REPORT ON THE CONSERVATION STATUS OF CETACEANS AND RELEVANT ACTIVITIES IN BLACK SEA

Date of the last modification of the report: 15/11/2024
Year of Start: 2023
Year of End: 2024

Introduction: *The aim of this report is to give a global vision of what occurred in the Region, regarding cetacean conservation, since the previous report, and what is important to address for the next period/in a near future. So the regional representative will synthetize the main studies (species, topics) led in the region, concerning research, monitoring and conservation, also the main "hot" topics or threats that need to be addressed and what is awaited from the Scientific Committee (and ACCOBAMS) for the next triennium as recommendations.*

Countries of Black Sea region:

Bulgaria
Georgia
Romania
Türkiye
Ukraine

Overview of activities in the Region since the previous report:

The information available for the period since the last report for the Black Sea Region (2020-2022). Major updates on cetacean density, abundance and distribution at the basin wide scale and also on the seasonal patterns of the harbour porpoise activity have been published. The results of the bycatch assessment were also published and widely discussed. Also, the efficiency of porpoise alerting devices (PALs) was tested to mitigate bycatch, and the PALs were considered as promising for use in the Black Sea. Threats posed by the war were identified. The activities have undertaken for continuous data acquisition in link with comprehensive cetacean population estimate and distribution, habitat use, passive acoustic monitoring, bycatch monitoring and mitigation trials, developing tissue banks, toxicology and microplastics contamination, stranding networks and events for the three subspecies inhabiting the Black Sea (*Delphinus delphis ponticus*, *Tursiops truncatus ponticus* and *Phocoena phocoena relicta*). A new IMMA (Important Marine Mammal Areas), in addition to 11 existing ones, was approved for the Eastern Anatolian waters. The assessment of the status of the three Black Sea subspecies in the IUCN Red List has been updated and submitted, now in the review process.

Cetacean abundance and distribution

CeNoBS: Support MSFD implementation in the Black Sea through establishing a regional monitoring system of cetaceans (D1) and noise monitoring (D11) for achieving GES (funded by DG ENV, European Commission). The multi-task project was implemented in 2019-21. The results of the survey have been published as a peer-reviewed paper, which provided modern insight into basin-wide density, abundance and distribution of three cetacean species in the Black Sea, as well as a discussion on their population dynamics, trends and prospects of research and conservation measures.

BlackCeTrends: Large coverage initiative for acoustic survey of cetaceans in the Black Sea. The ongoing international project has been implemented 2020, in which six institutions from all around the Black Sea (except Russia), with the objective of assessing the trends in the occurrence of Black Sea cetaceans, especially harbour porpoises, using a passive acoustic monitoring device, F-POD. Data on seasonal and diel activity of the harbour porpoise throughout the Black Sea have been published, brought light on porpoise seasonal migrations and their link with prey movements at present.

Bulgaria: The Ministry of Environment and Water (MOEW) completed the project "Natura 2000 in the Black Sea" with the following main outcomes: three cetacean species were mapped within existing N2000 sites where the species *Tursiops truncatus* and *Phocoena phocoena* are subject to conservation through ship-based surveys; the three cetaceans species had been mapped during four seasons (2022-2023) in Exclusive Economic Zone (EEZ) of Bulgaria through aerial surveys; photo ID catalogue developed for part of individuals in N2000 and coast-based surveys were made. Bulgaria already declared its commitment to the Synoptic Basin-Wide Survey in the ACCOBAMS area (ASI-2 project), including financial contribution for a three-year period up to 150 000 BGN (76 694 euro), which is depending on securing and actual starting of the project.

Green Balkans NGO continued its systematic vessel distance sampling surveys covering the Bulgarian territorial waters. In the summer of 2022 and 2023, the surveys covered shelf waters (up to 100 m depth). Data from 12 surveys (2017-2022) have been analyzed and summarized in a PhD thesis (Popov, 2023) that identified hotspots for each of the species during all four seasons. On that basis, important habitat was identified outside of the scope of the N2000 network and proposals for adding these areas to the existing marine N2000 network were made. An update of threshold values of indicator number (N) according to criterion D1C2 and of indicator density (D) according to D1C4 from the Monitoring Program under Descriptor 1 – Biodiversity (marine mammals) according to MSFD was proposed.

