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Draft updated Action Plan for the conservation of cetaceans in the Mediterranean Sea

Note:

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Note by the Secretariat

1. The Action Plan for the conservation of cetaceans in the Mediterranean Sea was adopted by the Contracting Parties to the Barcelona Convention in 1991. It aims at ensuring the recovery of cetacean populations in the Mediterranean. The Action Plan was prepared using the information available about the cetacean populations and the threats hanging over them as known in 1991.
2. In 2016, the Appendix “The list of Additional Points for the Implementation of the Action Plan” adopted by the Focal Points for SPAs in October 1992 has been revised for the first time, to provide new orientations for the Action Plan that are in line with the evolving regional context regarding cetacean conservation and with the new challenges and priorities as identified by the most recent scientific knowledge.
3. The revised version has been adopted by the Contracting Parties in their COP19, Decision IG.22/12, 2016
4. For the biennium 2020-2021, the Contracting Parties to Barcelona Convention requested SPA/RAC during the CoP 21 (Naples, Italy, 2-5 December 2019) to update the Action Plan for the conservation of cetaceans.
5. This update process was done in close collaboration with ACCOBAMS, given that the common obligations relating to cetaceans under the Protocol on Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) are fulfilled through the implementation of ACCOBAMS (COP 14, Slovenia 2005) and the new Memorandum of Collaboration between ACCOBAMS and SPA/RAC, signed in Monaco on October 15, 2020, defining the joint ACCOBAMS - SPA/RAC work program for the period 2020-2022
6. With regards to this update, an assessment of the implementation of the previous version has been done at national and regional levels. It has considered the SPA/RAC Progress activities achieved during the last biennium. This evaluation appears in the annex I of the present document.
7. A previous version of the draft Action plan has been shared with the SPA/BD focal points and the comments and input received have been taken in consideration to produce the present version.
8. The draft updated Action plan including the **Implementation schedule** is given in this document.

Draft updated Action Plan for the conservation of cetaceans in the Mediterranean Sea

I. Background

1. The Contracting Parties to the Barcelona Convention, within the framework of the Mediterranean Action Plan, give priority to the conservation of the marine environment and to the components of its biological diversity. This was confirmed by the adoption of the 1995 Barcelona Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) and of its annexes, among them a list of endangered or threatened species.
2. Elaborating and implementing action plans to conserve one species or group of species is an effective way of guiding, coordinating and strengthening the efforts the Mediterranean countries are making to safeguard the natural heritage of the region. Although they do not have a binding legal character, these action plans were adopted by the Contracting Parties as regional strategies setting priorities and activities to be undertaken. In particular, they call for greater solidarity between the States of the region, and for co-ordination of efforts to protect the species in question. This approach has proved to be necessary for ensuring conservation and sustainable management of the concerned species in every Mediterranean area of their distribution.
3. These Action Plans constitute mid-term regional strategies that should be updated every five years, based on an evaluation of their implementation at regional and national levels. For the biennium 2020-2021, the Contracting Parties to Barcelona Convention requested SPA/RAC during the CoP 21 (Naples, Italy, 2-5 December 2019) to update the Action Plan for the conservation of cetaceans.
4. This update process was done in close collaboration with ACCOBAMS, given that the common obligations relating to cetaceans under the Protocol on Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) are fulfilled through the implementation of ACCOBAMS (COP 14, Slovenia 2005) and the new Memorandum of Collaboration between ACCOBAMS and SPA/RAC, signed in Monaco on October 15, 2020, defining the joint ACCOBAMS - SPA/RAC work program for the period 2020-2022.

II. Introduction

5. The Mediterranean Sea, *Mare medi terraneum* (Latin for a “sea in the middle of the land”), is the largest (2,969,000 km²) and deepest (average 1,460 m, maximum 5,267 m) enclosed sea on Earth. It is a marine biodiversity hotspot, with approximately 17,000 marine species occurring within its basin (Coll et al, 2010). Its cetacean diversity is also remarkable: twenty-five species of cetaceans occur or have occurred at various degrees of abundance in the Mediterranean Sea. Eleven species occur regularly, with resident populations in the basin (Table 1). In addition, the North Atlantic minke whale *Balaenoptera a. acutorostrata*, the North Atlantic humpback whale *Megaptera n. novaeangliae* and the false killer whale *Pseudorca crassidens* are considered visitors, while the remaining 11 species are very rare (Table 2).

Table 1. Cetacean species with regular occurrence and resident populations in the Mediterranean Sea and their common names in English, French and Arabic. (Cetacean names in Arabic are usually direct translation from the English version but some Arabic countries translate the French names instead. When two options are given, the upper name refers to English and the lower to French).

Cetacean species represented by populations regularly present in the Mediterranean			
Species	English	French	Arabic
 <i>Balaenoptera physalus</i>	Fin whale	Rorqual commun	الحوت الزعنفي روكال شائع
 <i>Physeter macrocephalus</i>	Sperm whale	Cachalot	حوت العنبر
 <i>Ziphius cavirostris</i>	Cuvier's beaked whale	Ziphius	حوت كوفير المنقاري زيفيوس
 <i>Orcinus orca</i>	Orca	Orque	الحوت القاتل اوركا
 <i>Globicephala melas</i>	Long-finned pilot whales	Globicéphale noir	الحوت القائد جلوبيسيفالوس
 <i>Grampus griseus</i>	Risso's dolphin	Dauphin de Risso	دلفين ريسو جرامبوس
 <i>Steno bredanensis</i>	Rough-toothed dolphin	Sténo	الدلفين ذو الاسنان الخشنة ستينو
 <i>Tursiops truncatus</i>	Common bottlenose dolphin	Grand dauphin	الدلفين زجاجي الانف الدلفين الكبير
 <i>Stenella coeruleoalba</i>	Striped dolphin	Dauphin bleu et blanc	الدلفين المخطط الدلفين الأبيض والازرق
 <i>Delphinus delphis</i>	Common dolphin	Dauphin commun	الدلفين الشائع
 <i>Phocoena phocoena relicta</i>	Harbour porpoise	Marsouin commun	خنزير البحر

Table 2. Cetacean species occurring, or having occurred, in the Mediterranean Sea. Regular species outlined in grey. Habitat (preferred in bold) and status are indicated only for species recognized as regular. (Adapted from ACCOBAMS, 2021. Conserving Whales, Dolphins and Porpoises in the Mediterranean Sea, Black Sea and adjacent areas: an ACCOBAMS status report. By Giuseppe Notarbartolo di Sciara and Arda Tonay. *In preparation.*)

	Species/subspecies	English name	Classification	Presence	Habitat	Current status (IUCN)
1	<i>Eubalaena glacialis</i>	North Atlantic right whale	Mysticeti, Balaenidae	very rare		
2	<i>Balaenoptera a. acutorostrata</i>	North Atlantic minke whale	Mysticeti, Balaenopteridae	Visitor		
3	<i>Balaenoptera b. borealis</i>	Northern Sei whale	Mysticeti, Balaenopteridae	very rare		
4	<i>Balaenoptera p. physalus</i>	North Atlantic fin whale	Mysticeti, Balaenopteridae	Regular	oceanic, slope, neritic	Vulnerable
5	<i>Megaptera n. novaeangliae</i>	North Atlantic humpback whale	Mysticeti, Balaenopteridae	Visitor		
6	<i>Eschrichtius robustus</i>	grey whale	Mysticeti, Eschrichtiidae	very rare		
7	<i>Physeter macrocephalus</i>	sperm whale	Odontoceti, Physeteridae	Regular	slope, oceanic	Endangered
8	<i>Kogia sima</i>	dwarf sperm whale	Odontoceti, Kogiidae	very rare		
9	<i>Hyperoodon ampullatus</i>	northern bottlenose whale	Odontoceti, Ziphiidae	very rare		
10	<i>Mesoplodon bidens</i>	Sowerby's beaked whale	Odontoceti, Ziphiidae	very rare		
11	<i>Mesoplodon densirostris</i>	Blainville's beaked whale	Odontoceti, Ziphiidae	very rare		
12	<i>Mesoplodon europaeus</i>	Gervais' beaked whale	Odontoceti, Ziphiidae	very rare		
13	<i>Ziphius cavirostris</i>	Cuvier's beaked whale	Odontoceti, Ziphiidae	Regular	slope, oceanic	Vulnerable
14	<i>Delphinus d. delphis</i>	common dolphin	Odontoceti, Delphinidae	Regular	neritic, slope, oceanic	Endangered
15	<i>Globicephala macrorhynchus</i>	short-finned pilot whale	Odontoceti, Delphinidae	very rare		
16	<i>Globicephala m. melas</i>	North Atlantic long-finned pilot whale	Odontoceti, Delphinidae	Regular	oceanic, slope, neritic	Endangered (proposed)
17	<i>Grampus griseus</i>	Risso's dolphin	Odontoceti, Delphinidae	Regular	slope, oceanic	Vulnerable (proposed)
18	<i>Orcinus orca</i>	Orca	Odontoceti, Delphinidae	Regular	neritic, slope, oceanic	Critically Endangered
19	<i>Pseudorca crassidens</i>	false killer whale	Odontoceti, Delphinidae	Visitor		
20	<i>Sousa plumbea</i>	Indian Ocean humpback dolphin	Odontoceti, Delphinidae	very rare		
21	<i>Stenella coeruleoalba</i>	striped dolphin	Odontoceti, Delphinidae	Regular	oceanic, slope	Least Concern (proposed)
22	<i>Steno bredanensis</i>	rough-toothed dolphin	Odontoceti, Delphinidae	regular in the Levantine Sea, visitor	oceanic, slope, neritic	Data Deficient (proposed)
23	<i>Tursiops t. truncatus</i>	North Atlantic bottlenose dolphin	Odontoceti, Delphinidae	Regular	neritic, oceanic	Least Concern (proposed)
24	<i>Phocoena p. phocoena</i>	North Atlantic harbour porpoise	Odontoceti, Phocoenidae	very rare		
25	<i>Phocoena p. relicta</i>	Black Sea harbour porpoise	Odontoceti, Phocoenidae	regular in N. Aegean Sea	Neritic	Endangered

6. The Mediterranean region has been inhabited by humans for millennia. Among the planet's marine environments, the Mediterranean Sea is one of the most affected by anthropogenic activities. Concentration of human populations and activities around the basin cause substantial impacts to the marine and coastal environments, threatening the structure and function of natural ecosystems and the quality and abundance of natural resources to varying degrees. The State of the Mediterranean Marine and Coastal Environment Report 2012 (UNEP/MAP, 2012) highlighted the following as the major issues requiring coordinated policy and management responses to stop the degradation of the Mediterranean ecosystems: coastal development and sprawl, chemical pollution, eutrophication, marine litter, marine noise, invasive non-indigenous species, over-exploitation, sea-floor integrity, changed hydrographic conditions, marine food webs, and biodiversity. This complex scenario of multiple pressures acting simultaneously puts certain habitats and species at high risk. As very mobile, long-lived vertebrates situated at the highest levels of the marine trophic webs and with very low reproductive rates, cetaceans are among those species at risk. Accordingly, nations bordering the Mediterranean and Black Seas created a legal instrument to ensure the survival of whales and dolphins in the area: The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), which came into force in 2001. Besides this, and in addition to national legislation, other European and international regulations are also of relevance, either directly or indirectly, to cetacean conservation (Table 3).

Table 3. European legislations, international environmental agreements and Intergovernmental organisations relevant to cetacean protection in the Mediterranean Sea.

