

Adriatico altomedievale (VI-XI secolo)

Scambi, porti, produzioni

a cura di Sauro Gelichi e Claudio Negrelli

The Byzantine Shipwreck of Cape Stoba (Mljet, Croatia)

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Abstract The remains of cape Stoba shipwreck lies in the waters of the island of Mljet at the depth between 21 and 28 m. It was investigated for the first time in 1975 (by Maritime Museum in Dubrovnik) and the research was resumed between 2009 and 2013 by the Department for Underwater Archaeology of the Croatian Conservation Institute. Research has shown that the cargo is composed of nine types of Middle Byzantine amphorae datable in the 10th-11th century AD, produced in the area of the Marmara, Black sea and Eastern Mediterranean shore. Some of them present graffiti written in Old Bulgarian letters or runes, like those on the amphorae of Serce Limani wreck. The secondary part of the cargo was composed of glass vessels, perhaps originating from the Palestinian area. Since 2012 the research on the site was carried out through a project in cooperation between the Croatian Conservation Institute and the Department of humanistic studies of the Università Ca' Foscari. Aim of the project is the excavation of the site, a photogrammetrical documentation of the amphora cargo which allows the production of an innovative 3D image of the context and the recovery and study of the items (almost 100 amphorae were recovered up to date). The site is one of the very few wrecks from this period in the Mediterranean. It is important for reconstructing traffic routes in the Adriatic Sea in the 10th and 11th centuries and presents an excellent base for the development of more extensive typologies of Middle Byzantine amphorae.

Summary 1 Introduction. – 2 The Amphora Cargo. – 3 Graffiti and Stamps. – 4 Dating. – 5 The Cape Stoba Shipwreck Glass. – 6 Conclusions.

Keywords Amphora graffiti. Byzantine amphora. Byzantine shipwreck. Glass. Wooden stopper.

1 Introduction

The Cape Stoba shipwreck is located on the seabed off the island of Mljet in Croatia, about 35 km north-west of Dubrovnik (fig. 1). The site was ap-

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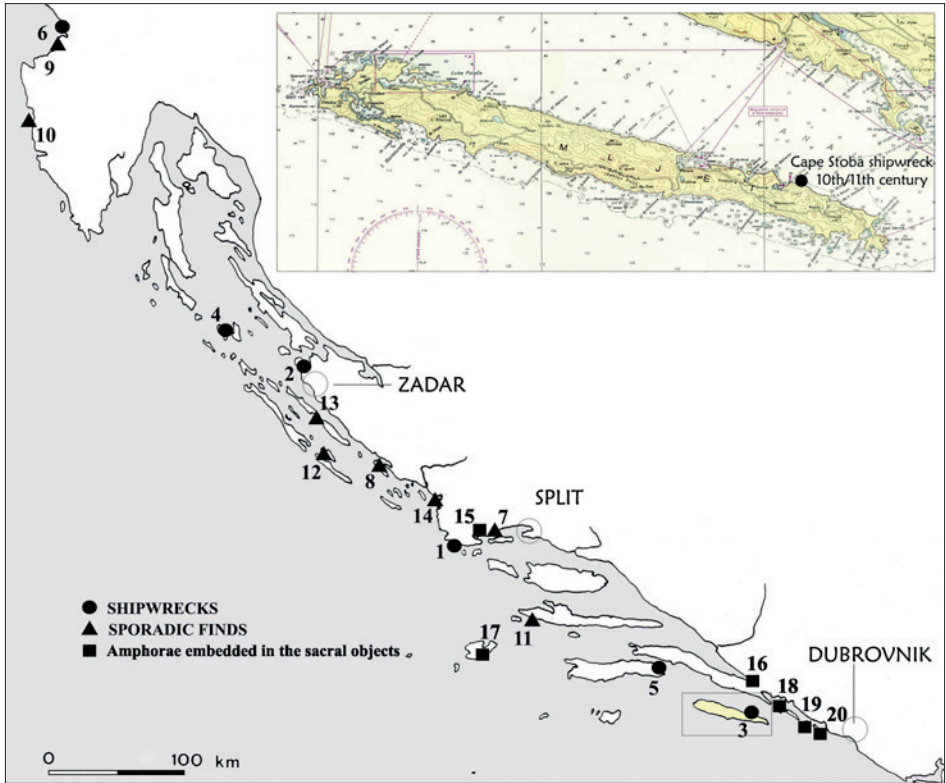


Figure 1. Underwater sites with Byzantine amphorae in the eastern Adriatic

1. Merara islet 13th-14th century; 2. Ždrijac near Nin 11th-12th century; 3. Cape Stoba, island of Mljet 10th-11th century; 4. Grebeni near island of Silba 13th-14th century; 5. Lučnjak shallows 13th-14th century; 6. Bay of Pijan, Savudrija 11th-12th century; 7. Port of Trogir; 8. Island of Vele Arte near Murter; 9. Umag; 10. Poreč; 11. Port of Hvar; 12. Island of Žut; 13. Island of Ošljak near Zadar; 14. in the monastery collection on the island of Krapanj; 15. Church of Saint Barbara in Trogir; 16. Church of Saint Michael near Ston; 17. Church of Saint George on the island of Vis; 18. Church of Saint John the Baptist on Lopud; 19. Church of Saint Nicholas on Koločep; 20. Church of Saint John on Šipan (drawing: Zmaić, V.)

parently discovered by sport divers in the 1960s, at which point amphorae and other valuable material started to be removed (Kisić 1988, 158-62). It was reported to the authorities, and the first archaeological survey was carried out in 1975 by the Institute for Protection of Cultural Monuments and the Maritime Museum in Dubrovnik. As, according to information received from the looters, more than 30 amphorae had previously been removed and most of the remaining material was in fragments, archaeologists concluded that the site had been almost completely destroyed. Based

