

The Harbour of Medieval Sozopol

Nestled on a tiny peninsula on Bulgaria's Black Sea coast, the town of Sozopol (Σωζόπολις) boasts more than 6000 years of history and culture. The first settlement on the site dates to the Chalcolithic Age or the beginning of the Bronze Age. Settlers from Miletus moved to the Sozopol peninsula at the end of the 7th century BC and founded Apollonia, the earliest ἀποικία on the south-western coast of the Euxinus Pontus¹. In the middle of the 6th century BC, Apollonia became an independent πολιτεία² and important trade centre between Ancient Greece and Thrace. Thanks to its strong navy and naturally protected harbours, Apollonia kept control of the major merchant route along the western Black Sea coast for several centuries. After this phase of political, economic, and cultural climax, the town suffered a period of decline throughout Late Antiquity. Despite the damage, it survived the »Völkerwanderung« period and succeeded in restoring its former glory during the Middle Ages, though this time under a new name. Following the Christian mainstream tradition, its name was changed to Sozopol, »town of salvation«, which was first attested in the 5th century AD³.

Medieval Sozopol was initially integrated into the Byzantine maritime network, and from the 13th through the 15th century, the town became part of the global Mediterranean »Weltwirtschaft« operated by Venice and Genoa. At that time, Sozopol developed into an important trade and shipping centre in the Black Sea contact zone of the Mediterranean area. Medieval authors do not spare superlatives when talking about Sozopol. In the 12th century, the Arab scholar Al-Idrisi (1100-1165) described Sozopol as »an outstanding merchant centre and a famous town«⁴. Two centuries later the Byzantine polymath Nicephorus Gregoras (c. 1295-1360) describes Sozopol as »a very rich and populous city of the Romans, situated more than a thousand stadia from the neck of the Pontus«⁵. The emperor-historian John VI Kantakouzenos (1347-1354) also speaks of it as

»a populous and big town« on the Pontus Euxinus⁶. The same qualification (»a big town«) is given to Sozopol in two anonymous portolans whose protographs are supposed to originate from the 14th century⁷.

Medieval Sozopol should be considered as a complex, composed of parts interconnected by a local communication network, such as the urban built-up area, its hinterland and the harbour. However, the present paper aims to analyse the functioning of one of these interwoven components – the harbour of Sozopol⁸ – in order to assess its contribution to the town's prosperity. By placing the study in a broader context, it attempts to evaluate the extent to which the harbour of Sozopol, with its structures, was able to participate in the international maritime trade, thus revealing its role and significance in the maritime contacts of Byzantium and Bulgaria with the world economy in the Mediterranean.

Harbours, natural or artificial, comprise sheltered bodies of water and facilities (a pier/quay/docks) for loading and unloading vessels, dropping off and picking up passengers, as well as warehouses/storages etc. From that perspective, each harbour has two basic functions: protective/sheltering and logistics. The former refers to its ability to protect from winds, waves, and currents. The latter corresponds to its commercial activities and facilities and the way a harbour can link efficiently with the production and market areas within its hinterland. For that reason, particularly important, with a view to the study of the functional capacity of Sozopol harbour, are multifarious data on: the geographic location and microclimatic conditions, the navigational potential of the harbour water area – size, depth, the extent of protection, specifications of the seabed; the typology as well as the exact parameters of the mooring vessels; road links, land, and maritime communications; infrastructure and supply routes within the hinterland. Dealing with different primary sources, the paper will apply an interdisciplinary approach while trying

1 Gyuzelev, *The West Pontic Coast* 120.

2 Gyuzelev, *The West Pontic Coast* 121.

3 Dimitrov, *La città medievale* 498.

4 Nedkov, *Geographiata na Idrisi* 70-71.

5 Nicephorus Gregoras, *Byzantina historia* 83-84: βαθύπλουτον τὴν καὶ πολυάνθρωπον πόλιν Ῥωμαίων, πλείον χιλίους σταδίου ἀπέχουσαν τοῦ Πόντου αὐχένος.

6 Ioannes Cantacuzenus, *Historiarum* 326: τὴν Σωζόπολιν κατὰ τὸν Εὐξεινον Πόντον πολυάνθρωπον οὖσαν καὶ μεγάλην πόλιν.

7 Delatte, *Portulans* 231: χώρα μεγάλη. – Koledarov, *Portolan* 20. – Dimitrov, *Kartographia* 34: »Sisopoli e Città grande«

8 The medieval history of Sozopol has been studied to some extent, with B. Dimitrov in particular giving the due attention to the political, religious, cultural and economic history of the town during the Middle Ages. See Dimitrov, *Sozopol* 388-407. – Dimitrov, *La città medievale* 497-522. However, unlike the harbour of ancient Apollonia Pontica (see Dimitrov, *Anchors* 156-63. – Dimitrov/Porozhanov/Orachev, *Pristanishtata* 440-450. – Porozhanov, *Les ports* 196-207. – Porozhanov, *Olovni shtokove* 35-36. – Porozhanov, *Pristanishtata* 2-7. – Porozhanov, *The Thracian Civilization* 260-270. – Orachev, *Strandzha* 344-365. – Hristov, *Stone anchors* 31-50), the harbour of medieval Sozopol has not yet been in the focus of the researchers. So far, there have not been any studies on this specific aspect of the history of medieval Sozopol.

Evaluation criteria	Profile
Taxonomic class in the harbour system	Tiradore – in <i>Compasso de navegare</i> (13 th c.) Porto, λιμένας – in all portulans from the 14 th -16 th c.,
Rating of the harbour and its navigation characteristics	Bono, καλός
Vessel types to moor in the harbour aquatory	Vessels of different classes of both round and long types of ships
Status of the harbour settlement	Town, χώρα μεγάλη, Città grande
Highlighted in red colour on navigational/portolan charts	+
Presence of merchants, seafarers, and residents of the Italian maritime republics	+

Tab. 1 Harbour profile of the late medieval Sozopol.

to systemize and interpret the written, archaeological, cartographical, and geomorphological evidence.

Clarification of geographical location is essential for the exploration of the harbour's water area. In the 1st century BC, the Roman architect Vitruvius pointed out the greatest benefit of the harbours that have »natural advantages, with projecting capes or promontories which curve or return inwards by their natural conformation«⁹. Sozopol is a naturally protected harbour belonging to the craggy coastal zone of Strandzha, and more precisely to the intended coastline of Medni Rid¹⁰, while at the same time it is a south-eastern entrance to the Gulf of Burgas (the largest bay of the Bulgarian Black Sea coast), belonging to another coastal landscape area – that of the Burgas Plain. On the one hand, the location of Sozopol fits into the spatial model typical of the Western Black Sea – a harbour town located on a micro-peninsula/promontory¹¹, which in the case of Sozopol protrudes 2/3 mile to the north-east. On the other hand, in the geomorphological profile of Sozopol, there is another spatial component unique for the entire coastal zone – the existence of a peculiar archipelago that dominates the navigational conditions in the harbour area of Sozopol (tab. 1).

