.

216 Kassab Tezgör 2010b, 133; see also Opaiţ 2004, 30.

the neck and rim more specifically in the 5th century[217]. A fragment of a heavily ridged cylindrical body observed on the site (but not raised) almost certainly also comes from an LR1 amphora. If the jar does belong to this series, it likely originated in Cilicia or perhaps Cyprus, but LR1-derived forms were also manufactured in the southern Pontic region and more details are necessary to distinguish, particularly in this case given the broader assemblage's origins[218]. A second type revealed during the 1984 survey has the distinctively pinched waist of the C Snp I amphoras sketched in situ at the Kepez Tepe A site and described above. Amphoras of this type, with a broad shoulder and pinched waist probably below the midsection, were likely produced at a number of centers along the southern Black Sea coast. Some were certainly manufactured in the Demirci workshop, so finding additional Sinopean products alongside the carrot-shaped C Snp III jars would hardly be surprising, as either a small cargo or (perhaps more likely) provisions[219]. At Demirci, the jars of the 4th and 5th centuries bear this shape[220]. Two small anchors were also spotted near the wreck, but the only additional find recovered by the survey team was a small flat-bottom table amphora (83/31) found some distance away and of unclear relationship to the shipwreck[221].

52 The 200–300 or more southern Pontic C Snp III amphoras at İnce Burun present evidence for both the ship's primary cargo as well as its likely date in the 5th century. The lack of many intact jars suggests the site was once more extensive[222]. The remaining ceramics sketched or raised provide evidence for provisions or a small additional cargo, connected variously to the same Pontic region on the one hand and, perhaps, the northeast corner of the Mediterranean on the other, hinting at the interregional geography of the vessel's operation[223].

Kekova Adası B

53 Discovered during the 1983 survey, the Kekova Adası B shipwreck is situated in the channel separating from the mainland the long island from which it takes its name, a protected anchorage that saw much maritime traffic especially during Late Antiquity[224]. The site is marked by a reported 50–60 amphoras, all belonging to the same type and including some intact examples. These lie scattered down a gulley in the reef and perhaps also into the sandy seabed at its base at around 20 m of depth. A possible deposit of ballast stones appears near the top of the assemblage[225].

54 A single complete amphora was raised on survey[226]. It bears the distinctive heavily ridged bag-shaped body, simple vertical rim and ring handles of the long-lived Late Roman 5 (LR5) type produced in the southern Levant (Fig. 15: 83/48)[227]. The jar is small, only ca. 40 cm tall and 35.5 cm at its maximum diameter near the shallow rounded base. These dimensions and the squat proportions, along with the low collar rim, indicate a comparatively late point in the development of this form[228]. Pieri favors a date between the late 5th or 6th century and the 7th century for similar jars among his Type 3,

217 Pieri 2005, 70–74.

218 Opaiţ 2010b, 114 f. 128 figs. 15 a–d; Smokotina 2015, 129; Kassab Tezgör 2020, 41. 43.

219 Kassab Tezgör 1999; Erten et al. 2004; Kassab Tezgör 2010b.

220 Kassab Tezgör 2010b, 128 f. pls. 16. 18.

221 Yıldız 1984, 28 fig. 7.

222 Cf. the history of removal of this type of amphoras from Wreck 3 at Fournoi: Viglaki-Sofianou et al. 2019, 196–200.

223 See also the presence of a few LR1 jars among the cargo of carrot-shaped amphoras on shipwreck B near Sinope: Ward – Ballard 2004, 5; Horlings 2005, 36–38. 53 f. 65 fig. 42.

224 See generally Aslan 2014; Özdaş et al. 2022.

225 Yıldız 1984, 24. 29 fig. 8.

226 Yıldız 1984, 29 fig. 9.

227 Pieri 2005, 122. For Late Roman 5 (LR5) type you can also see the assemblages on the title page.

228 Reynolds 2005, 573 f. 606.

and good parallels for the rim can be found among examples of the early to mid-6th century at Beirut[229]. Magness offers a slightly earlier date, spanning the 5th and 6th centuries, and contexts prior to the mid-6th century at Jerusalem provide important parallels[230]. Examples dating to the mid- and latter 6th century, including from the late 6th-century Dor D shipwreck, offer reasonable comparanda, leaving open the possibility of a date slightly later in this century[231]. On the other hand, the Kekova Adası B jars may represent an earlier stage in the development than those from a late 6th-century shipwreck at İskandil Burnu[232]. Some variation in forms is to be expected given their production at many sites in the southern Levant[233]. The type is most commonly associated with the Holy Land wine that became famous in Late Antiquity[234], although other products may have been carried as well by this shared regional form[235].

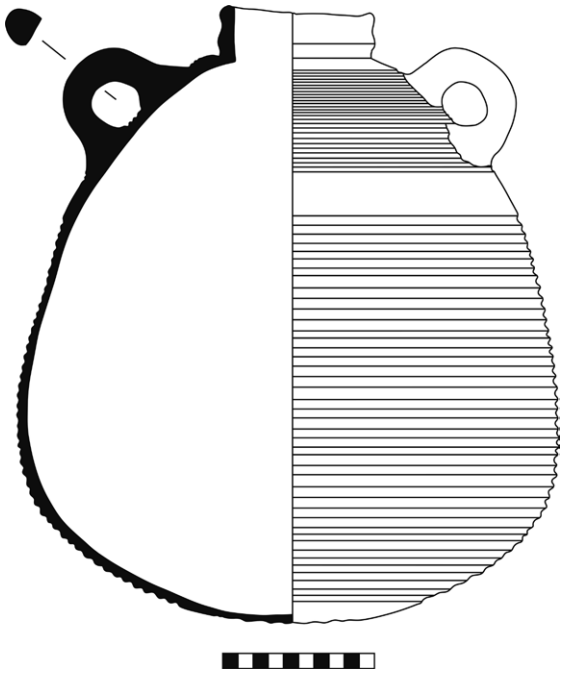


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Fig. 15: Ceramic from the Kekova Adası B site (scale 1 : 5)