	Habitats Directive (1992)	<ul style="list-style-type: none"> The directive's overarching goal strives to ensure the "preservation, protection and improvement of the quality of the environment, including the conservation of natural habitats and wild fauna and flora". Cetacean species are listed in annexes II and IV. Establishes a Community-wide network of nature protection areas known as <i>Natura 2000</i> with the aim of assuring the long-term survival of Europe's most valuable and threatened species and habitats. The responsibility for proposing sites for <i>Natura 2000</i> lies with the Member States¹.
	Pelagos Sanctuary (1999)	<ul style="list-style-type: none"> France, Italy and the Principality of Monaco to create jointly coordinated initiatives to protect cetaceans and their habitats from all sources of disturbance: pollution, noise, accidental capture and injury, disruption etc.
	The Mediterranean Regulation (2006)	<ul style="list-style-type: none"> Adaptation of the EU Common Fisheries Policy in the Mediterranean Sea context, by laying out the necessary measures for the sustainable exploitation of fishery resources. Regulation of the European Parliament and of the Council for fisheries technical measures. Newest version Regulation (EU) 2019/1241.
	Marine Strategy Framework Directive (2008)	<ul style="list-style-type: none"> Establishment of a framework within which Member States shall take the necessary measures to achieve or maintain <i>good environmental status</i>² in the marine environment by the year 2020 at the latest. Designated to create a synergy with the Habitats Directive for marine protection.
	Barcelona Convention (1976 and 1995)	<ul style="list-style-type: none"> "Convention for the protection of the marine environment and the coastal region of the Mediterranean". The Mediterranean Action Plan of the United Nations Environment Programme (UNEP/MAP) acts as its Secretariat. Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean. Action Plan for the conservation of Mediterranean cetaceans" (1991)
	Bonn Convention (1979)	<ul style="list-style-type: none"> The Convention on the Conservation of Migratory Species of Wild Animals (CMS).
	ACCOBAMS (1996)	<ul style="list-style-type: none"> The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea, and Contiguous Atlantic Area.
	CITES (1973)	<ul style="list-style-type: none"> The Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known Washington Convention. Forbids trade in endangered species (e.g., cetaceans).
	Bern Convention (1979)	<ul style="list-style-type: none"> The Convention on the Conservation of European Wildlife and Natural Habitats, also known as Bern Convention. Places all cetaceans regularly found in the Mediterranean in Appendix I (strictly protected fauna species).

	Convention on Biological Diversity (1992)	<ul style="list-style-type: none"> • Also known as CBD, although not explicitly referring to cetaceans, urges Contracting Parties to develop national programmes that will safeguard their natural heritage and biological diversity.
	UNCLOS (1982)	<ul style="list-style-type: none"> • United Nations Convention on the Law of the Sea. • It has special provisions for marine mammals (Art. 65: "States shall cooperate with a view to the conservation of marine mammals...").
	GFCM (1949)	<ul style="list-style-type: none"> • The General Fisheries Commission for the Mediterranean was established under the provisions of Article XIV of the Constitution of the Food and Agriculture Organization of the United Nations (FAO). • Its main objective is to ensure the conservation and the sustainable use of living marine resources as well as the sustainable development of aquaculture in the Mediterranean and in the Black Sea.
	IWC (1946)	<ul style="list-style-type: none"> • The International Whaling Commission is the global body charged with the conservation of whales and the management of whaling. • Currently 88 member governments from countries all over the world. • Today's IWC works to address a wide range of conservation issues.

7. Main threats faced by cetacean species in the Mediterranean Sea are reviewed below:

II.1. Fisheries Interactions

Bycatch in fishing gear (legal/illegal, ghost nets)

8. Interactions between cetaceans and fisheries in the Mediterranean Sea are probably as old as the first human attempts to catch fish with a net (Bearzi, 2002). Direct fisheries interactions pose a serious threat to the survival of many populations and some species of marine mammals, with bycatch (incidental mortality and injury caused by fisheries from accidental entanglement) being the most acute problem (Read, 2008; Brownell et al. 2019). Various types of fishing gear can lead to cetacean bycatch, including passive and active nets, longlines, traps and discarded or lost nets and lines. More than observed bycatch rates themselves, the evidence of entanglement observed in stranded cetaceans in the past few years shows the strong impact of fisheries on Mediterranean (and Black Sea) cetacean populations (ACCOBAMS, 2019). Additionally, larynx entanglement or laryngeal strangulation has also been shown as a cause of death in dolphins depredating fishing gear. During these depredation events dolphins may swallow the net, which may get wrapped around the larynx, get lodged in the stomach or cut into laryngeal tissue (Đuras Gomerčić et al. 2009).

9. Recently, the incidental catch of cetaceans in Mediterranean fisheries has decreased with respect to earlier periods, when marine mammal bycatch, caused mainly by pelagic driftnets, was relevant (also for other groups of large marine vertebrate species). The use of these nets was banned in 2005, and since then, only a few studies have reported on the bycatch of marine mammals from other fisheries in the Mediterranean Sea.

10. Currently, the types of vessel groups with the greatest rates of interactions with marine mammals seem to be those using set gillnets and trammel nets in coastal areas

11. In terms of species bycatch composition, the recorded species of cetaceans decreased considerably once large driftnets were banned and subsequently dismissed. Currently, medium-small cetacean species, such as the striped dolphin (*Stenella coeruleoalba*), the bottlenose dolphin (*Tursiops truncatus*)

and the common dolphin (*Delphinus delphis*) are sporadically found in bycatch reports (GFCM SOMFI 2020)

12. In recent decades, the use of static nets extending to the continental slopes in all coastal fisheries has led to an increased risk of fishing gear loss and thus to unaccounted catches (i.e., ghost fishing). Fishing gear can be lost accidentally during storms, but it can also be abandoned deliberately. In the Mediterranean, despite the scarcity and inconsistency of data on derelict fishing gear, this has been recognized as an issue of major concern. The main impacts of abandoned or lost fishing gear are not only the continued catches of fish, but also of other animals such as whales and dolphins. Additional impacts include alterations of the sea-floor environment (FAO, 2019).

Overfishing and prey depletion

13. The Mediterranean Sea is one of the most intensely fished regions in the world and hosts a substantial fishing fleet comprising an estimated 76,280 fishing vessels, of which small-scale fishing vessels represent approximately 82% (FAO, 2020). The intense fishing effort is depleting fish populations and impacting many vulnerable species, including cetaceans but also sharks, Mediterranean monk seals *Monachus monachus* and sea turtles. Unsustainable fishing has contributed to dramatic ecological changes in the Mediterranean Sea (Sala, 2004), where overfishing is well documented and has had negative effects on prey availability for marine mammals, especially for small cetaceans (Piroddi et al. 2010).

Depredation by cetaceans

14. Fish depredation by dolphins appears to be recurrently perceived by Mediterranean fishers to be causing economic hardship, particularly as far as small-scale fisheries are concerned, by causing damage to fishing gear and disturbing fishing activities (Bearzi, 2002). However, dolphin depredation is not limited exclusively to small-scale fisheries and has been also reported, for instance, in purse seiners in Tunisia and Morocco (Benmessaoud et al. 2018). Ecosystem damage resulting from overfishing and habitat degradation in the Mediterranean Sea has probably exacerbated the perception that dolphins reduce fishery yields (Reeves et al. 2001). Therefore, the economic damage caused by dolphins generates conflict with fishers and, although rarely, may lead to intentional kills in retaliation, as well as to occasional demands for organized culls in some places.

II.2. Intentional Killings

15. In some Mediterranean areas, direct killings and bounties for dolphins represented the first human attempts to solve the problem of depredation and competition, a strategy that was supported by several governments and went on until the late 1960s. Nowadays, approaches to marine mammal control such as culling, or harassment are illegal in most Mediterranean countries and are no longer viewed as appropriate by most fishing organizations. Although direct killings are still occasionally enacted by individual fishers or other people, intentional killings likely do not pose a conservation problem to Mediterranean cetacean populations anymore.

II.3. Ship strikes

16. The Mediterranean Sea is subject to some of the heaviest vessel traffic in the world, with about 30 % of the world's total merchant shipping concentrated within only 0.8 % of the global ocean surface.

17. Collisions with large vessels present a major conservation issue for both fin whales (*Balaenoptera physalus*) (David et al. 2011; Panigada et al. 2006) and sperm whales (*Physeter macrocephalus*) (Di Méglia et al. 2018; Frantzis et al. 2019). Fin whales and sperm whales are listed as Vulnerable (VU) and Endangered (EN) under the IUCN Red List Criteria respectively, underlying the urgent need to reduce and mitigate any anthropogenic pressure. An analysis of stranding and collision records showed that the fin whale is the most vulnerable species to ship strikes in the North-Western Mediterranean Sea. Unusually high rates of ship collisions have been reported for this species in the region, where the minimum mean annual fatal collision rate increased from 1 to 1.7 whales/year from the 1970s to the

1990s. It should also be noted that reported strikes greatly underestimate the true number of strikes. The highest number of collisions with fin whales occur in summer, during their feeding season when they are more often encountered, and when the traffic in ferries and passenger ships increases in the area. Collisions with fin whales tend to occur predominantly on the main passenger ship routes that cross the basin.

18. Sperm whales also are vulnerable to ship strikes, particularly on the main cargo routes that travel parallel to the Italian and French coastlines and along the Hellenic Trench, where sperm whale occurrence and naval traffic overlap substantially (Frantzis et al. 2019).

II.4. Underwater noise

19. Underwater noise from various maritime activities is recognised as a chronic, habitat-level stressor (Williams et al. 2020) and can adversely affect cetaceans in a number of ways. In the most severe cases, such as extremely high levels of acute noise (e.g., from seismic vessels or drilling projects of the offshore industry), this can result in permanent threshold shift or even tissue damage leading to stranding and death. Both acute and chronic noise - at various spatial and temporal scales - can affect cetaceans through a range of mechanisms, including temporary threshold shifts, spatial displacement and habitat exclusion, masking of sounds relevant to communication and foraging, disturbance and elevated stress levels, and modifications of short-term and possibly long-term behaviour (Southall et al. 2007; Weilgart 2007; Clark et al. 2009; Williams et al. 2020). These may lead to impacts on feeding and energetic balance, as well as on reproduction, potentially leading to population-level consequences. In addition to vessel traffic of all types and purposes (cargo, transport, fishing, tourism, whale watching, research), noisy activities can arise from geophysical exploration, military activities (sonar and explosions), dredging and coastal and offshore development (e.g., offshore windfarms). Potentially, the noise emitted by vessels may also affect the ability of cetaceans to avoid collisions with vessels.

II.5. Disturbance from boat traffic

20. There has been a great expansion of recreational boat traffic and shipping in the Mediterranean Sea in recent decades. The relatively closed nature of the Mediterranean Sea, its densely populated coastlines and prominent presence of tourism likely make cetaceans in this basin particularly susceptible to the impacts of recreational boat traffic and the associated acoustic disturbance. A number of studies demonstrated behavioural changes (including acoustic behaviour) in response to recreational boat traffic in some species (Papale et al. 2011), as well as temporary avoidance of areas with high vessel density of recreational boat traffic (La Manna et al. 2010; Gonzalvo et al. 2014), although a certain degree of tolerance has been also reported (La Manna et al. 2013). In addition to its potential to disrupt foraging, socializing or resting behaviour, as well as increase stress levels (see also 4-Underwater noise), boat traffic may also lead to serious injuries or death from boat strikes, as described above. §

II.6. Cetacean-watching (including swimming-with)

21. Invasive approaches of boats (e.g., from cetacean-watching activities or even non-careful research activities) can disturb cetaceans through direct physical presence and/or via emitted noise and may interrupt important behaviours, such as feeding and reproduction (Jahoda et al. 2003). Long-term vessel presence can also exclude animals from preferred habitat (see also 4-Underwater noise).

22. Unregulated cetacean-watching activities, which may grow very fast in some areas, may have detrimental population-level effects, which need to be mitigated and prevented.

23. Close and invasive approaches, such as those related to swim-with operations, should be prohibited in accordance with guidance from ACCOBAMS, the Pelagos Sanctuary Agreement and the IWC, as they may lead to severe disturbance to the animals.

24. It is noteworthy to consider also that Unmanned Aerial Vehicles (UAVs), or drones, have recently emerged as a relatively affordable and accessible method for studying, photographing and filming cetaceans. For many cetacean watching operators this relatively new, rapidly evolving and increasingly

affordable technology is seen as a good opportunity to obtain spectacular images and footage for promoting their business. §

II.7. Chemical pollutants

25. Effects of chemical pollutants on cetaceans are varied and can be both direct and indirect. They include immunosuppression (Tanabe et al. 1994), endocrine disruption (Tanabe et al. 1994 ; Vos et al. 2003 ; Schwacke et al. 2012), reproductive impairment (Schwacke et al. 2002) and developmental abnormalities (Tanabe et al. 1994 ; Vos et al. 2003). Pollutants may directly impact abundance through reduced reproduction or survival (Hall et al. 2006; Hall et al. 2017), while indirect effects include impacts on the abundance or quality of cetacean prey. Although organochlorine contamination has generally decreased in several areas, levels in several Mediterranean cetaceans remain alarmingly high (Jepson et al. 2016; Marsili et al. 2018; Genov et al. 2019). Currently, Polychlorinated Biphenyls (PCBs) are likely the greatest contaminant threat to cetaceans (Jepson et al. 2016). Within the Mediterranean Sea, PCB concentrations in bottlenose dolphins, a species widespread across the basin, generally decline from north to south, and from west to east (Genov et al. 2019), in line with a general gradient of human activities in this basin. The Mediterranean Sea may also be particularly vulnerable to contamination by mercury, due to its semi-enclosed nature, as well as the relatively high presence of this heavy metal from both natural and anthropogenic sources (Andre et al. 1991).§

II.8. Marine debris (macro/micro)

26. Plastic pollution has become one of the biggest environmental concerns of the Anthropocene, as it represents a major threat to both wildlife and human health. The Mediterranean Sea is one of the most plastic polluted environments. This acute marine pollution might threaten entire ecosystems through its impact on marine fauna (entanglement, ingestion, contamination), eventually impacting the tourism industry and the well-being of Mediterranean populations (Lambert et al., 2020).

