

REPORT ON THE CONSERVATION STATUS OF CETACEANS AND RELEVANT ACTIVITIES IN CENTRAL MEDITERRANEAN

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 synthesize 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 Central Mediterranean region

Albania, Croatia, Greece (western coast), Italy (Adriatic coast), Libya, Malta, Montenegro, Slovenia, Tunisia (eastern coast).

Overview of activities in the Region since the previous report:

Albania:	There are no known specific studies on cetaceans in the Albanian waters at present time.
Croatia:	1) Continuous monitoring and photo-ID study of common bottlenose dolphins is being carried out in all six N2K sites in Croatia dedicated to this species, where also biopsy samples are collected; (2) A year-round passive acoustic monitoring is being carried out on several location along the eastern Adriatic coastal and offshore waters; (3) Surveys on deep diving cetaceans aimed at establishing densities and habitat use in offshore area of southern Adriatic were carried out (4) Targeted surveys focusing on a possible re-colonization of central Adriatic by common dolphins are being carried out; (5) Studies on dolphin-fisheries interaction mitigation in northern Adriatic were carried out as part of LIFE Delfi project (https://lifedelfi.eu/); (6) monitoring of solitary common dolphins is carried out (7) a Citizen science program involving tourists and locals in data collection via the Marine Ranger website (www.marine-ranger.org) and mobile app continues providing relevant data on Cetacean observations in the Adriatic and Mediterranean; 7) Data on stranded, injured and by-caught animals is being collected.
Greece (Western coast):	Ongoing studies are carried out in the Ionian Sea archipelago, the Gulf of Ambracia, the Gulf of Corinth and along the Hellenic Trench, via boat surveys, photo-identification, biopsy sampling, acoustic surveys and aerial photogrammetry, focusing primarily on common bottlenose dolphins, common dolphins, striped dolphins, sperm whales and Cuvier’s beaked whales. Fixed-line ferry-based surveys are ongoing in the ferry lines connecting Italy and Greece.
Italy:	Continuous boat-based and photo-identification studies are ongoing in the Friuli Venezia Giulia, Veneto and the Gulf of Taranto, focusing primarily on common bottlenose dolphins and Risso’s dolphins, focusing on population abundance, behaviour, interaction with fisheries, distribution and habitat use. Fixed-line ferry-based surveys are ongoing in the ferry lines connecting Italy and Greece. Collection and necropsies of stranded animals is carried out along the entire Italian coast of the Adriatic Sea.
Libya:	No activities related to cetacean research and conservation are currently known to be carried out.
Malta:	Data on cetaceans is collected via examination of stranded animals and boat-based surveys.
Montenegro:	Photo-ID and land-based research is carried out in south Montenegro. Opportunistic information on sightings and strandings are also collected.
Slovenia:	Continuous year-round research and monitoring of common bottlenose dolphins is carried out in the Gulf of Trieste and surrounding waters of the northern Adriatic Sea, via land-based and boat-

	based surveys, photo-identification and mark-recapture, biopsy sampling, passive acoustic monitoring, underwater noise monitoring, and the use of unmanned aerial vehicles (UAVs) and environmental DNA (eDNA), focusing on population dynamics, social structure, behaviour, habitat use, interactions with fisheries, foraging ecology, chemical pollutants and body condition. Data on other cetacean species occurring in the area occasionally, such as common dolphins and fin whales, is also collected. Necropsies are carried out on all reported stranded and bycaught animals.
Tunisia (Eastern coast):	Boat-based surveys with photo-identification are carried out in various parts of Tunisian waters, with recent studies focusing also on dolphin-fishery interactions, using passive acoustic monitoring.

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

Albania:	NR: No major special problem for cetaceans during the last two years in the region. Incidental by-catch is reported occasionally by fishermen.
Croatia:	Interaction with fisheries and in particular depredation and gear interaction and entanglement are a burning issue causing a lot of concern. In addition, increase in marine traffic (particularly during tourist season) and ubiquitous noise continue to cause habitat degradation and disturbance. Unregulated dolphin watching is also a cause for concern in some areas.
Greece (Western coast):	NA
Italy:	NA