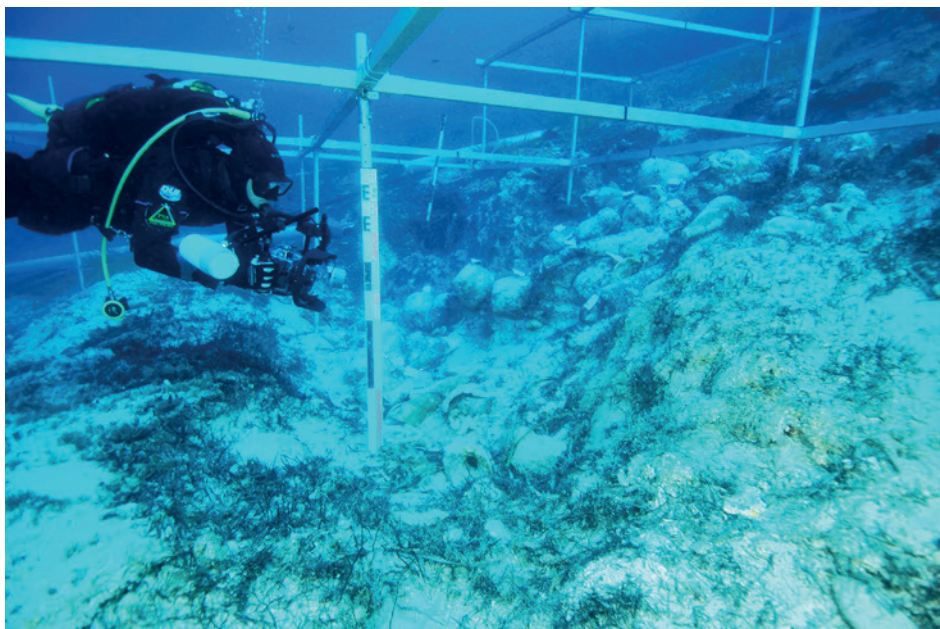


Figure 2. Cape Stoba: underwater archaeological research in 2012 (photo: M. Marukić)

on the material recovered, the amphoras that had previously been removed from the site and held in a private collection, and other known amphoras of the same period, Brusić was able to classify the Byzantine amphoras found in the eastern Adriatic in five groups (Brusić 1976, 37-49).

A short inspection of the site was carried out in 2009 by the Department for Underwater Archaeology of the Croatian Conservation Institute, during which a whole amphora sealed with a wooden stopper was uncovered, signalling the existence of at least one intact layer of archaeological material at the site. Thanks to the support of the Ministry of Culture of the Republic of Croatia, four underwater archaeological campaigns, from 2010 to 2015, were conducted by the Croatian Conservation Institute. Research continued in 2012, in collaboration with the Department of Studi Umanistici of the Università Ca' Foscari of Venice (Zmaić et al. 2016, 1-2).

The site stretches in the southwest-northeast direction over approximately 80 m². The remains of the ship's cargo (amphoras and glassware), and galley inventory (pottery tableware and pithoi), were scattered over a rocky slope and within stone fissures, where they dissipated and dispersed after the ship capsized. The sandy part of the site, covered by a thick layer of *Poseidonia Oceanica* roots, begins at the depth of 22 m and mildly drops towards the northeast to the depth of approximately 29 m. A partially cor-



Figure 3. Cape Stoba: underwater archaeological research in 2012 (photo: J. Kwiatkowski)

roded shank of an iron anchor incrustated to the seabed lays at the depth of 22-23 m, on the border which separates the rocky slope from the sandy part of the site. The iron anchor is 160 cm long, with the preserved ring whose diameter measures 25 cm, but without its arms.

The major concentration of amphoras, pottery and glass shards were found on a sandy plateau below the anchor, at the depth between 22 and 29 m. After determining the borders of the spread of the intact layer of the shipwreck, the excavation area was divided into 25 quadrants, each measuring 2×2 m. The area of 100 m² in total was researched and excavated in the course of four campaigns which took place between 2010 and 2015. Underneath the surface layer of sand mixed with *Poseidonia* roots, 10-30 cm thick, rested the intact archaeological layer containing amphoras discovered in one, two or three levels, depending on the configuration of the rock bottom, so the thickness of the cultural layer measured between 50 and 100 cm (fig. 2). This layer consisted of muddy, dark coloured sand, in which complete amphoras or amphora fragments, and glass fragments were found (fig. 3). Traces of ballast stones sporadically appeared in this layer in the form of smaller pieces of rubble or larger pebbles. The ballast was sometimes found below or above the layer of amphoras, which pointed that the hull might have flipped over at the time the ship capsized, after which it sank to the bottom and rested over the ship's cargo. If that was the case, the wooden hull would have stayed unprotected, which in return most likely accelerated the decomposition processes and provided the reason for not finding any hull remains on the site. The middle part of the site consisted predominantly of the amphora cargo, but the peripheral parts of the site consisted of a visible layer of the ship's ballast, sometimes even 40 cm thick, with sporadical finds of pottery or glassware. A large concentration of animal bones, glass and kitchenware was found in the southwest section of the site. These finds clearly implicate the position of the galley, and therefore the orientation of the ship, taking into consideration that the galley was situated in the stern part of the ship. Therefore, the site is oriented in the southwest-northeast direction, it is approximately 11 m long and 7 m wide, with the ship's bow turned to the northeast.

2 The Amphora Cargo

During four seasons of excavations at Cape Stoba site a total of one hundred and ninety-two amphorae were found. All amphoras belong to the Middle Byzantine tradition with a distinctive ribbed body, a short neck, massive, sometimes elongated handles and, in most cases, a rounded, concave or conical base (fig. 4). According to the general characteristics, all amphoras can be divided into nine main groups with some variants and subtypes, which can be compared with the findings from the eastern Medi-

