



FINS

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Newsletter of  **ACCOBAMS**



©Shutterstock/A. Sutton - Long-finned pilot whales, *Globicephala melas*

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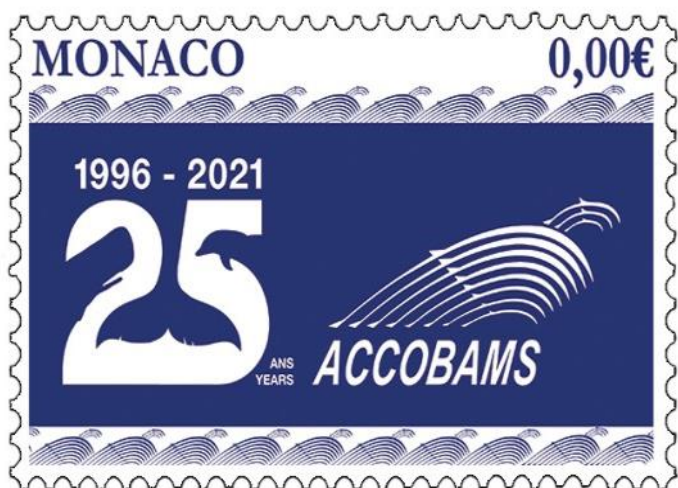
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Celebration of ACCOBAMS 25th Anniversary



On 24 November 2021 we celebrated the 25th Anniversary of ACCOBAMS , established in 1996 under Bonn Convention (CMS). A **commemorative video** mark the **25 years** of ACCOBAMS dedication and accomplishments, and gathered the images of the ACCOBAMS event organised at the Oceanographic Museum in Monaco.



Another highlight was a temporary logo celebrating the ACCOBAMS 25th anniversary and its work. A public contest had been launched by ACCOBAMS Secretariat months in advance, attracting many proposals. The winner graphic proposal above belongs to M. Hussam AL ZUBAIDI (Jordan), and was used on a commemorative stamp issued by the Office des Emissions de Timbres-Poste, in Monaco.



« (...) nous comptons sur la force collective de la communauté de l'ACCOBAMS, et de ses partenaires, pour qu'à l'issue du prochain quart de siècle, nos enfants et les jeunes d'aujourd'hui puissent nous être reconnaissants des efforts déployés au bénéfice de la vie marine, facteur-clé pour leur propre vie et celle de leurs futurs enfants.»

S.A.S le Prince Albert II de Monaco

«Because cetaceans can't be silenced.

Let us take action, so that the noble mission of ACCOBAMS continues to be carried out.»

ACCOBAMS Executive Secretary

As part of the celebration , H.S.H. Prince Albert II of Monaco unveiled the artistic work "Ainsi soit-il !" ("So be it !") which was donated by ACCOBAMS to mark the date.



Made of used plastics, the artwork combines nature and culture, inviting for a reflection on our common responsibilities towards the future.

«Its title "Ainsi soit-il!" suggests our prayer as human beings whose lives depend on the sea, on wild nature, and on their integrity. But it is also the silent prayer that the sea and the wilderness are addressing us.»

ACCOBAMS Executive Secretary



"All power is weak unless united, let's act together for the protection of cetaceans"

S.A.S le Prince Albert II de Monaco

ACCOBAMS New book on the Conservation Status of Cetaceans

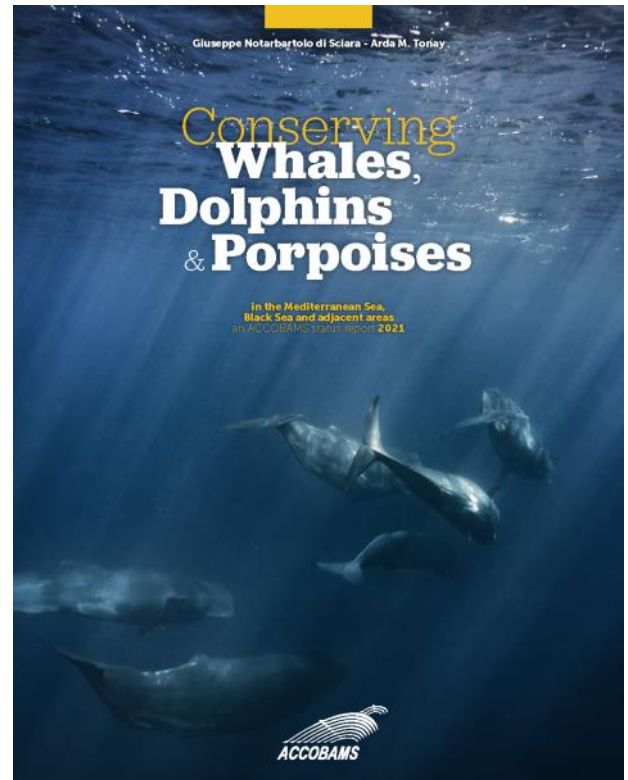
On the occasion of ACCOBAMS 25th Anniversary, the new ACCOBAMS Publication “Conserving Whales, Dolphins and Porpoises in the Mediterranean Sea, Black Sea and adjacent areas: an ACCOBAMS status report, 2021” was published both in print and online.

The authors - Dr Giuseppe Notarbartolo di Sciara and Dr Arda M. Tonay- have turned a decade of monitoring and research work conducted by dedicated experts and scientists throughout the area, including the ASI results, into a enjoyable reading. In face of environmental changes and impact of human activities, this third ACCOBAMS assessment of the conservation status of cetacean species provides the most up-to-date status of knowledge of cetaceans in the ACCOBAMS Area while offering an outstanding foundation for further reflection, including on priority actions.

According to the authors, there are still many factors threatening the 14 species and subspecies of cetaceans regularly present in ACCOBAMS area, such as fisheries, pollution, noise, whale watching, vessel traffic, ship strikes, epizootics, live captures, coastal degradation, and climate disruption, which are unlikely to be resolved very soon.

Killer whales and long-finned pilot whales near Gibraltar, the Gulf of Ambracia subpopulation of bottlenose dolphins, and the Gulf of Corinth subpopulation of common dolphins are Critically Endangered, while sperm whales, common dolphins, Black Sea bottlenose dolphins and harbour porpoises continue to be Endangered, recently joined in the same status by fin whales, long-finned pilot whales, and Risso’s dolphins. Black Sea common dolphin, Cuvier’s beaked whales are listed as Vulnerable, and the Gulf of Corinth subpopulation of striped dolphins is proposed for the same status. Finally, the Mediterranean subpopulation of rough-toothed dolphins is assessed as Near Threatened. Because of the extensive human presence and activity in the region, all these species, subspecies, and subpopulations continue to live in a state of precariousness. This creates a number of pressures that jeopardize the survival of these mammals. However, as a good progress, striped dolphins and common bottlenose dolphins, which were both listed as Vulnerable in the recent past, are now categorised as Least Concern.

As stated in the book, cetacean conservation ecology has come a long way in the last quarter-century, particularly by means of ACCOBAMS and, more recently, the ASI. Although cetaceans continue to face serious threats, conservation efforts are progressing in the right direction. The work should not, however, be confined to sustaining the current status quo; rather it should aim higher in order to restore former ecosystems and population numbers.



The authors would like to thank, once again, to all contributors who made the book so beautiful by sharing their photos and videos with them.

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5th Conference on the Conservation of Cetaceans in South Mediterranean Countries

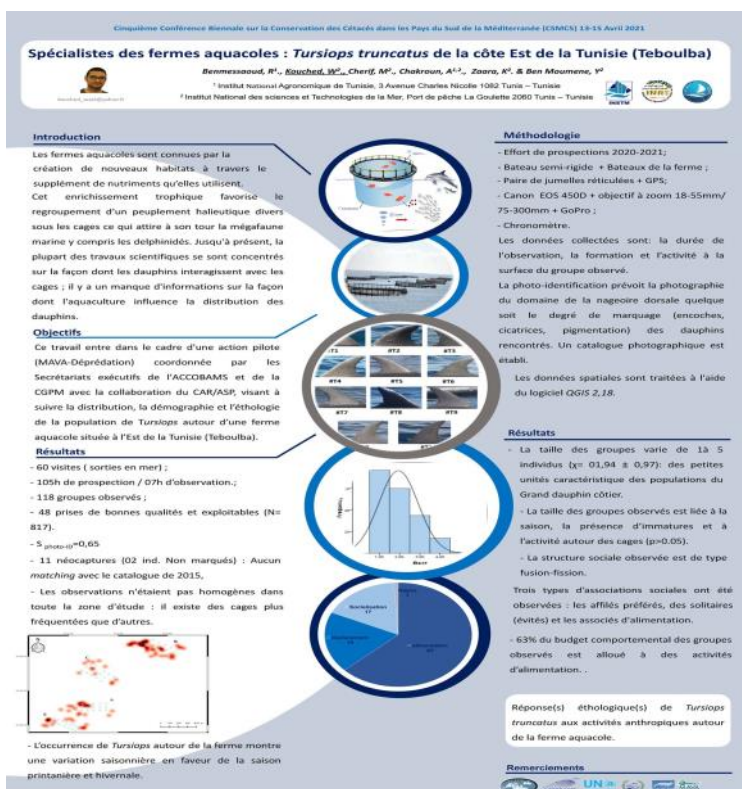
The 5th Conference on the Conservation of Cetaceans in the Southern Mediterranean Countries - CSMC5 -, hosted by the National Centre for Marine Sciences of Lebanon (CNRS-L), was held online from 13 to 15 April 2021. Organised by the ACCOBAMS Secretariat, in collaboration with the Regional Activity Centre for Specially Protected Areas (SPA/RAC), thanks to the financial support by the Principality of Monaco.

It counted with more than seventy participants - experts, researchers, doctoral students and students - from the ACCOBAMS region and many international organisations, such as the General Fisheries Commission for the Mediterranean (GFCM), the Commission for the Protection of the Black Sea (BSC) and the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG MARE).

The objective of CSMC5 was to take stock of the state of knowledge available on cetaceans in the southern Mediterranean, to identify potential gaps and to encourage the development of conservation actions in order to promote the implementation of ACCOBAMS recommendations.

During three intensive days, five scientific sessions were organised around the following themes: interactions between cetaceans and human activities, fishing and incidental catches, underwater noise, whale watching, cetacean strandings, monitoring of cetacean populations and areas of importance for cetaceans. They provided an opportunity to exchange experiences and information and to consider best approaches and actions for an improved knowledge of cetacean populations in the southern Mediterranean region.

A training workshop was dedicated to the use of the NETCCOBAMS digital platform for cetacean conservation.



Thanks to the financial support of the Principality of Monaco, a competition was organised to elect the best informative posters presented by doctoral students and students.

On 15th of April 2021, Mrs. Isabelle Rosabrunetto, Director General of the Department of External Relations and Cooperation, awarded the first prize to Mr Wael Kouched (Tunisia), a post-doctoral student from the National Institute of Marine Sciences and Technologies, for his poster entitled: "Monitoring of *Tursiops truncatus* around an aquaculture farm in eastern Tunisia".

Mr Wael Kouched was invited to attend the 14th Meeting of the ACCOBAMS Scientific Committee, held in Monaco.

On 26th November 2021, during the Scientific Committee 14th meeting, the ACCOBAMS Executive Secretary - Mrs. Susana Salvador -, the Chair and Vice-Chair of the Scientific Committee - Mr. Simone Panigada and Mrs. Léa David - respectively, congratulated the winner for his work and wished him well.



