

A nearly intact bombarde in the western Black Sea: initial observations

Dragomir Garbov

Abstract: This paper discusses a shipwreck recorded by the Black Sea Maritime Archaeology Project. The site lies in 137 m of water on Bulgaria's continental shelf. It represents the remains of a 20-metre-long two-masted wooden sailing ship. Physical evidence was examined against documentary sources in an attempt to contextualise the archaeological site. The vessel is discussed as an early 19th century bombarde, a light cruiser or armed merchantman typical for the region of Provence, but also built in other parts of the Mediterranean. The shipwreck symbolises the re-integration of the Black Sea in the globalised maritime world of the 'long nineteenth century.'

Keywords: Black Sea MAP, shipwreck, polacre, ketch, bombarde

1. Introduction

The Black Sea Maritime Archaeology Project (Black Sea MAP) was undertaken in waters under Bulgarian jurisdiction (Territorial Sea, Contiguous Zone and Exclusive Economic Zone) between 2015 and 2017 (Vagalinski *et al.* 2016; 2017; 2018; Fig. 1/A). The research program was aimed at assessing impacts of Late Pleistocene and Holocene environmental change on human populations. Geophysical investigations contributed to the recording of 65 wooden shipwrecks in various depths of water between -30 and -2,200 m. The palimpsest of archaeological sites reflects over 2,400 years of navigation on the Black Sea.

This paper presents the author's preliminary remarks on a shipwreck recorded by Black Sea MAP. The archaeological site retains the largely coherent remains of a ketch-rigged wooden vessel. It is part of a category of three similar sites containing the wrecks of 19th century bombardes, scattered along the present-day Bulgarian coast. This is the earliest and the best preserved of the three shipwrecks.

The site was recorded via non-intrusive methods in 2016. As no destructive sampling was undertaken, this study is built upon examination of records as accumulated by Black Sea MAP and comparative analysis with known parallels. The archaeology of the shipwreck is discussed against contemporary sites, documentary sources and published research, and a working hypothesis on the chronological and cultural parameters of the vessel is proposed. Future research on the specifics of hull and rigging will allow for more detailed conclusions.

2. Investigation and recording

The 2016 season marked the second deep-water expedition of Black Sea MAP. Works were focused on core-sampling and geophysical survey in Bulgarian waters. The archaeological permit did not contain allowances for destructive investigations and sampling of shipwrecks. Non-intrusive inspections and archaeological recording were undertaken opportunistically when shipwrecks were detected during geophysical surveys (Vagalinski *et al.* 2017).

In 2016, the Black Sea MAP team worked aboard the ROV support ship MV *Stril Explorer* (Fig. 1B). The archaeological site was located via the ROV *Surveyor* (Fig. 1C) and recorded in a *c.* two-hour long archaeological inspection using a *Supporter* work-class ROV on September 21, 2016 (Fig. 1D). Low-altitude high-resolution surveys via side-scan sonar and multibeam echosounder were undertaken, followed by video and photographic recording, contributing to a high-resolution scaled georeferenced photogrammetric model (for method refer to Ruiz *et al.* 2019). The information acquired during these surveys forms the basis of the current study.