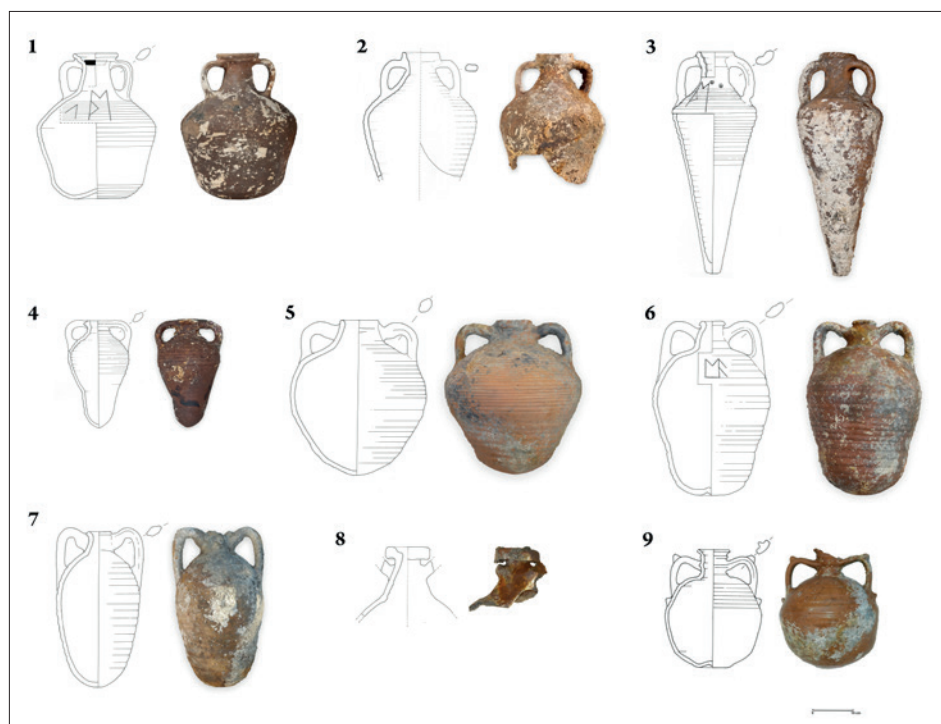


Figure 4. Types of Middle Byzantine amphoras from the Cape Stoba site (drawing: Zmaić, V.; photo: I. Miholjek)

terranean, the Sea of Marmara and the Black Sea.¹ While it has proved difficult to trace the development of medieval amphoras in the western Mediterranean, the situation is quite different on the eastern part of the Byzantine Empire, especially along the coasts of the Sea of Marmara and the Black Sea, where workshops produced commercial-transport amphoras throughout the Middle Ages. A similar development can be discerned in the waters along the eastern Adriatic coast, where trade involving Byzantine amphoras lasted until the 13th and 14th centuries. This is confirmed by more than six known medieval shipwrecks with Byzantine amphora cargoes, dozens of sporadic finds and several instances of amphoras incorporated into the domes of early medieval churches to improve their acoustics (fig. 1) (Bakirtzis 1989, 77; Jurković, Turković 2012, 133-9).

¹ Based on the findings from that area, the study of Byzantine amphoras resulting in several classifications and typologies (Demangel, Mamboury 1939, 148-9; Brusić 1976; Bakirtzis 1989, 73-7; Günşenin 1989, 267-76; Garver 1993).

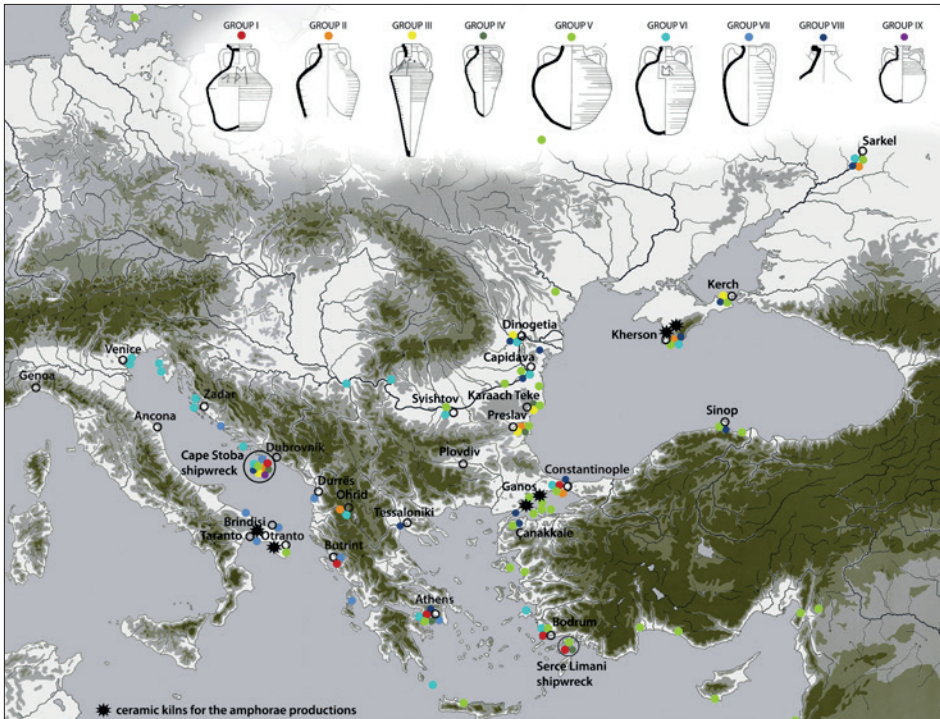


Figure 5. Distribution of Middle Byzantine amphora types found on the Cape Stoba wreck-site (drawing: Zmaić, V.)

More than fifty eight vessels can be attributed to Brusić's Group I (Brusić 1976, 38) (fig. 4.1). They have a wide, emphasized shoulder and a slightly funnel-shaped neck. The body is 40 cm in height and gradually narrows, after the point of maximum diameter of 30 cm, to the flat base with a concave centre. According to Garver's chronological division of Byzantine amphoras from the Bodrum Museum of Underwater Archaeology, these belong to her Class 8, dated the 9th-11th centuries, based on their similarity to amphoras discovered during a renovation of the buildings at Mangala in Istanbul, which were built at the time of Basil I (867-886) at the end of the 9th century (Garver 1993, 152). The best-known parallels are six amphoras found on the Serçe Limanı shipwreck, dated to the 11th century (Van Doorninck 2002, 902). More close parallels can be found at the Butrint site in Albany (Vroom 2012, 291, fig. 7), at the Agora of Athens, dated to the 9th and 10th centuries (Robinson 1959, 120, pls. 34, 58), and at the Saraçhane site in Istanbul in the layer dated to the 11th century (Hayes 1992, 75, fig. 25.15) (fig. 5).