14th Meeting of the ACCOBAMS Scientific Committee

The fourteenth Meeting of the Scientific Committee was convened in Monaco from 22 to 26 November 2021. It was attended by Members of the Scientific Committee and Representatives from International Organizations and Observers, including ACCOBAMS Partners. Due to the Covid-19 pandemic, the meeting was held in hybrid mode, with participants also joining online .



The ‘**ACCOBAMS Survey Initiative**’ - **ASI** - a basin-wide survey to estimate cetacean density and abundance is about to be completed and the last few months have been partially dedicated to actions related to this project. A technical on-line workshop was recently organized by the ACCOBAMS Secretariat, where participants had the opportunity to discuss and present a list of conservation recommendations stemming from the ASI results. A detailed document has been prepared, with the final goal of establishing a Long-Term Monitoring Program (LTMP) to facilitate regular and systematic basin-wide survey through shared research and logistic protocols. Efforts have also been devoted to planning an ASI Special Issue to be published in *Frontiers of Marine Science*. Ideally, most of the scientists involved in ASI would access the dedicated online platform and consider submitting a manuscript, as this Special Issue will be important to disseminate the results, as well the proposed conservation actions and recommendations of ASI and CeNoBS projects.

ASI results have also allowed further effort to elucidate cetacean population structure within the ACCOBAMS area, facilitating the reassessment, under the **IUCN Red List** criteria, of all species occurring in the ACCOBAMS region, including those which were listed as Data Deficient and those which had not been previously assessed. The final results of this effort, carried out in cooperation with the IUCN Office in Malaga and the Red List Authority are 3 subspecies assessed in the Black Sea, all three belonging to a threatened status. 13 subpopulations of 9 species have been assessed for the Mediterranean Sea: 10 are threatened, 1 is Near Threatened and 2 are Least Concern. The new Red List assessments have been published on the IUCN Red List portal in December 2021.

The effort started previously on basin-wide conservation plans for selected species is still ongoing, and the SC has agreed to follow the template developed and adopted by the International Whaling Commission, of **Conservation Management Plans** (CMP). These are plans which involve different stakeholders since the beginning and integrate and implement existing regional or national plans. Currently there are 4 Mediterranean species under consideration - fin whale, Risso’s dolphin, bottlenose dolphin and common dolphin. A drafting workshop for bottlenose and common dolphins was held in March 2022. There is a recommendation to work on other species as well, with sperm and Cuvier’s beaked whales considered as priority species.

The issue of **noise** has been high among the SC priority actions, in order to make sure that adequate attention is used when planning, *inter alia*, seismic or military activities, stressing the importance of conducting dedicated and rigorous Environmental Impact Assessments. The newly developed on-line **platform NETCCOBAMS** has been thoroughly revised, with online tools to map cetacean habitats and potential threats, such as noise hotspots and traffic data, through AIS signal processing.

Ship strikes have also been addressed and mitigation measures suggested. The existing collaboration with the International Whaling Commission and the effort to gather information on ship strikes globally has facilitated the identification of high-risk areas within the Mediterranean Sea. ACCOBAMS is joining international effort to further develop and support the process for the designation of a PSSA at a scale that includes the North-West Mediterranean Sea, Slope and Canyon IMMA, plus the Eastern portion of the Pelagos Sanctuary and the Spanish corridor, to take into account whale population movements and distribution. Zoning within the area with ship strike mitigation tools (e.g., speed reduction and routing measures) could be proposed as part of Associated Protective Measures within the PSSA. A recommendation to focus on mitigation measures suggested by the International Maritime Organization will be presented to the next MoP in November 2022.

Chemical pollution, as well as the presence of **plastic debris** throughout the Basin, still represent a substantial source of concern for cetaceans in the Agreement area, with macro, micro and nano-plastics very high on the international agenda. Proposals from the SC to evaluate ways to remove plastics from the sea, together with a significant reduction of plastics coming from land have been discussed. Rather than collecting new data, the SC as well the ASI recommendation workshop stressed the there is an urgent need to take concrete actions, to reduce the impact on cetacean populations.

ACCOBAMS is also very active in assessing **bycatch and depredation issues** and has been joining efforts with SPA-RAC and GFCM within the framework of MAVA Bycatch Project. The ACCOBAMS-ASCOBANS Joint Bycatch Working Group organized the first meeting, which took place online during 10-12 February 2021 to exchange and share the experience between two agreement areas. More than 150 participants from 31 countries produced a series of recommendations on general aspects, monitoring and mitigation of bycatch. The publications of both bodies have been shared and updates on recent development regarding bycatch have been made.

Place-based and threat-based approach also played an important role over the last triennium, with reference to the ongoing process carried out by the IUCN Marine Mammal Protected Areas Task Force to identify Important Marine Mammal Areas (IMMAs) within the Mediterranean and Black Seas and the ACCOBAMS effort to overlap existing maps of reference for the ACCOBAMS region of densities of cetaceans (from Mannocci et al., 2018 and ASI), taking into account IMMAs, with maps of human pressures to delineate **Cetaceans Critical Habitats**. The Terms of Reference for a dedicated workshop have been prepared and the workshop should take place in March 2022.

The 11 new **IMMAs** (Important Marine Mammal Area) are part of 14 new IMMAs for the marine mammals of the Black Sea, Turkish Straits System, and Caspian Sea, which were elaborated at the IMMA online regional workshop organized in February 2021 by the IUCN SSC-WCPA Marine Mammal Protected Areas Task Force. The workshop resulted in the identification of 23 new candidate Important Marine Mammal Areas (cIMMAs). Following independent review, 14 IMMAs, one candidate IMMA (cIMMA) and 11 areas of interest (Aoi) were approved.

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ACCOBAMS Survey Initiative Technical Workshop

The [ACCOBAMS Survey Initiative \(ASI\)](#) is recognized as one of the Agreement's greatest successes and tangible achievements. While having demonstrated the important role of the Agreement in terms of cooperation and capacity building for coordinated, the best-known success of the ASI is that it has led in 2018 and 2019 to the collection of an unprecedented amount of data on marine fauna and certain anthropogenic pressures through basin-wide surveys conducted throughout the Mediterranean and Black Seas.

The ASI project was indeed built to support such a massive monitoring effort in order to obtain a solid baseline on Agreement-wide cetacean species distribution and abundance, and to establish a long-term monitoring system that would ultimately serve to strengthen decision-making for cetacean species conservation.

It was therefore also expected that during the lifespan of the ASI project its results would already be used for conservation purposes and as guidance for a better management of human uses of the sea. As a first step towards this key objective, the ACCOBAMS Secretariat organized a regional multi-stakeholder workshop in 2021, that allowed for an inclusive dialogue between scientists, conservationists, decision makers, but also with representatives of the private sector and maritime industries. In total, more than 110 people registered for one or more sessions of this 4-day workshop, which was conducted through a mix of plenary sessions and small discussion groups, so to question robustness of data analysis methods and interpretation of ASI results, and relevance of these results to managers and decision-makers, with the ultimate goal of evaluating the long-term value of ASI. For the first time, a new approach and dedicated tools were also used to stimulate a frank and open dialogue between participants, under the guidance of a team of professional facilitators.

Recommendations and results that emerged from this collaborative effort are being used through ACCOBAMS channels. In particular, they served to develop a recommendation on the ACCOBAMS Long Term Monitoring Program (LTMP) during the 14th Scientific Committee Meeting (Monaco, 22-26 November 2021). This outcome is now used as a basis for a draft resolution aimed to improve monitoring efforts and the use of results for conservation purposes, which will be submitted for adoption by the Parties at their Eighth Meeting, planned for 28 November—2 December 2022 (MOP8) in Malta.



Black Sea and Turkish Straits System IMMAs workshop

despite COVID-19 restrictions

The seventh workshop of the IUCN Marine Mammal Protected Areas Task Force, held between 22-26 February 2021, during intensive ZOOM sessions, covered the areas of Black Sea, Turkish Strait System and Caspian Sea regions. The work of more than 25 experts from 9 countries, covering all Black Sea riparian countries, achieved incredible results in the identification of 23 new candidate Important Marine Mammal Areas (cIMMAs), of which 11 were formally awarded Important Marine Mammal Area (IMMA) (Fig. 1) status by the International Union for Conservation of Nature (IUCN) Task Force on Marine Mammal Protected Areas.

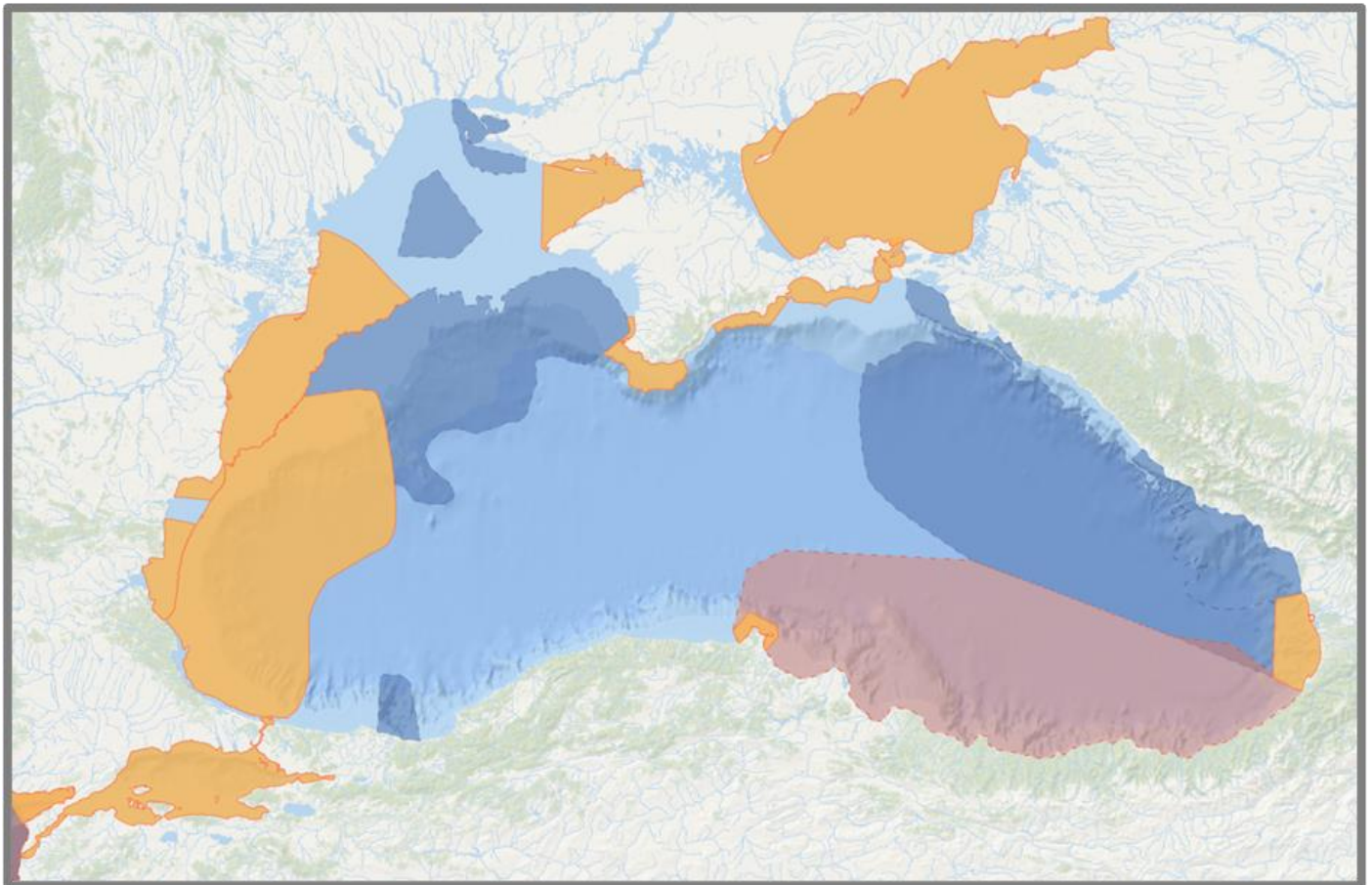


Fig. 1. Areas proposed for Black Sea: with orange – IMMA, red – cIMMA, blue-Aol.