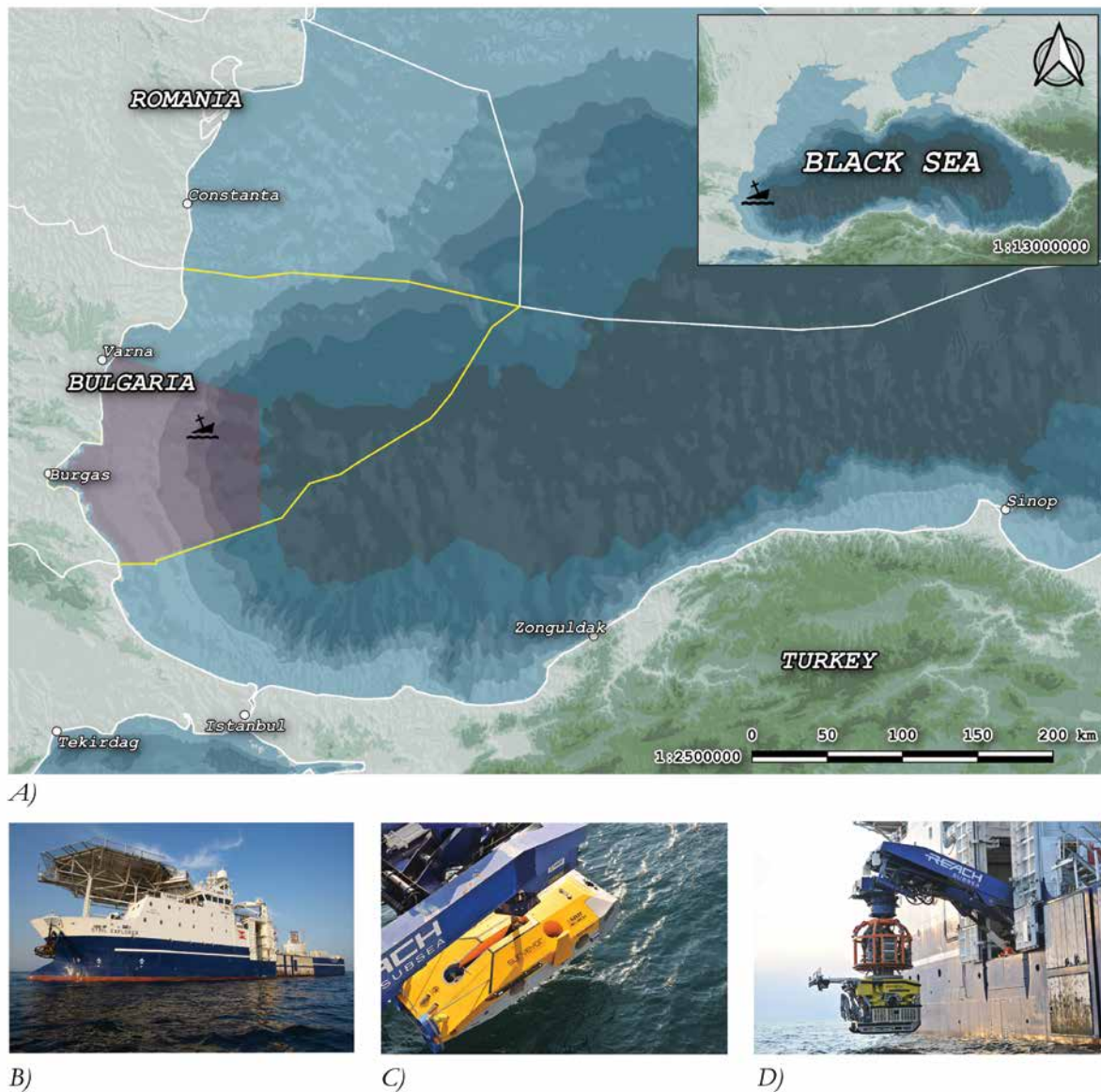


Fig. 1 A) Location of the subject site within the Bulgarian EEZ (outlined in yellow) and the Black Sea MAP study area (shaded in red); B) MV Stril Explorer; C) ROV Surveyor; D) ROV Supporter (images: Black Sea MAP)

3. Previous investigations

The post-processing of data revealed that this archaeological site is known from previous studies (Peev 2004; 2018; Pletnyov *et al.* 2013). According to Pletnyov *et al.* (2013), the shipwreck was initially discovered during sonar surveys in 2001 and inspected via ROV in 2008 and submersible and 2012. Limitations of the previous investigations, combined with the lack of published (or accessible) coordinates, made it difficult to align this investigation with earlier publications. This became possible after comparison of processed Black Sea MAP records against the two photographs published by Pletnyov *et al.* (2013, Fig. 2, 3). The data acquired by Black Sea MAP represents a major contribution to this site's recording, significantly enhancing our understanding, and allowing for a more detailed assessment.