Group II amphoras (Brusić 1976, 39-40) are represented by eleven specimens from the site. They have a short neck, pear shaped recipient and massive handles which start just below the rim, and descend to the mid shoulder (fig. 4.2). The base of the vessels varies from rounded to slightly conical. According to Garver, these amphoras belong to her Class 1, dated mainly to the 10th and the 11th centuries. Based on their similarity to amphoras discovered during a renovation of the buildings at Mangala in Istanbul (Demangel, Mamboury 1939, 148-9), which were built at the time of Basil I (867-886) this type appears earlier, during the 9th century (Garver 1993, 57-60). The closest parallels are amphoras from Istanbul, Kherson in the south-west Crimea, Sarkel on the Don (Jakobson 1951, 333, fig. 6.25-27) and from Preslav in Bulgaria (Doncheva-Petkova 1977, 193-4, pl XXX:356). In the Saint Sophia church at Ohrid, thirteen amphoras of that form were found built into the vault, in order to improve resonance (Aleksova 1960, 202-3; Brusić 1976, 39) (fig. 5). There are sixteen related specimens in the collection of the Bodrum Museum of Underwater Archaeology (Garver 1993, 6-60).

Group III amphoras (Brusić 1976, 38) are the most common at Cape Stoba, and more than eighty-four examples have been found evenly distributed across the site. These amphoras have a similar upper part to those in Groups I or II, while the body tapers in a cone shape, like the earlier Late Roman 'carrot' amphoras (fig. 4.3). Several variants of this type were found and the differences between them are related to dimensions and volume, varying between 45 and 60 cm in height, 21 to 25 cm in diameter and 5 to 7 l in capacity. The closest parallels to this type are four amphoras built into the construction of the vaults in the Church of John the Baptist in Kerch, dated to the 9th-10th century (Jakobson 1979, 75). A few examples of a similar type were discovered at Preslav, dated to the 10th and 11th centuries, and at a monastery complex near Karaach Teke in the east of the medieval Bulgarian state (Todorova 2012, 18-9, 23) (fig. 5). It seems that this amphora type represents a reminiscence of the well-known Sinopean 'carrot' amphora, which was manufactured from the 4th and throughout most of the 5th century AD (Magomedov, Didenko 2010, 480). Most 'carrot' amphoras occur across the whole Black Sea littoral during the Late Roman period, particularly along the northern and western coast where the forms were adopted by some Heraklean and Chersonesan workshops (Opaiţ 2010, 373). The shape, size and capacity of the Byzantine amphoras from the Cape Stoba wreck are significantly different from the Late Roman types, particularly with their distinctive massive handles attached close to the rim, a shorter neck and a flattened base.

Six examples of small piriform amphoras that belonged to the Group IV have been found at the site. They are 30-32 cm high, with a stubby neck and oval handles reaching from the rim to the shoulder where the amphora is the widest, at about 17 cm in diameter (fig. 4.4). This type

belongs to Brusić's Group IV (Brusić 1976, 41), and Günseñin's Type XI of Byzantine amphoras (Günseñin 1990, 39), dating them to the 10th and 11th centuries. The closest parallels are the amphoras found on the 11th-century Serçe Limanı shipwreck, and in the Agora of Athens where they were found in the stratum dated to the 10th and 11th centuries. The same date is given for this type of amphora found in Bulgaria at Preslav and in the monastery complex near Karaach (Todorova 2012, 19, 23) (fig. 5).

Only two amphoras from the site can be connected to a time and place of production. This type belongs to Group V. It has a wide piriform body and no toe at the bottom. It is 37 cm in height and 33 cm in diameter, with a stubby neck and small oval handles reaching from the rim to the shoulder (fig. 4.5). Günseñin (1989, 269-71) included amphoras of this type in her Type I of Byzantine amphoras, and dated them to the 10th-12th centuries. She linked them to the production of wine at the Ganos monastery in the Marmara region (Günseñin 2009, 147). The monastery was founded in the 10th century at the base of a mountain sacred to the monks in this area, comparable to those of Bithynia or Athos. From the 10th century on, the monastery was engaged in amphora production, probably for the export of locally produced wine (Günseñin 2009, 145-6). Surveys of the region carried out in the 1990s located several amphora kiln sites at Ganos (now Gaziköy), a village on the north-west coast of the Sea of Marmara, at Chora (Hoşköy), and two sites on Marmara Island, as well as others beyond the immediate area of Ganos, that produced this type (Günseñin 1999, 19). At the same time, underwater surveys along the Marmara islands resulted in the location of 13 Byzantine shipwrecks, eight of which were carrying Ganos amphoras (Günseñin 2001, 117-33). The same type of amphora can be found in almost all parts of the Byzantine Empire and beyond, which suggests that Ganos wine was a part of a large-scale trading network: along the coast of Byzantine Asia Minor (see the Serçe Limanı shipwreck), on Crete and Cyprus. Internationally, they reached Egypt, the Levant, southern Italy, countries bordering the Black Sea, and inland to Sarkel, and north into Russia and Sweden (Günseñin 2009, 152) (fig. 5).

Twenty four piriform amphoras of Group VI were recovered from the site. They have a rounded base, a short neck, thinly rolled rim and thick, oval handles that in some cases slightly overpass the rim. Dimensions vary from 40 to 45 cm in height and 25 to 35 cm in diameter (fig. 4.6). Several variants of this type have been found at the site, and the differences can be observed in the shape of the neck, the rim, the position and height of the handle, the diameter of the body, as well as in the capacity of the vessel. According to available data, this is the most widely distributed type of Middle Byzantine amphora (fig. 5). These vessels belong to Brusić's VA Group (Brusić 1976, 41), Bakirtzis' Type I, dated to the period from the late 9th to the 11th century (Bakirtzis 1989, 74-7) and Garver's Class 5, dated to the period from the 9th to the 13th century (Garver 1993, 129-36).

