

Chapter 2

Brief History of the Black Sea and Scientific Research

Abstract The Black Sea name (*Black Sea*, *Mer Noire*, *Mare Nero*, *Schwarze Mer*, *Cernoe More*, *Kara Deniz*) is given recently, dating since the 14th century and has no connection with the Ancient names. In the early Greek antiquity, the Black Sea was called *Pontus Axeinus* (“inhospitable sea”) and later was called *Pontus Euxinos* (“hospitable sea”). The first accurate bathymetric surveys of the Black Sea were executed by R. Gotie in 1820 and 1821, the results being published in 1822. The 1970s witnessed the impressive monographs *The Black Sea. Geology, Chemistry and Biology*, edited under the coordination of Egon T. Degens and David A. Ross, as well as the results of Glomar Challenger expedition. One of the first and most interesting syntheses on Black Sea is owed to Grigore Antipa who, in 1942, published the first volume of *Black Sea monography*. The Knorr expedition of 1988 was the first one to deepen the knowledge on Black Sea based on a thorough measurement. Currently, research of the Black Sea ecosystem is being undertaken in the framework of national, regional and international projects.

Keywords *Pontus axeinus/euxinos* • Bathymetric surveys • Black Sea monography • Oceanographic investigations • Research projects

2.1 Name and Origin

The Black Sea name (*Black Sea*, *Mer Noire*, *Mare Nero*, *Schwarze Mer*, *Cernoe More*, *Kara Deniz*) is given recently, since the beginning of 14th century, and has no connection with the Ancient name. The scientific explanation of the name's origin is still far to be resolved due to the etymologic and hydronimical difficulties, as Gh. Brătianu also emphasized: “Amongst all the issues regarding the Black Sea, there is no other more characteristic and less known than that of name, however paradoxical such affirmation may appear” (Brătianu 1999, p. 69).

The Indian tribes (Meotian, Sindhi and Taurine) who lived in the Northern Black Sea steppes 850–800 years before Christ called the sea *Termarum*. In the early Greek antiquity, the Black Sea was called *Pontus Axeinus* (“inhospitable sea”) and

later was called *Pontus Euxinos* (“hospitable sea”). Other names were also used such as *Pontus Scycticus*, *Pontus Sarmaticus*, *Mare Sarmaticum* and Cimmerian Sea.

In the Middle Ages were also used several names: *Mare Majus*, *Mar Maggiore*, *Mer Maiour* (Fig. 3), *Kara Deniz* (Turkey translation for “Black Sea”) and in 1338 appears for the first time its Latin name of *Mare Nigrum*, launched many years later by Dimitrie Cantemir in the scientists’ world of 18th century by its works in Latin language (Dimitrie Cantemir 1710).

The controversy regarding the Black Sea name’s origin, in which important personalities of the Romanian culture took part, such as B.P. Hasdeu and Gh. Brătianu, remains open. However, the explanation must not be searched in the physical characteristics of the aquatory, but, we believe, in the manner in which it was perceived by the circumeuxinic local populations according often to subjective factors.

2.2 Early History of the Black Sea

The Greek Mythology keeps the first impressions of human from the history dawn about Black Sea. From Hesiod we find that Okeanos god, the most important character of the marine Greek mythology, who mastered the Ocean, lived in a deep cave in the Black Sea bottom, from where he came out to monitor the seas. Also from the mythology we find out about the Argonauts trip on Argo ship which is considered the first expedition on sea with precise goals: finding and capturing the Golden Fleece. Most of the trip was on the Black Sea between Bosphorus and Kolhida Straits. Orpheus poet, who was on Argo ship, leaves us interesting impressions about the currents, waves and prevailing winds. The fact that the Black Sea is known since prehistory is revealed also by the legends created around Snake Island, called Leuke back then. Here existed the magic temple where Ahilleus lived, retired on the island after deification.

The first information about Black Sea we owe to Ancient philosophers, starting with Homer (1000 B.C.), Hecateu (500 B.C.), Herodot (485–425 B.C.), Aristotel (384–322 B.C.), Ptolemeu (127–151 A.C.) who left texts and cartographic drawings, some of some astoundingly precise for that time. Aristotel occupies a special place within the gallery of first scholars who tried to understand the Black Sea. Therefore, in *Meteorology*, a fundamental paper written during the second Athenian period, Aristotel describes the active circulation of waters from Azov Sea, through Black Sea, Bosphorus and Dardanelle Straits, through Aegean and Mediterranean Seas towards the Atlantic Ocean, where it enters after crossing the Hercules Columns (Gibraltar Strait). Here we find the first accurate description of currents from Bosphorus Strait as well as much other information about Black Sea and Azov Sea. It followed a long period during which Black Sea was roamed by Greek, Venetian, Turkish seamen from whom remained interesting documents regarding the configuration of shores, geographical location of harbors and sailing factors and conditions.

2.3 Scientific Research on the Black Sea

The first accurate bathymetric surveys were executed by R. Gotie in 1820 and 1821, the results being published in 1822. The expedition led by E.P. Manjanari between 1825 and 1836 aimed the bathymetric elevation of the entire Black Sea basin, the map published in 1842 indicating for the first time an overall image of bathymetry and superficial sediments.