Fig. 2 Digital elevation model (author: D. Garbov, Black Sea MAP)

4. Description of the archaeological site

The archaeological site lies in 137 m of water *c.* 36 nm east of Obzor, Bulgaria. It consists of a largely coherent wooden shipwreck and associated debris scatter with overall dimensions of *c.* 35 m (E-W) x 35 m (N-S) and *c.* 1225 m² area (Figs 2 and 3). The shipwreck is oriented NW-SE, bow pointing to SE, with a bearing along the centre line of 291–111°. The hull and rigging are well preserved and any damages identified could be attributed to natural degradation.

The vessel is lying on an even keel. The bow is preserved better than the stern and rises *c.* 4 m above the seabed. While the stern area may have been the point of seabed impact, its damaged state is better explained through scouring via the N-S current typical for the Western Black Sea. Scour damage is evident along the northern (port) side of the hull, where

it has led to the dislodgement of planking (along the entire port side), and dislocation of frames (in the port side stern quarter). The southern (starboard) side is mostly buried in a scour pile and is better preserved. Both masts have fallen over to the south. The deck is largely covered with sediment, which appears to have filled most of the ship's cavities, with the thickest deposits towards the starboard side along the starboard bulwark. A debris scatter, consisting of planks and other construction elements, is concentrated densely around the hull, with a sparse plume developing southwards, where most objects appear to be associated with the vessel's rigging.



Fig. 3 Photogrammetric model of the shipwreck, view from NW (image: Black Sea MAP)

5. Hull and rigging

The length of the hull between the posts (along the deck) is 20 m; the beam is 6.6 m. The ship's bottom is buried in the seabed sediments, consequently none of its features could be observed. The bow is nearly intact, complete with planking on its starboard side, therefore the stempost could not be sufficiently recorded (Fig. 4A). The sternpost is also buried in the sediments and only its top ¼ could be observed showing the uppermost rudder gudgeon. The rudder is missing (Fig. 4B).

Scouring has exposed portions of the vessel's frame along the port side. The hull was double framed with closed paired futtocks. The second futtocks, third futtocks, and toptimbers are currently visible. The midship frame is identifiable (Fig. 4C), with 25 frames counted ahead of it and *c.* 30 frames abaft (the overall number of frames abaft the midship frame could not be established due to obscuring and dislocation). Measurements, based on the scaled photogrammetric model and field observations (using the Supporter ROV's laser scale), indicate an average frame thickness (at the second and third futtocks) of *c.* 25 cm and room-and-space of *c.* 35 cm. The port side bulwark has partially collapsed on deck (forward and amidships), and partially over the side (towards the stern). It shows evidence of seven *c.* 50 × 50 cm gun ports (Fig. 4D). No other evidence of armament was identified. Six deadeyes with iron chain plates associated with the main mast were recorded on the main rail near the midship section.

While the deck is largely obscured, some notes can be made on the vessel's deck plan. Not much is visible in the fore and midship areas. A forecabin skylight and companion way can be seen before and abaft the windlass. The outline of a main hatch (*c.* 2.5 × 3 m) is discernible as a depression in the sediment in the midship area. The stern is more exposed. As the laid deck in this area is largely missing, it could be established that the ship had a *c.* 4.3 m long low quarter deck, which has collapsed over the partially dislodged frame. A companion way to the stern cabin and a skylight are visible on the quarter deck. No evidence for the steering mechanism is present.

The fittings are represented by a windlass, capstan and one pump. The windlass is *c.* 3.8 m wide, handspike-operated, and has an octagonal barrel combining hemp cable on the port side with chain cable on the starboard side. It has a central ratchet wheel with pawls on the king post. The starboard barrel is fitted with whelps to accommodate the chain – still wrapped *in situ* (Fig. 4E). The capstan is dislodged from its original position. Its broken-off upper portion is visible next to a heap of chain near the starboard rail, before the mizzen mast. A single wooden pump stands proud of the deck abaft the forecabin companionway and before the main mast's original position.

Four admiralty pattern anchors were identified: two bowers in their original locations on the port and starboard bow, and kedg and stream anchors hooked over the windlass. These were likely stored abaft the latter and have ended up in their current location during the sinking. The catheads are missing from their positions; one of them was identified *c.* 7.3 m S of the starboard stern quarter in the debris plume.