Similar amphoras have been found in pottery kilns in Kherson, in southern Crimea, and at other sites on the northern coast of the Black Sea, in Kerch and in Sarkel on the Don (Jakobson 1979, 71-3) suggesting a Crimean provenance. The possibility that they were produced elsewhere along the Mediterranean coast cannot be excluded, however, since a similar type has been found at numerous sites over a vast area. For example, three such amphoras are stored in the Bodrum Museum and analogous specimens were discovered in Istanbul, at the Agora of Athens, on the island of Samos, and in the harbour at Antikythera in Greece (Coldstream, Huxley 1972, 269-70, fig. 87.18; Garver 1993, 135), on the Svichtov site in Bulgaria, Dinogetia and Capidava in Romania, in the Church of Saint Sophia in Ohrid and in Kostol and Belgrade in Serbia (Bjelajac 1989, 113). There are many parallels on the eastern Adriatic as well: on the shipwreck in the vicinity of Nin, near the islet of Ošljak in the Zadar Channel, in the Port of Hvar, in Umag and in the bay of Pijan in Istria (Brusić 1976, 41; 2010, 246). Some similar vessels were found at San Francesco del Deserto and at Torcello islands in the Venetian Lagoon (Toniolo 2007, 103) (fig. 5).

Two ovoid amphoras with a stubby neck and massive high-placed handles that rise slightly above the rim belong to Group VII (fig. 4.7). The amphora is relatively small, only 37 cm in height and 20 cm in diameter. These amphoras belong to Brusić's Group VA (Brusić 1976, 41), and to Günsegin's Type XV (1990, 308, pl. LXXXIV/3; 313, pl. LXXXVI/1). The closest parallels are amphoras embedded in the vault construction of the church of Saint Barbara in Trogir, from 7th decade of the 11th century (Brusić 2010, 249; Jurković, Turković 2012, 137) and amphoras found in Albania at the site Butrint, in the city of Durrës (ancient Dyrrhacium), in Greece on the island of Cefalonia (Scognamiglio 1997, 18) and at the Agora in Athens in the layer dated to the 11th and 12th centuries (Günsegin 1990, pl. LXXXVI/1). Amphoras of similar shape have been found on the opposite coast of the Adriatic, on the area off southeast Apulia at Mola di Bari, in Brindisi and at Capo San Vito near Taranto (Volpe et al. 2007, 363-4) (fig. 5). Excavations and archaeological finds at Otranto, the site of Quattro Macine, Antifano, the monastic sites of San Giovanni Malcantone, and Le Centoporte, as well as pre-disturbance surveys of the underwater sites around Apulia that took place during the 1980s and 1990s, have revealed an abundance of amphoras made from a distinctly local Apulian fabric, in contexts dating from the 10th-11th to the 13th century (Arthur, Auriemma 1996, 16). Since medieval amphora kilns were also found in Apulia (Arthur, Auriemma 1996, 16), a future comparative petrographic analysis may reveal the origin of these products. Production of Middle Byzantine amphoras in that area can be explained by the fact that in the second half of the 9th century Apulia was returned to the Byzantines who kept it for nearly two centuries, during which time they initiated the revival of many cities prior to the arrival of the Normans in 1043. It seems that the production

and exportation of surplus agricultural produce was relatively abundant in that period and the port of Otranto was a major Middle Byzantine town from which goods left Apulia and supplied other parts of the Byzantine Empire to the East (Arthur, Auriemma 1996, 14).

Among the amphoras, one fragment of a neck was found with a base part of the handle and the distinctive broad angular rim (fig. 4.8). Only a small part of the handles was preserved, but it is suggested that they extend above the rim. Amphoras with these characteristics belong to a type of piriform vessels with bowed handles. This type (our Group VIII) was very common and well represented in the Eastern Mediterranean and the Black Sea basin from the 10th to the 12th century, but it is a very rare find in the Adriatic region. This is apparently the sole example of this type found on the eastern Adriatic coast. According to Günsenin's typology it belongs to the Type II b (Günsenin 1990, 31-4), and to Type IV in Bakirtzis' classification (Bakirtzis 1989, 74-5). Similar examples have been found further to the west, in Thessaloniki and at the Agora in Athens. Furthermore, this type can be traced along the Black Sea basin in Kherson, Kerch, and inland up to Sarkel on the Don (Jakobson 1979, 109-10), and in Tulcea, Dinogetia and Capidava in Romania (Barnèa 1989, 133-4). These amphoras were found at the Mangala site in Istanbul (Demangel, Mamboury 1939, 198), in Sinop, in Şarköy on the north coast of the Marmara Sea, as well as examples recovered from the area around the coast of Byzantine Asia Minor, stored today in the Çanakkale Museum collections (Günsenin 1989, 270-1) (fig. 5).

3 Graffiti and Stamps

Many of the Byzantine amphoras from the Cape Stoba shipwreck have graffiti on the upper part of the body (fig. 6). In addition to graffiti, some amphoras were stamped before firing. The graffiti can be divided into several distinct groups: single-mark and multiple-mark graffiti, Greek/Cyrillic letters, Turkic/Oghuric runes, and geometric and pictorial symbols or numerals (Collins 2012, 95). The most common marks are X, M, and A. These symbols could be categorized as a Greek/Cyrillic letters, but they also have parallels in runic alphabets and the mark X may represent a number, such as the Roman numeral ten. X appears in multiple character marks, including ligatures: XM, AX, MAX, XMA, XMD or NX, and the mark M appears in ligatures as well: XM, AM, MD, MP, MF, MFT, XMD. In general, the marks can be identified as symbols from various runic alphabets that were used in the area around the Black Sea, particularly in Bulgaria and the Crimea in the medieval period (Collins 2012, 118). There are also plenty of parallels with graffiti on amphoras found on land sites around the Black Sea basin, including Kherson, Sarkel, Kiev, Aegysus-Tulcea,



Figure 6. A graffito and stamps on the upper part of an amphora (photo: R. Mosković)

Dinogetia, Pliska, Sinope, and the mouth of the Don, as well as on amphoras from Byzantine shipwrecks, including the 7th-century Yassiada shipwreck, the 11th-century Serçe Limanı shipwreck, the 13th-century Novy Svet shipwreck and the 13th-century Çamaltý Burnu shipwreck (Collins 2012, 138). Therefore, the graffiti indicate the potential participation of several ethnic groups in Byzantine maritime trade, including the Danube and Balkan Bulgars, and the Khazars or other local Crimean populations (Collins 2012, 107-58).