Georgia: three shipboard surveys were conducted in 2024 to estimate cetacean abundance.

Romania: Within the scope of the Monitoring and Conservation of Black Sea Cetaceans Programme, managed by Mare Nostrum, both distance sampling and opportunistic surveys were performed in 2023 and 2024, mainly on the southern part of the Romanian Territorial Waters. Also, there is in place a costal monitoring of marine mammals and other biota within the scope of the Biodiversity monitoring under the National Infrastructure-related project against Costal erosion project.

Ukraine: Distribution data obtained from passive acoustic monitoring are being analysed.

Türkiye: Within the scope of the Integrated Marine Pollution Monitoring Programme, managed by the Ministry of Environment, Urbanization and Climate Change, and implemented by TUBITAK MAM, an opportunistic cetacean sighting survey was conducted along the Turkish coastline of the Black Sea in the summer of 2023. As part of the same programme, a dedicated line transect study was conducted in the Sea of Marmara in September 2024.

Publication:

Ivanchikova, J., Tregenza, N., Popov, D., Meshkova, G., Paiu, R. M., Timofte, C., ... Hammond, P. & Gol'din, P. 2024. Seasonal and diel patterns in Black Sea harbour porpoise acoustic activity in 2020–2022. Ecology and Evolution, 14(10), e70182.

Ivanchikova, J. 2024. Harbour porpoise *Phocoena phocoena relicta* in the Black Sea: spatiotemporal activity patterns, habitat use, conservation. PhD Thesis. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kyiv, Ukraine.

Özsandıkçı, U., & Özdemir, S. (2024). Seasonal abundance estimates of cetaceans in the southern Black Sea (Sinop), Türkiye. Marine Mammal Science, 40(2), e13092.

Paiu, R.-M., Cañadas, A., Dede, A., Meshkova, G., Murariu, D., Öztürk A.A., Popov, D., Tonay, A.M., Timofte, C., Kopaliani, N., Gol'din, P., Panigada S. 2024. Density and abundance estimates of cetaceans in the Black Sea through aerial survey (ASI/CeNoBS). Frontiers in Marine Science. 11: 1248950.

Popov, D., Panayotova, M., Bekova, R., Dimitrov, H., Meshkova, G. 2023. Seasonal Abundance, Density and Distribution of Cetaceans in the Bulgarian Black Sea Shelf in 2017. Diversity, 15(2), 229.

Popov, D. 2023. Abundance and distribution of cetaceans (Cetacea) in Bulgarian territorial waters of the Black Sea. Plovdiv University "Paisii Hilendarski", Biology Faculty, Zoology Department, 334 pp.

Popov, D. V., Meshkova, G. D., Klisurova, H. I., & Dimitrov, H. A. 2024. Where do Cetaceans Spend their Summers in the Bulgarian Black Sea? Acta Zoologıca Bulgarıca, Supplement 20: 173-184.

Bycatch

The results of the bycatch assessment in the light of new data on population abundance obtained under the CeNoBS project were published and widely discussed. From 2019 to 2021, the bycatch assessment study was conducted in Bulgaria, Romania, Türkiye and Ukraine. Bycatch data were collected by independent observers onboard turbot fishing boats, complemented by questionnaire surveys and examination of stranded carcasses. Cetaceans were caught on 55% of the monitoring trips. The median number of porpoises bycaught per trip was 1 (maximum 41) and the number of porpoises per km of net varied between 0 and 3.66 (median 0.1). The total annual bycatch of harbour porpoises in the Black Sea was roughly estimated as between 11 826 and 16 200 individuals. These numbers were the product of median values for effort (days/trips and vessels) and bycatch rate. Given the new estimates of porpoise abundance based on the CeNoBS survey of 2019 and reconciling abundance and bycatch estimates, harbour porpoise bycatch in the Black Sea represents at least 4.6% of the estimated total population. Even this most conservative estimate is among the highest worldwide and far exceeds the probable sustainable levels of around 1.0-1.7%. This study confirmed that bycatch posed the most serious threat to the Black Sea harbour porpoises and that all riparian countries engaged in turbot fisheries must implement urgent measures to reduce it immediately, if the population is to survive in the long-term.