The most detailed information on the characteristics of Sozopol harbour during the Middle Ages is contained in the special navigation documents from the 14th and 15th centuries – the portolans and the navigational/portolan charts¹². In fact, the earliest notice of the harbour dates to the boundary

between Late Antiquity and the Early Middle Ages and is found in an anonymous periplus of the Euxine dated to the second half of the 6th century. It says that the former Apollonia Pontica/Magna, which »is now called Sozopol, has two large harbours« (Ἀπολλωνίαν πόλιν τὴν νῦν Σωζόπολιν λεγομένην ἔχουσαν καὶ λιμένας μεγάλους δύο)¹³. The next evidence is in no less terse, but already dates from the time of the portolans. In the *Compasso de Navegare*, the earliest Italian portolan (13th century), there is a special section for *Mare Maius* – »the Great Sea«, as Italian seafarers used to call the Black Sea at that time. In the *Compasso* it is noted that »Sisopoli e bono tiradore per barche« [Sozopol is a good wharf for barques/barks.]¹⁴

Far more specific are the portolans of the 14th and 15th centuries. Two anonymous fourteenth-century portolans whose text fragments about Sozopol are actually identical, give the following information: Ἡ Σιζόπολι ἔναι χώρα μεγάλη καὶ ἔχει καὶ πόρτο καλὸ. ἔχει νησιά δύο καὶ τὸ ἓνα τὸ λέγουσιν Ζαφορονήσι καὶ ἔχει καὶ μίαν ἐκκλησίαν εἰς τὴν μέση τοῦ νησιού. καὶ ῥάξης τὰ σίδερα εἰς τὴν χώρα καὶ τὰ πλωρήσια δένης εἰς τὸ νησί καὶ ῥάξης εἰς φοῦντος ὄργιας τέσσερης καὶ πέντε. καὶ τὸ ἄλλο τὸ λέγουσιν ὁ Ἅγιος Ἰωάννης καὶ ἔναι εἰς τὴν μέρεα τῆς τρεμουντάνας καὶ ἔναι εἰς τὴν μπουκα τοῦ πόρτου. (»Sozopol is a big town and has a good harbour. There are two islands, and one is called Zaforos [St Cyricus] and there is a church in the middle of the island. And you drop the anchors to the town side and tie the ropes [at the bow of the vessel] to the

9 Vitruvius, *De architectura* 5.12.1.: *Hi autem naturaliter si sint bene positi habebantque acroteria sive pronunturia procurrentia, ex quibus introrsus curvaturae sive versurae ex loci natura fuerint conformatae, maximas utilitates videntur habere.*

10 Medni Rid is a ridge in the north-eastern reaches of the Strandzha mountain range. Its highest peak is Bakarlaka (376m). The Medni Rid coast is peculiar with its strong indentation of the coastline and is characterized by peninsulas jutting out up to 2km into the sea and bays deeply cut into the land. Orachev, Strandzha 344-365.

11 Most of the harbour towns along the Western Black Sea Coast are located on such small rocky peninsulas, with the best examples being Nessebar and Pomorie. However, Sozopol promontory is more resistant to erosion than those of Nessebar and Pomorie, since the Medni Rid shoreline as a part of the Strandzha coastal zone has the lowest rate (0.001 m/year) of coastal abrasion along the

Western Black Sea coast. This is mostly due to the geological composition of Strandzha rocky cliffed coast, which determines its greater resistance to the weathering. Peychev/Peev/Stanchev, *Abrasia* 178.

12 The term »portolan« (from the Italian »portolano«, from Latin »portus« – harbour, port) refers to written sailing directions. Portolans are considered to be the medieval successors of the ancient periplois. The navigational/sea/maritime chart of the European Middle Ages (1300-1500) was based on compass directions and estimated distances observed by the pilots at sea, and is noted for its cartographic accuracy in presenting coastlines and ports. It is believed that the nautical charts were constructed from the information contained in contemporary written pilot handbooks (portolans), hence the *terminus technicus* »portolan charts« (harbour-finding charts). Campbell, *Charts* 395.

13 Diller, *Geographers* 137.

14 Debanne, *Compasso* 121.

island and drop (the anchors) at a depth of 4-5 *orgia*. And the other [island] they call it St John and it is to the north and is at the entrance to the harbour».¹⁵

From these two anonymous portolans, whose supposed protographs are from the 14th century, it is clear that Sozopol was already qualified as »a big town« (χώρα μεγάλη, Città grande), which had »a good harbour« (πόρτο καλὸ, bon Porto). The depth of the harbour moorage is also indicated – 4-5 *orgia* (between 7.6 and 9.5 m¹⁶). Another circumstance that makes an impression is the close connection of the harbour with the two islands in the waters of Sozopol and especially with the St Cyricus Island, which is closer to Skamni peninsula.

More detailed information about Sozopol harbour is contained in the so-called Leiden portolan dated back to the 16th century, but with a probable base from the 15th century¹⁷. There it is noted that: Ἡ Σιζόπολι ἔναι καλὸς λιμένας καὶ ἔχει ὀμπρὸς δύο νησιά. τὸ μέγα νησί λέγεται ὁ Ἅγιος Ἰωάννης καὶ τὸ ἄλλο λέγεται ὁ Ἅγιος Κήρυκος. καὶ ἀπὸ τὸ νησί τὸ μικρὸν καὶ τὴν στερεάν ἔναι ὁ καλὸς λιμένας καὶ τὸ ἔμπα ἔναι ἀπὸ τὸν θρασκέα, καὶ (ἄν)θελῆς νὰ ἔμψης ἀπὸ μέσα τοῦ νησίου τοῦ μεγάλου, ἀλαργάρισε ἀπὸ τὴν μέτα τοῦ νησίου τοῦ μικροῦ πληρῆσι γ'. καὶ ἀπεκεῖ κοστάρης εἰς τὴν στερεά πληρῆσι α' ς" καὶ ῥάξε εἰς φοῦντος ὀργαίαι δ' ἕως ε'. [Sozopol is a good harbour and there are two islands in front. The large island is named St John, and the other St Cyricus. And the good/nice harbour is from the side of the little island and the mainland and the entry is from north-north-west. And if you wish to enter from the middle (side) of the large island you should give the little island's shoal a berth of three *ploriesia*. And moor at 1 ½ *ploriesia* from the mainland and cast (anchors) at a depth of 4 to 5 *orgia*]¹⁸. It is evident that the Leiden portolan confirms the status of Sozopol as »good (nice) harbour« (καλὸς λιμένας) mentioned in the two anonymous portolans and repeats the data relating to the water depth of harbour's moorage. At the same time, it gives several important details concerning manoeuvring in the water area and keeping a certain distance from land at mooring.