The vessel was ketch-rigged. A bowsprit and two masts were recorded. The bowsprit (8 m) has collapsed from its original position, crushing the beak-head, and is leaning over the bow with its head in the sediment. No evidence of the jib boom was identified. A main topsail yard is leaning over the starboard bow. The end of a stunsail boom protrudes from the sediment immediately SE of it. The 25.4 m tall main mast is rigged polacre fashion and consists of a single stick (combining main and main topmast), and a fidded topgallant mast. The rigging of mainsail, main topsail and main topgallant sail is clearly traceable along the mast (Fig. 4F). The mizzen mast (13.2 m preserved height) is rigged traditionally with a fidded topmast, which is broken-off above the mast cap. A fragment of a trysail mast, or 'horse,' with a gaff jaw still attached indicates that the vessel was rigged with a spanker.

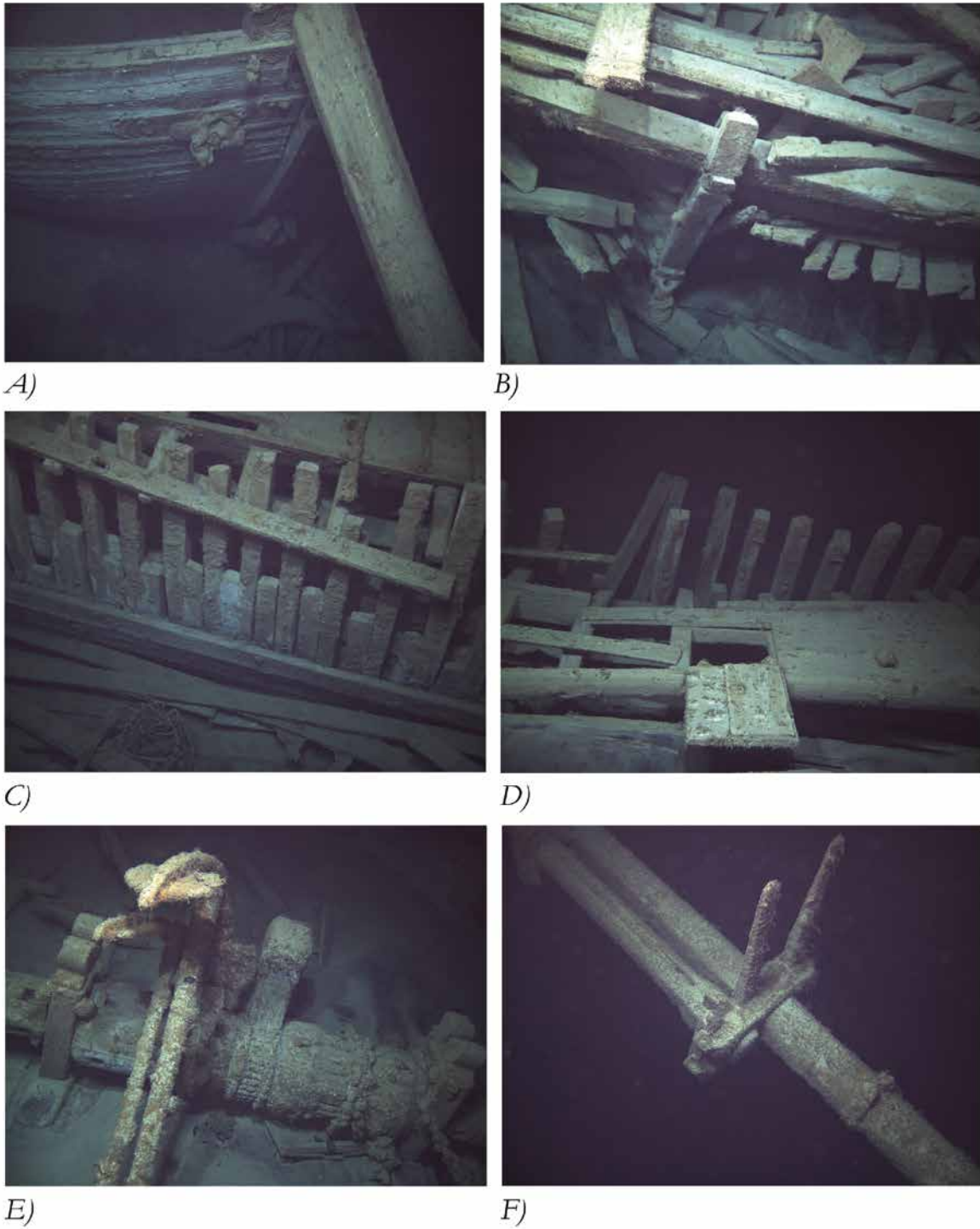


Fig. 4 A) Bow and bowsprit, view from SW; B) Stern and stern post, view from NW; C) Waist with midship frame visible in the centre of the image, view from N; D) No. 5 gun port on the port bulwark, view from S; E) Stream and kedge anchors leaned over the windlass, view from W; F) Main mast top and fidded topgallant mast (strops for rigging the main topsail visible in the bottom right corner), view from NE (images: Black Sea MAP)

6. Discussion

The evidence for hull and rigging suggests that the shipwreck should be interpreted as that of a Mediterranean bombarde. The hull appears to be framed in a typical late 18th and 19th century fashion, recorded on numerous sites in Europe and North America: a notable case being the US brig *Eagle* (e.g. Crisman 2014: 322–327), and the most recently published example being the Akko Tower wreck (Cvikel 2016; 2022). While the presence of a trysail mast/horse could indicate construction in the late 18th century, research on the introduction of chain cables suggests that the vessel was likely in operation during and after the second decade of the 19th century (Harland 2013). The absence of typical mid-19th century features, such as a pump-action windlass, iron (and chain) rigging, copper- or yellow metal sheathing, etc., suggests that she may have been built and lost prior to the 1840s and 50s. As this seems to be the first bombarde identified in the archaeological record, and to discuss her specifics further, the archaeology of this site is interrogated against relevant documentary sources.