CetaByM: the pilot project, endorsed by the GFCM, assessed cetacean bycatch in Black Sea turbot gillnet fisheries and tested measures to mitigate the incidental catch of cetaceans, and the results have been partly reported since 2024. The efficiency of porpoise alerting devices (PALs) was tested to mitigate bycatch of the Black Sea harbour porpoise. The PALs imitated harbour porpoise alarm signals at a frequency of 10–130 kHz. Forty fishing operations, with a total soak time of 502 days, were observed in 2023. The gear rigged with PALs had less Black Sea harbour porpoise bycatch than the control gear, six individuals and 22 individuals, respectively. The results were promising, however needed further validation.

The results of the studies have been widely discussed in the ASCOBANS-ACCOBAMS Bycatch Working Group, GFCM Black Sea Group, ICES Working Group on Bycatch of Protected Species, MSFD D1C1 Incidental Bycatch Working Group. The shared view was that the situation was serious and needed practical measures for improvement.

Bulgaria: The MOEW adopted Order No RD-215/19.03.2024 with a requirement for the use of certain models of acoustic deterrent devices (pingers/ PAL devices) during turbot gillnet fishing in five NATURA 2000 sites. MOEW is developing a procedure for a national methodology and scheme for bycatch monitoring and defining threshold values. It is intended to be embedded in the Institute of Oceanology – Bulgarian Academy of Science; The levels of bycatch (especially *Harbour porpoise*) should be effectively monitored, so to ensure that it does not have a significant negative impact on the species concerned. MOEW has purchased 100 PAL pinger units – the intention is for these to be used as mitigation measures at N2000 sites during turbot gillnet fishing. The plan is these to be tested in 2025 and if successful and further funds are available more to be bought. Cetaceans' conservation in Bulgaria is anticipated also through the

Maritime and Fisheries Programme 2021-2027, Priority 1 “Promoting sustainable fisheries, restoration of water biodiversity and water ecosystems”. Procedure “Specific equipment of fishing vessels, actions and innovations aiming at conservation of biodiversity” foresees support for the use of pingers to mitigate bycatch. In addition procedure “Protection of marine environmental status” plans actions for the establishment of centre for monitoring of threats for cetaceans via remote methods and building capacities of authorities for monitoring and effective control of anthropogenic activities that impose threats for cetaceans.

Publication:

ICES. 2023. Working Group on Bycatch of Protected Species (WGBYC). ICES Scientific Reports. 5:111. 334 pp. https://doi.org/10.17895/ices.pub.24659484

Özbilgin, H., Fakıoğlu, E., Carpentieri P., Özdemir, S., Popov, D., Eryaşar, A. R., Paiu, M., Özsandıkçı, U., Şahin, F., Meshkova, G., Timofte, C., Dinçer, T., Gökçe, G. 2024. Commercial tests of porpoise alerting devices in the Black Sea turbot (*Scophthalmus maximus*) gillnet fishery. Fish Forum, Antalya. P. 77. Available from: https://www.researchgate.net/publication/380297052_Commercial_tests_of_porpoise_alerting_devices_in_the_Black_Sea_turbot_Scophthalmus_maximus_gillnet_fishery.

Popov, D., Meshkova, G., Vishnyakova, K., Ivanchikova, J., Paiu, M., Timofte, C., Amaha Öztürk, A., Tonay, A.M., Dede, A., Panayotova, M., Düzgünes, E., Gol’din, P 2023. Assessment of the bycatch level for the Black Sea harbour porpoise in the light of new data on population abundance. Front. Mar. Sci. 10:1119983.

Stock identification and population structure

Romania: Opportunistic surveys for Photo-identification were performed, still in processing phase.

Türkiye: According analyzed mitochondrial DNA (mtDNA) sequences of 73 bottlenose dolphin samples from Turkish coast (mainly Black Sea and TSS), revealing 14 haplotypes, eight of which are reported first time. The northern Black Sea bottlenose dolphins (NBS) appear to be genetically differentiated from those in the southwestern Black Sea (SBS), Mediterranean, and Atlantic Ocean, but not from the TSS and Aegean Sea populations. Besides, SBS bottlenose dolphins were differentiated only from those in the western Mediterranean (WM) and the Atlantic. Therefore, NBS and SBS bottlenose dolphins should at least be categorized as different populations. However, contrary to some previous studies there was no evidence supporting the classification of Black Sea bottlenose dolphins as a separate subspecies.