55 Survey images reveal the possible presence of a second amphora type that is almost certainly Late Roman 4 (LR4), although whether it reflects additional cargo or shipboard supplies remains unclear[236]. This type was produced throughout Late Antiquity across the Palestinian coastal region, likely also inland, and potentially also in Egypt in the southern Levant[237]. Due to its association with wine of the Holy Land, it achieved a particularly extensive circulation throughout the Mediterranean and beyond[238]. Traces of resin lining have been found on interiors[239], but the type is known to have been reused. Apart from the main wreck assemblage, several LR5 amphoras of the same type as this cargo have been observed in the vicinity, in the direction of the Early Archaic Kekova Adası A wreck. If these additional LR5 jars are contextually related, they may represent spill or jettison from the Late Antique ship. On the present evidence, it seems reasonable to suggest that the Kekova Adası B wreck was carrying a cargo – probably of wine – from the southern Levant when it came to rest here during the 6th century.

Arap Adası B

56 The site near Arap Adası, east of Söğüt and south of Marmaris, was first investigated during the 1982 survey following the report of a sponge diver and then revisited on the 1988 survey[240]. The visible remains constitute a discrete and clearly identifiable

229 Pieri 2005, 121. 285–287 pls. 45–47; Pieri 2007, 305. 320 fig. 8, 8; see also Reynolds 2005, 606 figs. 145–148.

230 Magness 1993, 224 f.

231 Kingsley 2002, 27–34. 86. On the other hand, we might postulate significant reuse for the jars on board the Dor D shipwreck, which seems to have been recycling and reusing jars with some frequency: see Kingsley 2002, 34. 86.

232 İskandil Burnu A: see Lloyd 1984, 16–20. fig. 4.

233 Kingsley 2001, 49 f.; Ballet 1997, 55.

234 Kingsley 2001, 50 f.; Kingsley 2002, 29; Pieri 2005, 126 f.

235 Pieri has collected evidence for oil, dried figs, and fish sauce in LR5 amphoras: see Pieri 2005, 125.

236 Majcherek 1995, 166–168; see also Sazanov 2017, 635. A narrow, ridged base illustrated in the notes may also belong to this form. See also below for discussion of the LR4 from the Arap Adası B wreck.

237 Inter alia, see Blakely 1988, 37; Empereur – Picon 1989, 243; Majcherek 1992, 107; Majcherek 1995, 166–169; Israel 1995; Tomber – Dore 1998, 96; Oked 2001; Fabian – Goren 2001; Kingsley 2002, 27; Pieri 2005, 106 f.

238 Riley provides the most basic distribution: see Riley 1979, 221 fig. 46. Keay, Hayes, Johnson and Stager, and Kingsley each greatly expand and update this catalog: see Keay 1984, 656 f.; Hayes 1992, 64 f.; Johnson – Stager 1995, 106 f. figs. 6. 7; Kingsley 2001, 51–55; Kingsley 2002, 74–77. 80 fig. 120.

239 Mayerson 1993; Johnson – Stager 1995, 103 f.; the 6th- and early 7th-century jars from the warehouse just south of Ashkelon contained such resinated wine: Fabian – Goren 2001, 213.

240 Pulak 1990, 75 f. Arap Adası B, discussed here, is distinct from Parker's Hellenistic »Arap Adası« wreck: see Parker 1992, 57 f. (#50). This other site near Arap Adası refers to a possible second wreck in the area, which

amphora mound, measuring ca. 10 by 5 m. The sandy seabed on which the vessel came to rest, at the base of the steep slope at 30 m of depth, is suggestive of a reasonably intact assemblage. Test probes and investigations in the sand revealed more extensive remains, including additional intact ceramics. The two major amphora types reflect variants of the common LR1 form. Of these, a wider-bodied form accounts for most of the assemblage visible on the surface and continuing beneath the sand, while the narrower-bodied form is represented by just a few examples. Given the LR1's widespread production, its later stages included a range of contemporaneous wider and narrower forms that clearly traveled alongside each other[241]. Together, these provide evidence in support of a date for the Arap Adası B shipwreck from perhaps the middle of the 6th century and end of that century or potentially into the early 7th century.

57 Several dozen of the first, wider-bodied LR1 form were counted, including some complete examples, and a single jar was raised for further study (Fig. 16, 1: 82E-1)[242]. This amphora has a slightly tapering body with a faint pinch well below the midsection and a rounded base. The proportions of the thick cylindrical neck situate it late in the series, when the distinctive tall collar rim of the 4th and 5th centuries has in certain productions been reduced to a thick everted lip with a slight ridge underneath. These features place it in Pieri's LRA 1B1 type, dated to the 6th and 7th centuries[243], and Opaiţ's 6th-century and later LRA 1A4 group[244]. The survey example exhibits similar proportions and certain features to some amphoras from the shipwrecks at La Palud (mid-6th century)[245], İskandil Burnu A (late 6th or early 7th century)[246], and Plaka Cape (mid-6th to mid-7th century)[247]. Many other contexts from one end of the Mediterranean to the other and into the Black Sea have produced similarly dated comparanda for this form at Arap Adası B[248], including a complete jar from Carthage dated toward the end of the 6th century[249]. The survey jar's fabric is sandy and light brown, with plentiful small to medium sandy opaque and other bits that give it a similar appearance to the fabrics of LR1 amphoras produced in Cilicia, though this cannot be confirmed without analysis[250]. The growing corpus of production centers not only on Cyprus but into the Aegean at this late stage complicates attributions[251]. No resin lining or other traces help reveal the contents of the survey jar, and it seems likely that the LR1 amphora was intended to contain the breadth of its region's agricultural produce rather than a single commodity[252].

because of its inclusion in Parker's catalog should properly be designated Arap Adası A to contrast with the present Late Antique site. Arap Adası A is purported to have yielded bronze and wooden fragments as well as a small bronze statue. This site may have been the same one explored by Bass with remote sensing between 1965 and 1968, when a large assemblage of Late Hellenistic Rhodian(?) amphoras was discovered, but without any traces of other exotic finds: see Bass 1966, 82 f.; Bass – Joline 1968; Bass – Fernald 1971; Rosencrantz et al. 1972.