After 1850, several Russian expeditions are carried, the substantial activity of European Commission of the Danube is started, the scientific investigations are developed in all the main harbors, the first marine investigations stations appear (Odessa 1872, Sevastopol 1879, Karadag 1902) and later the stations Kerch (1919), Novorosisk (1921), Kerson (1921), Agigea (1926), Constanta (1932), Batuni (1932), Mamaia Sat (1933), Kaliakra (1933), etc.

Amongst the most significant expeditions we consider those conducted by F. Wranghel and J.B. Spindler, between 1890 and 1894 on board of the *Cernomoreț*, *Zaporojet* and *Donet* vessels, with the participation of researchers N. Andrusov, A. Ostrumov, I. Lebedințev, N. Zelinski. The great merit of these expeditions is the finding of anoxic waters, rich in H_2S , the clarification of thermal and saline general structures of the aquatory, the description of the main types of sediments from the deep basin and the description of general structure of marine biome.

Grigore Antipa carries investigations on the marine fauna in 1893, for 9 months, at the board of the *Elisabeta* cruiser. It is the first Romanian oceanographic expedition in the Black Sea, in which a rich zoological material is collected and chemical measurements are carried as well as currents determinations.

Starting from 1890, the Romanian Maritime Hydrographic Directorate and the General Staff of Army perform highly accurate cartographic and oceanographic papers both in the coast area but also on the high of Black Sea. Later, the Russian expeditions conducted by N.M. Knipovici (1920–1922) and by J.M. Șokalaschi and I.A. Nikitin (1923–1926) continued the investigation of the basin's morphology and the oceanographic structure of Black Sea aquatory.

An important role regarding the information on currents goes to R. Ciocârdel who, between 1932 and 1937, arranges several research cruises on board of Romanian War Royal Marine vessel. The result of these investigations consisted in the elaboration of the most complex map of currents from the North-West of Black Sea, with genetic and dynamic oceanographic explanations underlying the recent studies. One of the first and most interesting syntheses on Black Sea is owed to Grigore Antipa who, in 1942, publishes the first volume of *Black Sea monography*. Unfortunately, the second volume remained in manuscript and was further lost.

After World War II, the oceanographic investigation of Black Sea is resumed within the specialized institutions of riparian countries, become more intense and organized until the beginning of '60s when large collaboration are established with the participation of the most important oceanographic center of the world. The preliminary investigation of Black Sea becomes now a systematic investigation.

The programs developed based on the investigations on board of *Atlantis II* (1969) and *Glomar Challenger* (1975) vessels resulted in the publication of various papers, including the impressive monographs *The Black Sea. Geology, Chemistry and Biology* edited under the coordination of the well-known oceanographers Egon T. Degens and David A. Ross, as well as the results of *Glomar Challenger* expedition (*Deep Sea Drilling Project*, vol. XVII). It was the first moment of synthesis which extends a lot the limits of Black Sea knowledge to all levels, by specifying the further approaches of deepening.

The Knorr expedition (Black Sea Oceanographic Expedition *R/V Knorr*) conducted between April 5th to August 1st, 1988, is the first one of the series of those which deepens the knowledge on Black Sea based on a stringent measurement program using the entire arsenal of modern oceanography. The scientists focused on the study of inorganic nutrients, the distribution of oxygen and hydrogen sulfide, as well as on studying the light and heat distribution within the aquatory. The Hydroblack 91 Program, conducted in 1991, aimed the study of main physical features (pressure, temperature, density) and salinity. Five vessels from Turkey, Bulgaria and Ukraine participated to this program and over 300 measurement stations in vertical profile were performed.

During 1991–1994 the international program CoMSBlack (Cooperative Marine Science Program for the Black Sea) is developed under the coordination of Prof. David Aubrey from Woods Hole Oceanographic Institution. The program was initiated by the executive board of Intergovernmental Oceanographic Commission) at the 25th UNESCO session, held in Paris in March 1992. This is the first major basin-wide international program, with 5 research vessels from Turkey, Ukraine and Bulgaria, properly fitted for the physical oceanographic researches and some chemical and biological features of the aquatory.

In 1993 the Black Sea Environmental Programme is initiated and in 1995 the International Oceanographic Committee established a territorial Committee for Black Sea for the purpose of developing a territorial GOOS programme (Global Ocean Observing System) focused mainly on the investigation of biogeochemical flows, monitoring pollution and study of eutrophication (GOOS Report 2002).

The NATO-TU Black Sea project was held during 1993 and January 1998, with the participation of over 100 researchers from Turkey and from 14 oceanographic institutions from Europe and United States of America (Workshop Report Physical and Ecological Data and Models of the Black Sea, 1998). The project aimed the development of oceanographic database for the system's future management, the development of an infrastructure for the investigations in riparian countries and the development of some interdisciplinary models of ecosystems from Black Sea biome.

During 1999–2000, the International Atomic Energy Agency (IAEA) develops a project called “The Marine Environmental Assessment of the Black Sea” aimed for the study of radioactive contamination of waters and introduction of new nuclear techniques to determine the marine pollution.

References

Brătianu G (1999) Marea Neagră. Ed Polirom. Iași, Romania, p 69 (in Romanian)

GOOS Report (2002) Black Sea GOOS workshop. Second Session, Poti, Georgia 22–25 May 2001. UNESCO, GOOS Report No 109. Paris

The Black Sea

Physical, Environmental and Historical Perspectives

Vespremeanu, E.; Golumbeanu, M.

2018, IX, 150 p. 29 illus., 18 illus. in color., Hardcover

ISBN: 978-3-319-70853-9