The origins of Mediterranean bombardes can be traced to the Atlantic coast of France in the late 1600s (Prins 1995: 95). This type of vessel was initially conceived as a bomb ketch and referred to as *galiote a bombe*. A lithograph in Saint Remy's *Memoire d'Artillerie*, leaves no doubt as to the kinship with *fluyits*, and *galjoots* (Surierey de Saint Remy 1697: Plate 83; Fig. 5A).

During the 18th century bomb vessels spread to the Mediterranean and were employed by most local navies (including La Serenissima and the Ottoman Empire: e.g. Maffioletti 1785; Yener 2018). Over the course of the century, they were adopted in the merchant marine due to their cargo carrying capacity and modest crewing requirements. Atlantic influence is evident in the hulls of these Mediterranean vessels (e.g. Gueroult du Pas 1710: 25). The characteristic *mate à pible* rig that some of them received is believed to have been a contemporary technological development (Dennis 1957). Towards the end of the century, bomb vessels had become obsolete and bombardes were henceforth built and employed as small merchantmen (up to 100–125-ton). Their name endured in homage to their naval origins.

Merchant bombardes were a common sight in the early 19th century Mediterranean, and typical for the Provence (Pâris 1885: 24). Their transition from navy to merchant marine is explained in the caption to Plate XVI of Jean Jerome Baugean's *Collection de toutes les espèces de bâtiments* (Fig. 5B):

On ne sert plus dans la marine de guerre de ces sortes de bâtiments destine à porter sur leur avant des mortiers de fort calibre a la place on emploie des frégates qui sont plus propres à évoluer que ces sortes de bâtiments.

(Baugean 1826: 11)

Apart from Baugean's lithographs, such vessels appear in the works of Nicolas Cammillieri, Domenico Gavarone and the Roux family of artists, whose ship portraits present opportunities for comparison with the Black Sea example.