The complex comparative analysis of the data from the 14th and the 15th-century portolans and navigational/portolan charts¹⁹ reveals that the harbour configuration of Sozopol is marked by three important spatial domains – Sozopol/Skamni (Stoletz) peninsula/promontory (στερέα), St Cyricus Island, situated 250 m north-west of the peninsula, and St John Island, located 1 km north of the promontory. The underwater and coastal geoarchaeological studies conducted in the

waters of Sozopol contributed to the discovery of the harbours/anchorages of Apollonia Pontica, thus compensating for the complete lack of information about them in ancient written sources. With regard to the port of the medieval Sozopol, however, the results of these investigations are not yet satisfactory. Nevertheless, the accumulated data on the anchorages of Apollonia Pontica are a good starting point that could serve as a basis of comparison for the analysis of the data from the medieval written and cartographic sources on the localisation and characteristics of the port of the medieval Sozopol. The summary observations on the previous eras, based on the stone anchors and stone and lead stocks of wooden anchors found during underwater archaeological excavations in the waters of Sozopol show that from the late Bronze Age to Antiquity Apollonia's harbour was locked in the same area outlined by the two mentioned islands and the peninsula, with the anchorages shifting within its boundaries depending on climatic changes, eustatic Black Sea oscillations, epirogenic movement (upheavals or depressions) of land, micro tectonics, seismic tectonic, accumulation, sedimentation specificity, abrasion, landslide processes, coastal and onshore environments, etc.²⁰. The moorages of vessels from different historical periods are located with a fair degree of certainty thanks to two methods. The first one refers to the diachronic study and mapping of anchors and/or parts of anchors, clustered in a particular section of the seabed. These are thought to have been the traditional anchorages of ships that, for various reasons, lost part of their anchors during their stay. Their gradual longue durée accumulation is a sustainable indicator for the operation of a permanent anchorage. The second method to locate antique harbours is to take account of changes in sea level during the Late Holocene and to analyse the geomorphological dynamics of the coastline over the various historical periods²¹.

The aggregated results from the underwater studies related to the bathymetric data on the sea level changes and geomorphologic data on the sinking and rising of the land reveal that the earliest anchorage in the waters of Sozopol was westwards and south-westwards from St Cyricus Island. It was used in the second half of the 2nd millennium BC and probably the beginning of the 1st millennium BC, which coincided with the beginning of the so-called Phanagorian regression, related to the decrease of the temperatures and the lowering of the sea level. In the 6th-2nd century BC, when it was the peak of the Phanagorian regression where the sea level according to the different authors and the interpretation

15 Delatte, Portulans 231. – In the Italian anonymous portolan is noted that: »Sisopoli e Città grande et ha bon Porto et ha 2 Isole. Et una la chiamano Isola de Zaffarana, et anco ha una Chiesa sopra e mezzo de dela Isola. Et sorgite li vostri ferri verso la Cita et li Provesi sopra l'isola et sorgite in passi 4,05 (sic!). A l'altro Isolo lo chiamano Sangioanne et sta alla parte della tramontana alla bocca del Porto«. Koledarov, Portolan 20. – Dimitrov, Kartographia 34.

16 Ὀργυιά/ὀργία »orgia« – »fathom«, a unit of length. In the Byzantine period this unit of length known as ἀπλὴ ὀργυιά was roughly equivalent to the old Greek ὀργυιά/fathom and was equal to 6 Byzantine feet, c. 1.89 m. See Schilbach/Cutler, Orgyia 1532.

17 Delatte, Compléments 38-47. – Orachev/Rusinov, Portolan 84.

18 Delatte, Compléments 46-47. – Orachev/Rusinov, Portolan 78. – 1 plorisi/πληρῆσι = 10 ὀργαίαι »orgiai«.

19 The two islets in the waters of Sozopol are accurately depicted on the medieval navigational/portolan charts by two blacked-ink dots. Gordieiev, Place names 353-354.

20 Dimitrov/Porozhanov/Orachev, Pristanishtata 440-450. – Porozhanov, Les ports 196-207. – Porozhanov, Olovni shtokove 35-36. – Porozhanov, Pristanishtata 2-7. – Porozhanov, The Thracian Civilization 260-270.

21 Hristov, Stone anchors 34. 36.

of the facts varied from -2/-3 m to -11 m below the present-day sea level, the permanent mooring place was shifted in the basin between St John Island and Sozopol peninsula, westward of the submerged stone reef which today is at 14 to 20 m depth. In fact, four anchorages were established marked with remnants of anchors with stone stocks. All of them are located to the north of the peninsula, in the waters around Cape Skamni, the reefs of Palikari, Gata and Milos, and in the south leeward mooring place of St John Island. In the 6th-2nd century BC, this small barrier reef probably raised above the water's surface and played the role of a natural breakwater that protected a relatively large water area from the dangerous eastern winds²². From the 2nd century BC until the 3rd century AD, the anchorage of the harbour of Sozopol returned to its original location – westwards from St Cyricus Island, at today's depths of 6-14 m. The relocation took place again due to the sinking of the coast (or the rise of the sea level) which took place in the 3rd/2nd century BC and led to a level up to 2-3 m above the current one²³.

Some authors assume that during the Middle Ages there were again sharp changes in sea level. The largest is associated with the so-called Nymphaean transgression, which reached its peak in the Black Sea in the 8th to mid-10th century, exceeding the present-day sea level by 1 or 2 m. According to some scholars, it explains the fact that certain antique harbour facilities on the Bulgarian coast ceased to function at the end of the 6th and the beginning of the 7th century²⁴. In the 14th century, there was a decline in sea level, which some authors call the Korsunian regression named after the city of Korsun (the medieval Cherson), resulting in a lowering of 3 m. Most researchers, however, dispute the existence of such a regression and maintain that it is more appropriate to talk about a slight eustatic decline in the Black Sea level resulting from the general drop in temperatures in Europe in the 13th and 14th centuries. This lowering of the sea level explains the presence of islands and reefs along the western Black Sea coast in the 14th-17th century medieval navigation charts, which are now below sea level or are smaller than the area indicated in the medieval charts²⁵. It is assumed that the current rise in the Black Sea level began in the second half of

the 17th century and continues to date, with values in the last century fluctuating for the various Black Sea coastal zones from 1.4 to 4 mm per year, with the rise of the sea level at Medni Rid coast being in parameters close to the maximum (3 mm per year)²⁶.