27. Different cetacean species may be threatened by marine debris to varying degrees (Baulch & Perry 2014), with deep-diving odontocetes apparently particularly vulnerable to ingestion of plastic macro debris (Simmonds 2012; de Stephanis et al. 2013). Baleen whales such as the Mediterranean fin whale may be especially vulnerable to the ingestion of microplastics due to their feeding mechanisms. The interaction between free-ranging fin whales and microplastics in the Mediterranean Sea and elsewhere has only recently started to be investigated. Fossi et al. (2012) found considerable quantities of microplastics and plastic additives in surface water samples of and adjacent to the Pelagos Sanctuary. More recent studies suggest that debris, including micro-plastics and chemical additives (e.g., phthalates), tend to accumulate in pelagic areas in the Mediterranean (Fossi et al. 2016, 2017), indicating a potential overlap between debris accumulation areas and fin whale feeding grounds. Exposure to microplastics (direct ingestion and consumption of contaminated prey) poses a major threat to the health of fin whales in the Mediterranean Sea. Microplastics have also been found in a number of odontocete species, but the scale of impacts is still poorly understood (Nelms et al. 2019).

II.9. Habitat loss and degradation

28. Habitat degradation can be defined as ‘those processes of anthropogenic origin that make habitats less suitable or less available to marine mammals’ (IWC, 2006). It is often difficult to separate physical degradation of certain activities (i.e., physical damage to the habitat such as coastal development or bottom trawling) from other factors associated with those activities (e.g., high levels of noise resulting from coastal development or trophic web effects). Either way, directly or indirectly human development activities (both coastal and pelagic) in key cetacean habitats can have serious adverse impacts.

29. Reduced habitat quality and loss of critical habitat can be caused by coastal and offshore development, marine engineering, port and dam construction, opening and closing of waterways, and exploitation of marine resources (e.g., resulting in sea floor modifications, changes in water quality, eutrophication and harmful algal blooms). The resulting disruption of cetacean behaviour might compromise an individual’s energy balance and, consequently, population vital rates (e.g., survival and reproduction). Moreover, when this disruption affects most individuals in a population, it can translate

into changes in population dynamics. It has been reported, for instance, that higher intensities of dredging related to a harbour expansion project caused bottlenose dolphins to spend less time in the harbour, despite high baseline levels of disturbance and the importance of the area as a foraging patch (Pirodda et al. 2013).

II.10. Climate change

30. Climate change is now widely recognized as a global issue (IPCC, 2007), which has also been documented in the Mediterranean Sea. Boero and colleagues (2008) reviewed water temperature and salinity levels over the last decades, reporting higher levels throughout the entire Mediterranean Sea, attributable to climate change. The effects of climate change over the Mediterranean Sea have been the subject of several studies (Gambaiani et al. 2009; Lejeune et al. 2009), with predicted changes in prey availability and distribution over the water column and increases in the presence of alien (exotic) species, due to the ‘tropicalization’ of the entire area (Bianchi, 2007).

31. As an example, the potential effects of global climate change or ocean acidification on Mediterranean fin whales, largely dependent for feeding on euphausiids such as *Meganyctiphanes norvegica* (Notarbartolo di Sciara et al. 2003), as well as possibly susceptible to an increase in water temperature and salinity (Gambaiani et al. 2009), may strongly influence the entire population, leaving no space to move to northern latitudes.

32. The effects of climate change on Mediterranean cetaceans are currently unknown but cannot be neglected and need further investigation. Impacts may occur because of changes in prey availability, increased intra- and inter-specific competition, potentially increased incidence of pathogens, oceanographic changes or interaction of climate change and fishery pressure (Gambaiani et al. 2009).

II.11. Cumulative effects

33. The above sections discuss threats individually. However, it is clear that some or all of them may interact temporally and/or spatially.

34. Cumulative effects can be considered as changes in reproduction and/or survivorship that negatively affect population dynamics and status, because of repeated exposure to the same stressor(s) over time, or the combined effects of multiple stressors. Developing robust ways to evaluate this is a complex problem (Stelzenmüller et al. 2018). Perhaps the best-developed framework to date is the Population Consequences of Disturbance (PCoD) model (Booth et al. 2020), which has been extended to consider the Population Consequences of Multiple Stressors (PCoMS) (National Academies of Sciences, Engineering, and Medicine 2017). This approach moves through the effects of stressors on individuals' behaviour and physiology, which is converted to effects on vital rates and then on to population trends and sustainability. However, the approach is extremely data demanding and requires quantitative temporal and spatial information on the target species (distribution, demographics and physiology), their prey and environment, human activities and models linking these - this complexity also contains inherent large levels of predictive uncertainty.

Table 4. Threats faced by cetaceans with a regular occurrence and resident populations in the Mediterranean Sea.

(The attempt to rank threats affecting these 11 cetacean species should be considered as a purely indicative exercise. For instance, some of these threats may be locally high in a given area but considered medium or low at regional level. Moreover, the sparse use of “?” indicating lack of knowledge does not imply that the rest of “ranked” cells have to be considered as definitive, but as stated above, purely indicative based on available evidence).

													
<i>Balaenoptera physalus</i>	None	None	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Physeter macrocephalus</i>	High	None	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Ziphius cavirostris</i>	None	Medium	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Orcinus orca</i>	Medium	Medium	High	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Globicephala melas</i>	None	Medium	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Grampus griseus</i>	Medium	Medium	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Steno bredanensis</i>	Medium	Medium	Medium	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Tursiops truncatus</i>	Medium	High	High	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Stenella coeruleoalba</i>	High	High	None	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Delphinus delphis</i>	Medium	High	Medium	None	High	High	High	High	Medium	Medium	Medium	Medium	High
<i>Phocoena phocoena relicta</i>	Medium	Medium	Medium	None	High	High	High	High	Medium	Medium	Medium	Medium	High

?	High	Medium	Low	None
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Bycatch in fishing gear (legal/illegal, ghost nets)



Overfishing and prey depletion



Depredation by cetaceans



Intentional killings



Ship strikes



Underwater noise



Disturbance from boat traffic



Cetacean-watching (including swimming-with)



Chemical pollutants



Marine debris (macro/micro)



Habitat loss and degradation



Climate change



Cumulative effects

III. Objective of this Action Plan

35. The main Objective of this Action Plan is to provide a conservation framework and guidance, in line with decisions adopted by international bodies such as ACCOBAMS, the Pelagos Sanctuary Agreement and the International Whaling Commission (IWC), to be used to improve the conservation status of cetacean populations within the Mediterranean Sea.

IV. Methodology

36. According to the IUCN Red List, several cetacean populations in the Mediterranean Sea are Endangered or Threatened. Consequently, measures to enhance their protection and conservation should be considered as priority actions within this Action Plan by all Parties to the Barcelona Convention when defining the best strategies to implement it with the assistance of ACCOBAMS and SPA/RAC.

37. Ongoing efforts at the Mediterranean scale, such as the ACCOBAMS Survey Initiative (ASI), have allowed the collection of robust baseline data on presence, distribution, abundance and density of several cetacean species. On the other hand, many important aspects of cetacean biology, behaviour, range and habitats in the Mediterranean are still poorly known.

38. In drafting this action plan, references to the ongoing programme of work by ACCOBAMS and by the IWC have been taken into careful consideration. As an example, Conservation and Management Plans should be drafted and implemented for most cetacean species in the Mediterranean Sea, in order to properly manage human activities that may have detrimental effects on cetacean populations.

39. The Action Plan considers the UNEP/MAP Decision IG22/7 on the Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP), that aimed at enabling a quantitative, integrated analysis of the state of the marine and coastal environment. IMAP covers three clusters i) pollution and marine litter, ii) biodiversity and non-indigenous species and iii) hydrography. These backbones of the IMAP are the 11 Ecological Objectives and their agreed common indicators, targets and Good Environmental Status (GES) definition. At their 19th Ordinary Meeting (COP 19, Athens, Greece, 9-12 February 2016), the Contracting Parties to Barcelona Convention, when adopting IMAP, stated that species of cetaceans regularly present in the Mediterranean Sea should all be considered when developing the national monitoring and assessment activities. Accordingly, the Contracting Parties should make every effort to identify a minimum of two species (if present) to be included in their national monitoring programme, based on the specificity of their marine environment and biodiversity, and taking account that these species should belong to at least two different functional groups, where possible (Baleen whales/Deep-diving toothed whales/Shallow-diving toothed whales). Moreover, as far as possible, the choice of monitored species should be coordinated at sub-regional scale to ensure coherence with cetacean population distribution in the Mediterranean Sea.

40. Cetaceans are included in two Ecological Objectives of IMAP (EO1 and EO11). EO1 focus on common Indicators 3, 4 and 5 for distribution, abundance, and demography respectively. Most of the actions proposed are expected to provide robust data and inputs relevant for the establishment of a primary, region-wide Standardized Integrated Monitoring and Assessment Programme. Monitoring and assessment of cetacean distribution, abundance and demography at national, sub-regional and regional levels will be used to improve knowledge on the Mediterranean marine environment through the development every cycle of six year a regional assessment product (2023 Mediterranean Quality Status Report (2023 MEDQSR)).

41. While the different actions have not necessarily been specifically designed according to the EcAp/IMAP process, they are aligned with EcAp/IMAP goals and requirements. The data arising from the implementation of each single action will provide key inputs to address the different indicators targeting cetaceans.

V. Regional Coordinating Structure and Implementation

42. The coordinating body is composed by SPA/RAC in collaboration with ACCOBAMS with occasional support/advice from its Scientific Committee, which will be helping by:

- providing support to in the implementation of the AP, its review and update every five years;

- providing recommendations and advice on issues related to cetacean conservation;
- providing support on the creation and maintenance of a forum for cetacean conservation experts, where relevant information and experience is shared, exchanges are facilitated, challenges are discussed, cooperative initiatives are enhanced, transparency and openness of procedures are safeguarded (e.g., NETCCOBAMS);
- Regularly reporting to the National Focal Points for SPAs about the implementation of the present Action Plan;
- ensuring that the Mediterranean region is involved in the pertinent international and/or regional initiatives in relation with cetacean monitoring and conservation.

43. Implementing the present Action Plan is the responsibility of the national authorities of the Contracting Parties. At each of their meetings, the National Focal Points for SPAs shall assess how far the Action Plan is being implemented on the basis of national reports on the subject and a report made by SPA/RAC on implementation at regional level.

44. In the light of this assessment, the Meeting of National Focal Points for SPAs will suggest recommendations to be submitted to the Contracting Parties. If necessary, the Meeting of Focal Points will also suggest adjustments to the schedule that appears in the Appendix to the Action Plan.

VI. Participation in the Implementation

45. Implementing the present Action Plan is the province of the national authorities of the Contracting Parties. The concerned international organisations and/or NGOs, laboratories and any organisation or body are invited to join in the work necessary for implementing the Action Plan. At their ordinary meetings, the Contracting Parties may, at the suggestion of the meeting of National Focal Points for SPAs, grant the status of «Action Plan Associate» to any organization or laboratory which so requests, and which carries out, or supports (financially or otherwise) the carrying out of concrete actions (conservation, research, etc.) likely to facilitate the implementation of the present Action Plan, taking into account the priorities contained therein.

VII. National Action Plan

46. To ensure more efficiency in the measures envisaged in the implementation of this Action Plan, Contracting Parties are invited to establish National Action Plans for the conservation of cetaceans.

47. Each National Action Plan, taking into account the concerned country's specific features, should address the current factors causing loss or decline of cetacean population and their habitats, suggest appropriate subjects for legislation, give priority to the protection and management of marine areas, the regulation of fishing practices and ensure continued research and monitoring of populations and habitats as well as the training and refresher courses for specialists and the awareness-raising and education for the general public, actors and decision-makers.

VIII. Priority Actions

48. The actions outlined in this Plan are grouped into four categories: Education and Awareness, Capacity Building, Research and Monitoring, and Management.