According to the abovementioned plate by Baugean, and as noted by Harland, around the turn of the 19th century French merchant bombardes were still able to carry guns and could be armed as small cruisers or privateers (Harland 2000: 70; Fig. 5B). The vessel on the right-hand side carries at least ten guns and two swivels; the one on the left presents four open gun ports on her starboard side. A watercolour by Antoine Roux, dated to the naval blockade of Marseille (Meissonnier 1968: 49), provides another contemporary example (Fig. 5C). It depicts a bombarde at anchor sending down her spars: an open gun port is visible on the starboard bulwark. The rigging of this vessel, as well as of those on Baugean's lithograph, is closely similar to the Black Sea bombarde, a notable difference being that the mizzen mast is represented as a single stick. The right-hand side vessel on Baugean's lithograph raises a square mizzen topsail. With seven gun ports per side, the Black Sea bombarde was able to carry more guns than the above examples.

The 114-ton *La Volonté de Dieu* of La Ciotat (1816), is possibly the best documented Provençal bombarde. It was painted by Antoine Roux (Meissonnier 1968: 19; Fig. 5D) and his son François (Pâris 1885: 24, Plate 61); its builder's plan was redrawn and published with a commentary by Admiral François-Edmond Pâris (1882, No. 46), who also issued further comments on the second portrait by Roux the Younger (Pâris 1885: 24); a model of this bombarde is kept in the *Musée National de la Marine* in Paris.

The plan of *La Volonté de Dieu* is of particular pertinence to the Black Sea bombarde. It shows an unarmed vessel of nearly identical proportions (Prins 1995: 95). The length and beam are a match and Admiral Pâris's description of the frame indicates that both vessels were framed in the same fashion (Pâris 1885: 24). A difference is the denser and more robust frame of the Black Sea bombarde, which, unlike *La Volonté de Dieu*, was designed and built to carry armament.