Publication:

Tonay, A.M., Uzun, B., Dede, A., Danyer E., Danyer Aytemiz, I., Amaha Öztürk A., Archer, F.I., Öztürk, B., Bilgin, R. 2024. Population genetic structure of the bottlenose dolphin in the Turkish waters based on mtDNA sequences with implications for the Black Sea subspecies *Tursiops truncatus ponticus.* Mitochondrial DNA Part A. doi: 10.1080/24701394.2024.2427216.

Uluduz, N., Vishnyakova, K., & Sözen, M. (2023). Records of atypical pigmented bottlenose dolphins (*Tursiops truncatus*) at the south-western coast of the Black Sea (Zonguldak, Türkiye). Turkish Journal of Zoology, 47(5), 319-323.

Noise and acoustics

CeNoBS: The results of the survey have been discussed in the context of data available on vessel traffic in the Black Sea.

Romania: The results and methodology from CeNoBS were presented within the Summit of underwater noise management, Cartagena, Spain in 2023.

Ukraine: The methodology of using F-POD, a novel tool for passive acoustic monitoring, was elaborated and presented as a part of the BlackCeTrends effort in the Black Sea.

Publication:

Ivanchikova, J., & Tregenza, N. (2023). Validation of the F-POD—A fully automated cetacean monitoring system. Plos one, 18(11), e0293402

Frassà, V., Prospathopoulos, A. M., Maglio, A., Ortega, N., Paiu, R. M., & Azzellino, A. (2023). Shipping noise assessment in the Black Sea: insights from large-scale ASI CeNoBS survey data. Frontiers in Marine Science, 10, 1200340.

Marine pollution

Ukraine: The network analysis based methodology of assessment of co-occurrence of toxic compounds found in food chains of aquatic ecosystems was presented as a part of the pan-European LIFE-APEX initiative and included the data from harbour porpoises from the Black Sea.

Publication:

Alygizakis, N., Kostopoulou, N., Gkotsis, G., Nika, M. C., Orfanioti, A., Ng, K., … & Slobodnik, J. 2024. Network analysis to reveal the most commonly detected compounds in predator-prey pairs in freshwater and marine mammals and fish in Europe. *Science of The Total Environment*. 175303. https://doi.org/10.1016/j.scitotenv.2024.175303

Mihova, S., Doncheva, V., Stefanova, K., Stefanova, E., Popov, D., Panayotova, M. 2023. Plastic Ingestion by *Phocoena Phocoena* and *Tursiops truncatus* from the Black Sea. In: Dobrinkova, N., Nikolov, O. (eds) Environmental Protection and Disaster Risks. EnviroRISKs 2022. Lecture Notes in Networks and Systems, vol 638. Springer, Cham.

Filimon, A., Ciucă, A-M., Harcotă, G-E., Stoica, E. 2024. Preliminary study on microplastic contamination in Black Sea Cetaceans: Gastrointestinal Analysis of *Phocoena phocoena relicta* and *Tursiops truncatus ponticus*. Animals. 14(6):886.

Zaharieva, Z. 2024. Bioaccumulation of heavy metals in cetaceans and fish from the Bulgarian Black Sea coast. Turkish Journal of Fisheries and Aquatic Sciences, 24(10).

Disease and strandings

In 2022, an unusual increase of cetacean strandings and bycatches (mostly common dolphins and harbour porpoises) were observed on the coast of the Black Sea, and several more cases of unusual mortality were reported in summer 2023 (after the Kakhovka Dam disaster) and early 2024. Russia's war against Ukraine escalated in February 2022 putting the entire Black Sea basin under a huge threat. Military activities in the marine and coastal areas may affect the marine biota in the region, including cetaceans. All the experts in the Black Sea put effort into collecting data and samples to find out the cause of deaths.

Bulgaria: Strandings data for the period 2010-2022 was analyzed and published. The MOEW has sub-contracted Green Balkans NGO's Wildlife Rescue Centre to collect fresh carcasses of stranded cetaceans and perform necropsies.

