THE "LAND-SEA" INTERACTION ALONG THE WESTERN BLACK SEA: GEOARCHAEOLOGICAL AND HISTORICAL-GEOGRAPHICAL STUDY[*]

Preslav PEEV[**]
Rosina KOSTOVA[***]
Rumen YANKOV[****]
Galin PETROV[*****]
Bogdan PRODANOV[******]

Cuvinte-cheie: *porturi medievale, hărți nautice, geoarheologie.*
Keywords: *medieval ports,nautical charts, geoarchaeology.*

Rezumat: *Pentru a înțelege corect evenimente din istoria omenirii și influența factorului antropic, trebuie analizate rezultatele reconstrucțiilor paleogeografice privitoare la studiul schimbărilor climatice și la schimbările nivelului mării, care includ prezența umană. Accentul unui astfel de tip de cercetare integrată privește, pe de o parte omul, istoria sa, modul său de viață, iar pe de altă parte reconstrucția parametrilor de bază ai mediului înconjurător în care a activat acesta, a condițiilor paleoecologice în care a trăit în diferite perioade istorice și locuirea. Angajarea „Științelor pământului" și a aplicațiilor lor tradiționale în arheologie pot contribui la o interpretare mai exactă și mai eficientă și, mai ales, la o mai bună urmărire a relațiilor spațio-temporale dintre diferite obiecte. Cercetările geoarheologice și istorico-geografice trebuie să dezvăluie factorii obiectivi și trăsăturile regulate în comportamentul comunităților locale în contextul interacțiunii economice, politice și culturale pe „uscat-mare". Această nevoie este exacerbată de antropogenizarea puternică a părții de*

[*] The present study is part of the project "The land-sea" interaction along the Western Black Sea: geoarchaeological and historical-geographical study", funded by the National Science Fund of the Ministry of Education and Sciences of the Republic of Bulgaria (Grant Agreement no КП-06-Н–70/4).

[**] Preslav PEEV: Department of Marine Geology and Archaeology, Institute of Oceanology-Bulgarian Academy of Sciences; e-mail: peev@io-bas.bg

[***] Rosina KOSTOVA: Department of Archaeology, St. Cyril and St. Methodius University of Veliko Tarnovo; e-mail: r.kostova@ts.uni-vt.bg

[****] Rumen YANKOV: Department of Geography, St. Cyril and St. Methodius University of Veliko Tarnovo; e-mail: r.yankov@ts.uni-vt.bg

[*****] Galin PETROV: Department of Geography, St. Cyril and St. Methodius University of Veliko Tarnovo; e-mail: g.petrov@ts.uni-vt.bg

[******] Bogdan PRODANOV: Coastal Dynamics Department, Institute of Oceanology-Bulgarian Academy of Sciences; e-mail: bogdanprodanov@gmail.com

coastă studiată în ultimele două decenii și de ponderea tot mai mare a structurilor artificiale în segmentele de coastă, care au șters urmele arheologice și istorice ale trecutului. Zona selectată oferă o oportunitate excepțională pentru un studiu retrospectiv al modelului civilizațional al comunităților maritime din bazinul Mării Negre, care s-a dezvoltat fără întrerupere din perioada preistoriei târzii și până în prezent. Scopul strategic al proiectului de cercetare este de a asigura crearea unui model eficient și flexibil pentru cercetarea științifică interdisciplinară a interacțiunii „uscat-mare" în zona de coastă din vestul Mării Negre, de la începutul Holocenului târziu până la sfârșitul secolului al XVII-lea, bazat pe integrarea datelor geologice, paleogeografice, istorice și arheologice într-un mediu GIS. Nu în ultimul rând, se pune accent pe studiul comunităților multietnice de coastă de pe litoralul Mării Negre și a atitudinii acestora față de mare și activitățile economice conexe, în măsura în care datele privind patrimoniul cultural imaterial permit. Zona modernului Sozopol și a insulelor sale adiacente a fost aleasă pentru studiul de caz.