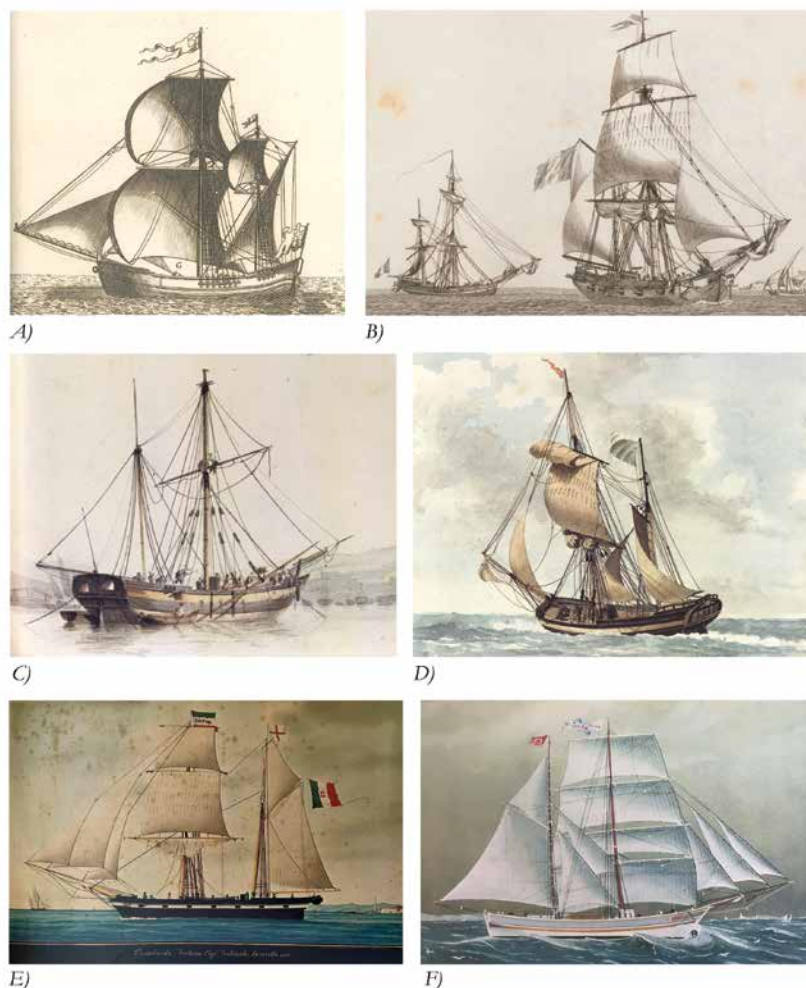


Fig. 5 A) ‘Galiote de Dunkerque’ (after Surirey de Saint Remy 1697, Planche 83, image courtesy of Eisenbibliothek, Schlatt, Switzerland); B) ‘Bombardes françaises de la Méditerranée’ (after Baugean, 1846, Planche XLV, image courtesy of Bibliothèque Nationale de France); C) Bombarde at anchor in the Old Port of Marseille (painting: Antoine Roux, after Meissonnier 1968, 49; image: public domain); D) *La Volonté de Dieu* (painting: Antoine Roux, after Meissonnier 1968, 19; image: public domain); E) ‘Bombarda Fortuna Cap. Fortunato Lavarello 1862’ (painting: Domenico Gavarone, after Schiaffino 1987, Plate 27); *Αγία Ζώνη* (painting: unknown artist, after Vassiliou 1961, 112)

Noting the fully pole-masted rig of *La Volonté de Dieu*, the rigging proportions of the two vessels, as far as they could be compared (main mast height, location of sails along the main mast and length of topsail yard), are also a match. Apart from the fully pole-masted rig and the lack of armament, *La Volonté de Dieu* is the closest parallel to the Black Sea bombarde that this author is currently aware of.

In the 1820s and 30s, merchant bombardes were built in Provence (Marseilles, Saint Tropez, Martigues etc., e.g. Pavlidis 2012), Liguria (Varazze, Voltri, Sestri Potente etc.; e.g. Delis 2012) and the Greek isles (Syros, e.g. Delis 2012).¹ Gavarone’s 1862 portrait of the 125-ton *Fortuna* of Camogli, built in 1834 (Schiaffino 1987: Plate 27; Fig. 5E), shows a vessel of slightly larger proportions and a later date. The style of beak-head, the use of chain in the bowsprit’s standing rigging and the iron-stocked anchors reflect some mid-19th century trends, absent from the Black Sea bombarde. While *Fortuna* appears to be fully pole-masted on the main, unlike the previous examples – but similar to the Black Sea bombarde – her mizzen is rigged with a fidded topmast.

In his commentary on Roux the Younger’s portrait of *La Volonté de Dieu*, Admiral Pâris states that by the 1860s bombardes had largely disappeared from the Western Mediterranean (Pâris 1885: 24). While over the later course of the century vessels referred to as ‘bombardes’ continued to be built in the Eastern Mediterranean (Tr. *bumbarta*, Gr.

¹ No contemporary portraits (1820s–1860s) are known to this author from the Greek Isles. I kindly invite any esteemed colleagues, who may be aware of such portraits, and have an interest in sharing their knowledge, to contact me.

βομβάρδα), contemporary sources suggest that by this time the term was used in a broader fashion. The 1890s–1900s Ottoman-Greek vessel *Άγία Ζώνη*, referred to as a ‘schooner’ in the original publication by Vasiliou (1961: 112), and identified as a βομβάρδα by Lyman (1970: 166–167) is a good example of a pole-masted ketch, whose traditional Eastern Mediterranean hull does not appear to be marked by the same Atlantic influence as earlier Provençal bombardés and the Black Sea example (Fig. 5F). It must be noted however, that more research is required on the chronology and typology of Eastern Mediterranean bombardés to discuss their evolution further.

7. Conclusions

Mediterranean bombardés would have appeared on the Black Sea soon after the reopening of the basin for international shipping, after the 1774 Treaty of Küçük Kaynarca (King 2004: 146–147). The features of the archaeological site discussed in this paper indicate that the vessel in question was likely built around or after the turn of the 19th century and could have been lost prior to the 1850s. While the closest parallels identified to date associate the Black Sea bombarde with the French region of Provence in the first two decades of the century, more research is required on Eastern Mediterranean bombardés to discuss the chronology and origins of this vessel further.