The theory explaining the palaeographical changes during the Holocene, mainly with the regression/transgression cycle of the Black Sea level, first launched by the Soviet scientist Fedorov²⁷, has been questioned in recent years in Western science because of its controversial methodology²⁸, and the composite curves of the sea-level oscillations during the Holocene suggested by Shilik²⁹, Balabanov³⁰ and others³¹ have been classified as »speculative and dependent upon many unreliable palaeobathymetrical indicators from diverse geological contexts«³². Much more precise analyses of local sediment cores, as well as ¹⁴C-dated fossil coastal bars, testify that many of the apparently obvious changes to sea level are actually tectonically induced³³. Concurrently, recent oceanographic surveys reveal that after the Black Sea was connected to the Mediterranean at the end of the Würm, both seas were in relative equilibrium and have not changed their levels by more than 0.7 m since the Archaic age³⁴. Attempts to link changes in the Black Sea level with local climatic conditions and increased freshwater flow from large rivers flowing into it are hampered by digital models proving that the maximum possible rise in the Black Sea level during the Holocene could not be more than 1 m³⁵. Bearing in mind the relatively stable sea level, a significant group of scientists bring to the fore tectonic movements as a major factor provoking the observed shoreline changes occurring in the form of local-regional uplift or submersion of the land³⁶. In this sense, they reject as methodologically unsatisfactory the elaboration of reconstructions, common to the whole Black Sea basin and its coasts, and accept that only local sea-level curves can be established³⁷.

Such a local approach is applied by the French team of scientists – A. Baralis, B. Devillers, N. Marriner, A. Hermay, who undertake a geoarchaeological survey of the Sozopol coastline. Those scientists, considering the local studies of hydrographical dynamics in the Sozopol Bay which show the

22 Probably during the Roman period, the moorages to the north of the promontory and in the aquatory of St John Island have still been in use as it is attested by the lead anchor stocks discovered at the indicated places. See Hristov, Stone anchors 47-49.

23 Porozhanov, Les ports 196-207. – Porozhanov, Pristanishtata 2-7. – Porozhanov, The Thracian Civilization 267-270. – Hristov, Stone anchors 47. – The view expressed in some older publications (see for example Dimitrov/Orachev, Pristanishtnata Sistema 7-8), that the ancient harbour of Apollonia at the St Cyricus Island was protected from the west by artificial harbour facilities such as a breakwater with an approximate length of 890 m and an inner breakwater-quay about 610 m long, has been refuted by the recent underwater and geomorphological explorations made in the area. There is neither archaeological nor historical evidence of the existence of such artificial harbour facilities. – Gyuzelev, The West Pontic Coast 129-130. – Hristov, Stone anchors 47.

24 Shilik, Oscillations 115-130. – Preisinger/Aslanian/Heinitz, Geomorphologic development 9-18. – Filipova-Marinova, Sea-level change 453-482. – Peev, Archaeological data 18.

25 Peev/Peychev, Medieval charts 105-106.

26 Dimitrov/Porozhanov/Orachev, Pristanishtata 440. – Markov/Peychev/Parlichev, Izmenenia 49-53. – Peev/Peychev, Medieval charts 105-109. – Preshlenov, Morphodynamics 305-307.

27 Fedorov, Pozdnechetvertichnaia istoriia 27-32.

28 Fouache et al., A critical view 162-174.

29 Shilik, Oscillations 115-130.

30 Balabanov, Sea-level changes 711-730. – On the evaluation of Balabanov sea-level curve see Martin/Yanko-Hombach, An evaluation 51-56.

31 See more in Brückner et al., The Holocene 160-179.

32 Baralis et al., Coastal geoarchaeology 104. – For a critical view on this concept see Fouache et al., A critical view 162-174.

33 Brückner et al., The Holocene 160-179.

34 Morhange/Marriner, Sea-level indicators 146-156. – Baralis et al., Apollonia Pontica 156.

35 Martin/Yanko-Hombach, An evaluation 51-56. – Esin/Kukleva, Theoretical curve 51-52. – Esin/Esin, Mathematical modelling 32-47.

36 Baralis et al., Apollonia Pontica 156.

37 Brückner et al., The Holocene 160.

relative sea-level stability in its water area³⁸, argue that the most reliable base for exploring coastal movements are the sedimentary inputs over the past 5000 years³⁹. Geomorphological studies⁴⁰ reveal a rapid subsidence of the shore of Apollonia, as well as the entire Strandzha coastline, compensated by sedimentary deposits along the shore. According to the French research team, it was namely the sedimentary budget, that has contributed to the progradation and regularisation of the coastline in the context of relative sea-level stability⁴¹. In Sozopol's case, this accumulation process explains the formation of a sandy spit (the so-called tombolo) that connected the promontory of Skamni to the mainland from as early as the 3rd millennium BC⁴². Investigating the sedimentary samples taken from the pier of the present-day Sozopol port and considering the new geomorphological configuration after the appearance of the sand isthmus, the French research team comes to the conclusion that the water area at the north-west front of the tombolo appears the most suitable place for a coastal shelter and actually was the ancient harbour, since it is very well protected from the east and south-east swell by the promontory of Skamni and from the north-west by St. Cyricus Island. Moreover, the Chernomorets peninsula efficiently provides additional protection to this area from the north-west swell. In addition, the French research team has hypothesised that there was a beach area in the north-western part of the isthmus, where vessels used to be towed to shore. This beach, together with the foothills of the promontory, was sufficiently protected to allow port activities from ancient times until the 20th century⁴³.

The localization of the port of Apollonia at the north-west front of the tombolo is an interesting hypothesis that has its solid foundation in terms of the main function of each port – to provide shelter. Undoubtedly, the considered water basin and its adjoining sand strip had excellent protection from the eastern, north-eastern and north-western winds. In addition, there are some archaeological and written testimonies indicating that in fact the waters and the beach at the north-west front of the tombolo were used as a harbour during Antiquity and the Middle Ages. In underwater archaeological research carried out in this area Bronze Age ceramics, antique amphorae, and antique amphorae stamps were found. In the immediate vicinity, to the west of the isthmus and to the south of St. Cyricus Island, one of the clusters of stone anchors is located⁴⁴. Two written pieces of information are related to

the assumption that the vessels were hauled on the beach of the isthmus⁴⁵. The first is indirect and is contained in the earliest preserved medieval Italian portolan – Lo Compasso de Navegare. In it, as already mentioned, it is noted that »Sisopoli e bono tiradore per barche«. In this case, what is important is the term used – *tiradore*, its etymology leads to the verb *tirare* and means »sea bottom/land, suitable for hauling vessels onto the shoreline«⁴⁶. The qualification of Sozopol as a *tiradore* means that its harbour features allowed small shallow-draft vessels of the type of barques to be hauled onto the beach. The same, only in a direct way, was announced in the 18th century by the Austrian diplomat Wenzel Fon Brognard. He pointed out that the harbour of Sozopol did not provide the best shelter for small ships and they were exposed to the breaking waves. However, the shoreline was only slightly elevated and made it easy to pull the vehicles on to land (»die Fahrzeuge leicht an Land gezogen werden können«)⁴⁷. This practice continued in the following centuries, as the preserved old photographs of Sozopol from the first half of the 20th century show. The fact that the towing of small shallow-draft vessels on the sandy beach of the isthmus was traditionally practised in the different historical periods is a lasting functional indicator of the topographical continuity between the port of ancient Apollonia and medieval and modern Sozopol.