Abstract: *To properly understand events in human history and the influence of the anthropogenic factor, the results of paleogeographic reconstructions related to the study of climate change and sea level changes, which include the human presence, must be analyzed. The focus of such type of integrated research is on the one hand man, his history, his way of life, and on the other hand is the reconstruction of the basic parameters of the surrounding environment in which he was active; of palaeoecological conditions in which he lived during different historical periods and habitations. Engaging the Earth Sciences and their traditional applications in archaeology are able to contribute to a more accurate and efficient interpretation and, above all, to better tracing of spatial-temporal relations between different objects. Geoarchaeological and historical-geographical research must reveal the objective factors and regular features in the behaviour of local communities in the context of economic, political and cultural "land-sea" interaction. This need is exacerbated by the strong anthropogenization of the studied part of the coast in the last two decades and the growing share of man-made structures in the segments of the coast erasing archaeological and historical traces of the past. The selected area provides an exceptional opportunity for a retrospective study of the civilizational model of maritime communities in the Black Sea basin, which has been developing without interruption from the period of late prehistory to the present day. The strategic goal of the research project is to ensure the creating of an effective and flexible model for interdisciplinary scientific research of the "land-sea" interaction in the Western Black Sea coastal area from the beginning of the Late Holocene to the end of the 17th century based on the integration of geological, paleogeographic, historical and archaeological data in a GIS environment. Last but not least, emphasis is placed on the study of the multi-ethnic coastal communities along the Black Sea coast and their attitude to the sea and related economic activities, as far as the intangible cultural heritage data allow. The area of the modern Sozopol and its adjacent islands was chosen as a case study area.*

The combination of geological and geomorphological data with the acquired archaeological and historical information can restore the ancient landscape of the study area. The research is focused on the landscape of Sozopol and its surroundings, due to it being among the most important areas in the history of the Western Black Sea. Multidisciplinary investigation of ancient archaeological sites is a key research field for systematic investigation. The research used a number of methods characteristics of the Earth sciences as well as the humanities. The Western Black Sea

coast is a peculiar geographic region, playing a crucial geopolitical role as a link in the North-South cultural interaction between Constantinople, the Danube region, and North-Eastern Europe. Therefore, the manifestation of any political and economic power in the entire region is based on the appearance and development of port cities. In addition, they have always played a crucial role in the logistics of military domination and functioned as outposts for control of sea roads along the coast.

Case study area

The research area covers the Medni Rid part of the Strandzha coast, framed by the Cape Chukalya (Kraimorie oil port) and the Cape Maslen Nos. The coastline in this section outlines the larger bays of Atiya, Vromos, Sozopol, and Kavatsi, separated by narrow peninsulas – Atiya, Accra, Sozopol, Budzhaka, etc., as well as the islands of Sveta Anastasiya, Sveti Ivan and Sveti Petar, Sveti Kirik and Sveti Toma. The immediate hinterland includes a swampy coastal lowland with the lakes Alepu, Arkutino, and Stomoplo, and the Medni rid hill (Bakarlak) – a part of the northernmost branches of Strandzha mountain. To the west and south, the region is geomorphologically framed by the valleys of the Ropotamo and Dyavolska Rivers. The Medni Rid coastline is characterized by a great topographic and natural diversity, which provides favourable conditions for coastal navigation and port activities since ancient times.

Land-sea economic interaction at the local level is based on traditional activities in the hinterland. The basis of the local economy for centuries is grapevine, wooden material and charcoal production, mining, and copper processing. The combination of fishing and fish processing in the settlements on the coast creates the preconditions for intensive internal and external economic exchange for the region, stimulating trade and navigation[1]. The economic connections inevitably had an impact on the settlement structures and the hierarchy of inter-settlement connections, constantly modified by resettlement.

Thus, the selected territory provides an exceptional opportunity for geoarchaeological and historical–geographical research of the civilizational model of the maritime communities in the Black Sea basin, which developed without interruption from the period of late prehistory to the present day. This type of interdisciplinary and innovative research allows us to establish the objective factors and regular features in the behaviour of local communities in the context of economic, political, and cultural land – sea interaction, which can and should be taken into account in modern strategies for sustainable development of the region.

Methods and approaches

The present project is focused on the five islands in the Bulgarian water area as well as on the peripheral zones between Kraimorie and Maslen nos on the West Black Sea coast which are anthropo–geographically determined. The strategic goal of the research is to ensure the creation of an effective and flexible model for interdisciplinary scientific research of the land-sea interaction in the Western Black Sea coastal area

[1] PEEV, GINALIS 2020, p. 383.

from the Late Bronze Age to the end of the 17th century based on the integration of geological, paleogeographic, historical and archaeological data in a GIS environment. The lower chronological date of the study is determined by the beginning of navigation in the Black Sea, which created the active connection land–sea in this sea basin. In the 17th century, on the other hand, the islands in the Western Black Sea gradually faded from the land-sea interaction, as their active habitation ceased.