49. In all the actions presented below, there is a section referred to as *Actors* and one as *Evaluation*. In the former, various bodies that may be responsible for the execution and implementation of each action are proposed; this is not meant to be an exclusive or comprehensive list and other actors can be included in a case-by-case basis, depending on the country/region of implementation of the action and its needs (e.g Pelagos Secretariat). Ultimate evaluation of all the actions proposed within this AP is to be carried

out by SPA/RAC and ACCOBAMS, as stated above, with support and advice from the ACCOBAMS SC.

50. There are several actions in this Action Plan, and we acknowledge it would be difficult to implement all of them and evaluate their objectives within the next five years. A priority ranking is provided for each action and it is suggested that during the next meeting of the Contracting Parties, these actions are carefully evaluated, their feasibility is considered, and agreement is reached on identifying the actions to be urgently implemented, according to national and international conservation and management priorities.

VIII.1. Education and awareness

VIII.1. INCREASE PUBLIC AWARENESS	
Objective	Priority (Low, Medium, High)
To develop a strategy for the timely production of a series of resources to inform citizens of the status and the importance of conservation of Mediterranean cetaceans	Medium
Description	
<p>Aim of this action is to develop a strategy and a series of actions to produce a variety of targeted, accurate, public awareness resources that will inform the general public on the status of Mediterranean cetaceans and on how citizens can assist in conservation efforts, including what they should do if they encounter living or dead individuals. This action refers to a variety of categories of stakeholders for each range state: coast guard, mariners (and their trade associations where applicable), fishers (and their trade associations where applicable), cetacean watching operators, NGOs, research institutes, schools, etc.</p> <p>Outreach should include the use of mass media such as newspapers, radio and television; the internet and social media; public lectures and symposiums; education programmes for teachers and students of all ages; and dissemination of information in written and spoken form in cetacean-watching and other tourism operations. Dedicated smartphone applications could also be developed, or those already existing may be adapted, as necessary.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, Ministry of Environment (or equivalent for each country), Ministry of Fisheries, Ministry of Education (or equivalent for each country), NGOs.	SPA/RAC and ACCOBAMS

VIII.2. Capacity building

VIII.2.1. INCREASE AND STRENGTHEN CAPACITY AT THE MEDITERRANEAN LEVEL	
Objective	Priority (Low, Medium, High)

To ensure that individuals and relevant management bodies have the motivation, skills and resources needed to implement this plan	High
Description	
<p>The degree of knowledge and expertise throughout the region is unevenly distributed. The transfer of necessary skills is a key step in the process of successfully implementing this AP. Training effort should be diverse and target different aspects of the conservation process, by providing the knowledge needed to conduct adequate research, monitoring and assessment activities on cetacean species and their ecosystems, but also by giving tools to effectively translate the newly acquired information on cetacean distribution and conservation needs into legislative, regulatory and management actions, that will lead to direct conservation benefits.</p> <p>This strategy is to be tailored for each Contracting Party and target groups may vary between countries - while some may be in need of very specific capacity building actions (i.e., training), other may be in a position to play an active role in exchanging of best practices by providing sub-regional training opportunities.</p> <p>Training packages for different approaches to cetacean research (e.g., line-transect surveys, photo-identification, stranding management and sampling protocols, data analysis, etc.) and conservation tools, with the aim of unifying teaching methods, will be designed in synergy with the ongoing activities developed within the EcAp/IMAP process.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, the Pelagos Sanctuary Agreement, research institutes, Universities and NGOs	SPA/RAC and ACCOBAMS

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VIII.2.2. INCREASE THE CAPACITY OF AND DEVELOP STRANDING NETWORKS THROUGHOUT THE REGION	
Objective	Priority (Low, Medium, High)
Set up a pilot project on remote training and advice for stranding networks	Medium
Description	
<p>The Covid-19 pandemic crisis has demonstrated the great potential of remote training and advisory services. This innovative approach can be applied to cetacean stranding capacity building, by setting up an online programme based on video tutorials and presentations. While some aspects of training may be carried out remotely, other aspects may be implemented through in-person teaching. These courses can be followed by dedicated personnel going through a final test, which should give access to a formal accreditation (open badge) issued by teaching entities (i.e., universities) and recognized by ACCOBAMS. The course should be tailored depending on resources and skills present in each country. Practical training should be provided for veterinarians and/or biologists by preparing a train-the-trainer</p>	

<p>program. Training subjects covered by the program will include information on stranding response and management, carcass disposal, data collection and basic post-mortem evaluation, as well as specific instructions on the collection and preservation of samples, related to both life history and histopathology.</p> <p>After compilation of the training, follow-up advice will be provided to support first interventions in stranding events and in more complex cases by using remote support platforms such as WhatsApp, Zoom, etc.</p>	
Actors	Evaluation
Universities, Research institutes, veterinary professionals, NGOs, already existing and well-established Stranding Networks, SPA/RAC and ACCOBAMS	SPA/RAC and ACCOBAMS

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VIII.2.3. INCREASE CAPACITY ON AND DISSEMINATE CETACEAN MONITORING TECHNIQUES	
Objective	Priority (Low, Medium, High)
Capacity building on cetacean monitoring techniques, to be complemented with a pilot initiative to facilitate remote training and advice for less experienced researchers	Medium
Description	
<p>Effective national and regional monitoring programmes in line with the EcAp/IMAP process and in synergy with the Marine Strategy Framework Directive (MSFD) are fundamental in setting conservation targets and ensure they are being met. Increasing national and regional capacity for implementing such programmes is therefore of utmost importance. Because institutional and individual capacity in the region is highly uneven and variable, training activities are vital in ensuring wider implementation capabilities and therefore data representativeness. Depending on the specific needs, the methods in question (e.g., boat-based visual surveys, aerial surveys, photo-identification, passive acoustic monitoring) and the level of experience by the trainees, training may be organised in-person, remotely, or as a combination of the two. Increasing capacity is needed at the level of data collection, data analysis and data publishing.</p>	
Actors	Evaluation
MPA management unit(s), IMAP national committee(s), Universities, research institutes running long-term cetacean monitoring programmes and projects, NGOs	SPA/RAC and ACCOBAMS

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VIII.2.4. INCREASE CAPACITY ON AND IMPROVE MONITORING OF THREATS AFFECTING CETACEANS

Objective	Priority (Low, Medium, High)
Capacity building on monitoring threats, to facilitate training and advice for less experienced researchers	Medium
Description	
<p>Alongside monitoring of cetacean populations, it is imperative to monitor the threats affecting them. This action is consistent with Action 2.3 and may build into it. As already postulated in Action 2.3, the monitoring capacity is highly uneven across the Mediterranean region and there are clear benefits to carry out capacity building activities to ensure a better data representativeness and region-wide ability to monitor the status of cetacean populations. As with Action 2.3, training activities may be organised through both in-person and remote learning, depending on the specific methodology, threats (e.g., fisheries bycatch, underwater noise, chemical pollutants, etc.) and individual needs in different countries or regions.</p>	
Actors	Evaluation
Universities, research institutes running long-term cetacean monitoring projects, National IMAP Committee(s) ¹ , NGOs	SPA/RAC and ACCOBAMS

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VIII.3. Research and Monitoring

VIII.3.1. CETACEAN BYCATCH – IMPLEMENTATION OF LESSONS LEARNT BY MEDBYCATCH PROJECT THROUGHOUT THE MEDITERRANEAN	
Objective	Priority (Low, Medium, High)
Implementing lessons learnt from the MedBycatch project throughout the Mediterranean	High
Description	

The scope of the on-going MAVA funded MedBycatch Project is to monitor and mitigate incidental catches of vulnerable species (Marine Mammals, Sharks, rays, seabirds, marine turtles, corals and sponges) and reduce fishing impacts and pressures on marine habitats and species. Phase 1 (Sept. 2017 - Jun. 2020), involving Morocco, Tunisia and Turkey generated several outputs, among them a protocol on Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea Fisheries: Methodology of data collection, an Identification guide of vulnerable species incidentally caught in Mediterranean fisheries, creation of a Pan-Mediterranean multi-taxa database containing data on bycatch of vulnerable species in the region, and a Review on Incidental Catches of Vulnerable Species in the Mediterranean and the Black Seas as well as national bycatch reports. Phase 2 (Jun. 2020 - Oct. 2022) has expanded the geographical scope of the project, including Croatia and Italy. Phase 2 is primarily focusing on testing mitigation measures and on informing and influencing policy developments related to the bycatch of vulnerable species at national and regional levels.

It is of key importance to capitalize the efforts done so far (and on-going) in the context of the MedBycatch project and promoting its approach, deliverables and results to encourage replication across the Mediterranean, establishing a baseline for bycatch in the region and identifying existing gaps. §

Actors	Evaluation
Parties to the Barcelona Convention, National IMAP Committee(s), Ministries of Fisheries and Environment (or equivalent for each country), GFCM, partners of the MedBycatch project directly (or indirectly) involved in cetacean conservation	SPA/RAC and ACCOBAMS

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VIII.3.2. INVOLVING FISHERS ACROSS THE MEDITERRANEAN SEA ON CETACEAN CONSERVATION	
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Gather fishers' local ecological knowledge in order to improve information on cetacean conservation status and threats, and increase their marine conservation awareness	Medium
Hiwgvt xsr §	
<p>Fishers' local ecological knowledge (LEK), accumulated over the course of their fishing careers, can be invaluable in helping marine researchers and resource managers obtain critical information to improve management of fish stocks and rebuild and conserve marine ecosystems.</p> <p>Well-designed and carefully conducted interviews with fishers will allow insights into past abundance of fish and changes in ecosystem status and quality, dolphin–fisheries interactions, as well as whale and dolphin population trends and status, and to identify the main conservation management actions needed. In addition, this initiative will contribute to increasing the marine conservation awareness of fishers by inviting them to reflect on issues that, in many cases, have been largely ignored by their community, and to directly contribute to effective ecosystem-based management measures.</p>	

The LEK protocol used in the context of the MedBycatch project (see above), as well as the experience gained in this field through similar initiatives within the Mediterranean are to be taken into consideration when designing future questionnaires addressed to fishers.

Fishers of different ages and from different generations should be ideally included in this exercise, to account for the phenomenon of shifting environmental baselines². Before conducting private interviews, informative talks will be given at the local fishers' cooperatives to call for the collaboration of their members. This action should not be focused exclusively on small-scale fishers, but also on those working in industrial fishing fleets. §

Actors	Evaluation
Parties to the Barcelona Convention, GFCM, Ministries of Fisheries (or equivalent for each country), Ministry of Environment (or equivalent for each country), NGOs	SPA/RAC and ACCOBAMS

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VIII.3.3. STANDARIZATION OF CETACEAN STRANDING PROTOCOLS ACROSS MEDITERRANEAN COUNTRIES	
Objective	Priority (Low, Medium, High)
Promote and implement standardized cetacean stranding protocols throughout the Mediterranean	High
Description	
<p>At the Joint ACCOBAMS/ASCOBANS Workshop on standardization of best practices on cetacean post-mortem investigation and tissue sampling, a common approach was adopted. This was followed by the resolution 7.14 on <i>best practices in monitoring and management of cetacean stranding</i> being released at the 7th Meeting of the Parties to ACCOBAMS, held in Istanbul, Turkey, in November 2019³. This should now be shared across the entire Region, including focusing on the collection of data on marine litter ingestion. Three sub-actions are envisaged:</p> <ol style="list-style-type: none"> Promotion and distribution of the documents to the different stranding networks in the region. Common data sets will be collected annually to have an updated overall view of cetacean interaction with fishing activities and marine litter. To stress the relevance of a common basic sampling. A common set of tissue samples should be collected and stored for further analyses. These data sets will be dependent on stranding networks skills and resources (see 2.2). Part of these samples will be stored in centralized common tissue banks identified by ACCOBAMS that will store and share samples with all the Mediterranean countries where required. A dialogue with CITES will be established as necessary to facilitate sharing tissue samples, including with IWC. Set-up of veterinary laboratories for those stranding networks not having one national laboratory for ancillary analyses (necropsy, histopathology, microbiology). Through the 	

² The phenomenon of shifting environmental baselines was described by Daniel Pauly (1995) noting that each generation subconsciously views as 'natural' the way the environment appeared in their youth. As one generation replaces another, perceptions of what is natural can change dramatically among local communities and lead to the loss of memory on past ecosystem status.