Three types of amphoras from the Cape Stoba shipwreck (Group I, IV, V), as well as the graffiti on them have parallels with those from the 11th-century Serçe Limanı shipwreck (Van Doorninck 1989, 253, fig. 3.16).

Among other parallels, the most frequent marks on the Serçe Limanı shipwreck is the letter M, alone or with other ligatured marks, like those on amphoras from Cape Stoba. The meaning of the graffiti on amphoras from Cape Stoba wreck has not yet been established. During transportation and distribution, graffiti had various uses: to indicate goods stored in the amphoras or their capacity, either in volume or in weight. In trade, a wide variety of individuals handled the amphoras, from the stevedores, to the officials who regulated trade (Collins 2012, 107); therefore, these signs could also relate to those activities. On the other hand, Van Doorninck has hypothesized in his discussion of the Serçe Limanı amphoras that certain groups of graffiti appear to be marks of ownership, and belong to crew or merchants involved in the ship's last voyage, while other graffiti appear to be the potter's marks. Considering that very close parallels of those graffiti occur on medieval Bulgarian pottery and building materials, he suggests that they represented marks of seamen and potters belonging to a community of Bulgarians relocated to the north coast of the Sea of Marmara (Van Doorninck, pers. comm., September 2015).

Of total of one hundred and ninety-two amphoras recovered, thirteen were still closed with stoppers. After two amphoras were opened, it was found that they contained sand till the stopper. As their stoppers were sealed, the sand could not have washed in during their time on the seabed: the amphoras were intentionally filled with sand and possibly re-used.

4 Dating

Parallels found in the Serçe Limanı cargo are crucial for dating the Cape Stoba shipwreck. The Serçe Limanı ship sunk in the later part of the 3rd decade of the 11th century, carrying a mixed cargo that included pottery, glassware and glass cullet, probably in transit from the Fatimid Syrian coast to a glass-making centre in Byzantine waters (Van Doorninck 1989, 250-7; Bass et al. 2004). Among the finds on the wreck were glass weights for pan balances, used for weighing gold and silver Fatimid coins. The most recent weights are stamped with a date that corresponds to 1024/1025 AD, or 1021/1022, thus they gave a chronological reference point (Van Doorninck 2002, 902). In addition to the Serçe Limanı excavation, several examples that confirm the chronology come from excavations in the Athenian Agora (Günsenin 1990, 287-318), where parallels for almost all the types of amphoras from the Cape Stoba shipwreck can be found in sealed strata dated to the 10th and 11th centuries (Zmaić Kralj et al. 2016, 11).



Figure 7. Glassware: a. Cup; b-d. Bottles; e. Ewer; f. Lamp; g-h. Beakers (drawing: M. Ferri, photo: R. Mosković)

5 The Cape Stoba Shipwreck Glass (M.F.)

A part of the cargo of the Cape Stoba shipwreck consisted of glassware.

Until 2012, an estimated 50 glass vessels have been recovered.² Some of the glass was recovered in 1975, now held at the Dubrovnik Maritime Museum (Han, Brusić 1978) where they were counted, but not measured or drawn. However, most of the assemblage was been recovered during the 2010-12 excavations.

The large quantity of glass recovered indicates that this material was part of the cargo and not objects used aboard. The assemblage includes four main forms: bowls, bottles, lamps, and beakers.

Bowls are the most common forms. They sit on a high pedestal foot with a rough pontil mark and they are free-blown and mould-blown from two gathers (fig. 7.a). While the upper part is transparent with a greenish tinge, the lower part is deep blue and, in one of the two cups, has a continuous horizontal row of ring-and-dot ornament in low relief.

Transparent green bowls have a blue flaring rim and mould-blown, ring-and-dot body with a low pushed-in foot ring. There are bowls with foot rings of three different sizes, ranging from 35 to 80 mm. A rim from one of these bowls has a tiny inscription, incised on it and not yet deciphered (Han, Brusić 1978, 272; Zmaić et al. 2016, 54).

There are many different variants of bottles (fig. 7.b-d), ranging from those with one or more bulges in the neck, with applied decorative threads of blue-coloured glass (Brusić 2010, 252), or with necks shaped like a simple truncated cone; sometimes blue trails are applied. It is noticeable that at least one ewer, with a rim shaped like an inverted cone, a pinched pouring lip and a truncated neck with applied trail decoration, has been recovered (fig. 7.e).

Fourteen lamps had been found prior to the 2012 campaign, attested by the presence of solid beaded stems with a pontil mark on the base. Unfortunately, the lamp cup is invariably missing. Moreover, wall fragments with applied handles indicate the presence of mosque lamps. Fragments of scalloped, decorated pseudo handles, characterized by loops and curls formed by long irregular trails applied to the wall are probably also lamps (fig. 7.f). This type of handle was common, and sometimes associated to mussel-shaped mosque lamp handles (Bass et al. 2009, 413). However, a wall fragment with this wing decoration recovered in past excavations has been improperly restored with a flared neck (Han, Brusić 1978, 276).

Finally, beakers are very few with only two recorded prior to the 2012 campaign: one has a recurring ring-and-dot decoration and a second example has a wheel-cut decorative technique (fig. 7.g-h). This beaker is

² This count does not comprise glass fragments recovered during 2015 campaign.

the only one found of this type between the Cape Stoba glass finds. The engraved design resembles that representing an arcade found on a Islamic glass beaker dated to 900-1025 held at the Corning Museum of Glass.³

The glassware from the wreck forms a very consistent group including bowls, bottles, lamps, and a distinct group of beakers. The glass fits the 11th-century date provided by the associated pottery.

The Cape Stoba glass finds have been created using many and complex glassworking techniques. Many of the artefacts are made of a transparent light green/yellow and blue glass with a ring-and-dot decoration, created using dip moulds. This decorative technique was used in the area of Syria, as suggested by the Syrian metal mould dated to the 9th-11th century (Kröger 2007, 265). Actually, the ring-and-dot mould decoration is frequent in early Islamic glass from Nishapur (Kröger 1995), but is uncommon in the Serçe Limanı glassware assemblage, as well as the use of two gathers in different colours. Moreover, in the Cape Stoba glass finds, some vessels have applied trails: the knowledge of another working technique suggests a highly specialized workshop.