Romania: The Stranding Monitoring Network continued to function, over 1500 participants enrolled. Since the high pick of 2022 the number of stranding events is in decline for Romania, with 76 animals in 2023 and only 44 so far in 2024.

Ukraine: Post mortem studies have been conducted in cooperation with the University of Padova and Veterinary University of Hannover. Primary threats to cetaceans due to the war have been preliminarily identified, and the remediation measures were discussed at national forums.

Publication:

Uluduz, N., Yanchukov, A., Solak, H. M., & Sözen, M. (2023). Cetacean Stranding Events at Zonguldak, South-western Black Sea Coast of Türkiye. Acta Zoologica Bulgarica, 75(1).

Vishnyakova, K., Tonay, A.M., Popov, D., Meshkova, G., Paiu, M., Aytemiz Danyer, I., Danyer, E., Özsandıkçı, U., Timofte, C., Golubev, O., Rubanov, A., Dede A., Amaha Öztürk, A., Uludüz, N., Dimitrov, K., Kopaliani, N., Morell, M., Siebert, U., Hoyt, E., Mazzario, S., Goldin, P. 2023. An unusually high number of cetacean strandings in the Black Sea, 2022 - is it the consequence of war? 34th Conference of the European Cetacean Society, O'Grove, Spain, pp 256.

Amaha Öztürk, A., Tonay, A.M., Dede A. 2023. Crime scenes at sea: Deliberate killing of marine mammals in Türkiye (2014-2022). 34th Conference of the European Cetacean Society, O'Grove, Spain, pp 238.

Aytemiz Danyer, I., Tonay, A.M., Biskin Turkmen, M., Danyer, E., Dede, A., Amaha Öztürk, A. 2023. First report of vaginal stone in the common dolphin from the Black Sea coast of Türkiye. 34th Conference of the European Cetacean Society, O'Grove, Spain, pp 354.

Popov, D., & Meshkova, G. (2024). Cetacean Strandings along the Bulgarian Coast of the Black Sea in 2010–2022. In Oceans (Vol. 5, No. 3, pp. 429-441).

Vishnyakova, K.., Chernenko, I., Pashkevich, G., Gol'din, P. 2024. Unusual stomach contents in a Black Sea harbour porpoise found dead after the Kakhovka disaster. 35th European Cetacean Society Conference. Catania, Italy,. – P. 398.

Minea, M. A., Rizac, R. I., Timofte, C., Paiu, R. M., Militaru, M., Nicolae, G., ... & Soare, A. (2024). Nematode infestation in three harbour porpoises (*Phocoena phocoena*) on the Black Sea coast of Romania. Journal of Comparative Pathology, 210, 80.

Tissue banks

A tissue bank of cetacean samples established in Marine Mammals Laboratory at the basement of Faculty of Aquatic Sciences, Istanbul University, Türkiye with the partnership of a NGO, Turkish Marine Research Foundation. Also, the Ukrainian Bank of Cetacean Samples at the Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kyiv, Ukraine is operating.

Romania: Samples are stored in Bucharest Vet University and teeth samples were shared as well with Padova University.

Others:

Bulgaria: The project "Ecology and behavior of cetaceans - an indicator of the state of the marine environment and a prerequisite for sustainable development" was still ongoing in 2023. National roadmap for implementing EU Marine Action Plan was developed jointly by MOEW and Ministry of Agriculture and Food. Bulgaria has signed the Agreement

under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ) on 20 Sep 2023 and has the ambition to fulfil the Ratification instrument in the first half of 2025 (through a Bulgarian law of ratification). The agreement will address four main issues, which are in direct connection with cetaceans' conservation, as follows:

- Marine genetic resources, including the fair and equitable sharing of benefits;
- Measures such as area-based management tools, including marine protected areas;
- Environmental impact assessments; and
- Capacity-building and the transfer of marine technology.

Romania: A process of identifying Strict Protected Zones is ongoing, having an objective related as well to marine mammals.

Ukraine: Past impacts of the exploitation of cetacean populations in the Black Sea were traced throughout the past ten thousand years and it was shown that a profound human impact historically underlid later, recent changes in status of cetacean populations.