Actually, the two research theories explaining the coastal morphodynamics of Sozopol during the different periods with eustatic oscillations and widespread hydro-isostatic and neotectonic effects, despite offering different methodology, causality, and reconstruction models, are complementary to a certain extent as far as the harbour background of the town is concerned. In this sense, the results of the various studies are not mutually exclusive, but in their totality, they allow for a more precise and complex diachronic study of the harbour of Sozopol and its adjacent water area. Remnants of anchors from various historical ages localized in underwater research do not mark the entire harbour area, but rather trace the different berths suitable for mooring larger vessels within the waters of Sozopol. These anchorages, which varied depending on the navigation conditions, the tonnage and the draft of the mooring vessels, do not *a priori* negate the possibility that the harbour itself was permanently located in the north-west end of the isthmus, where it was originally the most protected section of the water basin, and where the coastal

38 Preisinger/Aslanian, The sea level 225-231.

39 Baralis et al., Coastal geoarchaeology 104. – More on the reliability of this method in a stable sea-level context see in Marriner/Morhange, Geoscience 137-194.

40 Preisinger/Aslanian/Heinitz, Geomorphologic development 9-18. – Georgiev/Stoev/Velkovsky, Geomorphologic development.

41 Baralis et al., Coastal geoarchaeology 105. – Baralis et al., Apollonia Pontica 156.

42 Baralis et al., Apollonia Pontica 156.

43 Baralis et al., Coastal geoarchaeology 107-108.

44 Porozhanov, Olovni shtokove 35-36. – Porozhanov, The Thracian Civilization 269. – Gyuzelev, The West Pontic Coast 130. – Hristov, Stone anchors 44-47. – Summarizing the results of the 2011 underwater excavations, I. Hristov even

guesses a possible existence of a harbour facility in the basin south-east of the St Cyricus Island.

45 Ancient seafarers often used beaches to land their ships. It is an interesting detail that even a 37 m military trireme with 170 oarsmen could be hauled onto the beach, if the slope of the shoreline was gentle enough, for instance no more than 15 % inclination which was also the maximum inclination of the ancient slipways. De Graauw, Catalogue 129-130.

46 Debanne, Compasso 289: *tiradore* – »fondo adatto per tirare a secco l'imbarcazione«.

47 Nikov, Opisanie 31. »Für kleine Schiffe liegt dieser Hafen zu offen, um nicht von der Gewalt der einschlagenden Wellen zu leiden, dafür aber hat er eine feste und ungemein sanft aufsteigenden Küste, auf welcher die Fahrzeuge leicht an Land gezogen werden können«.

morphology favoured to a great extent the efficient handling of cargo since the natural beach at the tombolo functioned as a traditional slipway where all smaller vessels were hauled ashore for servicing and (un)loading.

The comparison of the archaeological and geomorphological data on the navigation conditions in the Apollonia water area with the information from the medieval portolans shows that during the 14th and 15th centuries, there was continuity with the elements of the harbour topography determined by the persistent genotypic characteristics of the water area along the coast of Apollonia/Sozopol. St John Island was a northern border and an entryway to the harbour (ἔις τὴν μποῦκα τοῦ πόρτου). However, all mooring guidelines are given in relation to the smaller St Cyricus Island. The portolans clearly show that within the so delimited waters of Sozopol was a good harbour between the St Cyricus Island and the peninsula (καὶ ἀπὸ τὸ νησὶ τὸ μικρὸν καὶ τὴν στερεάν ξναὶ ὁ καλὸς λιμένας). It was entered from the north-west, as this was the way to avoid the shallows of St Cyricus Island. The other possible entrance was from the north, from St John Island, but it was advisable to give St Cyricus Island a berth of 3 *ploresia* (about 54m) due to the reefs surrounding it from the north and west.

From all these data it can be seen that the main moorage of the harbour of Sozopol in the 14th-15th century was between St Cyricus Island and the mainland. The mooring was at 1 ½ *ploresia* (about 21m) from the peninsula, as the bows of the vessels were turned and tied to St Cyricus Island apparently in order to be protected from the north/north-westerly winds by the island, and from the easterly and north-easterly winds – by the peninsula. It is well known that these are the dominant winds blowing in the region of Sozopol⁴⁸. Thus, its harbour area received the necessary complex protection provided by the Skamni peninsula and its adjacent group of islands (St John Island, St Peter islet located east of it and St Cyricus Island)⁴⁹. In fact, the main moorage in the harbour of Sozopol in the 14th-15th centuries similar to that of the pre-Hellenic Thracian settlement from the Late Bronze Age and that of Apollonia Pontica/Magna from the 2nd century BC to the 3rd century AD was closely related to the water area around St Cyricus Island.

However, unlike the previous anchorages which were situated west-north-west of the island, the one from the late Middle Ages (probably for greater protection against the winds) was gradually shifted south-south-east toward the water basin closed between the island and the peninsula, where the modern port of Sozopol is today. Thus, a con-