³ ACCOBAMS-MOP7/2019/Doc38/Annex15/Res.7.14

https://accobams.org/wp-content/uploads/2019/12/Res.7.14_-Best-Practices-Strandings.pdf

ACCOBAMS-MOP7/2019/Doc 33 - *Best Practice on Cetacean Postmortem Investigation and Tissue Sampling*

https://accobams.org/wp-content/uploads/2019/04/MOP7.Doc33_Best-practices-on-cetacean-post-mortem-investigation.pdf

<p>cooperation with the World Animal Health Organization Marine Mammal Health (OIE) reference centre, based in Torino, laboratories will be identified, training will be provided and contacts with already existing and well-established stranding networks will be facilitated.</p> <p>d. All resulting data is to be shared with the Mediterranean database on cetacean strandings (MEDACES)</p> <p>This action is complementary to 2.2 (Capacity building). A centralized tissue bank system should be identified according to the ISO standards foreseen by the OIE and the Environmental Tissue Bank standards.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, Ministry of Environment (or equivalent for each country), Coastguards, NGOs, National Stranding Networks	SPA/RAC and ACCOBAMS

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VIII.3.4. WEB-BASED EXCHANGE OF SCIENTIFIC INFORMATION	
Objective	Priority (Low, Medium, High)
Contribute to a harmonized web-based platform such as NETCCOBAMS by which scientific information (e.g., photo-ID catalogues, tissue sample database, sighting record registry) can be maintained in a centralized location and freely exchanged among interested parties	High
Description	
Integration of information on Mediterranean cetaceans from all areas where they are observed is of substantial value in understanding patterns of habitat use and the links between geographic areas, as well as in determining migration routes and wintering location(s) for some species, such as fin and sperm whales. Having a centralized data repository where all interested parties (including the public) would be able to share and exchange information on Mediterranean cetaceans - in accordance with an agreed data availability protocol - would benefit conservation measures at a broader (i.e., range-wide) geo-spatial scale.	
Actors	Evaluation
Parties to the Barcelona Convention, Ministry of Education (or equivalent for each country), Ministry of Environment (or equivalent for each country), Research Institutes, NGOs,	SPA/RAC and ACCOBAMS

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VIII.3.5. DEVELOP AND CARRY OUT EFFECTIVE LONG-TERM MONITORING AT THE ENTIRE MEDITERRANEAN BASIN SCALE TO ESTIMATE ABUNDANCE AND TRENDS
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Objective	Priority (Low, Medium, High)
To obtain robust and unbiased population estimates and distributional information on Mediterranean cetaceans throughout the Basin at regular intervals (suggested 6 years following the IMAP requirements)	High
Description	
<p>Promote suitable monitoring programme for the entire Mediterranean region to enable abundance trends, potential distributional changes to be identified and demography of population, in order to inform timely mitigation actions. Robust baseline information on parameters following the agreed EcAp/IMAP agreed common indicators (i.e distribution, abundance and demography) are necessary to inform conservation actions and to implement and evaluate the efficacy of any measures currently in place.</p> <p>The European Habitat Directive, the Marine Strategy Framework Directive, and the IMAP/Ecosystem Approach not only require the monitoring of the Good Environmental Status (GES) of species and habitats of community interest, but also require reporting on this status every 6 years.</p> <p>A synoptic survey, applying line transect distance sampling methodologies, to be carried out in a short period of time across the whole Mediterranean Sea, combining visual survey methods (boat- and aerial-based surveys) and passive acoustic monitoring (PAM). The main aim in both aerial and vessel-based surveys is to estimate density and abundance and assess potential trends over time. Standardized and agreed protocols should be used for the monitoring actions, following the guidelines endorsed by the Contracting Parties during the EcAp Coordination Group Meeting and benefits from the ACCOBAMS Survey Initiative (ASI, 2018) experience.</p> <p>Use existing ongoing programs to integrate abundance estimates and trend estimates.</p> <p>Consider the possibility to perform photo-ID and biopsy and eDNA sampling during large scale surveys to: (1) sample data poor areas, (2) monitor changes in hormones levels, stable isotopes, contaminants in areas of interest as identified by previous surveys.</p> <p>Power analysis should be used to design the specific monitoring framework to detect a trend of a given magnitude and to detect specific rates of population change.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, National IMAP committee(s), MPA management unit(s), Ministry of Environment (or equivalent for each country), Universities, Research Institutes, NGOs	SPA/RAC and ACCOBAMS

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VIII.3.6. DEVELOP AND CARRY OUT EFFECTIVE ANNUAL LONG-TERM MONITORING OF CETACEAN DISTRIBUTION, ABUNDANCE AND TRENDS NATIONALLY AND SUB-REGIONALLY

Objective	Priority (Low, Medium, High)
Ensure that annual/seasonal monitoring of distribution, abundance and density is regularly conducted nationally and at relevant sub-regional units, corresponding to the main distribution areas of Mediterranean cetaceans	High
Description	
<p>Continued monitoring of the Mediterranean cetacean populations and regular updates on population status are essential for meeting conservation objectives; among these, the Barcelona Convention, through the EcAp/IMAP, requests Parties to implement common indicators on a variety of species topics (e.g., distribution, abundance and demography) and prepare periodic regional assessment report (Quality Status Reports), to be presented at regular intervals of six years. In addition, the European Commission, through the implementation of the MSFD, asks its members to systematically report on their monitoring programs, developed at national level.</p> <p>Photo-identification is a widely used technique in cetacean research that can provide information on population demography, estimates of abundance and population parameters such as survival and reproductive rates. Long time series of photo-identified cetaceans of several species are available in different areas, providing opportunities for detecting changes in abundance over time. Similarly, biopsy sampling can be used to obtain information on population genetic structure, contaminant levels, and abundance through genetic mark-recapture analysis.</p> <p>Monitoring at the regional level may require data collection throughout the year, to better understand seasonal patterns in distribution, whereas monitoring at the basin level would mainly address inter-annual changes (3.5.). Mark-recapture models should be applied to photo-identification data (and genetic data where practicable) to estimate abundance for specific areas that populations or part of populations occupy during one or more seasons of the year. Collating information collected by different research groups in these areas is also recommended. Line-transect surveys based on distance-sampling methodology may be appropriate for some species, countries or regions. The use of platforms of opportunity, such as fisheries surveys and/or passenger ferries should also be considered in some cases, while acknowledging their limitations.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, national IMAP committee(s), MPA management unit(s), Ministry of Environment (or equivalent for each country), Universities, Research Institutes, NGOs	SPA/RAC and ACCOBAMS

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VIII.3.7. MONITOR THREATS AT THE NATIONAL AND BASIN LEVEL	
Objective	Priority (Low, Medium, High)
To periodically assess the status and trends of threats, and the emergence of potential new threats	High

Description	
<p>Status and trends of threats to cetaceans, including ship strikes, bycatch in fishing gear and other negative interaction with fisheries, underwater noise, micro- and macro litter ingestion, chemical contaminant exposure, physical disturbance and climate change, as well as their cumulative effects in the entire Mediterranean Sea, is key information needed to assess the efficiency of existing and future mitigation measures, and the needs for adaptation of any mitigation strategies. Existing national fishing fleet monitoring programs should be leveraged to obtain information on and monitor cetacean bycatch. Trend maps will inform on the evolution of known threats in previously identified risk areas compared to previous assessments, the identification of new risk areas and the emergence of new threats. The needed know-how to conduct this monitoring is not uniformly distributed among the region; therefore, this action is to be conducted in coordination with 2.4., which aims at providing capacity on monitoring threats to cetaceans where necessary.</p>	
Actors	Evaluation
<p>Parties to the Barcelona Convention, national IMAP committee(s), MPA management unit(s), Ministry of Environment (or equivalent for each country) in collaboration with neighbouring countries (whenever possible), Universities, Research Institutes, NGOs</p>	<p>SPA/RAC and ACCOBAMS</p>

VIII.4. Management

VIII.4.1. WIDER ADOPTION AND IMPLEMENTATION OF STANDARDIZED MEASURES TO MITIGATE ADVERSE IMPACT OF CETACEAN WATCHING ACTIVITIES	
Objective	Priority (Low, Medium, High)
<p>Efficient management of cetacean watching activities and the implementation of relevant standardized codes of conduct (IWC, ACCOBAMS, CMS)</p>	<p>Medium</p>
Description	
<p>Harassment risk begins when a vessel is deliberately closer than the minimum distance identified in common rules (Code of Conduct) for commercial cetacean watching or when the vessel stays for a period longer than prescribed. This is especially true for swim-with cetacean activities. Moreover, direct interactions between swimmers and animals may introduce risks of animal violent behaviour and transmission of diseases.</p> <p>Additionally, individuals that are regularly approached (even in respect of the code of conduct) can experience substantial stress, which may lead to medium or long-term population-level impacts.</p> <p>It is therefore necessary to minimize the risk of cetacean-watching activities having negative impacts on cetaceans, by the implementation of effective management strategies including the adoption and implementation of standardized codes of conduct (IWC, ACCOBAMS, CMS). The ACCOBAMS “High Quality Whale-Watching®” Certificate aims at encouraging the implementation of good practices and sustainable know-how by whale-watching operators involved in initiatives fostering quality and</p>	

<p>environmental responsibility; its implementation throughout the basin must be promoted and implemented, ideally, by all Parties.</p> <p>There have been several attempts to evaluate the potential impact of UAVs on cetaceans. At present, there is very little evidence that UAVs disrupt the behaviour of baleen whales. To date, the behavioural responses of dolphins when approached by a UAV remain poorly investigated and most studies have focused on bottlenose dolphins. The available evidence suggests that when small UAVs are flown at an altitude of 10–30 m above bottlenose dolphins, short-term behavioural responses occur. These responses may vary depending on group size and behaviour. Guidelines and well-defined protocols should be developed, promoted among the industry and properly implemented to minimize any potential adverse effects (See Raoult et al. 2020 for a review on using drones on marine animal research).</p>	
Actors	Evaluation
Parties to the Barcelona Convention, Ministry of Environment (or equivalent for each country), Ministry of Tourism (or equivalent for each country), Research Institutes, NGOs, MAP managers	SPA/RAC and ACCOBAMS

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VIII.4.2. MITIGATE SHIP STRIKES WITH LARGE WHALES	
Objective	Priority (Low, Medium, High)
Reduce ship strike risk for fin and sperm whales throughout the Mediterranean Basin	High
Description	
<p>Measures that separate whales from vessels (or at least minimise co-occurrence) in space and time to the extent possible (e.g., routing schemes, Traffic Separation Schemes TSS) are the most effective in reducing this threat. In the absence of routing options, reducing speed has been identified as the most effective way of reducing ship strike risk.</p> <p>Emphasis should be placed on the collection and reporting of data to the IWC Global Ship Strikes Database which will both: (1) facilitate a proper evaluation, prioritisation and monitoring of ship strikes as a threat to various populations and areas (e.g., the Mediterranean Sea); and (2) assist in the development of specific mitigation measures.</p> <p>One of the key actions is to identify high-risk areas for ship strikes (a high-risk area is defined as the convergence of either areas of high-volume shipping and whales, or high numbers of whales and shipping, reflected in the ACCOBAMS work on Cetacean Critical Habitat, CCH). Important Marine Mammal Areas (IMMAs) represent a systematic and biocentric approach to identifying important habitats and can be helpful in identifying potential high-risk areas for ship strikes. In particular, if an IMMA contains a species or population vulnerable to ship strikes, and is transited by significant shipping, the area can be “flagged” for further investigation and potential mitigation.</p> <p>The following steps should be undertaken as part of a process to identify High Risk Areas for Ship Strikes based on IMMAs and in relation to CCH: (1) Traffic information (e.g., vessel type, size, speed, flag, etc.): plotting major ship routes to determine overlap with IMMAs that host significant populations of species threatened by or vulnerable to ship strikes; (2) Species information (e.g., relative or absolute</p>	

<p>abundance, status, behaviour/seasonality/key lifecycle use in and within IMMAs); and (3) Management and Mitigation.</p> <p>Further develop the process for the designation of International Maritime Organization (IMO) measures, such as a TSS in the Hellenic Trench and a Particularly Sensitive Sea Areas (PSSA) at a scale that includes the North West Mediterranean Sea, Slope and Canyon IMMA, as well as the Spanish corridor, to take into account whale population movement and distribution. Zoning within the area with ship strike mitigation tools such as speed reduction and routing measures could be proposed as part of Associated Protective Measures within the PSSA.</p> <p>Co-operation with IMO, other IGOs, national authorities, the shipping industry, port authorities and the whale watching industry is essential if effective mitigation is to occur.</p>	
Actors	Evaluation
IMO, IWC, REMPEC, European Community Shipowners' Associations (ECSA), relevant Ministries per country, research institutes, NGOs	SPA/RAC and ACCOBAMS