The awarding coincided with the International Black Sea Action Day celebrated on 31 of October, making the event in 2021 to focus on celebrating Endangered Black Sea harbour porpoises *Phocoena phocoena relicta* and bottlenose dolphins *Tursiops truncatus ponticus* as well as Vulnerable Black Sea common dolphins *Delphinus delphis ponticus*.

The two dolphin and one porpoise species in the Black Sea are locally distributed subspecies. All three are genetically distinct from non-Black Sea populations. The harbour porpoise population is isolated from their closest counterparts in the Atlantic by a several thousand-kilometre distance.

Among the new IMMAs there are major regional water bodies including the entire Marmara Sea with the Turkish Straits System, the entire Sea of Azov, the Kerch Strait, and the western Black Sea. Therefore, all the Cetacean Critical Habitats (CCH) earlier identified by the ACCOBAMS, as well as their main migration corridors, feeding, breeding and nursing areas, and areas which are home to distinct cetacean populations, are now recognized as IMMAs.

The justifications for cIMMA designations were backed by the newest observations from ASI/CeNoBS basin-wide aerial survey in 2019, and several recent national and international surveys and population studies. The resulting set of IMMAs, cIMMAs and AoI is the most elaborated, comprehensive tool for cetacean research, conservation and marine spatial planning ever developed in the Black Sea region.

The new Black Sea IMMAs also mark the completion of the entire Mediterranean and Black Sea region. The Mediterranean IMMA work was completed in 2017. The ACCOBAMS Scientific Committee participated in the IMMA workshops and contributed with substantial information on cetaceans through the long-term research by the region's scientists.

The final report of the Seventh IMMA Workshop: Important Marine Mammal Area Regional Workshop for the Black Sea, Turkish Straits System and Caspian Sea from the IUCN Marine Mammal Protected Areas Task Force is now available for download from the IMMA website, along with maps and IMMA background data (Fig.2).

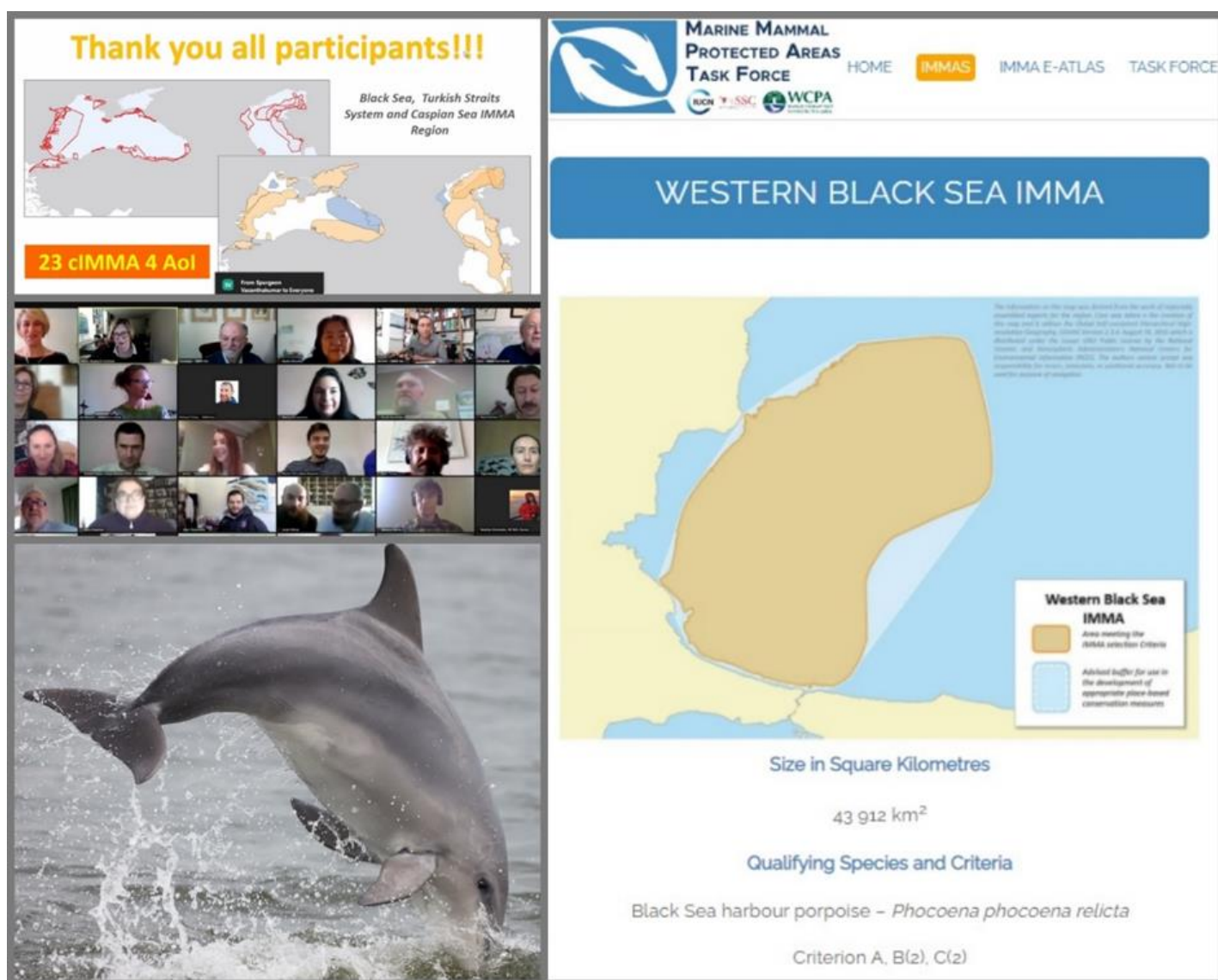


Fig.2. Insights from IMMA workshop, on the right side of the factsheets prepared.

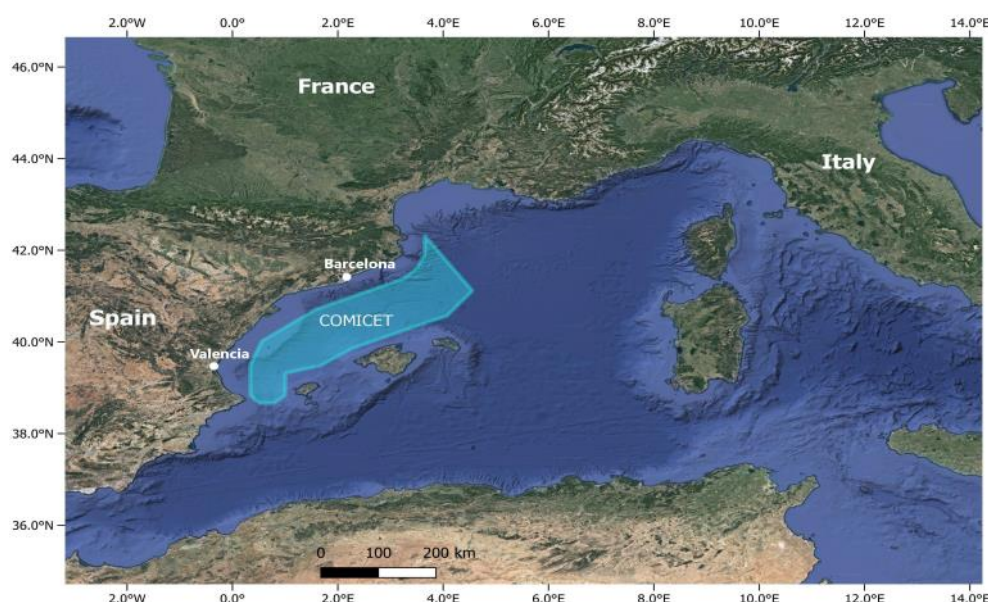
We express our gratitude to IUCN Marine Mammal Protected Areas Task Force and for the support of GOBI funded by the German government's International Climate Initiative (IKI), and Tethys Research Institute, through a contribution from MAVA Foundation.

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COVID-19 at sea: impacts on marine traffic in a large marine protected area

The coronavirus pandemic (COVID-19) has emerged as a global health and socioeconomic crisis, with many countries implementing mobility limitations. Ocean-related human activities have been radically altered with port restrictions, reductions in maritime transport, and changes in consumer demand impacting multiple sectors, most notably fisheries, passenger ferries and cruise ships. Vessel movement reduction associated with COVID-19 is likely to result in significant short- and long-term effects on multiple anthropogenic pressures, such as collisions with marine animals, underwater noise, and fishing effort, thereby there is an urgent need to quantify the magnitude and change patterns of marine traffic.

Recent technological advances associated with electrotonic monitoring systems, such as the Automated Identification System (AIS), allow to monitor vessel mobility patterns at a high spatio-temporal resolution at multiple scales (March et al., 2021). Here, we use monthly terrestrial and satellite AIS traffic density maps (EMODnet Human Activities, <https://www.emodnet-humanactivities.eu/>) to assess the short-term changes on ship mobility patterns in response to COVID-19 in a large marine protected area (MPA), the Mediterranean Cetacean Migration Corridor (COMICET).



The COMICET (Figure 1) is included in the List of Specially Protected Areas of Mediterranean Importance and is of particular significance to Mediterranean marine animals, especially cetaceans. It is located in proximity to two major

Figure 1. Study area. The Mediterranean Cetacean Migration Corridor (COMICET) in light blue.

When the first wave of COVID-19 pandemic hit, starting from March 2020, countries nearby the COMICET implemented several confinements and restrictions, resulting in sudden disruptions of marine traffic. The strictest limitations lasted up to July 2020, and gradually eased off varying across maritime sectors (March et al., 2021).