The main approaches to achieving the goal of the project are the integrated and interdisciplinary approaches. The integrated approach is applied in the initial stage of the project. It is focused on collecting and analyzing the information, which is found in documentary and historiographical sources. All available medieval and Renaissance maps and peripli depicting all or part of the Bulgarian Black Sea coast, data from non-destructive field research and archaeological excavations, as well as the results of previous research projects related to the region will be studied.

The interdisciplinary approach provides for:

In order to create network models and carry out the comparative study of settlement and port hierarchies and interconnected functionalities of coastal infrastructures along the Bulgarian Black Sea coast, databases from the paleogeography of the region, historical documentary sources and archaeological research were integrated into the GIS environment. Restoration of some of the main elements of the ancient, natural landscapes of the coast, in which human presence has been established, and present-day littoral zone, based on which to make a reconstruction of natural conditions in the period from prehistory to modern times. A study of the natural landscape of key objects in their evolutionary development is planned. A controlling factor in this reconstruction is the fluctuation of the Black Sea level and the dynamics of the coastal zone throughout the Holocene. The scope of the study will explore and interpret a wide range of parameters: the morphographic and morphometric characteristics of the bottom; the cliff shore and the underwater coastal slope; the change of the coastal morphology during the late Holocene, controlled by the transgressive-regressive cycles; interpretation of climatic and oceanographic elements (waves, sea currents).

Preliminary results

Concerning the location of the ancient harbours of Apollonia Pontica, coring's were carried out in two areas, each of which is likely to be a potentially protected harbour. The first coring site is located on the north-western coast of the promontory of Skamni peninsula in an area well protected from the dominant northeastern and eastern winds[2]. The second one is along the western shore of the tombolo, between the centre of Sozopol and its suburb bays of Alepou, south of Sozopol[3]. Under similar geomorphological conditions, as at Pomorie[4], the tombolo was formed at the modern Sozopol Peninsula. In the past, today's Skamni Peninsula was an island, which, as a result of regular lithodynamic manifestations, was connected to the mainland by a sandbar. The only question that remains to be resolved is when it was

[2] BARALIS *et alii* 2011, p. 103–109.

[3] FLAUX *et alii* 2016, p. 57–70.

[4] LILIENBERG 1966, p. 23–45.

happened. According to one of the first investigators of the geomorphological development of the study area, it has happened in the Newchernomorian time. The other peninsulas along the Medni rid coastline of Strandzha mountain (Chukalya, Atiya, Kyupriya), the same author defines them as horst islands connected to the continent through the Karangat period.