The evidence for armament, together with the presence of both windlass and a capstan, indicate that this was a versatile ship. She could sail under arms, as a small cruiser or privateer, relying on the larger complement required to man up to 14 3–4 pounder guns and turn her capstan. However, she would also have been able to sail unarmed with a crew of around six, as typical for merchant bombardés (see Pâris 1885) and enough to work with just her windlass (Harland 1991). While the Black Sea bombarde appears to have sailed unarmed when she sank, the ability to carry guns can be seen as another hint for dating her construction prior to the French conquest of Algeria in 1830 and elimination of piracy on the Mediterranean.

Archaeological sites such as the Black Sea bombarde signify the early phase of reintegration of the Black Sea, within the globalised maritime world of the long 19th century.

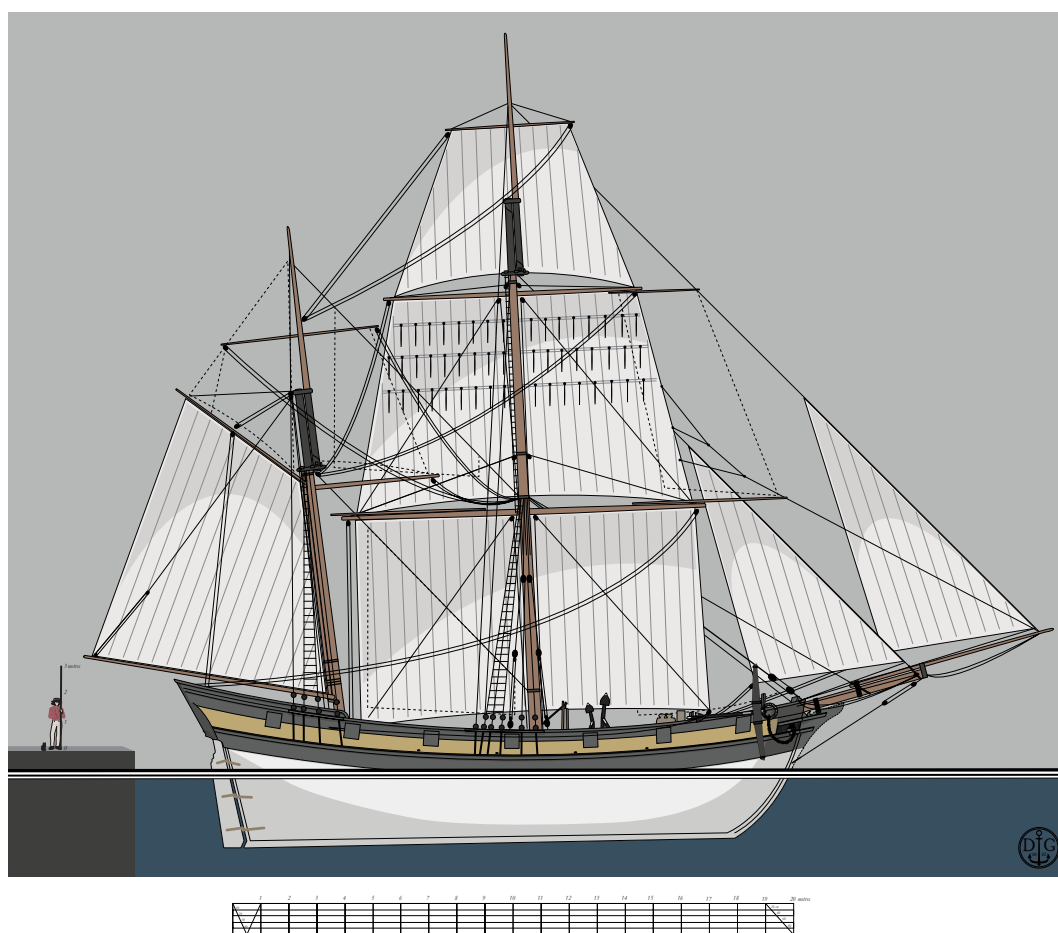


Fig. 6 Tentative reconstruction of the sheer and sail plan of the Black Sea bombarde (author: D. Garbov)

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