241 For production at Elaiussa Sebaste, see Ricci 2007. 171 f. fig. 1, 1; on Cyprus, see Demesticha 2003, 472 fig. 3. Their co-presence in circulation is attested at Cape Andreas in northeast Cyprus: Green 1973, 161–163 figs. 19–23 (site 17).

242 Another sample jar of this type seems to have been raised during the 1988 survey: see Pulak 1990, 78 fig. 2.

243 Pieri 2005, 75 f. 255–258 pls. 15–18.

244 Opaiţ 2004, 8 f.

245 Long – Volpe 1994, 226 fig. 13, 1; Long – Volpe 1998, 335 fig. 298 nos. 81. 82 ; 336 f.; Pieri 2005, 20 fig. 9.

246 Lloyd 1984, 27 fig. 7.

247 Waksman et al. 2014.

248 E.g., Reynolds 2008, 71 fig. 3 o.; Expósito Álvarez – Bernal Casasola 2007, 128 f. figs. 2. 3 ; 132; Waksman et al. 2014.

249 Fulford – Peacock 1984, 120 fig. 34, 2; cf. Fulford – Peacock 1984, 120 fig. 34, 1, which the authors date to ca. 500 A.D. but may extend into the 6th century.

250 Pieri 2005, 80 f.; Williams 2005a, 618; Williams 2005b, 162–166; see also Leidwanger 2014.

251 The Arap Adası B example is clearly quite different from those of published centers on Kos and Paros: see Diamanti 2010; Diamanti 2016. One type identified as Cypriot by Demesticha has a broad formal resemblance, although the Arap Adası B clay appears to be different: see Demesticha 2003, 471 fig. 2; also Demesticha 2014.

252 See above, n. 185.

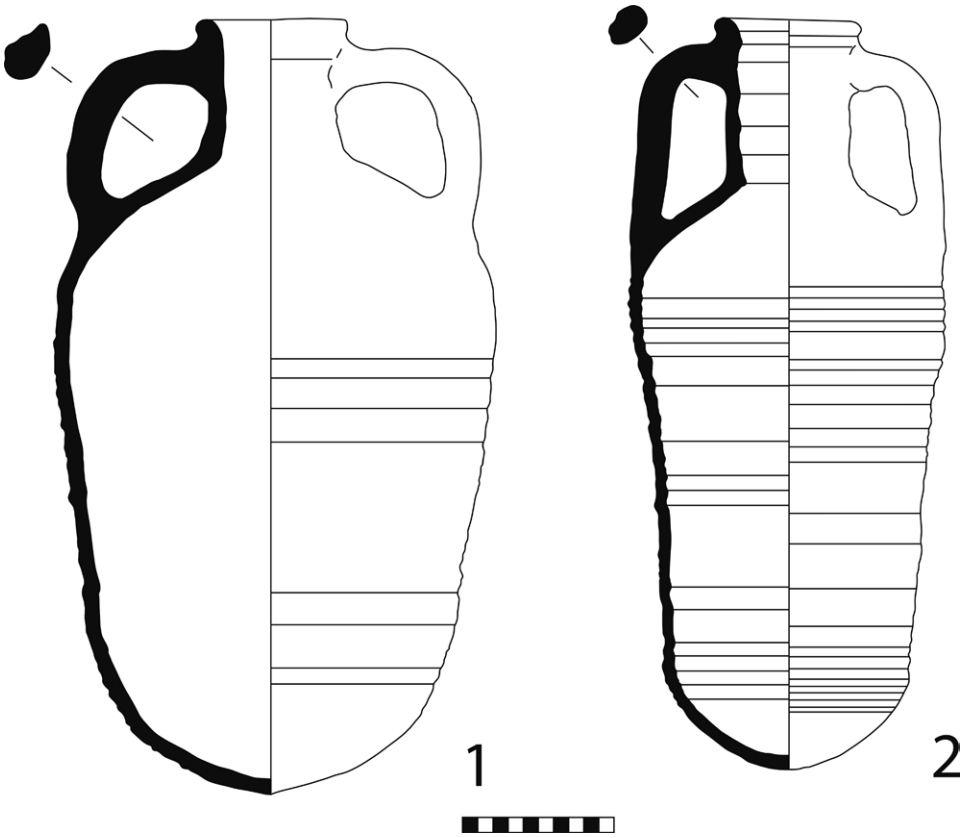

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Fig. 16: Ceramics from the Arap Adası B site (scale 1 : 5)

58 One example of the narrow-bodied LR1 type was also raised from among at least four recorded during survey (Fig. 16, 2: 82E-2). Although more may be buried in the sand, the scarcity of this form relative to the type above suggests that it represents a smaller cargo component. The jar has nearly the same height and gentle concavity as the first type but with a much narrower body; the rounded base and cylindrical neck with a thickened and slightly everted rim and ridge underneath are likewise similar to its wider relative. The amphora belongs to a group of narrow-bodied jars that developed late in the LR1 series. In their publications of finds from Kellia and Benghazi, Egloff and Riley note their similarity in necks and handles to those on the larger types, but simply the narrower bodies[253]. Riley labeled the group LRA 1a and assigned it a date in the 6th and early 7th century[254]. Small jars of this general shape were manufactured at Elaiussa Sebaste in eastern Cilicia during the latter 6th and 7th century, and narrow forms have been noted among production on Cyprus during this same period[255]. Pieri's recent work suggests that miniature LR1s – part of his LRA 1B »sous-modules« – can be dated from the mid-6th to the mid-7th century[256]. Opaiţ does not distinguish a single circumscribed set of narrow jars, but includes certain examples in his LRA 1D group, dated from the late 6th into the 7th century[257]. Among the large and diverse early 7th-century Yassıada A assemblage are some narrow LR1 jars[258]. The survey amphora's fabric looks generally similar to that of 82E-1, raising the possibility that both wide-bodied and narrow-bodied forms may be products of the same workshop or at least workshops exploiting similar resources. Since different variants shared a common fabric at Elaiussa Sebaste and on Cyprus, at least some workshops apparently produced both