Publication:

Aiken, M., Gladilina, E., Çakırlar, C., Telizhenko, S., van den Hurk, Y., Bejenaru, L., Olsen, M.T. & Gol'din, P. 2023. Prehistoric and historic exploitation of marine mammals in the Black Sea. Quaternary Science Reviews. 314. 108210.

Aiken, M., Gladilina, E., Çakirlar, C., Telizhenko, S., Bejenaru, L., Bukhsianidze, M., ... & Gol'din, P. (2024). Earliest records of Holocene Cetaceans in the Black Sea. Journal of Quaternary Science, 39(4), 585-591**.**

Conservation

A new IMMA (Important Marine Mammal Areas), in addition to 11 existing ones, was approved for the Eastern Anatolian waters. The assessment of the status of the three Black Sea subspecies in the IUCN Red List has been updated and submitted, now in the review process. Greenpeace Bulgaria has organized a public campaign gathering signatures for a petition to declare the first marine reserve in Bulgarian Black Sea waters overlapping with Ropotamo SAC (N2000 site).

Major issue(s) or main threats or "hot" topics that have emerged during the said period for the Region:

The result of CeNoBS bycatch assessment showed that the bycatch of the harbour porpoise in the Black Sea exceeds the threshold for the sustainability of the population and poses a significant threat to this subspecies. The main tasks for the future activities remain from the previous period and include further updating fleet and effort assessments, enhancing the bycatch reporting and observation coverage, mortality analysis, validation of data, elaborating background for time-space closure measures, and, most importantly, developing techniques for bycatch mitigation, with consideration of local specific features. Also, the efficiency of porpoise alerting devices (PALs) was tested to mitigate bycatch under the CetaByM project by the GFCM, and the PALs were considered as promising for use in the Black Sea. It is of utmost importance that the obtained results are well-presented to the European Commission (DG MARE and DG ENV) and used as sound scientific evidence for effective bycatch reduction measure. It is necessary for Regulation (EU) No 597/2014 to be amended and to include Black Sea cetaceans in its scope making independent observers and the use of pingers obligatory for all vessels fishing turbot in the Black Sea. Furthermore, better collaboration with GFCM is necessary during the process of turbot fishing management in the Black Sea, ex. taking into account the risk this fishery imposes on the Black Sea harbour porpoise and ensuring its sustainability.

In 2022, unusual increase of cetacean strandings and bycatches (mostly common dolphins and harbour porpoises) were observed on the coast of the Black Sea, and several more cases of unusual mortality were reported in summer

2023 (after the Kakhovka Dam disaster) and early 2024. The Russia's war against Ukraine escalated in February 2022 puts the entire Black Sea basin under a huge threat. Military activities in the marine and coastal areas may affect the marine biota in the region, including cetaceans. All the experts in the Black Sea put effort to collect data and samples to find out the cause of deaths.

Recommendations / suggestions for Improvement of the conservation:

The bycatch in turbot fishery and the high seasonal mortality of harbour porpoises, threatening the viability of the subspecies, it is of an urgent matter to refine and monitor estimates of porpoise abundance, population dynamics, causes of mortality and bycatch level, as well as to develop and test multiple measures to reduce bycatch. Among them, testing of porpoise alerting devices (PALs) for bycatch mitigation should be continued with their potential improvements. Also, bycatch monitoring of fisheries should be enhanced.

Comprehensive monitoring of underwater noise, marine pollution and biological indicators of stress in animals, as well as response to stranding events and studies of pathology, are necessary for understanding and managing the war impact and other human impacts (construction, seismic surveys). Cooperative regional effort is necessary for obtaining adequate material and data about the causes of mortality.

Demining measures and activities are necessary both in short and long-term run for reducing multiple threats for cetaceans, and other marine biota and research efforts.

Establishing new marine protected areas planned on the basis of earlier defined IMMAs, including transboundary and international reserves, will be important for cetacean conservation. Biosphere reserves may be suggested for areas of high cultural importance and human impact.

Improvement of effort and application of new techniques would be important for monitoring the animals in captivity to prevent illegal takes from the wild and illegal trade. No excuse or exemption can be made for takes of animals from the wild to captivity under the umbrella of stranding response effort.