Libya:	NR: There has been no major special problem for cetaceans during the last two years in the region
Malta:	Noting that impacts from marine litter, underwater noise and ship strikes are omnipresent throughout the Mediterranean, it is deemed pertinent to continue providing capacity building regarding common methodologies for assessment of such impacts
Montenegro:	Strategy on the Conservation of Cetaceans in the Adriatic Sea for the period 2016 - 2025 - recognize a threats and their impacts on cetaceans in the Adriatic sea. To date when Strategy was developed (2015.), eight types of threats have been identified, with bycatch and marine debris being assessed as the most significant ones in terms of severity of impacts and number of cetacean species they may affect. However, it should be stressed that assumptions were given based on scarce data about actual impact. For instance, existing stranding data indicates relevance of bycatch, but do not show the accurate state. The significance of climate change is least known, but due to geographical features of the Adriatic, it is expected this is an important issue to tackle in the future.
Slovenia:	None reported.
Tunisia (Eastern coast):	The existing data on abundance and density are very old (INSTM-2005 campaign) and also geographically limited (ASI-2018). In Tunisia, like most countries in the Mediterranean, the threats to cetaceans are generally linked to the concentration of human activities and mainly to fishing activity. dolphins are now considered by professional fishermen as real competitors for access to fishery resources, hence the problems of depredation, bycatch and stranding.

Recommendations / suggestions for Improvement of the conservation:

Albania:	Training activities for the capacity building, in particular necropsy for veterinarians is a necessity. National stranding network to be established as soon as possible. So far only incidental cases of stranding are reported by the fisherman.
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	The national plan for cetaceans conservation is elaborated in 2006 initially and has been implemented through some pilot actions after that. There is a need for its revision and updated since it is more than 10 years of its preparation. Centre for Fauna and Flora Research (under the Faculty of Natural Sciences) in the framework of the annual monitoring projects, coordinated by National Environment Agency of Albania, is involved in the monitoring of cetaceans species. However, due to the limited funds the monitoring is not comprehensive and it does not cover all cetaceans' species
Croatia:	Developing and funding of targeted dolphin-fisheries studies investigating local phenomenon and possibly proposing mitigation measure. Funding of continuous Cetacean monitoring activities. Developing dolphin-watching monitoring (licensing) scheme. Advancing studies of deep diving cetaceans in the southern Adriatic.
Greece (Western coast):	NA
Italy:	Italy suggests the recommendation of utmost caution in the case of studies that require study practices that make use of potentially invasive techniques. Indeed, any activities involving the disturbance of species of Annex IV of the Habitats Directive, such as biopsies, satellite markings, active acoustics experiments (including the use of pingers), etc, must be authorized by derogation, as expressed by the art 16 of the up mentioned Eu Directive. Besides, it should be remembered that studies of toxicology, genetics, diet of the species, medium / long-term displacements make use of two types of techniques: 1) skin biopsy 2) satellite telemetry and such techniques, if not correctly conducted (there are international studies produced in the light of various experiences in various parts of the world) can cause serious disturbance and have harmful effects to the specimens. In particular, these techniques, especially skin biopsy, have spread strongly in the Mediterranean and are now also used by nascent groups with little or no experience, elements that increase the danger of causing harm. Therefore, Italy requests more attention on the release of authorizations, which must be carefully evaluated according to the species concerned, the experience of the operator, the actual need in consideration of the type of study or analysis proposed. Besides, Italy recalls the attention of the Scientific Committee on such matter.
Libya:	To help countries that don't have a national stranding network to put it in place with necropsy training for veterinarians <ul style="list-style-type: none"> • Evaluate the functioning of the stranding network for improvement • To help countries to set up a tissue bank • Passive acoustic training, MMO-PAM
Malta:	1) To continue providing capacity building in terms of national stranding networks and including necropsy training for veterinarians; (2) To further evaluate the functioning of the stranding networks; (3) To further help countries to set up a tissue bank; (4) To organise passive acoustic training.
Montenegro:	Support to put in place national stranding network is absolutely necessary including equipment needed to perform necropsy. Also support in relation to set up tissue bank and training on MMO-PAM is of high relevance. Support to the development of Management plan for Cetaceans would be also very welcome.
Slovenia:	<ul style="list-style-type: none"> - Expansion of existing MPAs (process currently ongoing) - Improved funding of cetacean research and conservation programmes
Tunisia (Eastern coast):	The realization of monitoring campaigns all along the Tunisian coasts. Standardization of observation technique and data analysis. Identification of IMMA and CCH areas.