The artefacts are of uniformly high quality and the same decoration is used on several vessel shapes. Apart from one beaker, the glass assemblage has a very consistent appearance and the same colours are utilized. This homogeneity suggests that nearly all the glassware was produced in the same area, maybe by a single workshop.

The only vessel that we can keep out from the cargo assemblage is the beaker with wheel-cut decoration: in this piece colour, decorative technique and shape are extremely different from the other vessels. One wonders whether this beaker may have belonged to someone on board the ship and whether this beaker was not part of the cargo.

The Cape Stoba ship transported a cargo likely direct to the Byzantine towns on the eastern or north Adriatic coasts. The glassware was probably made in the eastern Mediterranean, as paralleling in shape and ornamentation suggests, but one can exclude it was produced in the same workshop as the Serçe Limanı glassware (Bass et al. 2009, 413).

The shipment of Levantine glassware found in the Adriatic Sea might enable the definition of clients and recipients in a trade system that has so far only been hypothesized. The unique character of those finds still in the 9th century imply for the Adriatic region and the Balkan Peninsula a gift system and not a neighboring market (Curta 2010, 272-3), but the Cape Stoba shipwreck demonstrates the existence of a different network for the supply and consumption of prestige goods, that previously were only available through contact with elites.

3 <http://m.cmog.org/artwork/beaker-arcade> (2016-10-15), accession no. 64.1.24.

6 Conclusions

The island of Mljet is located on a traditional trade route between the eastern and the western Mediterranean. Preliminary investigations in 1975 and systematic excavation from 2010 to 2015 of the Cape Stoba shipwreck site have enabled more than one hundred and ninety amphoras and a glassware assemblage comprising approximately fifty vessels. Nine types of amphora, probably used for the transportation of wine, were identified, most of which bear characteristics attributable to production areas around the Black Sea and the Marmara Sea, and one that can be linked to production in southern Apulia. Analogous amphora types found in the Serçe Limanı shipwreck, dated shortly after 1025, suggest that the shipwreck at Cape Stoba can be placed roughly in the same period.

Six medieval shipwrecks with amphora cargoes, and dozens of sporadic finds found on land and in the sea of Dalmatia, are evidence that the widespread use of clay containers for trade within the Byzantine Empire was still common practice in this area. A similar situation is reflected in areas under Byzantine rule: Byzantine amphoras have been found in Albania, Greece, Bulgaria, Romania, the area around the Black and Marmara Sea as well as along the eastern Mediterranean coast, with Byzantium as the trade and commercial centre. In contrast, in part due to the widespread use of barrels for sea transportation (McCormick 2012, 91-4), finds of Byzantine amphoras are rare and sporadic in the western Mediterranean and most of Italy from the 8th century AD onwards. Apulia is the exception, as it continued under Byzantine rule until the Norman conquest of the 11th century.

The Cape Stoba ship sunk while transporting an eastern Mediterranean cargo, most probably intended for trade with the Byzantine towns on the eastern or north Adriatic coasts. Two Byzantine amphoras of the Apulian type in the ship's cargo points to the possibility that the ship stopped in a harbour in southern Puglia.

Bibliography

- Aleksova, B. (1960). *Srednovekovna keramika od crkvata Sveta Sofija vo Ohrid*, *Glasnik na Institutot za nacionalna historija*, 1-2(4), 199-216.
- Arthur, P.; Auriemma, R. (1996). «A Search for Italian Wine, Middle Byzantine and Later Amphoras from Southern Puglia». *INA Quarterly*, 23, 14-7.
- Bakirtzis, C. (1989). «Byzantine amphorae». *Recherches sur la Céramique Byzantine*. Paris, 73-7. BCH Supplément 18.
- Barnea, I. (1989). «La céramique byzantine de Dobroudja, Xe-XIIe siècles». Déroche, V., Spieser, J.-M. (éds.), *Recherches sur la céramique byzantine*. Paris, 131-142. BCH Supplément 18.

- Bass, G.F.; Matthews, S.D.; Steffy, J.R.; van Doorninck, Jr., F.H. (2004). *Serçe Limani, An Eleventh-Century Shipwreck*, vol. 1. College Station (TX).
- Bass, G.F.; Lledo, B.; Matthews, S.D.; Brill, R.H. (2009). *Serçe Limani, The Glass of an Eleventh-Century Shipwreck*, vol. 2. College Station (TX).
- Bjelajac, L. (1989). «Byzantine Amphorae in the Serbian Danubian Area in the 11th-12th Centuries». Paris, 109-18. BCH Supplément 18.
- Brusić, Z. (1976). «Byzantine Amphorae (9th-12th Century) from Eastern Adriatic Underwater Sites». *Archaeologia Jugoslavica*, 17, 37-49.
- Brusić, Z. (2010). «Ranosrednjovjekovni nalazi iz hrvatskog podmorja». *Archaeologia Adriatica*, 4, 243-55.
- Coldstream, J.N.; Huxley, G.L. (eds.) (1972). *Kythera: Excavations and Studies Conducted by the university of Pennsylvania Museum and British school at Athens*. London.
- Collins, C.A. (2012). *Amphorae Graffiti from the Byzantine shipwreck at Novy Svet, Crimea* [Doctoral Dissertation]. Texas A&M University, College Station. URL [nautarch.tamu.edu/pdf-files/Collins-MA\(2012\).pdf](http://nautarch.tamu.edu/pdf-files/Collins-MA(2012).pdf) (2016-10-10).
- Curta, F. (2010). «A Note on Trade and Trade Centers in the Eastern and Northern Adriatic Region Between the Eighth and the Ninth Century». *Les renaissances médiévales*. Zagreb, 267-76.
- Demangel, R.; Mamboury, E. (1939). *Le quartier des Manganes et la première région de Constantinople*. Paris.
- Doncheva-Petkova, L. (1977). *Bulgarska bitova keramika prez rannoto srednovekovie*. Sofiia.
- van Doorninck Jr., F.; (1989). «The Cargo Amphoras on the 7th Century Yassi Ada and 11th Century Serçe Limani Shipwrecks: Two Examples of a Reuse of Byzantine Amphoras as Transport Jars». *Recherches sur la céramique byzantine*. Paris, 247-57. BCH Supplément 18.
- van Doorninck Jr., F. (2002). «Byzantine Shipwrecks». Angeliki, E.L. (eds.), *The Economic History of Byzantium: From the Seventh through the Fifteenth century*. Washington, 899-905.
- van Doorninck Jr., F. (2004). «The Anchors». Bass, G.F.; Matthews, S.D.; Steffy, J.R.; van Doorninck, F.H., *Serçe Limani. An Eleventh-Century Shipwreck*, vol. 1. College Station (TX), 189-238.
- Garver, E.L. (1993). «Byzantine Amphora's of the Ninth Through Thirteenth Centuries in the Bodrum Museum of Underwater Archaeology» [Thesis]. Texas A&M University, College Station. URL [http://anthropology.tamu.edu/papers/Garver-MA\(1993\).pdf](http://anthropology.tamu.edu/papers/Garver-MA(1993).pdf) (2016-10-10).
- Günsenin, N. (1989). «Recherches sur les amphores byzantine dans les musées Turcs». Paris, 267-7. BCH Supplément 18.
- Günsenin, N. (1990). *Les amphores byzantines (Xe-XIIIe siècles): typologie, production, circulation d'après les collections turques*. [Doctoral Dissertation]. Université Paris I (Panthéon-Sorbonne).