253 Egloff 1977, 166; Riley 1979, 216; Peacock – Williams 1986, 185 fig. 104, B; Williams 2005b, 165 pl. 3.
254 Riley 1979, 216, fig. 91 nos. 346. 347.
255 Demesticha 2003, 472 (Cyprus); Ricci 2007, 171 f. fig. 1, 1 (Elaiussa Sebaste).
256 Pieri 2005, 76 f.; Pieri 2007, 300. 314 fig. 2.
257 Opaiţ 2004, 9 f.
258 van Alfen 1996, 200 f. fig. 13 (Type X).

narrower and wider forms simultaneously[259]. Sieving during conservation of the survey jar brought to light three grape seeds that suggest wine as a product, despite a lack of (at least preserved) resin lining.

59 An additional fragmentary top belonging to the LR4 type was likewise raised (82E-3), and although more examples may lie buried in the sand, it remains unclear as to whether this represents provisions for the crew or a small cargo component[260]. The relatively narrow jar exhibits a thickened and everted rim and sharp turn at the shoulders, where the small ring handles are set over prominent ridging. Clay accretions at the shoulders and rim obscure certain features, either the result of a coil in which the inverted jar was placed for stability during production or the remnants of affixing a stopper[261]. Certainly the trend noted within established typologies by Majcherek, Pieri, and Sazanov toward slimmer proportions in later development can be seen in this very narrow example, suggesting a relatively late date in the series[262]. This rim shape appears on examples dated by Pieri to the latter half of the 6th and 7th century[263], and Opaiţ and Sazanov note similar features on latter 6th-century finds from the Black Sea region[264]. The Arap Adası B jar fits broadly within the fabric range described for Palestinian production, but no more precise an origin can be discerned without compositional analysis. Wine is commonly assumed as the primary content for the type, but no resin lining or other clues were recorded on the example raised from this interregional cargo assemblage at Arap Adası[265].

A Regional View of Southeast Aegean Interaction

60 One dozen sites do not dramatically expand the impressive and growing numbers of ancient Mediterranean shipwrecks, but they provide a different and increasingly useful kind of data, significant for its finer detail and limited geographical focus. Within the diverse contours of Mediterranean interaction, the present data offers a regional view from the vantage point of the southeast Aegean over the course of Rome's dominance in the east and its transformation in Late Antiquity. The wrecks offer only a partial record, with geographical unevenness that is typical of all such datasets. Such unevenness, evident also in Parker's original distribution map for the Aegean, can result from contrasting fieldwork and dissemination traditions as well as the prevalence of non-archaeological diving[266]. The 12 wrecks are also exclusively located within diving depths of up to 50 m.

61 This presentation of 12 wrecks benefits from contextualization among other known sites in shallow and deeper, Turkish and adjacent Greek waters of the southeast Aegean Sea (Figs. 17. 18)[267]. Expanding this regional dataset means including coarser-grained information, but this allows us some preliminary tools for comparison to the wrecks studied here. To capture simultaneously also a broader view of Rome's long trajectory, we can add basic details for 42 other dated wrecks of the 2nd century B.C. through 7th century A.D. known along these Turkish shores (and some deeper Turkish

259 Ricci 2007, 171 f. fig. 1, 1; Demesticha 2003, 472 fig. 3.

260 Aside from the one sample raised, an additional small body sherd, which may also reflect some example of this type, could not be relocated.

261 For the coil idea, see Johnson – Stager 1995, 99. For the stopper suggestion, see Zemer 1977, 61.

262 Majcherek 1995; Pieri 2005; Sazanov 2017.

263 Pieri 2005, 106 f. Majcherek suggests a slightly earlier date: Majcherek 1995, 168 f.

264 Opaiţ 2004, 22. 127 pl. 7, 7 B; Sazanov 2007, 806 f. 813 fig. 5 (generally nos. 11–24); Sazanov 2017, 640–642. fig. 7.

265 Fournet 2021, 70.

266 Parker 1992, map 13; see also Gibbins 2001, 280; Koutsouflakis 2017, 32 f.

267 For the approach used to quantify shipwreck data and assign dates, see the captions for the histograms in the relevant figures.