Published papers in 2023-2024 relevant to the Central Mediterranean

- ⇒ Bearzi, G., Bonizzoni, S., Genov, T., & Notarbartolo di Sciara, G. (2024). Whales and dolphins of the Adriatic Sea: present knowledge, threats and conservation. *Acta Adriatica*, 65(1).
- ⇒ Borrell, A., Tort, B., Garcia-Garin, O., Genov, T., & Gonzalvo, J. (2024). Stable isotope ratios indicate trophic niche overlap in three sympatric delphinid species in the Eastern Ionian Sea. *Marine Mammal Science*, e13196.
- ⇒ Cañadas, A., Pierantonio, N., Araujo, H., David, L., Di Meglio, N., Doremus, G., ... & Panigada, S. (2023). Distribution patterns of marine megafauna density in the Mediterranean Sea assessed through the ACCOBAMS Survey Initiative (ASI). *Frontiers in Marine Science*, 10, 1270917.
- ⇒ Constaratas, A. N., Holcer, D., Özgöbek, Ö., & Širović, A. (2024). Acoustic occurrence of deep-diving cetaceans in the southern Adriatic Sea. *Marine Mammal Science*, e13204.
- ⇒ D’Amen, M., Fortuna, C.M., Holcer, D., Panigada, S., Bonora, N., Lauriano, G. 2024. Climate change and cetacean habitat suitability in the Mediterranean Sea: a challenge for Marine Strategy Framework Directive D1C4, D1C5 criteria. *Animal Conservation* DOI: 10.1111/acv.13002
- ⇒ David, L., Akkaya, A., Arcangeli, A., Gauffier, P., Mazzariol, S., Vighi, M., & Carlucci, R. (2024). Risks, threats, and conservation status of cetaceans in the Mediterranean and Black Seas. *Frontiers in Marine Science*, 11, 1364527.
- ⇒ Fortuna CM, Fortibuoni T, Bueno-Pardo J, Coll M, Franco A, Gimenez J, Stranga Y, Peck MA, Claver C, Brasseur S, Fernandez-Corredor E, Frascchetti S, Garcia-Garin O, van Leeuwen A, Louzao M, Pedrajas A, Raicevich S, Ramirez F, Ransijn J, Russell DJF, Serena F, Sbragaglia V and Katsanevakis S. 2024. Top predator status and trends: ecological implications, monitoring and mitigation strategies to promote ecosystembased management. *Front. Mar. Sci.* 11:1282091. <https://doi.org/10.3389/fmars.2024.1282091>.
- ⇒ Good, S.D., Dewar, K., Burns, P., Sainsbury, K., Phillips, R.A., Wallace, B.P., Fortuna, C., Udyawer, V., Robson, B., Melvin, E.F., Currey, R.J.C. 2024. Adapting the Marine Stewardship Council risk-based framework to estimate impacts on seabirds, marine mammals, marine turtles and sea snakes. *Marine Policy*, 163, 106118. <https://doi.org/10.1016/j.marpol.2024.106118>.
- ⇒ Grattarola, C., Pietroluongo, G., Belluscio, D., Berio, E., Canonico, C., Centelleghes, C., ... & Casalone, C. (2024). Pathogen Prevalence in Cetaceans Stranded along the Italian Coastline between 2015 and 2020. *Pathogens*, 13(9), 762.
- ⇒ Hofs, J., Miočić-Stošić, J., Frleta-Valić, M., Mackelworth, P., & Holcer, D. (2024). Defying Evolution: Observations of a Mouth-Breathing Bottlenose Dolphin (*Tursiops truncatus*). *Aquatic Mammals*, 50(3).
- ⇒ Legnardi, M., Franzo, G., Cecchinato, M., Si, H., Baston, R., Mazzariol, S., ... & Tucciarone, C. M. (2024). First Detection of Gammacoronavirus in a Striped Dolphin (*Stenella coeruleoalba*) from the Adriatic Sea. *Animals*, 14(18), 2725.
- ⇒ Mackelworth, P., Fortuna, C.M., Antoninić, M., Holcer, D., Abdul Malak, D., Attia, K., Bricelj, M., Guerquin, F., Marković, M., Nunes, E., Perez-Valverde, C., Ramieri, E., Stojanović, I., Tunesi, L., McGowan, J. 2024. Ecologically and Biologically Significant Areas (EBSAs) as an enabling mechanism for transboundary marine spatial planning, *Marine Policy*, 166, 106231, <https://doi.org/10.1016/j.marpol.2024.106231> .
- ⇒ Panigada, S., Pierantonio, N., Araújo, H., David, L., Di-Méglio, N., Dorémus, G., ... & Cañadas, A. (2024). The ACCOBAMS Survey Initiative: the first synoptic assessment of cetacean abundance in the Mediterranean Sea through aerial surveys. *Frontiers in Marine Science*, 10, 1270513.
- ⇒ Patton, P. T., Cheeseman, T., Abe, K., Yamaguchi, T., Reade, W., Southerland, K., ... & Bejder, L. (2023). A deep learning approach to photo-identification demonstrates high performance on two dozen cetacean species. *Methods in ecology and evolution*, 14(10), 2611-2625.
- ⇒ VanCompernelle et al. 2024. Vulnerability of marine megafauna to global at-sea anthropogenic threats. *Conservation Biology*, in press.