- Günšenin, N. (1999). «From Ganos to Serçe Limani: Social and economic activities in the Propontis during Medieval Times illuminated by recent archaeological and historical discoveries». *The INA Quarterly*, 26(3), 18-23.
- Günšenin, N. (2001). «L'épave de Çamaltý Burnu I (Ile de Marmara, Proconněse): Résultats des Campagnes 1998-2000». *Anatolia Antiqua*, 2, 117-33.
- Günšenin, N. (2009). «Ganos Wine and Its Circulation in the 11th Century». Mundell Mango, M. (ed.), *Byzantine Trade, 4th-12th Centuries*. Oxford, 145-53.
- Han, V.; Brusić, Z. (1978). «Une découverte sous-marine du verre médiéval dans l'Adriatique». *Annales du 7e Congrès International d'Histoire du Verre*. Berlin; Leipzig, 271-82.
- Hayes, J. (1992). *Excavations at Saraçhane in Istanbul, vol. 2, The Pottery*. Princeton.
- Jakobson, A.L. (1951). «Srednovekovie amfori Severnogo Pričernomorja». *Sovjetskaja arheologija*, 15, 325-44.
- Jakobson, A.L. (1979). *Керамики Керамическое Седневековой Таврики*. Leningrad.
- Jurković, M.; Turković, T. (2012). «La Croatie médiévale: état des lieux». Palazzo-Bertholon, B.; Valière, J.-C. (éds.), *Archéologie du son. Les dispositifs de pots acoustiques dans les édifices anciens*. Paris, 133-9.
- Kisić, A. (1988). «Rezultati podmorskih rekognosciranja i istraživanja na dubrovačkom području (Results of Underwater Survey and Excavation in the Dubrovnik Region)». *Izdanja Hrvatskog arheološkog društva*, 12, 153-67.
- Kröger, J. (1995). *Nishapur: Glass of the Early Islamic Period*. New York: Metropolitan Museum of Art.
- Kröger, J. (2007). «An Islamic mold». *Journal of Glass Studies*, 49, 265-6.
- Magomedov, B.; Didenko, S. (2010). «Sinopean Amphorae and Chernyakhov Culture». *Ancient Civilizations from Scythia to Siberia*, 16, 479-85.
- McCormick, M. (2012). «Movements and Markets in the First Millennium Information, Containers, and Shipwrecks». Morrisson, C. (ed.), *Trade and Markets in Byzantium*. Washington (DC), 51-98.
- Opaiř, A. (2010). «Sinopean, Heraklean and Chersonesan 'Carrot' Amphorae». *Ancient Civilizations from Scythia to Siberia*, 16, 371-556.
- Robinson, H.S. (1959). *The Athenian Agora, volume V, Pottery of the Roman period*. New Jersey.
- Todorova, E.P. (2012). *Amphorae from the territory of Bulgaria (VII-XIV century). Амфорите от територията на България (VII-XIVв)*. [Doctoral Dissertation]. Sofia University St Kliment Ohridski Faculty of History Department Archaeology.
- Toniolo, A. (2007). «Anfore dall'area lagunare». Gelichi, S.; Negrelli, C. (a cura di). *La circolazione delle ceramiche nell'Adriatico tra tarda antichità e altomedioevo = III Incontro di studio Cer.Am.Is.* (Venezia, 2004). Mantova, 91-106.

- Volpe, G.; Annese, C.; Disantarosa, G.; Leone, D. (2007). «Ceramiche e circolazione delle merci in Apulia fra Tardoantico e Altomedioevo». Gelichi, S.; Negrelli, C. (a cura di), *La circolazione delle ceramiche nell'Adriatico tra tarda antichità e altomedioevo = III Incontro di studio Cer.Am.Is.* (Venezia, 2004). Mantova, 353-74.
- Vroom, J. (2012). «Early Medieval Pottery Finds from Recent Excavations at Butrint, Albania». Gelichi, S. (a cura di), *Atti del IX Congresso Internazionale sulla Ceramica Medievale nel Mediterraneo* (Venezia, 2009). Firenze, 289-96.
- Zmaić, V.; Beltrame, C.; Miholjek, I.; Ferri, M. (2016). «A Byzantine Shipwreck from Cape Stoba (Mljet, Croatia): an interim report». *The International Journal of Nautical Archaeology*, 45, 42-58.
- Zmaić, V. (2012). «Bizantski srednjovjekovni brodolomi u podmorju istočnog jadrana». *Histria Antiqua*, 21, 471-82.
- Zmaić, V. (2015). «Medieval Byzantine Shipwreck in the Eastern Adriatic». Militello, P.M.; Öviz, H. (eds.), *SOMA (2011), Proceedings of the 15th Symposium on Mediterranean Archaeology* (Catania, 3-5 March 2011), 1043-50. Oxford. BAR 2695.