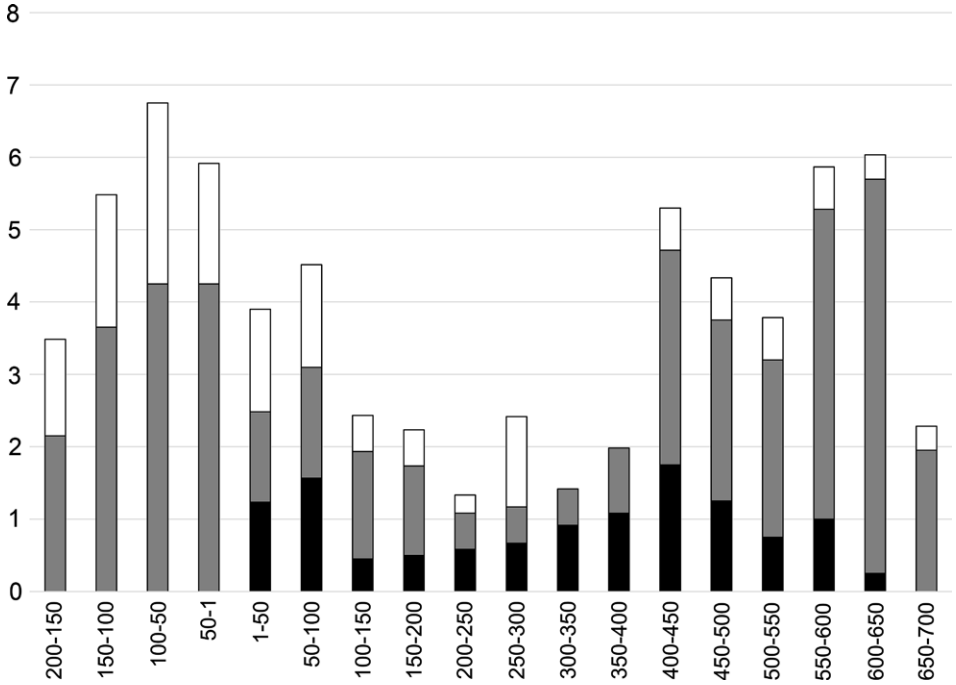

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Fig. 17: Chronological distribution of 70 shipwrecks in the southeast Aegean region (extending across the shore of Lycia), 2nd century B.C. through 7th century A.D. These include the wrecks studied here (n=12, black), as well as those previously tallied by the relevant DARMC-OXREP databases in Turkish waters (n=42, gray) and compiled from Greek waters (n=16, white). Following Wilson 2009, a shipwreck is assumed to have an equal probability of sinking in any year across its assigned date range; wrecks not dated as precisely as a half century are therefore spread proportionately across their ranges, and some ranges extending earlier than the 2nd century B.C. result in the non-whole number of wrecks overall

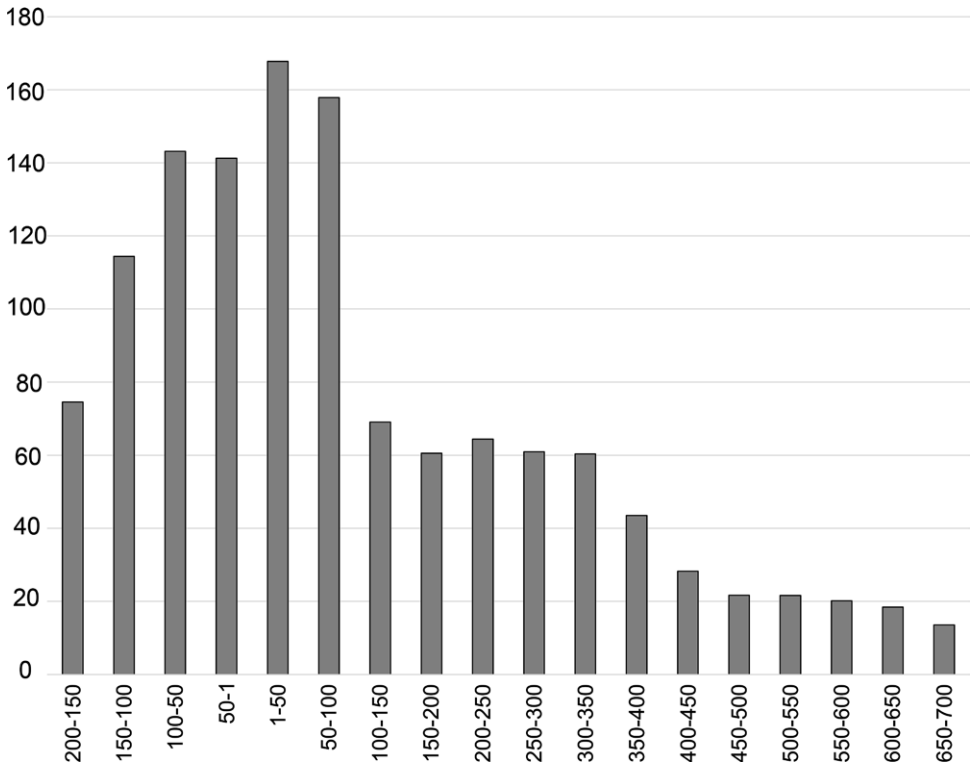

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Fig. 18: Shipwrecks of the 2nd century B.C. through the 7th century A.D. in the Mediterranean region, based on the OXREP dataset (2017 data, n=1424). Following Wilson 2009, a shipwreck is assumed to have an equal probability of sinking in any year across its assigned date range; wrecks not dated as precisely as a half century are therefore spread proportionately across their ranges

waters). And we can include an additional 16 shipwrecks from the Dodecanese Islands thanks to synthetic publications of wreck data deriving from the ongoing efforts of the Ephorate of Underwater Antiquities and collaborating universities and other institutions which have assembled a large database of documented shipwrecks in Greek territorial waters[268]. This rich material record brings the regional dataset up to a total

268 Data here derives from Koutsouflakis 2017. All wrecks dated partially or fully in the period between 200 B.C. and 700 A.D. were included. On the databases from the Ephorate of Underwater Antiquities more generally,

of 70 wrecks in the southeast Aegean and eastward along the Lycian shore (Fig. 17). The data allows us to explore long-term patterns at a finer regional scale than purely quantitative studies have tended to emphasize, and in turn can be viewed against the broader Mediterranean-wide dataset of 1424 wrecks for these centuries (Fig. 18)[269].

62 Within the comprehensive regional dataset, the trajectory is immediately striking across the Hellenistic and Early Roman Imperial Era and into Late Antiquity. The last two centuries B.C. are marked by growth into the early 1st century B.C., followed by a slow decline over the initial two centuries A.D. The low point around the 3rd century is followed by a slow and then rapid increase over the 4th and into the 5th century, after which shipwreck numbers reach their absolute height regionally before dropping sharply in the later 7th century. It should be noted that some of the unevenness and rough peaks in Late Antiquity are largely the product of data from excavated or intensively surveyed and therefore particularly well-dated sites (i.e., those that can be attributed confidently to a narrower chronological span than most survey allows). These include the Yassıada B (ca. 400 A.D.) and A (early 7th century) wrecks, the İskandil Burnu A wreck (early 7th century), as well as a wreck off Syrna Island (late 3rd century) that is unusually precisely dated by its assemblage of coins; in most instances, survey wrecks can only be dated to a century or 150 years, thereby resulting in smoother trends within the histogram.