figuration is formed that resembles the one outlined in the Leiden Portolan, according to which there are two islands in front of the harbour of Sozopol (ἔχει ὀμπρὸς δύο νησιά). The islands and the harbour are situated on a vertical line at the northern end of which is St John, in the middle is St Cyricus, and at its southern end is the harbour itself, sheltered also from the east-north-east by the Skamni Peninsula. Through this particular linear configuration, it acquires a higher degree of protection from the northerly and easterly winds. This circumstance was noticed by several travellers who voyaged to or passed by Sozopol over the years. In 1582 the London merchant John Newbery, whose ship was forced to seek shelter in Sozopol from the stormy east and north-eastern winds, points out that »Sissopoli is a good harbour [...] and to the East of the Harbour are three Islands«⁵⁰. In the 18th century, Wenzel von Brognard wrote that the harbour of Sozopol was protected from the northern winds (»die Nordwinde«) by two islands (»durch zwey Inseln«)⁵¹. The navigation link between the archipelago and the Skamni Peninsula is also reflected in the descriptions of the Sozopol water area left by the Frenchmen Jacques Nicolas Bellin and Edouard Taitbout de Marigny. In the 18th century, Bellin presented Sozopol as a small, but very good port (»son petit port est fort bon«), where anchor could be drop at a depth of 10 to 12 brasses/fathoms (between 18 and 22m), very close to which »there are two small isles or rocks« (»deux petites Isles ou rochers«), one of which the Greeks call Zafaronisi (St Cyricus), and the other one Ayu Yoani«⁵². Far more comprehensive in his 19th century Black Sea Pilot is Taitbout de Marigny. He mentions that the harbour of Sozopol (port de Sizopoli) was located west of the Skamni/Stolets Peninsula and had the shape of a semicircle. Its width was 1 ¼ miles. The eastern end of the harbour stretched to the Sozopol peninsula, where the settlement itself was located, and the western one to another small peninsula (Chrysosotira, present-day Chervenka) where the monastery »St Trinity« is⁵³. Further Taitbout de Marigny continues his description as follows: »Half a mile north of Sozopol there is the small island of St Cyricus [petite île appelée Kirios], which forms two sailing passages (easternmost and westernmost) to the bay. The smaller one has a depth of 12 brasses/fathoms (22m), measured midway between the island and the settlement [à égale distance de l'île et de la ville], and 6 to 8 fathoms (11-14.6m) close to the shores. The wider passage offers a sea bottom of 10-12 fathoms (18-22m). At the eastern end of St Cyricus Island is St Peter's Islet, which is connected to the island by a rocky bank and should be given a berth of 1 cable-length (185.3m). In the

48 Popov/Michev, Géomorphologie 267.

49 A part of this archipelago were also two other islets/reefs named Milos and Gata, located between Skamni peninsula and the islands of St John and St Peter. These two reefs probably submerged due to an earthquake at the beginning of the 20th century. At present each of the reefs constitute a submerged rock up to 30-40m wide, reaching 8-10m below the water surface whereas its foundation lies at a depth of 20-22m. The reefs are separated by a 10-15m wide straight. – Dimitrov/Orachev, Pristanishtnata Sistema 4-5. – Dimitrov/Po-zhanov/Orachev, Pristanishtata 449. – Gyuzelev, The West Pontic Coast 61.

50 Purchas, Voyages 476.

51 Nikov, Opisanie 31.

52 Todorova, Frensko opisanie 136.

53 In fact, Taitbout De Marigny describes the whole Bay of Sozopol, stretching eastwards to Sozopol peninsula and westwards to Chrysosotira (present-day Chervenka) promontory, near the present-day town of Chernomoretz. Local inhabitants still call Chrysosotira promontory »the Monastery«.

western part of St Cyricus there are reefs, jutting out into the sea 2 cables-length in west-south-west direction. Another triangle-shaped island, called St John is located 1 cable away from the west side of Sozopol [du bord occidental de Sizopoli]. This area, limited to the north by rocks that leave only a 12-14m wide navigable pass near the island, shelters shallow-draft vessels that want to moor near the town. There they anchor at a depth of 2.5-3 brasses/fathoms (4.5-5.5 m), over a sandy sea floor and feel in complete safety [en toute sûreté]. This small harbour, approximately 200 meters long and almost as wide, has no outlet to the southward, as a bar of sunken rocks runs across it with only 3 to 4 feet water over them. The outer (western) shore of the island ends with several rocks projecting southwards, which should be circumnavigated at a distance. In the middle of the harbour of Sozopol (Au milieu du port de Sizopoli) there is a depth of 7-8 brasses/fathoms (13-14.6 m), the seafloor is sand and algae [fond de sable et d'herbes] and is in a bad condition [d'assez mauvaise tenue]. It is preferable to anchor at a depth of 4 brasses/fathoms (7.3 m), south of St John island, opposite to the isthmus [vis à vis de l'isthme], where also a well can be seen. Vessels that can approach at a distance of 1 cable will be in complete safety. Between Cyricus and Sozopol, or in other words between this island and the mainland to the west, the seabed is of mud and shells and is in a good condition [de vase et de coquilles de bonne tenue]. Near the small St Trinity peninsula, the seafloor is sandy and has a depth of 2.5 brasses (4.5 m)⁵⁴.

It is clear from the detailed paragraph cited above that the navigational profile of the harbour of Sozopol area, outlined by Taitbout de Marigny, corresponds with the information in the medieval portolans. That is why the autopsy-like description of the French marine officer can be used retrospectively to complement with its details the *status quo* depicted in the 14th and 15th-century sailing directions. However, it is necessary to take into account a technical mistake made by Taitbout de Marigny. He incorrectly exchanged the names of the islands of St Cyricus and St John. Except for this inaccuracy, everything else in his Pilot Book corresponds to the data from the portolans, and at the same time, it expands and enriches the information they provide about the waters of the harbour of Sozopol and its immanent island configuration, the navigational approaches, the depths and the composition of the seabed, the possible mooring sites and the localization of the best moorage situated south of St Cyricus Island and west of the isthmus of the Skamni Peninsula.

In addition to its excellent navigational features, which turned it into the best natural harbour on the entire Western Black Sea coast, where ships in distress found salvation, Sozopol was also distinguished by its logistical potential. At a day-long sailing from the Bosphorus under ideal conditions;

one of the main ports of the Strandzha zone as well as the southern entrance to the Gulf of Burgas, connected by internal land routes with the fertile Thracian hinterland, the medieval Sozopol became one of the leading trade and communication centres on the Western Black Sea coast. The importance of the harbour town was also appreciated by the Italian merchant-seafarers, who dominated the late medieval Mediterranean »Weltwirtschaft« (world-economy). The Genoese took a particularly keen interest in the local market. Their presence and active involvement there is attested in two documents. Firstly, a decree of the Genoese *Officium Ghazariae* of 22 March 1316, explicitly interdicted Genoese merchants to go to Sozopol (*De non eundo ad Susopolim*) under threat of a fine of 50 Genoese *librae*/pounds because of the reluctance of Tsar (*Imperator de Zagora*) Theodore Svetoslav (1300-1321) to cover the damage and losses that some representatives of the Republic of Genoa suffered from people of the Bulgarian ruler in the town of Maurocastron (the present-day town of Bilhorod-Dnistrovskij, Ukraine) and other places. The second document, which reflects the Genoese interests in Sozopol, is the Account Book (*Computus*) of the Genoese »Military Service« of 1351-1352, where commercial exchanges with grain, wine, and slaves, made by Genoese merchants in the town, were reported⁵⁵.