In this study focusing on the COMICET MPA, we assessed monthly changes in marine traffic throughout 2020, in relation to 2019. Months with the most dramatic reduction in shipping traffic were April to August 2020 (Figure 2), which links to the time period when the strictest lockdown measures were implemented to counter the COVID-19 outbreak. Major decreases in marine traffic density were found along regular maritime routers, which could be associated to domestic and passenger vessels. In particular, the southern part of the COMICET, which overlaps with a connection area with the Balearic Islands, appeared as one of the worst affected areas. In contrast, the difference in marine traffic was less noticeable in the months leading up to March 2020 and at the end of the year, when most restrictions

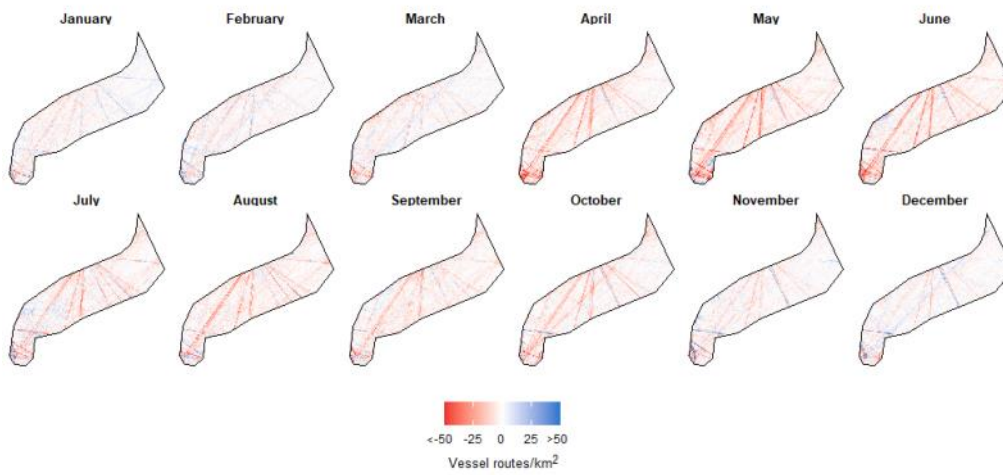
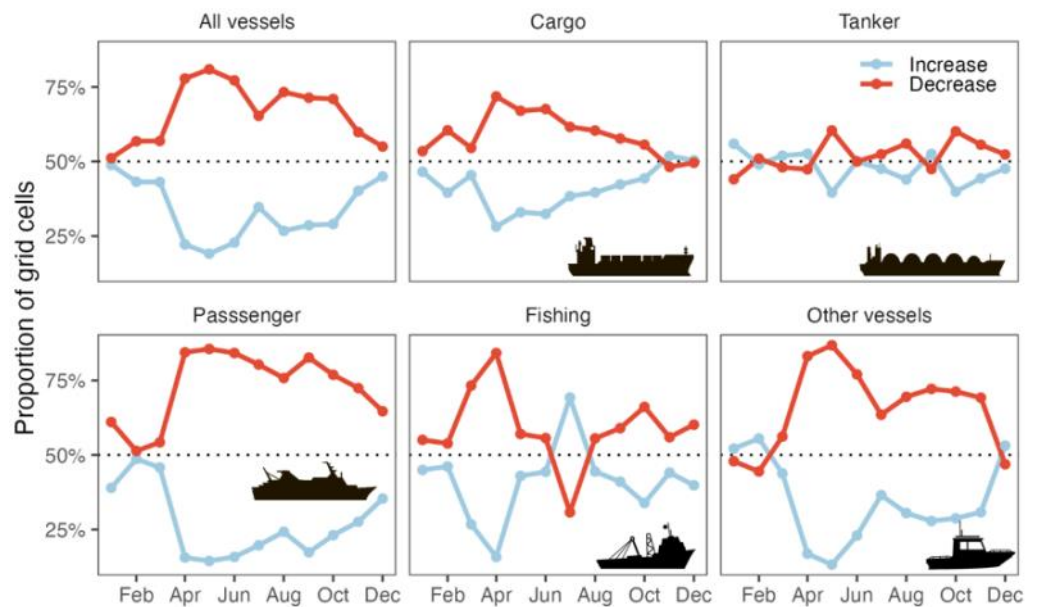


Figure 2. Monthly changes in vessel traffic density. Maps show the absolute difference in traffic density (number of vessel routes per square kilometre per month) in the COMICET, from 2020 relative to 2019 as the reference year. Absolute differences derived using cell-by-cell subtraction. Negative (red) cells indicate decreases during 2020.

In the COMICET, reduction in marine traffic varied greatly across sectors (Figure 3). Passenger ship industry experienced a notable reduction in traffic from March to December 2020 and was the most heavily impacted sector, which can be explained by mobility restrictions, including the limitation of non-essential tourism-related activities. Similar results were obtained for “other vessels” which include recreational vessels. Mobility restrictions had a lower effect on the transportation of goods such as petroleum products, thus the impact of COVID-19 was the lowest on the maritime transport sector (i.e., cargo vessels and tankers). Similarly, while the fishing sector also experienced major traffic reductions at the start of the pandemic (March and April 2020), its suspension did not last long as the restrictions on essential commercial activities had to be lifted to meet societal demands. Our findings go in hand with previous studies from the Western Mediterranean that reported a general decrease in marine traffic and fishing effort (Coll et al., 2021; March et al., 2021).

Figure 3. Changes in marine traffic in 2020. Change represented as a proportion of grid cells with increases and decreases per month and vessel category (i.e., red line at 75% indicates that 75% of the grid cells in the study area experienced a decrease in marine traffic from year 2019 to 2020). The estimates are based on a grid of 1 x 1 km spatial resolution.



Analyses using high spatio-temporal resolution AIS data can provide a unique opportunity to evaluate changes to the blue economy and ocean health at regional and global scales (March et al., 2021). Our local-scale approach showed that the lockdown implemented to combat COVID-19 led to an unprecedented decrease in marine traffic in the COMICET. Considering that Valencia and Barcelona are one of the major ports of the Mediterranean sea, such significant disruptions have the potential to result in substantial socio-economic impacts, especially on tourism and recreation sectors as they were the ones directly influenced by lockdown measures.

In terms of COVID-19 effects on the marine environment, the response of marine ecosystems may depend greatly on the duration and intensity of the implemented restrictions. Reported short-term effects include a global 12% reduction in ocean shipping and a marked reduction in ocean noise. This may be the explanation for the global increase in marine animal sightings, which were mostly related to large mammals, such as baleen whales, manatees and toothed whales, such as dolphins and orcas, that appeared in atypical areas. However, these sightings do not necessarily mean that marine wildlife populations increased, they could simply relate to a temporary shift in the species behaviour and distribution range resulting from weakened human pressures during the COVID-19 pandemic (Coll, 2020).

Despite the positive effects, there is much uncertainty as to whether or not COVID-19 could have any long-term benefits for the marine environment. Furthermore, various negative environmental impacts related to COVID-19 have emerged, posing a risk to marine conservation across the world. The main issues include a lack of surveillance, management and law enforcement of protected areas during the lockdown (especially remote MPAs), the resulting increase of illegal wildlife harvesting and illegal fishing, of increased plastic pollution, of various long-term monitoring surveys being postponed or suspended, of funding cuts to environmental organizations and research institutions, with governments side-lining urgent environmental problems as they focused on resolving the global health and economic crisis (Coll, 2020).

While our analysis shows a significant reduction in ocean-related human activity, the environmental impacts of COVID-19 on the marine ecosystem of the Mediterranean Cetacean Migration Corridor are currently unknown and further studies will be needed to assess the short- and long-term effects. However, local-scale analyses such as ours can provide crucial insights into the effects of COVID-19 or any possible future crisis, on human pressures in the sea.

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Harmonization and centralization of cetacean data collection within the MPA French Mediterranean network - TURSMED project



Since 2018, in the framework of the TURSMED project in partnership with the French Office of Biodiversity, MIRACETI works to enhance cetacean management in the MPA French Mediterranean network. A dedicated standard protocol has been developed within the free application ObsEnMer for the use of MPA managers allowing the collection of harmonized cetacean monitoring data within the network. A common database has been developed to centralize all the data collected thanks to this protocol facilitating analyses on a larger and better scale for these mobile species.

In order to encourage the collection of reliable data, trainings are organized throughout the project. Theoretical training sessions during which managers are trained to design cetacean monitoring strategy are complemented by practical on-board training, in which the managers are immersed during a week on a scientific mission where they experiment data collection and photo-identification.

In summary, this projects enables the implementation of integrated monitoring of cetaceans and evaluates population indicators along the French Mediterranean coast, for a better knowledge and conservation of cetaceans in the Mediterranean waters. With a coordinated and long time work, these actions allow building better management and conservation for cetaceans on a more efficient scale for these large mobile species.



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The longest bow-riding in a sea survey in the Romanian Black Sea waters

One of the most fascinating and welcomed behaviours of dolphins, for both public and scientists, is when they bow-ride or swim alongside the boat. It consists of dolphins, porpoises and other small toothed whales and in some occasions, pinnipeds positioning themselves in a precise spot as to be lifted up and pushed forward by the circulating water generated from a bow pressure wave of a moving vessel. Also, the waves from boats are used by them to increase their swimming distance and speed.

The reason is still unknown, it has been proposed that it is a mechanism to efficiently travel from one place to another. However, this hypothesis is still debatable because often after dolphins are bow-riding, they are heading back to whence they picked up the vessel. It is more likely that riding the bow is done for enjoyment, sport or playing for strengthening their movement coordination and social bonding.

Considerable distance travelled while bow-riding in the Romanian waters of Black Sea have not yet been reported, until the summer of 2021 when a pod of 15 Black Sea bottlenose dolphins (*Tursiops truncatus ponticus*), rode alongside our boat for more than 2 hours, covering 12 NM (Fig. 1). The group consisted of 11 adults and 4 calves and they followed our boat the entire time (red line), some of them were bow-riding, while the mothers with calves kept a safe distance from the boat of several meters. During this time, no new sighting observations were recorded.

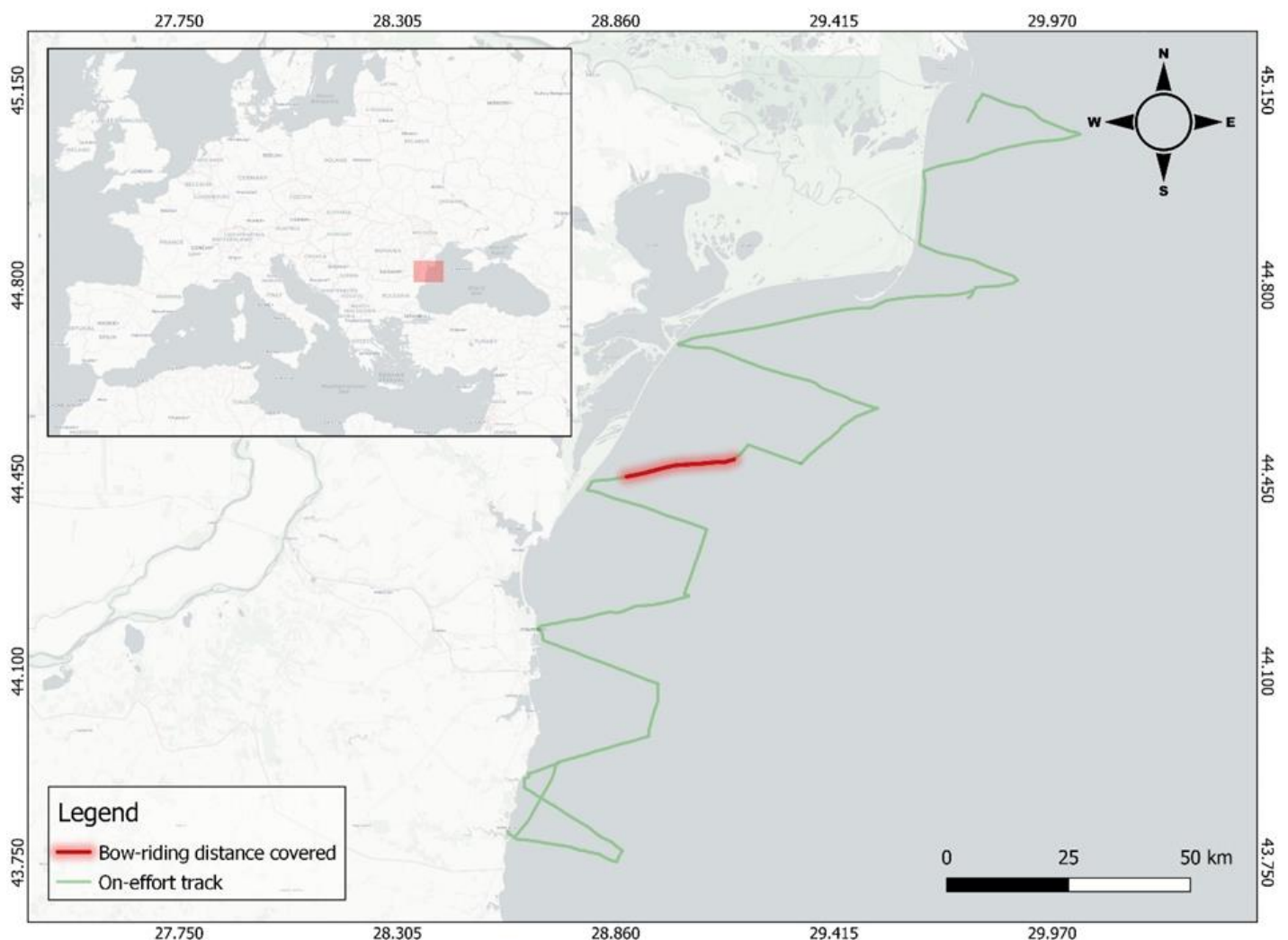


Figure 1 - Distance covered riding the bow by the bottlenose dolphins' pod (picture on the right)
(©Mare Nostrum NGO)