63 Several overall patterns in the regional data are unmistakable. First, we can easily distinguish two periods of activity separated by a lull from the early 3rd century. The arc of activity in the Late Hellenistic and Early Roman centuries mirrors the pattern others have noted in ancient shipwrecks numbers across the Mediterranean, but the peak in this region is clearly situated in the 1st century B.C. rather than the 1st century A.D. as Wilson argues for the overall Mediterranean scale[270]. This earlier peak in the southeast Aegean region and along the Lycian shore may point to a shift in gravitational center of Mediterranean exchange toward Italy and the central Mediterranean over the course of the empire's growth. The 12 Roman and Late Antique cargos analyzed in new detail here reveal a strongly local geography behind these assemblages, which in most instances appear limited to such types as Rhodian-style, Koan-style, and Knidian, and occasional jars from Pamphylia or the east Aegean. Yet even the limited survey finds available for study show a lack of uniformity within these local types; that is, we see diversity within broad groups such as Koan-style or Rhodian-style jars that make up several shipwreck assemblages, likely indicating shipments to which several producers (and potentially merchants) contributed. These patterns are mirrored in other wrecks for which detail is available, especially those from Greek waters, which are dominated as well by (often multiple different forms of) Rhodian-style, and to a lesser extent Koan-style and Knidian jars[271]. The spatial scope of this Early Roman surge was largely local, involving both short-haul movements for redistribution and consumption within the southeast Aegean as well as the collection of southeast Aegean products for transshipment to interregional destinations[272]. This geography is underscored in at least one instance by a wreck's location: the Sancak Burnu A cargo, which almost certainly was on a local route when it was lost deep inside the Gulf of Gökova.

see also Micha 2005/2006; Simosi 2009; Theodoulou 2011; Koutsouflakis et al. 2012; Koutsouflakis 2013. For many decades, strict regulations on sport diving and controls over the dissemination of site locations helped to ensure heritage preservation and prevent looting along the most extensive coastline – and thus one of the most difficult to monitor effectively – in the Mediterranean region, but also made this data less broadly accessible: see generally Dellaporta 2002; Dellaporta 2004; Viglaki-Sofianou et al. 2019, 198 f. Too often, however, the Turkish and Greek material has been studied separately despite the geographic proximity of the data.

269 See also Reinfeld 2022.

270 Wilson 2009, 222–224.

271 Koutsouflakis 2017, 35–37.

272 Cf. Reinfeld 2022, 38.

64 The limited range of these Early Roman movements is thrown into high relief by comparison with the slightly later, 3rd-century İskandil Burnu B cargo, which shows few local connections but carried goods from the Adriatic, elsewhere in the Aegean and potentially beyond. That the single shipwreck dated to this period of economic turmoil would be marked by the most interregional cargo merits further study to understand whether it represents a long-distance shipment itself or the local redistribution leg for products acquired together at a major port. Whatever the case, it speaks to the persistence of longer-distance movements through tumultuous periods. The other tightly dated 3rd-century wreck in these waters, off Syrna Island to the southwest of Kos, also presents a shipment that is both unusual and almost certainly interregional: thousands of coins originally transported in some form of box, interpreted as pay for the Roman army, and accompanied by a lead sarcophagus as well as some domestic and storage pottery[273].

65 Another clear pattern in the quantitative data concerns the high numbers for Late Antiquity, indicating a level of maritime activity from the 5th century onward that rivaled that of the Late Hellenistic and Early Roman Era. Off the Lycian coast, Reinfeld has noted for Late Antiquity a sharp rise in shipwrecks to exceed numbers for the Late Hellenistic and Early Roman centuries[274], and indeed the data from Lycia in the present study area also reflects a higher proportion of late sites. Overall, most of the Late Antique wrecks come from Turkish waters, both shallow and deep, in comparison with the relatively few such sites reported around the Dodecanese Islands. It is not yet clear whether these distinctions within the study area reflect an underlying pattern in communication and economic activity or simply an uneven or insufficient sample along different shores. Shipwreck data from elsewhere in the east Aegean is not quantified here, but other contexts seem, at least at first view, to follow this same trend: Late Antiquity is the best represented period among the shipwrecks located during a 2008 survey near Chios, and also among the large corpus of shipwrecks published from recent work along the Fournoi Archipelago just to the north of the study area[275]. The southeast Aegean uptick contrasts starkly with Mediterranean-wide trends, which see shipwreck numbers continue to decline over these centuries.

66 A closer look at the compositions of assemblages here provides important clues, revealing a broadening geography of interaction during Late Antiquity. While Aegean components like the Agora M237 amphoras from the Gümüşlük A site continue to appear, from the latter 4th and especially the 5th century onward, the assemblages are dominated by farther-flung connections, particularly Cyprus and Cilicia (for the LR1 jars) but also the southern Levant and Black Sea region. This expanding geographical profile of cargos, and the drop in representation of local southeast Aegean containers, suggests both an uptick in interregional activity between the eastern Mediterranean and Aegean, and the centrality of these shores as the transit point between regions. While the particular dynamics of amphora production during Late Antiquity – fewer broad types produced over larger areas – make it more difficult to detect potential cargo diversity through survey alone, there are at least a few clues from fabric and form that suggest these assemblages reflect many different producers: for example, among the jars from the Kepez Tepe A and Arap Adası A sites. That amphoras from around the eastern Mediterranean basin are most prevalent – first and reliably LR1 but also southern Levantine types from the 6th century onward – may point to a dominant directional flow of goods along this axis toward the Aegean and beyond, a trend also

273 Koutsouflakis 2017, 37.

274 Reinfeld 2022, 38 f. fig. 7.

275 Theodoulou et al. 2015; Campbell – Koutsouflakis 2021.

seen in survey data elsewhere[276]. Feeding the growing capital of Constantinople and meeting the state's demand for military supply were major impetuses for shipping[277]. The heightened prosperity of many settlements along the Lycian and Carian coasts during Late Antiquity clearly indicates the benefits of being situated along this vital supply corridor[278]. The appearance of stone columns and blocks among the remains of a shipwreck off Arkioi, in the northern Dodecanese, also hints at the role of long-distance shipments of architectural materials, often also connected to the imperial center, in driving connections[279]. This same wreck's small group of Sinopean D amphoras, part of a more routine appearance of Pontic amphoras off this coast, might make sense as a byproduct of a convergence of major routes on the capital and its deep hinterlands of supply.