What were the parameters of the logistic function of the harbour of Sozopol in the 13th-15th centuries? At this stage, there are no specific data in the sources on its storage facilities. Still, in his manual *La pratica della mercatura* the Florentine banker Francesco Balducci Pegolotti (14th century) puts Sozopol among the leading wheat markets along the Western Black Sea coast together with Anhalio (the present-day town of Pomorie, Bulgaria), Maurocastron, Varna and Vicina (a town on the Lower Danube whose location is still unknown)⁵⁶, which is an indirect indication of the commercial-logistic potential of the town and the availability of warehouses and facilities for storing the wheat traded at the harbour. The Account book of the Genoese »Military Service« mentions that wheat (74 modia) and barley (45 modia) were loaded and exported in linhs and barques from Sozopol to Pera in 1351-1352⁵⁷. Carrying out such commercial operations which involved purchase and loading of such a large tonnage of wheat (17.7t) and barley cannot have been successfully realized without the availability of a suitable warehouses.

A valuable piece of information, which is an attestation of the logistic function of the harbour of Sozopol, is contained in the »Sozebolu Harbour Law« drafted by the Ottoman authorities in the 16th century, which mentions the existence of a sheltered marketplace at the harbour for the use and maintenance of which the local authorities collected a certain fee⁵⁸. It can be assumed with a great deal of probability that this market existed in the previous centuries and contributed

54 De Marigny, Pilote 26-27.

55 Gjuzelev, Ochertzi 105.

56 Pegolotti, La Pratica della mercatura 42.

57 Gjuzelev, Ochertzi 111-112.

58 Tzvetkova, Prouchvane 203.

to the higher efficiency of the maritime trade carried out at the harbour of Sozopol.

As far as the loading capacity of the harbour of Sozopol is concerned, there is only one clear evidence of the way the cargo was transported from the vessels to the shore. In his Account Book (*Computus*) Antonio Barberi, the treasurer of Amadeus VI, Count of Savoy (1334-1383), reports that on 9 January 1367 he paid in Sozopol 8 silver ducats for the boat that carried Amadeus VI's property from the galley he travelled with to the shore⁵⁹. From this information, it appears that the transport of cargo from the basin where the large ships moored (Amadeus VI travelled with *galea grossa*) to the shore was carried out by boats, which served the internal communications in the harbour and played an important role in loading and unloading. Despite the lack of direct data, it is logical to assume that there was also a pier, which, judging by the above-mentioned use of harbour boats, was available to vessels with smaller displacement and shallow draft – vessels which, as already mentioned, could also be hauled onto the sandy beach for more effective cargo handling. Interesting information about the Sozopol pier was recorded in the 18th century by Wenzel von Brognard. He points out that the pier of the town stretched 2 miles inward (»Des Marktflakens eigene Scale ist zwey Miglien tiefer einwärts gelegen«)⁶⁰. The existence of a harbour pier in Sozopol in the first quarter of the 17th century was also reported in a marginal note written by the abbot of the monastery of »St Anastasia« Nathanail, which says that in 1623 some Cossacks with 17 caiques »... came to the Sozopol pier«⁶¹. However, the question remains to what extent these two pieces of evidence for the existence of a harbour pier are relevant to the 13th to 15th centuries.

An important indicator of the functional capacity of a harbour is the type of ships it can accommodate in its waters, with the size, the displacement as well as dead-weight tonnage of the mooring vessels being of particular importance. As already mentioned, in *Lo Compasso de Navegare Sozopol* is defined as a harbour for barques. However, the 14th century sources expand this profile and indicate that it far exceeded the category of a harbour for small sail-boats. In the *Devetum de non eundo ad Susopolim* (Embargo on going to Sozopol) issued on 22 March 1316 by the Genoese Officium Ghazariae it is ordered that no one with a galley, nave (nef), linh or barque (*aliqua galea, navi, ligno vel barca*) can visit Sozopol⁶². It is clear from this prohibition that besides barques, other larger classes of both long and round types of ships⁶³ also moored in Sozopol before being banned

from sailing to its harbour area. This evidence is supported by: the information in the Account Book (*Computus*) of the Genoese »Military Service« of 1351/1352 about a linh and galley that visited the harbour of Sozopol⁶⁴; reports from the logbook of the large galley whose captain was Simone Lekavela of Genoa which visited Sozopol in March 1352⁶⁵; and the data from the 1366/1367 Account Book (*Computus*) by Antonio Barberi, where, besides the galleys in Amadeus's fleet, a pamphylos and several linhs are mentioned among the vessels that transported the Count's people to and mostly from Sozopol to Constantinople⁶⁶. From the review of these documents, it is clear that linhs stand out as most commonly used. In March 1367 Emperor John V Palaiologos (1341-1391) and the Latin Patriarch of Constantinople travelled aboard a linh from Nessebar to Sozopol. The same ship waited for them for 3 days in the water area of the harbour until they finished their mission and then took them back to the Count of Savoy⁶⁷. On 27 April 1367 in Constantinople, 415 perpera were paid for freight to Gonrado de Lacu as a patron of a linh (*patrono cuiusdam ligni*). This ship transported 83 people from Sozopol to the Byzantine capital – including the servants of Amadeus VI, as well as some people from Württemberg⁶⁸. The next notice is from 2 May 1367. Then, Constantine Decipat of Sozopol was given 425 perpera for transporting 84 Teutonic Knights and Englishmen on his linh (*sui ligni*) from Sozopol to Constantinople⁶⁹.

Along with the above-mentioned types of ships, the list of vessels that moored at the harbour of Sozopol is also enriched by a »small galley« (*una parva galea*)⁷⁰, by some cargo ships such as griparea⁷¹ and pamphylos⁷², as well as by sandalion⁷³, which was mainly used by local fishermen.

The brief overview of the types of vessels that visited the harbour of Sozopol during the Middle Ages, shows that ships of different classes, size and characteristics moored in its waters, which proves its high standard of safety and operability while handling the ship traffic, i.e. the harbour's functional capacity was absolutely relevant to the needs of medieval navigation providing shelter to both long and round types of ships.

In a nutshell, several conclusions can be drawn. Over the centuries Sozopol and its harbour underwent changes in their geomorphological configuration. As a result, during the Middle Ages the water area between St Cyricus Island and the north-west front of the tombolo established itself as the basic harbour moorage, which *a propos* seems to have been the permanent main body of the harbour since the time of the pre-Hellenic Thracian settlement. Due to its excellent

59 Bollati, *Illustrazioni della spedizione* 105, §411.

60 Nikov, *Opisanie* 31.

61 Karaiotov, *Ostrov* 61.

62 Gjuzelev, *Ochertzi* 105.

63 More on these two general types of Mediterranean ships and the main distinctions between them see in Lane, *Ships* 1-53.