Discussing with the other specialists from the Black Sea region it seems that this could have been the longest bow-ride event ever recorded, not only in Romanian waters but also in the Black Sea.

The event was recorded in the sea survey performed within the territorial waters of Romania, between Sulina (North) and Vama Veche (South), within the CetMal project “Interaction between marine litter and cetaceans in coastal waters of Romania”, co-funded by the Sustainable Ocean Alliance (SOA). The survey was conducted in the first week of August 2021, using line transects distance sampling methods. In total, 38 observations were recorded with 167 individuals from all 3 Black Sea species. Additional 46 observations of marine litter on transects predominantly identified plastic, metal, wood, and textile items.

In the past decade, Mare Nostrum’s program “Monitoring and Conservation of the Black Sea Cetaceans” ([Biodiversity | ONG MareNostrum](#)) gathered data from sea surveys and strandings monitoring sessions, adding in the past 2 years acoustic monitoring, by using F-PODS. Data from strandings and sea surveys are exported to international databases such as Ocean Biodiversity Information System – Spatial Ecological Analysis of Megavertebrate Populations (OBIS - Sea Map) and Mediterranean Database of Cetacean Strandings (Medaces). Within the frame of the program networking and cooperation actions are implemented with important national, regional and international stakeholders (eg. authorities, research institutions etc.). Each year Dolphin Day festivities are the reminder of the collaborative work that the network is performing.

In 2021, with the help of Romanian Ministry of Environment, Waters and Forests, we organized an online workshop “Roadmap 2030 – Toward the good state of cetaceans” where over 70 people participated, with the purpose to establish a better workflow and collaboration between all the actors involved in the process of marine mammal conservation.



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Monitoring and mitigation of cetaceans' bycatch in Bulgarian turbot fishery

Incidental catch in fishing gears (bycatch) is a major mortality factor for the Black Sea harbour porpoise (*Phocoena phocoena relicta*), an endemic subspecies listed as Endangered in the IUCN Red List. Main risk of bycatch in the Black Sea is imposed by bottom gillnets and trammel nets targeting turbot (*Scophthalmus maeoticus*) – the most valuable commercial fish species in the Black Sea. Recent report developed in the [CeNoBS](#) project has estimated levels of Black Sea harbour porpoise annual bycatch to be between 4.6% and 17.2% of the total population posing a serious threat. One of the most common mitigation measures implemented worldwide for reduction of bycatch is using acoustic deterrent devices better known as pingers.



Bycaught Black Sea harbour porpoise in a monofilament

In the period 2019-2021 in Bulgaria onboard monitoring was organized to assess bycatch rate of cetaceans in bottom set gillnets for turbot and pingers were tested as mitigation measure. Following devices were used: Future Oceans – 10 kHz, 132 dB NETGUARD; Future Oceans – 70 kHz, 145 dB NETGUARD and Porpoise Alerting Devices (PAL) – 10 kHz, 132 dB by F3: Maritime Technology (Germany). In total 340.76 km of nets were monitored during the three years. Those were set at depths from 45 to 88 m with soaking times from 12 to 31 days. Bycatch numbers were 105 in 2019, 47 in 2020 and 31 in 2021 with 176 of these being harbour porpoises, 4 bottlenose dolphins and 3 common dolphins. Significant increase of bycatch from spring to summer was observed. In spring 4 of the bycaught female porpoises were pregnant and other was lactating. In summer 14 females were lactating. Body length of bycaught porpoises varied between 41 and 144 cm for males (mean - 115 cm) and 73 to 150 cm for females (mean - 126.88 cm); common dolphin was 159 cm and bottlenose dolphins were 180 to 211 cm.



Fetus of pregnant Black Sea Harbour porpoise

No significant difference in bycatch rates between active and control nets was observed for tested Future Oceans pingers over the three-year period. 10 kHz model showed reduction of 14% ($p > 0,05$) while 70 kHz model reduced bycatch with 40% ($p > 0,05$) but results were not statistically significant for both models.

PALs spaced at 140 m have shown 61% reduction of bycatch during trials in 2020 (4 active v. 4 control sets) while in 2021 (2 active v. 6 control sets) results were even better with 100% reduction in active nets. Statistical test has shown that bycatch reduction value of 85.93% is significant ($p = 0,003115$, $p < 0,05$) for the entire study period of 2020 and 2021.

Better result for use of pingers as mitigation measure in the Black Sea was previously reported only for Dukane NetMark (Gonener and Bilgin, 2009) but that model is no longer produced. On the basis of the obtained results, we can recommend use of PAL pingers as an effective mitigation measure for lowering bycatch of Black Sea harbour porpoise.



Porpoise bitten by spiny dogfish



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Monitoring of bycatch and trials of pingers in 2020 and 2021 were made within "Monitoring and mitigation of cetacean bycatch in Bulgarian waters" project funded by ACCOBAMS SCF, MoU № 14/2019.

The effects of different vessel types on bottlenose dolphins in Montenegro

It perhaps seems obvious to a cetologist that the presence of marine vessels is likely to change the behaviour of marine mammals, akin to how a loud environment or a perceived threat may affect human behaviour. There are, however, relatively few studies that quantitatively demonstrate this and of these studies, the majority focus on the effects of whale watching. Whilst these studies have no doubt improved our understanding of cetacean behaviour, whales and dolphins interact with far more vessels than just whale watching vessels.

In 2020, Clarkson et al., published the results of a study that investigated the short-term effects of non-targeted tourism (i.e., tourism not involving cetacean watching) on the behaviour of bottlenose dolphins. The work demonstrated a considerable decrease in feeding behaviours as well as a decrease in milling-socialising behaviours. In contrast, this was coupled with an increase in resting behaviour thought to be due to the formation of tighter groups in order to increase cohesiveness in the presence of vessels (Table 1).

More recently, DMAD published another study, this time looking at the effect of artisanal and commercial fisheries on behaviour of bottlenose dolphins in Montenegrin waters. Interestingly, whilst both artisanal and commercial fisheries had significant impact on dolphin behaviour, they had different effects to one another as well as to the effects caused by tourist vessels (Table 1).

Each of the three vessel categories appears to interrupt surface feeding behaviours, with tourist vessels effecting four out of the five collected behavioural states. Whilst the decrease in important socialising behaviours in the presence of tourist vessels is concerning, the increase in diving within the vicinity of commercial vessels poses risk of injury or death due to interactions between dolphins and fishing gear. The contrast in these results demonstrates that differences in vessel type, size and activity each have implications when decisionmakers conceptualise the protection of cetaceans and it may not be enough to consider all vessels equal.

Table 1 - Percentage changes in five different behavioural states when in the presence of three different categories of marine vessel. Red cells indicate a significant decrease, blue cells indicate a significant increase and grey cells indicate no significant change in the proportion of time spent in each behavioural state.

Type of vessel	Travelling	Diving	Surface feeding	Milling-socialising	Resting
Non-targeted tourism vessel	-	-16.3%	-7.6%	-5.7%	+23.1%
Artisanal fishing	-	-	-7.6%	-*	
Commercial fishing	-23%	+10%	-10%	-*	



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Manuscripts can be found at:

Rudd et al., 2022 - <https://onlinelibrary.wiley.com/doi/abs/10.1111/mms.12913>

Clarkson et al., 2020 - <https://www.int-res.com/abstracts/meps/v638/p165-176/>

Or a copy can be obtained from any of the authors of this article.

Slow steaming: an essential measure in the future Conservation Management Plan for the SPAMI "Cetacean Migration Corridor"

In December 2019, the Barcelona Convention (UNEP/MAP) included in its list of Specially Protected Areas of Mediterranean Importance (SPAMI) the Spanish Marine Protected Area (MPA) called "Cetacean Migration Corridor", a 46,386 km² area located between the Balearic Islands and the Iberian Peninsula.

This important international recognition of the great environmental value of the Cetacean Migration Corridor should serve as a stimulus for the Spanish Government to draw up a Conservation Management Plan for this MPA/SPAMI that will enable effective management of the intense maritime traffic in the area in order to reduce the underwater noise it produces, reduce the risk of lethal ship strikes and make progress in the very urgent decarbonisation of maritime transport, limiting its greenhouse gas (GHG) emissions as much as possible. In the "Overview of the Noise Hotspots in the ACCOBAMS Area Report" commissioned by ACCOBAMS the region has also been identified as an area exposed to multiple noise generating activities.



In this regard, among the various operational measures available, reducing the speed of ships is the one that can contribute most cost-effectively to reducing the environmental impact of maritime transport. In fact, this measure can significantly reduce, with immediate effect, emissions of carbon dioxide (CO₂), atmospheric pollutants such as sulphur oxides (SO_x), nitrogen oxides (NO_x), particulate matter and black carbon, as well as underwater noise and the risk of collisions of ships with marine fauna. Several studies ⁽¹⁾⁽²⁾ have thoroughly described the multiple environmental benefits of slow steaming.

In order to support the Spanish Ministry for Ecological Transition and the Demographic Challenge (MITECO) in the development of the above-mentioned Management Plan, OceanCare has produced the report "[Quiet Waters for Whales and Dolphins](#)"⁽³⁾. This report focuses in particular on measures to avoid, reduce and mitigate underwater noise generating activities, a problem of increasing severity. As a matter of fact, according to the joint European Maritime Safety Agency (EMSA) and European Environment Agency (EEA) "[European Maritime Transport Environmental Report 2021](#)"⁽⁴⁾, underwater noise has more than doubled between 2014 and 2019 in EU waters. The modelled underwater noise energy data show the same overall increasing trend for all European seas, including the Mediterranean.

The Cetacean Migration Corridor also qualifies as a Particularly Sensitive Sea Area (PSSA) by the International Maritime Organisation (IMO), due to its importance in terms of recognised ecological, socio-economic and scientific attributes and its vulnerability to damage from international maritime activities. For this reason, OceanCare's report proposes that the Spanish Government request the IMO to declare the entire SPAMI as a PSSA, establishing a compulsory speed limit for all ships sailing in this marine area.