67 These broad quantitative patterns and geographies can be more deeply contextualized through a finer view of the few more intensively surveyed or excavated assemblages within the southeast Aegean dataset. The southern Levantine cargo – contained seemingly in various LR4 and LR5/6 forms – from the İskandil Burnu A wreck, for example, is thought to have been moving westward when it was lost near the tip of the Datça Peninsula, and certainly this profile would fit the general picture above[280]. The two shipwrecks excavated at Yassıada are similarly interregional in their cargo compositions and each exhibits diversity in forms within its major amphora types. Only limited numbers from the Yassıada B assemblage have been preliminarily studied, but the LR1 and Agora M273-related groups appear to include multiple discrete forms[281]. The more comprehensively studied 7th-century cargo from the Yassıada A vessel reveals fabrics and forms indicating several larger groups and dozens of other subtypes (some clearly reused) within its 800 or more LR2-related and LR1 jars[282]. This shipment is thought to have been traveling from the east Aegean toward the northeast corner of the Mediterranean; this journey contrasts with the strong westward pull visible in the surveyed wrecks above. Van Doorninck's link to state and military supply, though, underscores the powerful role these institutions played in stimulating interregional movements of goods along this shore[283]. While southeast Aegean goods are less prevalent in the Late Antique cargos here, the growth in economic activity and interregional movement left the southwest coast of Anatolia and the Dodecanese Islands in a prime position. The small and scattered but diverse Burgaz A wreck assemblage in the Gulf of Hisarönü near modern Datça may reveal stages of local redistribution that linked to these larger flows, bringing occasional extra-regional goods to southeast Aegean consumers while collecting produce from around the area for further shipment[284].

68 Raw shipwreck numbers tell a story about the ebbs and flows of maritime interaction over the long term that have dominated discussions of shipwreck evidence for the ancient economy. The dozen sites presented in new detail here, viewed in

276 See the dominant representation of LR1, either alone or alongside LR2, among the cargos off the Fournoi Archipelago: Campbell – Koutsouflakis 2021; for the mix of types in cargos off Chios, see Theodoulou et al. 2015.

277 See generally Kingsley – Decker 2001, 2–9; McCormick 2012, 85; also Karagiorgou 2001; Swan 2007; Rizos 2013; Kara 2021.

278 E.g., Zimmermann 2004, 48; Kolb 2008, 366; Deligiannakis 2016, 87–97; Terpoy 2019; Gross et al. 2024; also Bakirtzis 1995.

279 Koutsouflakis 2017, 38. On stone shipment as a driver for Late Antique connections, see Russell – Leidwanger 2020; especially the largely Proconnesian cargo of the Marzamemi 2 wreck: Leidwanger et al. 2021.

280 Lloyd 1984, 70–76; the assemblage also includes LR1 jars that point to another eastern Mediterranean connection: Lloyd 1984, 26–29.

281 Bass – van Doorninck 1971, 34.

282 Leidwanger 2014. See also the several LR1 variants from the wreck cargo at Southern Prasonisi Islet: Theodoulou et al. 2015, 47 f.

283 See generally van Doorninck 2015.

284 Leidwanger et al. 2015.

tandem with several dozen others known from these waters, reveal finer patterns of movement in one corner of the Mediterranean. These help us to break up monolithic notions of »connectivity« and highlight the varied trajectories created and experienced by particular regions over the long history of Rome's rise and later transformation[285]. A closer inspection of these assemblages also reveals underlying geographies and compositions of cargos that distinguish different structures behind the interactions that brought them together, as is evident between the two periods of heavy activity in the southeast Aegean, including Lycia and the Dodecanese. Such a perspective allows us to move from broadly superficial observations toward more nuanced characterizations of regional economies and connections. This finer-grained analysis highlights the intersections between different scales of movement that linked local communities to broader Mediterranean economies.

69 The growth in maritime archaeological surveys along the Turkish coasts over the past two decades, involving multiple institutions and partners, promises additional regional data to complement the sites described here and to extend analysis into the east Aegean, the Black Sea, the Mediterranean coast, Cilicia, and beyond. Revisiting legacy data offers an opportune and easy first step to supplement these new survey efforts. It provides a window onto sites that are often no longer as well preserved given the persistent threats to not only shallow and accessible shipwrecks but sites even in deeper waters[286]. New insights demand not only greater quantities of data, but also better-quality data that allows us to link such numbers with more nuanced views of individual assemblages. Collecting sufficient data to outline variation in major cargo components and sampling for formal and fabric diversity (especially important for broad regional types like LR1) during underwater survey can be both relatively rapid and non-intrusive, especially if finds are returned to the seabed after documentation to ensure preservation and to avoid the conservation and storage challenges that are so acute for museums today[287]. Equally important to future surveys is a more thorough accounting of potential non-cargo elements. These rarer finds are not as visible as cargo – in the case of amphoras bearing crew provisions, they are also often indistinguishable from cargo – and so they have not been as great a focus for surveys, which often judged a wreck's potential for more intensive work first and foremost through its cargo. Yet galley wares can help to further reveal the scales of operation of ancient shipments as well as the networks of merchants and mariners who traveled along with these cargos[288]. In this way, we can uncover the finer diverse contours of maritime activity along these many shores and assemble them into larger models of multiscalar interaction and its intersection with shifting Mediterranean political, social, and economic trajectories over the course of antiquity.