64 Gjuzelev, *Ochertzi* 111-112.

65 Balard, *La bataille du Bosphore* 465.

66 Bollati, *Illustrazioni della spedizione* 118-119, § 441; 134, §542; 139, §580.

67 Bollati, *Illustrazioni della spedizione* 118-119, § 441.

68 Bollati, *Illustrazioni della spedizione* 122, § 460.

69 Bollati, *Illustrazioni della spedizione* 125, § 490.

70 Bollati, *Illustrazioni della spedizione* 112, § 432.

71 Gjuzelev, *Ochertzi* 119-120.

72 Gjuzelev, *Tri etjuda* 120.

73 Gjuzelev, *Izvori* 219.

functional characteristics, both sheltering and logistic, Sozopol became one of the busiest harbours along the Western Black Sea coast. The apogee of the medieval town dates back to the 13th-15th centuries when the West Black Sea system of harbour towns became part of the international maritime trade network directed by the Italian merchant-seafarers. Sozopol is present in all medieval portolans and in most (86.3 %) of

the portolan charts from the 14th to the 17th centuries, with its name regularly highlighted in red⁷⁴, which reflects its location and its crucial importance as a key maritime and trade centre. There is no doubt that, not only in the heyday of the ancient Apollonia Pontica but also during the medieval prime of Sozopol, the harbour was one of the determining factors for the prosperity of the town and its inhabitants.

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Summary / Zusammenfassung

The Harbour of Medieval Sozopol

Sozopol (Σωζόπολις / ancient Apollonia) was one of the most important port cities in the late medieval and early modern Black Sea, as is documented in various portolans and documents of the 14th century onwards. This paper explores the function and topography of its harbour and anchorages based on a combination of written, archaeological, cartographic, pictorial and also new geophysical evidence.

Der Hafen des mittelalterlichen Sozopol

Sozopol (Σωζόπολις / das antike Apollonia) war eine der wichtigsten Hafenstädte im spätmittelalterlichen und frühneuzeitlichen Schwarzen Meer, wie verschiedene Portolane und Dokumente ab dem 14. Jahrhundert belegen. Dieser Beitrag untersucht die Funktion und Topographie seines Hafens und seiner Ankerplätze auf der Grundlage einer Kombination aus schriftlichen, archäologischen, kartographischen, bildlichen und auch neuen geophysikalischen Befunden.



Fig. 1 View to the town of Sozopol, its water area, the port, and the islands. – (D. Dimitrov, 2019; base map GoogleEarth).



Fig. 2 View of Sozopol peninsula and its sandy isthmus/tombolo with small vessels hauled onto the beach area in the north-western part of the isthmus. Postcard, first quarter of the 20th century. – (Unknown photographer).



Fig. 3 View of the harbour of Sozopol basin and St Cyricus Island, 1940. – (Fotoatelier »Gr. Paskov«, Sofija, State Archives – Burgas BASA-1513-1-28-1).



Fig. 4 A drawing of Sozopol by the Flemish painter Jan Peeters (?) (1653) showing the harbour and St Cyricus Island. – (From Dimitrov, Sozopol 396-397).



Fig. 5 Plan of Sozopol Bay by Taitbout De Marigny (1830). – (From Orachev, Prouchvania 9).

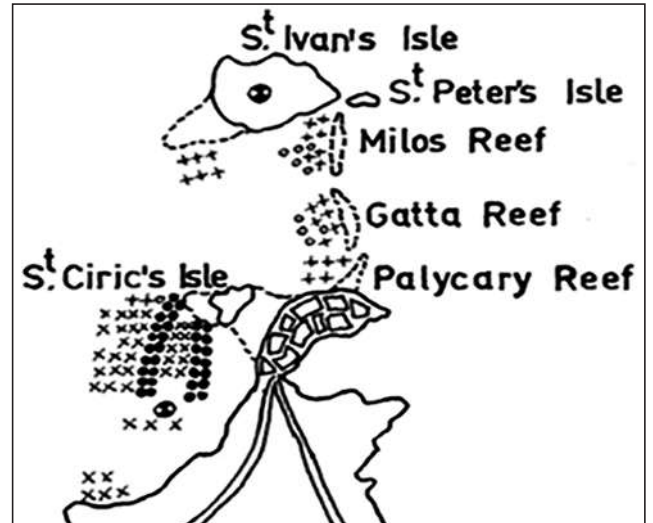


Fig. 7 Sketch of the water area and the anchorages of Apollonia Pontica. Key: xxx Stone anchors. ooo Lead stocks. --- Coastline in Antiquity. --- Present-day coastline. ••• hypothetical ancient breakwaters. – (From Dimitrov, Anchors 57).



Fig. 6 The Western Black Sea harbour system according to the earliest extant dated navigational/portolan chart produced at Genoa by Petrus Vesconte in 1311. Sozopol (Cisopoli) is highlighted in red and the two dots in front of its coastline designate the islands of St John and St Cyricus. – (From Dimitrov, Kartographia 43).



Fig. 8 Location of the harbour area of late medieval Sozopol according to the portolans. – (D. Dimitrov, 2019; base map GoogleEarth).

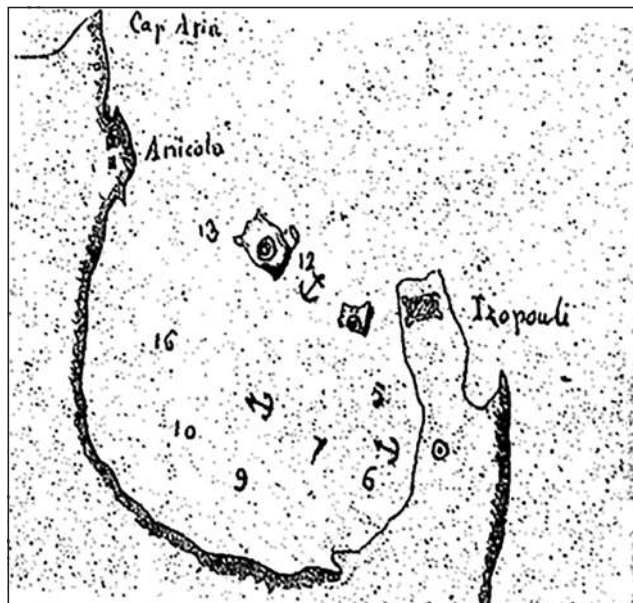


Fig. 9 Sozopol Bay and its anchorages according to an Anonymous French Plan of the Western Black Sea coast from the 17th to 18th centuries. – (From Orachev, Prouchvania 9).