The report includes recommendations on the monitoring and implementation of the plan and a stakeholder participation process, with the aim of making it an example of best practice in the governance of marine protected areas, which could be replicated in other parts of the world.

In short, it's up to Spain to take up this unique opportunity to substantially reduce underwater noise emissions and to transform an area with a high intensity of maritime traffic into a quiet zone for marine fauna while reducing the currently huge shipping's carbon footprint.



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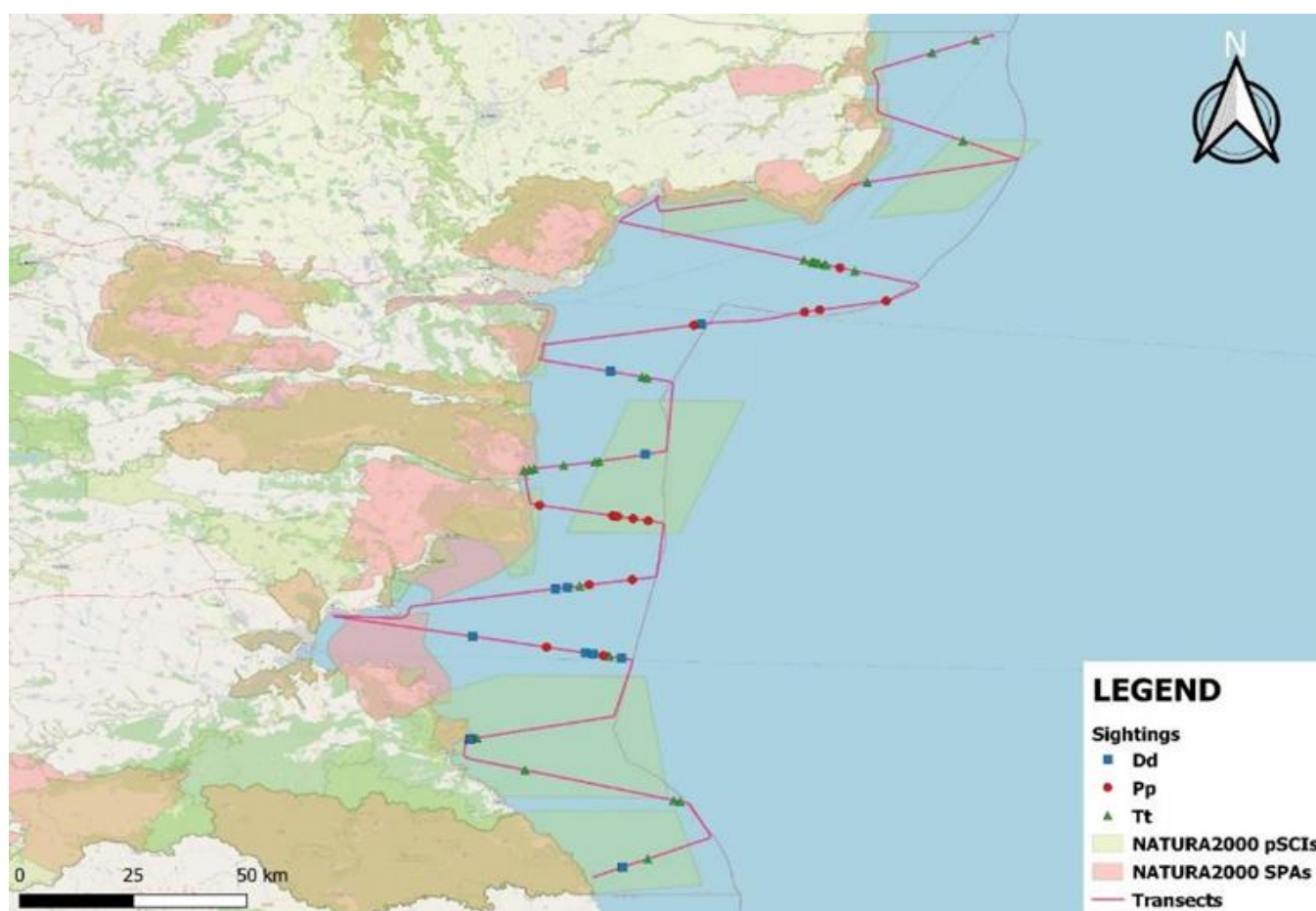


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Vessel surveys of Bulgarian territorial waters of the Black Sea in 2020 and 2021

Green Balkans NGO has continued regular monitoring of cetaceans in Bulgarian territorial waters thanks to support by OceanCare. During the past two years surveys have covered spring and summer seasons. Spring surveys were made in May while summer ones were held in end of July. Same systematic design of 13 transect lines with total length of more than 400 km was used to ensure continuity of data collection.

In spring 2020, a total of 136 sightings were recorded and 125 of these were of Black Sea harbour porpoise. Dolphins were encountered at 19 occasions with 10 of these being of Black Sea common dolphin and 9 of bottlenose dolphin. Estimated abundance was 4889 (CV=21.56%) for harbour porpoise; 609 (CV=53.71%) for bottlenose dolphin and 791 (CV=45.02%) for common dolphin. Group of approx. 25 porpoises and mixed group of 6 bottlenose and 3 common dolphins were amongst the more notable encounters. Spring of 2021 has brought similar results in terms of sightings ratio: harbour porpoise was again most frequently encountered with 57 sightings, followed by common dolphins with 25 sightings and only 8 of bottlenose dolphins. Large group of approx. 40 common dolphin was observed to feed together with approx. 1000 Yelkouan shearwaters off the Northern coast close to Cape Shabla. Continuous bow-ride and following by groups of common dolphins allowed long photo-sessions. Spatial distribution has shown similar preference for Northern and Southern sectors compared to Central. Estimated abundance was 3023 (CV=28.52%) for harbour porpoise; 960 (CV=42.81%) for bottlenose dolphin and 4838 (CV=45.06%) for common dolphin.



Non-typical spatial distribution in summer 2020

During the summer survey in 2020 the ratio among sightings of species was quite different. Most encountered were bottlenose dolphins with 57 sightings (almost 50% of all sightings) followed by harbour porpoises with 17 and common dolphins with 11 observations. Estimated abundance was 991 (CV=42.62%) for harbour porpoise; 3447 (CV=35.22%) for bottlenose dolphin and 1436 (CV=40.83%) for common dolphin. Summer of 2021 has shown different picture that was similar to spring surveys.



Black Sea common dolphins

Harbour porpoises were encountered most regularly – 47 occasions, followed by bottlenose dolphins with 17 sightings. Common dolphins were seen only 7 times. The largest encountered group was of approx. 20 bottlenose dolphins including calves observed once again off the Northern coast close to Cape Shabla. Spatial distribution in 2020 was mostly in Central sector while in 2021 it was markedly higher for Northern and Southern sectors especially for harbour porpoise. Estimated abundance was 3559 (CV=45.59%) for harbour porpoise; 3439 (CV=39.54%) for bottlenose dolphin and 1654 (CV=50.23%) for common dolphin.



Mixed group of common and bottlenose dolphins

Protecting large cetaceans from the risk of ship strikes in the Mediterranean: the North-West Med PSSA project

BACKGROUND

The [workshop on ship strikes organized in April 2019 by IWC, IUCN and ACCOBAMS](#) made a recommendation to ACCOBAMS to develop for the north-western Mediterranean Sea a designation process of a Particularly Sensitive Sea Area (PSSA)¹, i.e. an area which, because of the importance of its ecological, socio-economic or scientific characteristics and its vulnerability to damage caused by international maritime transport, is the subject of special protection conferred by measures taken by the International Maritime Organization (IMO).

Following this, [Resolution 7.12 on ship strikes](#) was adopted at the ACCOBAMS 7th Meeting of Parties in 2019².

During the same meeting, France, Spain, Italy and Monaco pledged to work together towards joint measures for conservation of the north-western Mediterranean³, one of the busiest shipping lanes in the world and an area of high concentration of marine mammals. The high collision rates reported for the isolated Mediterranean sub-populations of fin and sperm whales raise particularly serious concern, and both are classified as Endangered on the IUCN Red List. Moreover, the ASI results indicate that the fin whale in the Mediterranean is much less abundant in numbers than anticipated. This could be due to a negative trend in abundance, to which this high collision rate certainly contributes. Furthermore, maritime transport in the whole Mediterranean is expected to increase in the coming years, both in terms of the number of routes and in terms of intensity, which will lead to a further increase of risk of collisions with large whales, but also other marine fauna.

At the IUCN World Conservation Congress in September 2021, the four countries committed to work on a joint proposal of PSSA to the IMO. This commitment was included in the action plan for an exemplary Mediterranean ([PAMEx](#)) and in the Quirinal Treaty (enhanced bilateral cooperation treaty) signed in 2021 between Italy and France.

A PSSA proposal must describe the international shipping activities causing damage in the proposed area and the degree of resulting damage resulting. It must also contain a proposal for measures that may be taken by the IMO to prevent, reduce or eliminate the identified threat or vulnerability: notification requirements, discard restrictions, operating criteria, bans on certain activities, routing measures. The application must specify how the measures would address the identified vulnerability, and the categories of vessels to which they would apply. It must also describe the measures that would be taken under the domestic law of the requesting countries if a vessel does not comply.

PRELIMINARY WORK

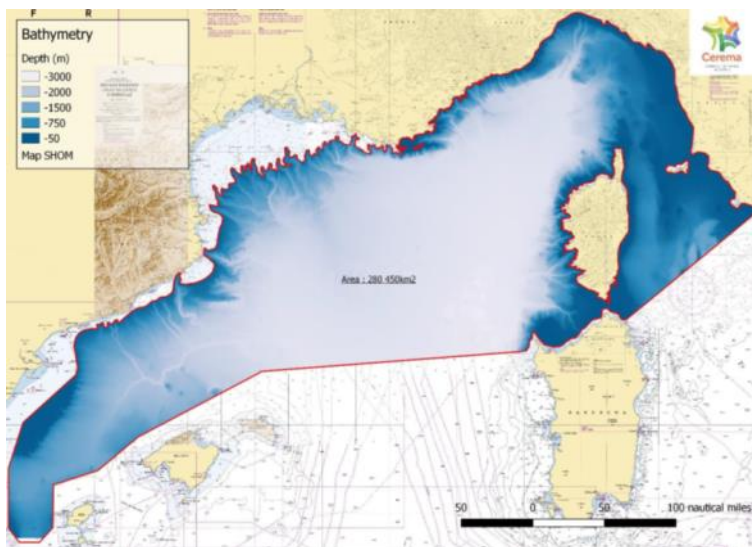
The French Center for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning (Cerema) developed a preparatory study, and an information document summarizing it was submitted to the 77th IMO Environment Committee held in November 2021.

Two workshops took place between representatives of the administrations of the four countries, scientists, NGOs, multilateral organisations, and representatives of the private sector, in Paris in October 2021 and in Monaco in December 2021. Studies and data on the presence of cetaceans and on the traffic were highlighted, as well as the limits of a voluntary approach. Projects were presented, which findings could provide useful input to the rationale for the PSSA submission, as well as measures already experimented that could be implemented in the future PSSA. System of evaluation of the impacts of measures was also discussed, as well as the diplomatic efforts to obtain support from the IMO representatives.