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VIII.4.3. DEVELOP CONSERVATION MANAGEMENT PLANS (CMPs) FOR MEDITERRANEAN CETACEANS	
Objective	Priority (Low, Medium, High)
Develop a series of CMPs to manage human activities that affect cetaceans in the Mediterranean Sea in order to maintain a favourable conservation status throughout their historical range, based on the best available scientific knowledge	High
Description	
<p>It is not possible to 'manage' cetaceans in the Mediterranean Sea themselves, but it is possible to manage human activities that adversely affect the cetaceans and/or their habitat. Thus, by their nature, the management actions associated with CMPs require a degree of control and limitation on human activities.</p> <p>In pursuing this goal, the needs and interests of stakeholders need to be considered to the extent possible, whilst recognising that favourable conservation status is the highest priority. Moreover, scientific uncertainty must be considered while setting priorities and determining appropriate actions, but uncertainty alone should not preclude conservation action. Ideally, all management actions are based on adequate scientific data. However, there are occasions when the potential conservation consequences of waiting for confirmatory scientific evidence are sufficiently serious that it is justified to take action immediately whilst continuing to study the problem. This means following the 'precautionary principle'.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, IWC, research institutes, NGOs	SPA/RAC and ACCOBAMS

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VIII.4.4. ENHANCE EFFORT ON SPECIALLY PROTECTED AREAS OF MEDITERRANEAN IMPORTANCE (SPAMIs) WITH IMPORTANT MARINE MAMMAL AREAS (IMMAs) AND CETACEAN CRITICAL HABITATS (CCH)	
Objective	Priority (Low, Medium, High)
Continue with the ongoing effort to monitor existing SPAMIs and designate new ones, assess potential new candidate IMMAs and Areas of Interest and move forward with the overlap with anthropogenic stressors, to identify CCH in the Mediterranean Sea	Medium
Description	
<p>There are 2 SPAMIs specifically designated for the protection of marine mammals in the Mediterranean Sea: the Pelagos Sanctuary and the Spanish Migration Corridor. Efforts to continue monitoring these areas, by implementing their management plan, as well as proposing new potential SPAMIs in the Basin should be considered as a priority.</p> <p>The Mediterranean Sea also features 19 IMMAs designated as important habitats for cetaceans. In addition to these, 5 candidate IMMAs relevant to cetacean conservation have been identified, along with 23 AoIs. The re-evaluation period for IMMAs is envisaged every 10 years. The next evaluation for the Mediterranean, following a first workshop organised in 2016, is scheduled for 2026, coinciding with the last phase of this 5-year AP. Furthermore, where possible, efforts should be made to designate some of the existing IMMAs as Marine Protected Areas.</p> <p>SPAMIs and IMMAs provide the initial biocentric process (through the spatial definition of the animals' most important habitats) to be followed by use of the CCH, in which the spatial distribution of threats is identified. Management advice is then based upon an integration of the two approaches and the prioritization of mitigation approaches on a case-specific basis. In addition, other highly relevant initiatives include the post-2020 Regional Strategy for Marine Protected Areas (MPAs) and Other Effective Area-based Conservation Measures (OECMs) in the Mediterranean Sea, coordinated by SPA/RAC. This multidisciplinary effort will assist in providing Countries with advice on targeted and effective conservation measures (where appropriate on a seasonal basis) including:</p> <ul style="list-style-type: none"> ▪ designation of new (or the extension of existing) MPAs with appropriate focused management actions, ▪ zoning within existing MPAs, ▪ corridors between MPAs, ▪ threat-specific mitigation measures for application throughout the region (shipping or noise directives, e.g., through IMO) during marine spatial planning processes. 	
Actors	Evaluation
IUCN Marine Mammal Protected Areas Task Force, Parties to the Barcelona Convention.	SPA/RAC and ACCOBAMS

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VIII.4.5. REDUCE THE INTRODUCTION OF ANTHROPOGENIC SOUND INTO THE MARINE ENVIRONMENT AND MITIGATE ACTIVITIES LIKELY TO PRODUCE

UNDERWATER NOISE	
Objective	Priority (Low, Medium, High)
Reduce the input of man-made sound into the marine environment, especially from sources and at levels likely to negatively impact cetaceans, as well as provide mitigation measures for noise-producing activities	High
Description	
<p>Cetaceans rely on sound to communicate, navigate and locate prey. Man-made underwater noise is a significant threat to these animals. Efforts should be made to reduce the underwater noise pollution, in order to prevent adverse effects on cetaceans. For activities and development likely to produce high intensity impulse sounds (e.g., seismic surveys for oil and gas exploration, pile driving and the use of sonar) and long-term chronic noise (e.g., planning of ports and shipping routes or other sound-producing activities), appropriate Environmental Impact Assessments should be carried out before such activities are allowed to take place. Appropriate mitigation measures should be put in place to prevent detrimental effects of underwater noise on cetaceans.</p> <p>Within the EcAp/IMAP process, Contracting Parties to the Barcelona Convention are required to monitor and assess the candidate common indicators related to energy including underwater noise (i.e. common indicator 26: Proportion of days and geographical distribution where loud, low, and midfrequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals, and common indicator 27: Levels of continuous low frequency sounds with the use of models as appropriate).</p> <p>It is also important to monitor underwater noise levels nationally and regionally and build on initiatives such as the “Overview of the Noise Hotspots in the ACCOBAMS area”, the EU funded QuietMed I & II projects, the Quiet Sea Project and the Mediterranean Strategy on Underwater Noise Monitoring for establishing the methodological basis for a future implementation of a basin-wide monitoring programme on underwater noise.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, national IMAP committee, MPA management unit(s), Relevant Ministries for each Government, IWC, CMS	SPA/RAC and ACCOBAMS

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VIII.4.6. REDUCE THE INPUT OF CHEMICAL CONTAMINANTS	
Objective	Priority (Low, Medium, High)
Reduce the input of chemical contaminants into the marine environment and limit the mobilization of contaminants in marine sediments	High
Description	

<p>Chemical pollutants impact cetacean species in a number of ways. While some pollutants in the Mediterranean Sea have declined or are declining, organochlorine levels, particularly PCBs, are found at high concentrations in several Mediterranean cetacean species. Pollutants and their impact in marine organisms are included in the EcAp/IMAP Ecological Objective 9 and its Common Indicator 19 and the Descriptor 8 of the Marine Strategy Framework Directive (MSFD)</p> <p>At the Mediterranean policy level, PCB concentration in relation to established toxicity thresholds should be used to assess “Favourable Conservation Status” of cetaceans. Chemical pollutants need to be included in impact assessments of other activities likely to affect cetaceans, due to cumulative and synergistic effects. Greater compliance with the Stockholm Convention is needed in order to significantly reduce PCB contamination of the marine and terrestrial environment by 2028. Measures include the safe disposal or destruction of large stocks of PCBs and PCB-containing equipment, limiting the dredging of PCB-laden rivers and estuaries, reducing PCB leakage from old landfills, limiting PCB mobilization in marine sediments, and regulating the demolition of PCB-containing precast buildings.</p>	
Actors	Evaluation
Parties to the Barcelona Convention, national IMAP committee, Relevant Ministries for each Government, MED POL, IWC, REMPEC	SPA/RAC and ACCOBAMS

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VIII.4.7. REDUCE THE AMOUNT OF MARINE DEBRIS AND MICROPLASTICS ACROSS THE MEDITERRANEAN BASIN	
Objective	Priority (Low, Medium, High)
Reduce the input of marine debris and micro/nano plastics into the marine environment and ensure appropriate removal where possible	High
Description	
<p>Different cetacean species are threatened by marine debris to varying degrees, with deep-diving odontocetes likely most vulnerable to ingestion of macro debris and fin whales especially vulnerable to the ingestion of micro/nano plastics. Macro- and microplastics enter the marine environment either directly from improper waste disposal, improperly managed landfills, improperly treated water waste management or result from the degradation of larger items breaking down into smaller particles.</p> <p>Marine litter monitoring of IMAP is based on the Regional Plan on Marine Litter management (Decision IG.20/10) and on the following agreed candidate indicator 24 “Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds, and marine turtles (EO10)”.</p> <p>Mitigation measures in relation to marine plastic pollution should focus on 1) preventing the leakage of new micro- and macro-plastic material into the environment and 2) instigating the removal of macro-plastics</p>	

from the marine environment. The Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 was established to reduce the impact of plastic on the environment (including marine ecosystems) by promoting the establishment of a circular economy. Considering that single-use plastics and fishing-related items represent the vast majority of marine litter, these products should be the main target of mitigation measures. The transition to a circular economy framework will involve the phasing out of single-use plastics, extended producer responsibilities, and recycling schemes. The Regional Plan on Marine Litter Management in the Mediterranean in the Framework of Article 15 of the Land Based Sources Protocol should be implemented.

Actors	Evaluation
Parties to the Barcelona Convention, national IMAP committee, Relevant Ministries for each Government, MedPOL, IWC, REMPEC	SPA/RAC and ACCOBAMS

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VIII.4.8. MANAGEMENT OF FISHERIES TO MITIGATE CETACEAN BYCATCH

Objective	Priority (Low, Medium, High)
Recognising mitigating cetacean bycatch as intrinsic to successful fisheries management	High

Description

Despite being considered as the greatest threat to cetaceans globally, bycatch is frequently perceived as a separate fisheries management issue. Nevertheless, to achieve effective reduction of cetacean bycatch rates, technical mitigation measures specially designed, promoted and imposed for cetaceans, must be coupled with other intrinsic improvements in fisheries management globally. For instance, the most generally effective mitigation measure of cetacean bycatch is reduction in fishing effort; such strategy is to be seriously considered, starting to incorporate it in future fisheries management initiatives, starting by fisheries with the largest documented impact, which may vary considerably among or even within countries.

According to the ACCOBAMS/ASCOBANS bycatch mitigation measures, the following are proposed:

16. Encourage Parties, Research Institutes, and Private Sector bodies supported by funding bodies, in collaboration with fishers throughout the process, to develop or improve mitigation measures with new technology and/or materials, alternative gears, the shifting of fishing effort etc.

17. The success of particular mitigation measures depends upon a variety of elements including the particular cetacean population, specifics of the gear and its deployment, as well as local conditions. The Working Group should keep a watching brief of case studies relevant to the Agreement Areas that describe which measures have or have not worked. This should be undertaken in liaison with other bodies (e. g. ICES, WGBYC, FAO, IWC, HELCOM, OSPAR) so that actions complement one another rather than duplicate effort.

18. There is a need to improve the involvement of fishers from the start, including transfer of knowledge, in adopting good practices and to contribute prevention and monitoring of bycatches and careful release of entangled animals. Better outreach would help to inform and reduce bycatch and entanglement. Parties should consider the provision of incentives where appropriate.

19. The Working Group should develop guidelines to policymakers, authorities, and the scientific community on how to best incentivise and engage fishers in prevention, mitigation and monitoring programmes.
20. Where the current mitigation measures (e. g. pingers) don't solve the problem, spatio-temporal closures may be the only immediately available solution, although care is needed that this does not simply move the problem elsewhere. Consideration should be given to moving away from métiers of concern, in which case national authorities should consider some means of compensation to help cover fishers' income loss, where appropriate. The precautionary principle should be adopted. Insufficient technology development should not be considered as a reason to postpone decision-making.
21. The need to move towards an internationally standardised approach for dealing with potential interventions (or lack thereof) of free-swimming, chronically entangled cetaceans should be considered. Expansion of the IWC Global Whale Entanglement Response Network across the regions should be encouraged, including dedicated training of entanglement responders.
22. The humane release of live bycaught and entangled animals according to best practices should be encouraged to help ensure their survival (e.g. Guidelines for the Safe and Humane Handling and Release of Bycaught Small Cetaceans from Fishing Gear - CMS Technical Series No.43, FAO/ACCOBAMS Good Practice Guide for the Handling of Cetaceans caught incidentally in Mediterranean Fisheries, IWC Guidelines for entanglement responders) and fishers should be encouraged to report releases of bycaught individuals.
23. Countries should be encouraged to establish Marine Protected Areas (MPAs) and Other Effective area-based Conservation Measures (OECMs) where appropriate, and to develop and implement management plans to reduce cetacean bycatch.
24. Methods to monitor the performance of mitigation measures (such as pingers) as well as compliance in their usage by fisheries in real world conditions should be improved and become standard.§

Actors	Evaluation
Parties to the Barcelona Convention, national IMAP committee, GFCM, Ministries of Fisheries (or equivalent for each country), Ministry of Environment (or equivalent for each country), IWC	SPA/RAC and ACCOBAMS

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VIII.5 Implementation schedule