285 For a comparison of wreck numbers in Croatian and Turkish waters, see Reinfeld 2022, 30 f. 35 fig. 5.

286 For deeper waters of the southeast Aegean, see Brennan et al. 2016; also Koutsouflakis 2017, 40 f.

287 E.g., Özdaş et al. 2022.

288 E.g., Trego 2019; Harpster 2023; also the İskandil Burnu A galley assemblage: Lloyd 1984.

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ZUSAMMENFASSUNG

Römische und spätantike Schiffswrackladungen vor der südwestanatolischen Küste auf dem Prüfstand

Justin Leidwanger

In diesem Beitrag werden 12 wenig bekannte römische und spätantike Schiffswracks analysiert, die zwischen den 1970er und 2000er Jahren vor der Südwestküste der Türkei untersucht wurden. Der Artikel konzentriert sich auf Kontexte am Meeresgrund und die detaillierte Dokumentation der begrenzten Materialien, die an den Fundorten geborgen wurden, vor allem Transportamphoren, welche die Ladung kennzeichneten. Die aus dem 1. bis 7. Jahrhundert n. Chr. stammenden Wrackladungen bieten ein detailliertes regionales Bild der maritimen Aktivitäten einer Küste und ihres sich wandelnden Platzes innerhalb der Geschichte von Roms Aufstieg und Transformation im Osten. Die chronologische Verteilung der Fundorte – vor dem Hintergrund der Anzahl der Schiffswracks im Mittelmeer – zeigt die Intensität der Schifffahrt in der Region, während die Zusammensetzung der Ladungen Einblicke in die wechselnden Verbindungen bietet, die diesen Mustern zugrunde liegen: frührömische Ladungen, die größtenteils lokal oder regional sind, im Vergleich zu eher überregionalen Profilen mit einer starken Ausrichtung auf die kaiserliche Versorgung in der Spätantike. Die Studie unterstreicht auch, wie nützlich es ist, alte Daten mit neuen Fragen zu konfrontieren, insbesondere in Anbetracht der anhaltenden Bedrohungen für die Bewahrung dieses Erbes, und die Maximierung der Erkenntnisse, die selbst aus kurzen Surveys unter Wasser gewonnen werden können.

SCHLAGWÖRTER

Rom, Schiffswrack, Amphoren, Seehandel, Spätantike

ÖZET

Güneybatı Anadolu Kıyılarındaki Gemi Batıklarının Roma ve Geç Antik Dönem Kargolarına Yeniden Bakış

Justin Leidwanger

Bu makalede, Roma Dönemi ve Geç Antik Dönem´e ait 12 gemi batığı değerlendirilmektedir. Türkiye´nin güneybatı kıyısında bulunan ve hakkında çok az şey bilinen bu batıklara yönelik araştırmalar 1970–2000 yıllarına dayanmaktadır. Bu makalede, su altındaki kontekslerle ve ayrıntılı biçimde belgelenmiş az sayıda buluntu malzemesine ağırlık verilmektedir. Kargonun büyük bölümü ticari amphoralardan oluşmaktadır. Batıklardaki MS 1.–7. yüzyıl arasına ait mallar, kıyı bölgesi denizcilik aktivitelerine ve bu aktivitelerin Roma´nın yükselişi ve doğudaki dönüşümünü içeren tarihsel süreç içindeki değişen yerine dair ayrıntılı bir tablo sunmaktadır. Bilinen gemi batıklarının kronolojik dağılımı -Akdeniz'deki gemi batıklarnn sayısı temel alındığında- bu bölgedeki denizciliğin yoğunluğunu göstermektedir. Gemilerin kargosunu oluşturan mallar ise bu duruma bağlı olarak değişen ticari ilişkiler hakkında fikir verir: Erken Roma Dönemi´ne ait kargoların çoğunluğu yerel ve bölgesel niteliklidir. Buna karşın, Geç Antik Dönem´de bölgeler üstü niteliktedir ve daha çok imparatorluğun ihtiyaçlarına yöneliktir. Eski verilerin yeni sorularla değerlendirildiği bu çalışma, özellikle tehdit altındaki bu mirasın korunması göz önüne alındığında, kısa süreli sualtı araştırmalarından en sağlıklı sonuç elde etmenin ne kadar yararlı olduğunu vurgulamaktadır.

ANAHTAR SÖZÜKLER

Roma, gemi batıkları, amphoralar, deniz ticareti, Geç Antik Dönem

SOURCE OF ILLUSTRATIONS

Title page: Harun Özdaş
Fig. 1: Justin Leidwanger
Fig. 2: Justin Leidwanger
Fig. 3: Bilge Güneşdoğdu
Fig. 4: Bilge Güneşdoğdu
Fig. 5: Su Ün
Fig. 6: Bilge Güneşdoğdu, Lana Radloff
Fig. 7: Bilge Güneşdoğdu, Lana Radloff, Su Ün
Fig. 8: Justin Leidwanger & Institute of Nautical Archaeology
Fig. 9: Justin Leidwanger & Institute of Nautical Archaeology
Fig. 10: Bilge Güneşdoğdu, Su Ün
Fig. 11: Bilge Güneşdoğdu, Jessie Simpson
Fig. 12: Bilge Güneşdoğdu, Lana Radloff
Fig. 13: Bilge Güneşdoğdu
Fig. 14: Bilge Güneşdoğdu
Fig. 15: Nicola Jago
Fig. 16: Bilge Güneşdoğdu
Fig. 17: Justin Leidwanger
Fig. 18: Justin Leidwanger, based on data from OXREP

METADATA

Titel/*Title*: Römische und spätantike Schiffswrackladungen vor der südwestanatolischen Küste auf dem Prüfstand/*Revisiting Roman and Late Antique Shipwreck Cargos off the Southwest Anatolian Coast*
Band/*Issue*: IstMitt 74, 2024
Bitte zitieren Sie diesen Beitrag folgenderweise/*Please cite the article as follows*: J. Leidwanger, Revisiting Roman and Late Antique Shipwreck Cargos off the Southwest Anatolian Coast, IstMitt 74, 2024, § 1–69, https://doi.org/10.34780/cd5j-fba5

DOI: https://doi.org/10.34780/cd5j-fba5
Schlagwörter/*Keywords*: Rom, Schiffswracks, Amphoren, Seehandel, Spätantike/*Rome, shipwrecks, amphoras, maritime trade, Late Antiquity*
Bibliographischer Datensatz/*Bibliographic reference*: https://zenon.dainst.org/Record/003076851

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