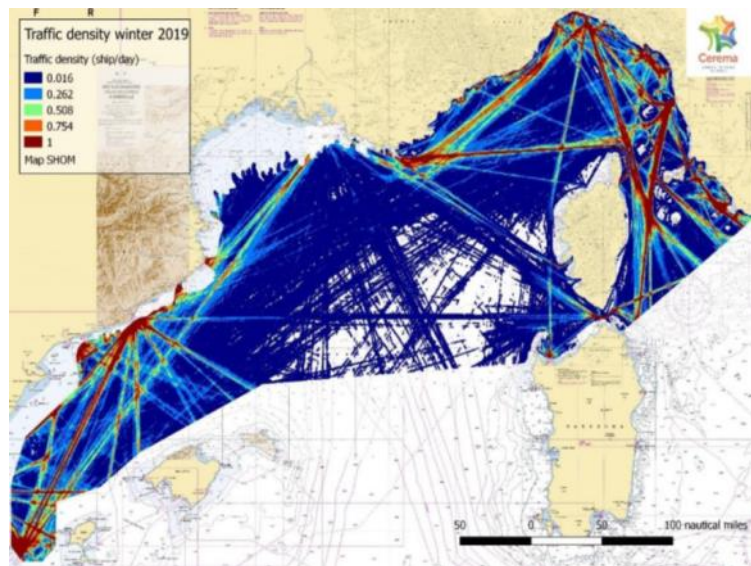
¹ Report of the Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike

² ACCOBAMS, 2019, [Resolution 7.12 on ship strikes](#) (replaces previous ACCOBAMS Resolutions 5.11 and 6.19 on the same subject).

³ ACCOBAMS, 2019, [MOP7 Final Report](#)



Perimeter of the study area and size



Representation of the intensity of maritime traffic during the winter period

The boundaries of the proposal remain to be formally agreed but we can reasonably foresee that they will correspond to the North Western Mediterranean Sea, Slope and Canyon System Important Marine Mammal Area (IMMA), extended to the eastern boundary of the Pelagos Sanctuary and to the Spanish cetacean migration corridor, recognised as a Specially Protected Area of Mediterranean Importance (SPAMI).

A CLEAR SOLUTION

The International Whaling Commission stated several times that the only effective measures to protect marine mammals from ship strikes are to avoid areas with concentrations of whales and to reduce speed⁴. ACCOBAMS Resolution 7.12 also recalls that vessel speed is the most significant factor in ship strikes, and that *“the only effective measures to avoid serious injury and death of cetaceans from ship strikes at present are (a) avoidance by ships of areas or times with high density of whales, including the establishment of shipping lanes or non-shipping zones, and (b) speed reductions in such areas or times, slowing ships down to speeds below 10-12 knots”*.

The existing data shows that in the area considered there is no zone with no or very little presence of whales, which are spread all over the western basin, with inter-annual, seasonal and diurnal variations. No zones of particularly specific concentrations, of so called hotpots, have been identified.

Given that whales are prevalent in the whole area considered, it is not possible to reduce risks to establish permanent routing measures.

Among the IMO measures, the only possibility to reduce the risk of collision is therefore speed reduction measures. Collision risk decreases with vessel speed, as does the severity of injury to the animal⁵. A 10% in speed reduction can reduce the probability of a fatal whale strike by 50%; if speed is reduced by 20% this probability drops to 22%⁶.

The need for more accurate risk-based maps should therefore not be used as a reason to delay the submission of these measures. We should not wait for provision of exhaustive data, which could take years, to tackle what we know for certain to be a serious threat to the survival of these two species and establish vessel speed limitation measures.

This would be consistent with implementation of Resolution 7.12, which encourages Parties to *“begin to integrate speed reduction of vessels (...) within key areas (e.g. Marine Protected Areas, SPAMIs, Cetacean Critical Habitats, IMMAs, etc.) at times of the year when large whales might be present”*.

As highlighted by several shipping companies, to maintain certainty, foreseeability and a level playing field, these measures shall be mandatory and applicable to all, even if tailored for certain specific areas, time periods and types of vessels.

The [regional governments of Catalonia, Valencia and the Balearic Islands already urged the Spanish Government to limit the maximum speed of ships passing through the Mediterranean Cetacean Migration Corridor](#), which is part of the area considered for the future PSSA.

⁴ IMO MEPC 69/10/3 [Information on recent outcomes regarding minimizing ship strikes to cetaceans](#)

MULTIPLE ENVIRONMENTAL BENEFITS

Good news is that reduction in speed contributes positively to other environmental objectives:

- Reducing the speed by 20% would decrease their fuel consumption by more than 24%⁷.
- It would also reduce by 24-34% their CO₂ emissions⁸ and by 20% their black carbon emissions (produced by fossil fuels' incomplete combustion, it is the second most important shipping climate pollutant after CO₂)⁹.
- In addition, a 10% and 20% reduction in speed would result in NO_x and SO_x emissions reductions of around 13% and 24% respectively.
- Regarding underwater noise from shipping, a 10% reduction in speed would reduce it by around 40%, reaching up to 67% with a 20% reduction in speed¹⁰.

At a time when the international community strongly encourages “break-the-silos” approaches and synergies between objectives and commitments of different multilateral environmental agreements ([this was again firmly reiterated during last UNEA Assembly in March 2022](#)), Parties to these agreements have the duty to favour the measures and actions that contribute to multiple agendas.

THE NEED FOR ACCOMPANYING MEASURES

To maximize risk reduction in the whole PSSA area, speed reduction measures should be combined with measures of dissemination of information to vessels concerning the presence of large cetaceans, through collaborative systems or any other relevant means, noting that these are not part of measures that can be implemented by the IMO. As highlighted during the workshops, there is a need to consider converging several of the existing systems to create a more efficient one, that could be used also at night, when animals are more sensitive to the risk of collision.

Systematic awareness and information campaigns for sailors and citizens in general will also be needed in parallel to the PSSA measures.

Whatever measures will be adopted in the framework of the PSSA, collaboration between the coast guards of the four countries will be fundamental to enforce them and guarantee compliance.

NEXT STEPS

The four countries will submit the proposal to the IMO Secretariat in June, for discussion at the 79th Marine Environment Committee, scheduled for December. The first semester of 2022 will therefore be dedicated to the drafting of the file and consulting of the various stakeholders.



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⁵ Vanderlaan, A.S., & Taggart, C., 2007, [Vessel collisions with whales: The probability of lethal injury based on vessel speed](#).

⁶ Leaper, 2019, [The Role of Slower Vessel Speeds in Reducing Greenhouse Gas Emissions, Underwater Noise and Collision Risk to Whales](#)

⁷ Lee et al. (2015) developed an economic model which indicated that the savings in total fuel consumption associated with slower speeds were usually higher than the cost of operating the extra vessels required to transport equivalent goods.

⁸ Faber, J., Huigen, T., and Nelissen, D., 2017, “[Regulating speed: a Short-term Measure to Reduce Maritime GHG Emissions](#)”

⁹ Reynolds Environmental Sustainability Consultants, 2019, [The multi-issue mitigation potential of reducing ship speeds](#). The study consists of a preliminary review of existing information. No original analysis is undertaken. However, the review is supplemented by consultation with prominent individuals working in the various subject areas examined.

¹⁰ Leaper, 2019 [“The Role of Slower Vessel Speeds in Reducing Greenhouse Gas Emissions, Underwater Noise and Collision Risk to Whales”](#)

Interaction between delphinids and fisheries at the central-western Mediterranean

Fishing operations are recognized as one of the main threats affecting vulnerable marine vertebrate species. Specifically, bycatch has been an important factor involved in marine vertebrates' population declines, including cetaceans, which are also affected by habitat degradation and decline of prey availability among other threats. In the Western Mediterranean, bycatch of small and medium-size cetaceans occurs leading different national and international institutions and agreements responsible for their protection and the regulation of fishing activities to launch proposals and programs to characterize, quantify, and mitigate this problem in different regions.

The main objective of the present study was to study fishers' perception about the interaction between all active fishing gears (artisanal métiers, bottom trawling, purse seine, and pelagic longline) and the cetacean species inhabiting the study area. The present study takes place along the three provinces (Castellón, Valencia and Alicante, north to south) of the Valencian Community coastline (East Spain) (see Figure 1) which is located at the south of the Mediterranean Cetacean Migration Corridor Marine Protected Area. Fishers were asked through interviews about: 1) delphinids' bycatch and 2) gear damage events and catch loss caused by these species over the year before the interview was conducted (2019 - 2020) following Revuelta *et al.*, (2018). Fishers' perception of delphinid population trends and sighting frequencies were also asked during interviews. Campaigns were designed to be carried out in 2020 and 2021, however, COVID-19 pandemics didn't allow the 2021 campaign. Nonetheless, in autumn 2022 interviews will be held if the sanitarian situation allows it.

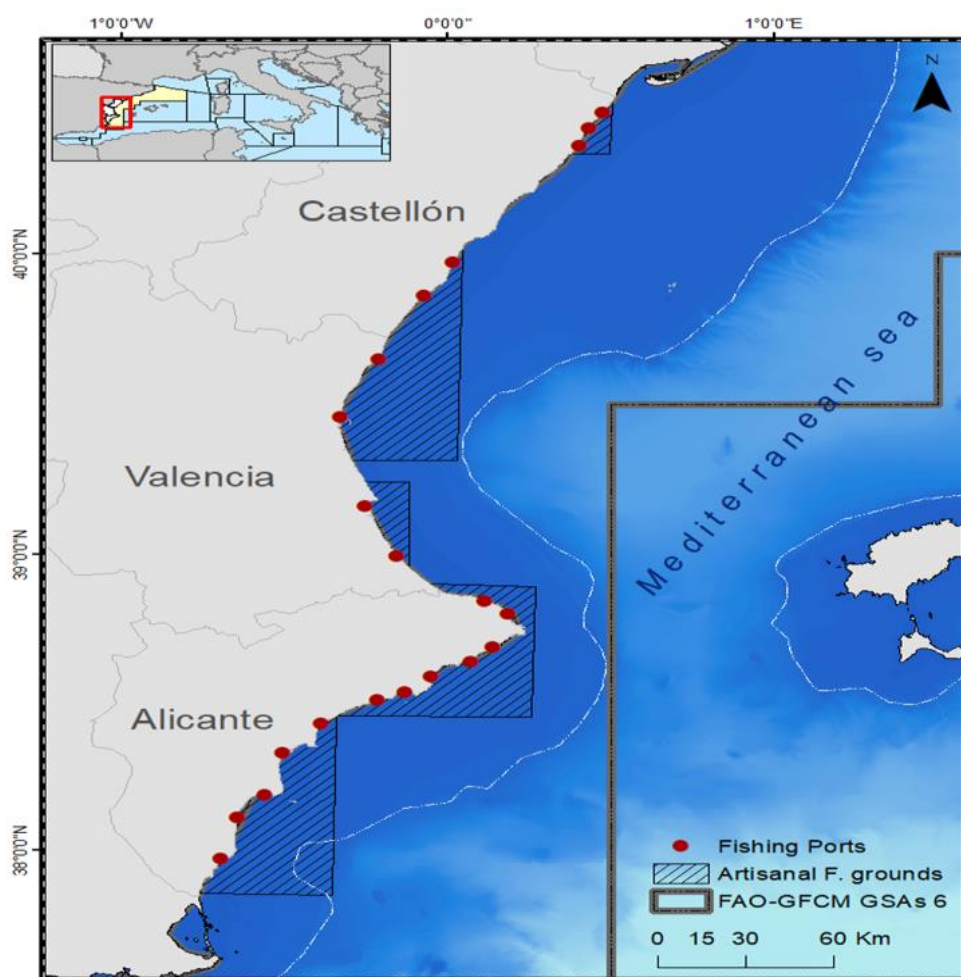


Figure 1. Map showing the study area with the surveyed fishing ports. Grey dashed line refer to Mediterranean FAO-GFCM GSAs delimitations (Geographical Sub-Area 6: Northern Spain) that includes trawl fishing grounds. Black polygons show the artisanal fishing grounds along the coast.