	Actions	Time	Who
VIII.1. EDUCATION AND AWARENESS	VIII.1.1. Increase public awareness	Continuously	Contracting Parties ; SPA/RAC; ACCOBAMS
VIII.2. CAPACITY BUILDING	VIII.2.1. Increase and strengthen capacity at the Mediterranean level	Continuously and as needed	SPA/RAC; ACCOBAMS; CPs
	VIII.2.2. Increase the capacity of and develop stranding networks throughout the region		SPA/RAC; ACCOBAMS; CPs

	VIII.2.3. Increase capacity on and disseminate cetacean monitoring techniques		SPA/RAC; ACCOBAMS; CPs
	VIII.2.4. Increase capacity on and improve monitoring of threats affecting cetaceans		SPA/RAC; ACCOBAMS; CPs
VIII.3. RESEARCH AND MONITORING	VIII.3.1. Cetacean bycatch – implementation of lessons learnt by med bycatch project throughout the Mediterranean	As soon as possible and continuously	SPA/RAC; ACCOBAMS; GFCM
	VIII.3.2. Involving fishers across the Mediterranean Sea on cetacean conservation		Contracting Parties
	VIII.3.3. Standardization of cetacean stranding protocols across Mediterranean countries		SPA/RAC; ACCOBAMS;
	VIII.3.4. Web-based exchange of scientific information		Contracting Parties; ACCOBAMS
	VIII.3.5. Develop and carry out effective long-term monitoring at the entire Mediterranean basin scale to estimate abundance and trends		SPA/RAC; ACCOBAMS; CPs
	VIII.3.6. Develop and carry out effective annual long-term monitoring of cetacean distribution, abundance and trends nationally and sub-regionally		SPA/RAC; ACCOBAMS; CPs
	VIII.3.7. Monitor threats at the national and basin level		CPs; SPA/RAC; ACCOBAMS;
VIII.4. MANAGEMENT	VIII.4.1. Wider adoption and implementation of standardized measures to mitigate adverse impact of cetacean watching activities	As soon as possible and continuously	CPs; ACCOBAMS; SPA/RAC; Pelagos secretariat
	VIII.4.2 mitigate ship strikes with large whales		CPs; ACCOBAMS; SPA/RAC; Pelagos secretariat
	VIII.4.3. Develop conservation management plans (CMPs) for Mediterranean cetaceans		ACCOBAMS; SPA/RAC; Pelagos secretariat

	VIII.4.4. Enhance effort on specially protected areas of Mediterranean importance (SPAMIs) with important marine mammal areas (IMMAs) and cetacean critical habitats (CCH)		ACCOBAMS; SPA/RAC; Pelagos secretariat
	VIII.4.5. Reduce the introduction of anthropogenic sound into the marine environment and mitigate activities likely to produce underwater noise		CPs, ACCOBAMS; SPA/RAC; Pelagos secretariat
	VIII.4.6. Reduce the input of chemical contaminants		CPs, ACCOBAMS; SPA/RAC; Pelagos secretariat, MEDPOL
	VIII.4.7. Reduce the amount of marine debris and microplastics across the Mediterranean basin		CPs, ACCOBAMS; SPA/RAC; Pelagos secretariat, MEDPOL
	VIII.4.8. Management of fisheries to mitigate cetacean bycatch.		CPs, ACCOBAMS; SPA/RAC; GFCM, Pelagos secretariat

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Annex I : Status of the implementation of the Action Plan for the conservation of cetacean in the Mediterranean Sea

Acronyms and abbreviations:

SPA/RAC: Specially Protected Areas Regional Activity Centre

ACCOBAMS: The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area

ASCOBANS: Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas.

GFCM: General Fisheries Commission for the Mediterranean

EcAp: The Ecosystem Approach for management

IMAP: Integrated Monitoring and Assessment Programme

GES: Good Environmental Status

IUCN: International Union for Conservation of Nature

ASI: ACCOBAMS Survey Initiative

MEDASSET: Mediterranean Association to Save the Sea Turtles

JBWG: Joint Bycatch Working Group between ACCOBAMS, ASCOBANS and CMS

CMS: The Convention on Migratory Species (CMS), also known as the Bonn Convention

EO: Ecological Objectives under the IMAP Criteria

CI: Common Indicator under the Ecosystem Approach

REMPEC: The Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea

MSFD: Marine Strategy Framework Directive

UNDP: United Nations Development Programme

ISPRA: The Italian National Institute for Environmental Protection and Research

CCH: Cetaceans Critical Habitat

IMMAs: Important Marine Mammal Area

AoI: Area of interest

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1. INTRODUCTION :

In the Mediterranean Sea, there are 21 species of cetaceans dwelling in the basin, a proportion of these are referred to as “OCASIONAL SPECIES” in which their presence is either spatially (such as the rough-toothed dolphin) or temporally (such as the Orca of the Strait of Gibraltar) limited in the basin. The other proportion is referred to as “REGULAR SPECIES” containing 8 species that are frequently present in the Mediterranean. These later group combine the following species: the fin whale (*Balaenoptera physalus*), the sperm whale (*Physeter macrocephalus*), Cuvier’s beaked whale (*Ziphius cavirostris*), long-finned pilot whale (*Globicephala melas*), Risso’s dolphin (*Grampus griseus*), common bottlenose dolphin (*Tursiops truncatus*), striped dolphin (*Stenella coeruleoalba*) and the short-beaked common dolphin (*Delphinus delphis*).

Based on the scientific evidence available, most of cetaceans’ populations in the basin are under pressure from different anthropogenic activities. Therefore, in 1991, the Contracting Parties of the Barcelona Convention adopted the Action Plan for the conservation of cetaceans in the Mediterranean Sea. The objectives of this action plan are to ensure; a). The protection and conservation of cetacean habitats in particular feeding, breeding and calving grounds, and b) protection, conservation and the recovery of cetacean populations present in the Mediterranean Sea area. Therefore, all cetacean species are now included in Annex II (*list of endangered or threatened species*) of the SPA/BD Protocol of the Barcelona Convention and also included in different degrees of vulnerability in the IUCN Red List.

In 2001, the ACCOBAMS Agreement inter into force and with it, a more binding legal framework was set to further strengthen the conservation effort of cetaceans. The Contracting Parties to the Barcelona Convention followed on that during their 14th Ordinary Meeting and invited the Mediterranean countries to join the Agreement which harmonised their goals and framework. They also invited the Mediterranean countries to recognize that common obligations relating to cetaceans under the SPA and Biodiversity Protocol are fulfilled through the implementation of ACCOBAMS goals and agenda. Similar to ACCOBAMS, the General Fisheries Commission (GFCM) has also joined the conservation effort for cetaceans in 2002 when they adopted Recommendation on the mitigation of incidental catches of cetaceans in the GFCM area (Recommendation GFCM/36/2012/2).

2. OBJECTIVE :

The Action Plan for the conservation of cetaceans in the Mediterranean Sea was adopted by the Contracting Parties to the Barcelona Convention in 1991. It aims at ensuring the recovery of cetacean populations in the Mediterranean. The Action Plan was prepared using the information available about the cetacean populations and the threats hanging over them as known in 1991.

In 2016, the Appendix “The list of Additional Points for the Implementation of the Action Plan” adopted by the Focal Points for SPAs in October 1992 has been revised for the first time, in order to provide new orientations for the Action Plan that are in line with the evolving regional context regarding cetacean conservation and with the new challenges and priorities as identified by the most recent scientific knowledge.

Seven priorities were highlighted in the revised Appendix as important for the conservation of cetaceans. The main aim of this report is to summarise the information gathered for each country to update the status of the different priorities at the national level.

The updated priorities are :

- ***Prohibition of deliberate taking;*** measures and actions to ensure that cetaceans are covered, at national level, by appropriate regulations and legislation to elimination deliberate killing and for the mitigation of the adverse impacts from their interactions with human activities.
- ***Prevention and elimination of pollution;*** especially regarding the implementation of a basin-wide strategy for underwater noise monitoring in the Mediterranean under the EcAp process, the development of acoustic mapping to build a comprehensive picture of the spatial and temporal distribution of anthropogenic noise sources, in particular for the noise hotspot areas identified in the Mediterranean by ACCOBAMS, and, to Promote awareness of the anthropogenic noise impacts on cetaceans, targeting in particular decision makers, key players in the industry organisations and the stockholders in the shipping sectors.
- ***Elimination of incidental catches in fishing gear;*** mainly through assessing cetacean bycatch, depredation and through the adoption of appropriate mitigation measures.
- ***Protection of feeding, breeding, and calving grounds;*** Establish a list of marine conservation areas under the country's jurisdiction identified as of special importance for cetaceans. Also, to Ensure, through regulation or other appropriate approaches, that whale-watching activity is environmentally sound and sustainably conducted.
- ***Monitoring, research and data collection and dissemination with regard to biology, behaviour, range and habitats of cetaceans;*** mainly regarding the implantation of the comprehensive survey of abundance and distribution of cetaceans carried out by ACCOBAMS (ACCOBAMS Survey initiative).

3. REPORTS OF THE CONTRACTING PARTIES REGARDING THE IMPLEMENTATION OF THE ACTION PLAN.

ALBANIA

Appropriate regulations measures regarding deliberate killing and Appropriate regulations measures regarding whale watching:

Although no direct regulations were developed by the Albanian state, there were some regulations that are relevant for cetaceans' conservation such as the legislation to regulate marine traffic especially in marine sensitive areas. Also, some regulations prohibiting live capture of cetaceans. Other relevant legislation:

- Order of Minister of the Environment, Forests and Water Administration "On the approval of the Red list of Albanian flora and fauna" no. 1280, of 20.11.2013
- Law no. 9867 of 31.1.2008 "On the rules and procedures on international trade of 31.1.2008 Ministry of Environment endangered species of wild fauna and flora".
- Law no. 10006, of 23.10.2008 "On wild fauna protection" 23.10.2008.
- Law no.81/2017, of 4.5.2017 "On protected Areas", amended in 2008 06.06.2002.
- Law no.9587 of 20.7.2006 "On biodiversity 20.7.2006 Ministry of Environment protection", amended in 2014.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The ACCOBAMS Areal Survey for the Adriatic Sea (including Albania) took place during Summer 2018 and was completed.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No monitoring of bycatch is taking place in Albania, stranding and bycatches sometime reported by fishers on voluntary bases.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise and, establishing conservation areas which are important to cetaceans:

Albania has not developed any recognisable monitoring programme for noise pollution.

BOSNIA AND HERZEGOVINA

Appropriate regulations measures regarding deliberate killing Appropriate regulations measures regarding whale watching:

No information was found on regulations or legislation specific for the conservation of cetaceans.

Implementation of the ACCOBAMS Survey Initiative (ASI):

Bosnia and Herzegovina is not a signing Party for ACCOBAMS

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No information was found on relevant assessment

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise, and Establishing conservation areas which are important to cetaceans:

No information was found on noise pollution monitoring both on the national level, public awareness, or the creation of relevant conservation areas.

CROATIA

Appropriate regulations measures regarding deliberate killing, Appropriate regulations measures regarding whale watching:

In Croatia, Cetaceans enjoy strict protection in all waters under national jurisdiction through the Nature Protection Act (OG No. 80/13, 15/18, 14/19) and the Ordinance on Strictly Protected Species (OG No. 144/13, 73/16). Furthermore, cetaceans are protected within the territory of the Protected Areas according to Nature protection Act (such as the case in the National parks of Mljet, Brijuni, Kornati, Lastovo archipelago and Telašćica). According to Regulation on Ecological Network (OG No. 124/13, 105/15), there are 6 Sites of Community Importance (SCIs) for Bottlenose dolphins, these are: 1). Cres-Lošinj; 2). Aquatorium of J.Molat-Dugi-Kornat-Murter-Pašman-Ugljan-Rivanj-Sestrunj-Molat; 3). Lastovo and Mljet channel, 4). National park Kornati, 5). Aquatorium of the island of Vis, 6). Aquatorium of western Istria.

Regarding whale watching, it is not regulated as specific activity at national level. All rules according to Nature Protection Act apply to it as any other activity influencing wild (strictly protected) species. There is a considerable challenge of fast growth of non-regulated whale-watching tours performed by local commercial operators as a tourist attraction. Currently, there is one company (Blue World Ltd) that is known to organize dolphin-watching tours on dolphin-friendly and environmentally conscious manner. Codes of conduct how to behave in the presence of dolphins have been prepared and educational programmes/campaigns for boat operators are planned.