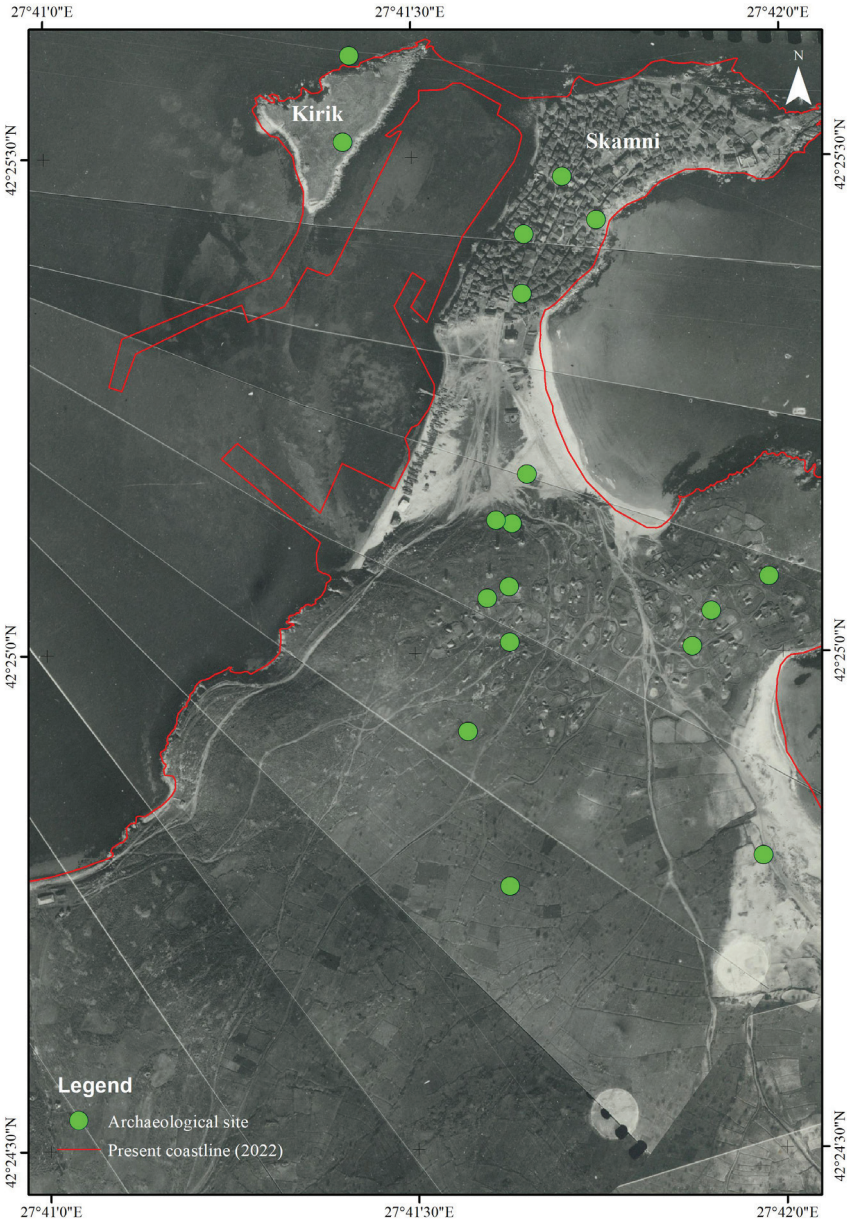

Fig. 1. Aerial photo mosaic with archaeological sites and present coastline (after PEEV, PRODANOV 2023).

Old photographs showed the tombolo when the area was not yet affected by modern building construction and hydro-technical facilities. The lack of archaeological monuments on the sand spit is also impressive (**Fig. 1**). Several hundred cultural-historical monuments from different eras of the Late Eneolithic, Antiquity and the Middle Ages are known from Sozopol and its surroundings. And none of them are located on today's sandbar.

Conclusion

In this manner, the geoarchaeological and historical-geographical study of the Sozopol coast aims to test the following hypotheses:

• Sustainability and/or dynamics of the patterns of settling and habitation in the region, predetermined by the border political, economic, and ethnocultural interactions between the coastal zone and the mountain hinterland;

• Significance and activity of Sozopol in the initiation and realization of intensive interregional economic and cultural relations of Thrace and Strandzha, on the one hand, and the Black Sea and the Eastern Mediterranean, on the other, for a long historical period;

• Manifestations and effects of isolation and connectivity in the island world of Sozopol in historical-geographical and cultural context. After analysing the geological and geomorphological information for the area of the Skamni peninsula, and in particular, for the sandy isthmus of the peninsula with the mainland, it was concluded that the sand body is a tombolo. All the different cores reveal the general situation that the tombolo was formed in real historical time. This is also confirmed by the lack of stationary archaeological sites on its territory.

The general impression is that the study area is subjected to stress by a variety of factors and influences-natural hazards (coastal erosion, sea level rising), human activities (building works, tourist stress), etc. There is an urgent need for appropriate mitigation strategies to be designed and implemented in order to combat the rapid coastal erosion, which is threatening the area of national and international importance.

BIBLIOGRAPHY

BARALIS *et alii* 2011 – A. Baralis, B. Devillers, N. Marriner, Ch. Morhange, A. Hermary, *Coastal geoarchaeology of Apollonia Pontica (Bulgaria)*, Méditerranée 117 (2011), p. 103–109 (https://doi.org/10.4000/mediterranee.6002).

FLAUX *et alii* 2016 – C. Flaux, P. Rouchet, T. Popova, M. Sternberg, F. Guibal, B. Talon, A. Baralis, K. Panayotova, C. Morhange, *An Early Bronze Age pile-dwelling settlement of discovered in Alepu lagoon (municipality of Sozopol, department of Burgas), Bulgaria*, Méditerranée 126 (2016), p. 57–70 (https://doi.org/10.4000/mediterranee.8203).

LILIENBERG 1966 – D. Lilienberg, *An attempt at morphological zoning of the Bulgarian Black Sea coast*, Izvestiya na Bulgarskoto geografsko druzhestvo 6/16 (1966), p. 23–45 (in Bulgarian).

PEEV, GINALIS 2020 – P. Peev, A. Ginalis, *Inventory of Late Antique and Medieval ports along the Western Black Sea*, Pontica 53 (2020), p. 381–390.

PEEV, PRODANOV 2023 – P. Peev, B. Prodanov, *Apollonia Pontica during the ages. Future research perspectives*, Proceedings of the 23rd International Multidisciplinary Scientific Geo Conference SGEM 23.1 (2023) (https://doi.org/10.5593/sgem2023/1.1/s01.02).