One-third (31 %) of interviewed fishers reported at least one incidental catch of cetaceans during its profession. Interviewees informed that for the 2019 - 2020 period, a total of 15 bottlenose dolphins, 7 striped dolphins (see Figure 2), one Risso's dolphin and 9 unidentified cetaceans were accidentally caught. Most delphinid accidental catches were carried out by bottom trawlers: 11 bottlenose dolphins, 5 striped dolphins and 7 unidentified cetaceans. Purse seines reported 4 bottlenose dolphins and 2 striped dolphins accidental catches, a pelagic longline reported a Risso's dolphin accidental catch, while artisans reported 2 accidental catches of delphinids that fishers were not able to identify.

According to interviews, 65% of interviewed fishers were able to identify cetacean species sighted during fishing operations, observing bottlenose dolphins, striped dolphins, common dolphins, fin whales and pilot whales. Regarding fishers' perception of cetacean population trends, only 6% of interviewees perceived a decrease on delphinid populations on its fishing area, while 42.9 % of interviewees perceived that delphinid populations remain stable, and 44.7 % of interviewees assured that delphinid populations have increased in the recent years. Artisanal fishers had a higher proportion of interviewees perceiving an increase in local delphinid populations. A total of 102 (89.5%, N= 114) artisanal fishers using gillnets and trammel nets reported negative interactions with cetaceans, especially with bottlenose dolphins, claiming that this species causes gear and catch damage events. Moreover, 80 out of these 102 fishers provided an estimation of their annual economic loss produced by these events, resulting in a mean of $2,998.1 \pm 2,095$ Euros (range: 100 - 9,000 Euros) per vessel.

Combine interviews' information with stranding data constitutes a valuable source to describe the impact of fisheries interactions on small cetacean species. Data gathered from the stranding network of the Valencian Community confirms that bottlenose dolphin and striped dolphin are the species with higher number of records on strandings with fisheries interaction signs, especially bottlenose dolphin that showed the highest percentage (18.5%). The impact is higher for this last species, whose populations abundance is about ten times lower than that of striped dolphins (Gómez de Segura *et al.*, 2006), particularly considering that this species is included as 'Vulnerable' on the Spanish Catalogue of threatened species and of the IUCN Red List in the Mediterranean.

In conclusion, striped dolphin and bottlenose dolphin are interacting with the fishing fleet of the Valencian Community. Both species, specially bottlenose dolphin must be considered in management plans to assure its conservation and fisheries sustainability, particularly in waters surrounding marine protected areas such as the Mediterranean Cetacean Migration Corridor.



Figure 2. Striped dolphin accidentally caught by one bottom trawler operating in the Valencian Community waters in autumn 2021

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The overlooked biodiversity hotspot of the Eastern Aegean Sea: year round monitoring by Archipelagos Institute of Marine Conservation

The eastern Aegean is an important hotspot for cetaceans, Mediterranean monk seals and sea turtles; nonetheless, it has not yet received the conservation attention it deserves. Archipelagos Institute of Marine Conservation was the first to direct its research focus to the region. Since 2000, we have been monitoring large resident populations of dolphins including short-beaked common, striped and bottlenose dolphins. Furthermore, we also monitor, throughout the year, in the same study area, small pods of resident Cuvier's beaked whales, as well as migratory populations of sperm whales and Risso's dolphins.

Research phase one, from 2000 until 2016, involved all year round, vessel-based, population monitoring. During phase two, from 2017 until 2021, boat-based monitoring was carried out with 2 vessels on a more frequent basis, while the scope of surveys was extended to include assessments of the impacts of fisheries, underwater noise, plastic debris and marine traffic on the populations. COVID-19 restrictions reduced the frequency of surveys in 2020. During that year research was also focused on underwater noise measurements, as it was a year where boat traffic drastically reduced.



2022 marks the beginning of a new phase for Archipelagos Institute during which extended cetacean monitoring is further enabled with a total of 4 research vessels. At the same time, upgraded equipment allows for the assessment of deep-water fish biomass and biodiversity, thus filling significant knowledge gaps regarding cetacean feeding grounds.

The strict lockdown restrictions implemented in March 2020 resulted in a 53% effort decline compared to 2019. The travel limitations imposed did not allow for our research boats to leave port to survey. Nonetheless, we did manage to conduct a total of 48 survey trips within that year.

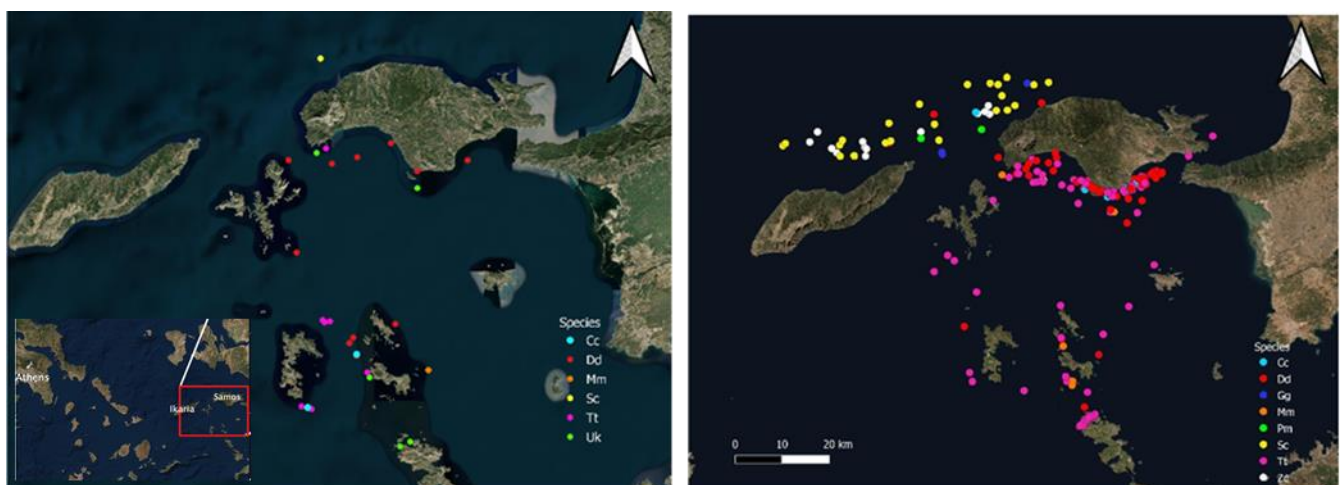


Figure 1: 2020 (left) and 2021 (right) map of sightings - survey effort continued despite COVID-19 restrictions and enabled the monitoring of the populations of 9 species of cetaceans, monk seals and sea turtles (*Delphinus delphis*, *Tursiops truncatus*, *Stenella coeruleoalba*, *Grampus griseus*, *Ziphius cavirostris*, *Physeter macrocephalus*, *Monachus monachus*, *Caretta caretta* and *Chelonia mydas*).



Since 2020 Archipelagos has conducted 274 surveys in this study area, with a total of 340 sightings of nice species including *Delphinus delphis*, *Tursiops truncatus*, *Stenella coeruleoalba*, *Grampus griseus*, *Ziphius cavirostris*, *Physeter macrocephalus*, *Monachus monachus*, *Caretta caretta* and *Chelonia mydas*. This highlights the importance of this biodiversity hotspot of the Eastern Aegean and the urgent need for implementation of tangible and efficient conservation measures in this region.



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Major shipping company helps save endangered sperm whales in the Mediterranean

A leading shipping and logistics conglomerate, Mediterranean Shipping Company (MSC) Group, is the first major shipping company to re-route their ships on the west coast of Greece to reduce the risk of striking endangered sperm whales. The decision was made after a coalition of ACCOBAMS partner NGOs approached MSC Group to move their ships away from critical habitat for the subpopulation of whales in the eastern Mediterranean, of which only 200 to 300 individuals remain. Outside the Mediterranean, sperm whales are listed as 'Vulnerable', but due to its small size and geographic isolation, the Mediterranean population is listed as 'Endangered' on the IUCN Red List of Threatened Species.

The International Fund for Animal Welfare (IFAW), OceanCare and WWF Greece are working in collaboration with the Pelagos Cetacean Research Institute, which has been studying the eastern Mediterranean sperm whale population since 1998. These studies have identified the Hellenic Trench, to the west and south of the Peloponnese and southwest of Crete, as critical habitat for these whales – the only area where resident family groups (social units) have been observed in the eastern Mediterranean. These deep-diving whales concentrate around the 1000m depth contour – directly in the path of busy shipping routes. For many years, the ACCOBAMS Scientific Committee has pointed to the importance of the Hellenic Trench as sperm whale habitat and in 2007 proposed that it should become a Marine Protected Area for cetaceans. In 2017, the Hellenic Trench was identified as an Important Marine Mammal Area (IMMA) at global scale by the IUCN SSC-WCPA Marine Mammal Protected Areas Task Force.

In addition to the re-routing of MSC cargo ships, MSC Cruises' vessels also make use of this east Mediterranean route to travel to Greek destinations and, following detailed discussions based on the scientific research, slight modifications have been made to routes from mid-April to October when these cruises operate. These routing modifications will make a substantial contribution to the survival of the endangered sperm whales and also are a very important positive message and example to be followed by other companies as well as by authorities in the Mediterranean countries.

More than half the sperm whales found dead on the Greek coast show evidence of ship strikes. This is the highest proportion known for any whale population globally. "The whales found dead on the shore with propeller marks and cuts are just the tip of the iceberg. Up to 20 times more die offshore and are never recorded. We are encountering fewer whales in our yearly research surveys than in previous years, which is a huge concern," explains Dr. Alexandros Frantzis, Scientific Director of the Pelagos Cetacean Research Institute.

"This population is at risk and even one ship strike is one too many. By implementing small re-routing changes, MSC is making a significant difference. Now we need other shipping companies to show similar leadership – if all ship traffic using this area made the adjustments, the research has shown that the ship strike risk to sperm whales would be reduced by almost 75 percent¹," comments the NGO coalition. "Ship re-routing is required now to change the course for sperm whales in the eastern Mediterranean." Thanks to science and technology and with good will, there are ways to co-exist with the wild animal populations and mitigate the impact of human activities.

The implementation of conservation action to reduce the risk of collisions with ships to protect the endangered sperm whale has already been subject to previous Resolutions adopted by the Parties to ACCOBAMS. MSC have taken the lead in routing their ships to avoid the highest risk areas and hopefully other operators will do the same. The next step would be for the Greek authorities to facilitate all vessels to minimise the ship strike risks through formal routing proposals to the International Maritime Organization.



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¹ Frantzis A, Leaper R, Alexiadou P, Prospathopoulos A, Lekkas D (2019) Shipping routes through core habitat of endangered sperm whales along the Hellenic Trench, Greece: Can we reduce collision risks? PLoS ONE 14(2): e0212016. <https://doi.org/10.1371/journal.pone.0212016>



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