Implementation of the ACCOBAMS Survey Initiative (ASI):

In 2016, Croatia joined the ACCOBAMS Survey Initiative project (ASI). With the support of the ACCOBAMS secretariat, during the summer 2018, the survey of abundance and distribution of cetaceans was carried out in the Croatian part of the Adriatic Sea as a part of survey blocks 16 and 17 of the Adriatic Sea. Additionally, there will be another survey implemented through the project "Establishment of the system of monitoring conservation status species and habitats" as well as through the LIFE project.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

At the national level, sporadic data on bycatch is collected through the National Stranding Network. Starting 2019, fishing sector has the obligation to record and to report bycatch of endangered species, including cetaceans. At national level, the mitigation measures for reducing bycatch and depredation have not yet been implemented, only sporadically, mostly project based. There is a need for further

capacity building in inspection sector and supervision services in each MPA and SCIs. Also, there is a need for education of fishermen how to handle incidentally caught species as well as certain education and clear instructions for reporting by caught animals. Only limited cooperation has started on this issue between fishing and nature protection sector.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

In 2014 for the purpose of the implementation of MSFD Government of the Republic of Croatia adopted Monitoring System for the Assessment of the status of the Adriatic Sea (OG No. 153/2014) and underwater noise is one of the descriptors that should be monitored. Implementation of monitoring started in 2016. Additionally, few projects are starting that will cover underwater noise research and analysis, basin wide.

Also, at the same year, and for the purpose of the implementation of MSFD Government of the Republic of Croatia adopted Monitoring System for the Assessment of the status of the Adriatic Sea (OG No. 153/2014) and underwater noise is one of the descriptors that will be monitored. Implementation of monitoring started in 2016. Additionally, few projects are starting that will cover underwater noise research and analysis, basin wide.

Establishing conservation areas which are important to cetaceans:

As mentioned previously, the National parks of Mljet, Brijuni, Kornati, Lastovo archipelago and Telašćica are inhabited by cetaceans' species and are protected as part of the NPs framework. There are also the 6 Sites of Community Importance (SCIs) for Bottlenose dolphins which are: 1). Cres-Lošinj; 2). Aquatorium of J.Molat-Dugi-Kornat-Murter-Pašman-Ugljan-Rivanj-Sestrunj-Molat; 3). Lastovo and Mljet channel, 4). National park Kornati, 5). Aquatorium of the island of Vis, 6). Aquatorium of western Istria.

CYPRUS

Appropriate regulations measures regarding deliberate killing and Appropriate regulations measures regarding whale watching:

There are some national legislations regarding the conservation of megafauna species including cetaceans, birds, and sea turtles. But nothing specific for deliberate killing or whale watching. These regulations are:

- Law 153(1) 2003 refers to the Habitats Directive of the EU
- Law 152(1) 2003 refers to the Birds Directive of the EU
- Fisheries Law (CAP 135)
- Fisheries regulations (273/90 and amendments)
- Maritime Traffic Act, Law 35(III) 2007, Law 140(I) 2005, Law 51, 1979 on dumping
- Both the Fisheries Legislation and the Habitats Directive (the Cyprus law implementing this) have provisions that related to the conservation of cetaceans.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The ACCOBAMS Survey of the Cypriot waters took place during the summer of 2018.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No information was provided regarding the assessment if bycatch

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No information was provided regarding any noise monitoring framework or activity

Establishing conservation areas which are important to cetaceans:

No information was provided

EGYPT

Appropriate regulations measures regarding deliberate killing and Appropriate regulations measures regarding whale watching:

There are some legislations regarding conservation and biodiversity in general, that include all marine mammals'. These are:

- Law 102 of 1983 for Nature Protectorates & Biodiversity (NCS/ EEAA).
- Law 4 of 1994 for the Protection of the Environment which is amended by Law 9/2009, & its executive regulation (EEAA).
- Law 124 of 1983 regulating fisheries, forced by General Authority for Fish Resources Development (GAFRD).

Finally, there are no whale watching activities taking place in Egypt.

Implementation of the ACCOBAMS Survey Initiative (ASI):

Due to constraints on requiring the necessary sailing permits for the survey boat, the ASI survey took place in late Summer of 2019 covering most of the Egyptian Mediterranean coast.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

Mo assessment was made regarding the bycatch of cetaceans in Egypt.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No framework or monitoring programme for noise on the national or regional levels.

Establishing conservation areas which are important to cetaceans:

Along the Mediterranean coast of Egypt, there is only one Marine Protected Area which is El-Salloum MPA. While cetaceans (especially coastal odontocetes) can be found within the MPA, it was established based on other conservation criteria for habitat and other species such as sea turtles and the monk seal.

FRANCE

Appropriate regulations measures regarding deliberate killing:

- Law n° 2016-1087 of 08/08/2016 for the conservation of biodiversity, nature, and landscapes: Following the entry into force in July 2017 of Decree 217-300 implementing the obligation to equip a position-sharing device aimed at avoiding collisions with cetaceans in the Pelagos sanctuary.
- Law n° 2006-436 on national parks, natural marine parks and regional natural parks and Law n° 1976-629 on the Protection of Nature.
- Order 07/01/2011 about the list of marine mammals protected on the national territory and the methods of their protection (Ministry of the Environment).
- 2005- Modifications of the decree of July 27, 1995 on protecting marine mammals allowing the compliance of the species protection texts with the community regulation of application of CITES.

Appropriate regulations measures regarding whale watching:

- France is working on setting up measures to supervise the approach of cetaceans at the national level, in particular with a draft regulation relating to the approach distance of cetaceans, in order to achieve an activity of whale-watching more sustainable and respectful of animal welfare.
- Also, France is already implementing and supporting the ACCOBAMS's High Quality Whale Watching (HQWW) label in the Mediterranean.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The survey took place by both by boat (in the Pelagos sanctuary) and airplanes to cover the national Mediterranean waters of France.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

There is a national working group "accidental catches of small cetaceans ", jointly chaired by the Directorate of Maritime Fisheries and Aquaculture (Ministry of Agriculture and Food) and the Directorate of Water and Biodiversity (Ministry of Ecological and Solidarity Transition) was set up in 2017. This working group also associating relevant organizations and agencies such as the French Agency for Biodiversity, the Pelagis Observatory, and others. Together, they aim at improving knowledge on the interaction between cetaceans and fisheries, reduce the bycatch via mitigation measures and raise awareness among fishing communities. Regarding legislation, there is article 4 of the decree of 2011 for the protection of marine mammals.

Also, two management plans were implemented for the pelagic trawling fleet which was identified as a main contributor to accidental capture. These plans have been proposed and approved by representatives of professional fishing to mitigate the issue of bycatch for cetaceans.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

The “**Underwater Noise Monitoring Programme**” is part of the Strategic Framework Directive on the marine environment. It started in 2017 to monitor the potential impacts of underwater noise emanating from human activities on the marine environment. It is coordinated by the Hydrographic and Oceanographic Service of the Navy (SHOM) and it is subdivided into 4 sub-programs:

- The continuous noise: covering maritime traffic and other types of traffic (recreational or artisanal fishing, pleasure craft).
- Pulsive noise: the objective of this sub-program is to create a national register of pulsive noise.
- Ambient noise: this sub-program concerns the creation of an in-situ acoustic observatory with a network of hydrophones (MAMBO device) and a database of opportunity measurements.

Also, under the programme “**Define Recommendations to Limit Impacts of Anthropogenic Acoustic Emissions**”, France has undertaken to develop a guide of recommendations to Limit Impacts of Anthropogenic Acoustic Emissions. This guide includes:

- an overview of the activities and the different types of emissions they produce.
- a presentation of the impacts on marine fauna according to the types of noise.
- the inventory and analysis of the various mitigation measures available.

Establishing conservation areas which are important to cetaceans:

The Pelagos Sanctuary which was created in February 2002 based on agreement between France, Italy, and Monaco to create a Sanctuary for Mediterranean Marine Mammals in the Corso-Liguro-Provençal Basin. The Sanctuary encamps a marine area of 87,500 sq. km subject to an agreement and management by the three countries. the sanctuary is also qualified as a Specially Protected Areas of Mediterranean Importance (SPAMI).

GREECE

Appropriate regulations measures regarding deliberate killing:

On the national level, there are several laws and legislations for the conservation of cetaceans in general, these are:

- JMD 115276/44 O.J. 8/B of 31/01/2011: Buying and selling of species of native flora and wild fauna being in danger of extinction, (Ministry for the Environment, Energy and Climate Change).
- Law 3937/11 of 31/03/2011, "Conservation of biodiversity and other provisions", (Ministry for the Environment, Energy and Climate Change).
- P.D. 67/1981 of 30/01/1981, for the protection of native flora and wild fauna and definition of a procedure for coordination and control of research on them, and corrections of 18/02/1981, on P.D. 67/1981 (Ministry of Rural Development and Food).
- Law 2055/92 of 30/06/1992 of Ratification of CITES Convention (Ministry of Rural Development and Food).

- J.M.D. of 26/10/2006 on Trade of species of wild fauna and native flora (Ministry of Rural Development and Food).

- 28/12/1998 J.M.D. 33318/3028/1998 Determination of measures and procedures for the conservation of natural habitats and of wild fauna and flora (Ministry for the Environment, Energy and Climate Change).

Appropriate regulations measures regarding whale watching:

Apart from the previous, rather general, legislations, no other text was found regarding the regulation of whale watching activities.

Implementation of the ACOOBAMS Survey Initiative (ASI):

The Survey took place in the Greek waters during the summer of 2018 and was completed in the same period.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No information was provided on the any assessment on cetaceans' bycatch in Greece.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

Through the EU funded QuietMED project (Joint programme on noise - D11), which aims to improve the level of coherence and the comparability of the implementation of the Second Cycle of MSFD as regards noise monitoring and mitigation D11. This was achieved through enhancing cooperation among MS, the Barcelona Convention and other third non-EU countries.

Also, the Project "PERSEUS" to implement the principles and objectives put forward in the MSFD regarding D11 and to promote them across the Southern European region.

Establishing conservation areas which are important to cetaceans:

The Gulf of Corinth IMMA: it is a small, semi-enclosed embayment with unique topographic variations, including continental shelf areas, steep bottom relief, and deep waters. It offers a suitable habitat for Vulnerable Mediterranean striped dolphins (*Stenella coeruleoalba*) and Endangered common dolphins (*Delphinus delphis*).

Also, The Hellenic Trench IMMA: it is a long bathymetric feature in southern Greece consisting of a continuous steep continental seaward slope, often bounding offshore linear trenches, troughs and basins, which reach 5 km in depth. The area is the core habitat for the eastern basin distribution of the Endangered Mediterranean sperm whale subpopulation. This eastern Mediterranean distribution includes some 200-250 animals. Additionally, the Hellenic Trench features a sub-area which is the largest among five high-density areas of Mediterranean occurrence for Vulnerable Cuvier's beaked whales that have suffered repeated mass stranding events in the area.

ISRAEL

Appropriate regulations measures regarding deliberate killing:

All marine mammals are fully protected in the national legislation, and they may not be harmed or disturbed in any way. Some examples of the legislation are:

- Wildlife Protection Law - 1955
- National Parks, Nature Reserves, National Sites and Memorial Sites Law – 1998
- Protection of the Coastal Environment Law - 2004

Appropriate regulations measures regarding whale watching:

Legislation toward the regulation of whale watching activities is under development in Israel.

Implementation of the ACOOBAMS Survey Initiative (ASI):

Aerial survey took place during the summer of 2018 to cover the Israeli national waters.

Assessment of cetacean's bycatch, depredation, and the adoption of mitigation measures:

Cetacean bycatch, through fisher reports/victim transfer and/or strandings judged to be bycatch victims, are monitored and recorded by IMMRAC (Israeli Marine Mammal Research & Assistance Center) since 1993. All these data are then reported to the Israel Nature and Parks Authority (INPA) on an annual basis and stored in INPA databases.

Implementation of noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

There are several regulations instituted by the Ministry of Energy regarding minimizing the introduction of noise during oil and gas prospecting activities in Israeli national and economic waters (EEZ). Also, there are areas defined where such actions are altogether prohibited. Environmental impact assessments performed through directives from the Ministry of Environmental Protection prior to activities with an underwater noise component, such as port and coastal construction, always include assessment of potential adverse noise impacts on cetaceans.

Establishing conservation areas which are important to cetaceans:

In Israel, there are several Marine Reserves that hold small odontocete species such as the bottlenose dolphin and the common dolphin. These include :

- Rosh Hanikra Marine Reserve.
- Yam Dor Habonim Marine Reserve.
- Avtach Marine Reserve

In addition, the coastal shelf waters of the Israeli Mediterranean coast have been recognized as an IMMA (Important Marine Mammal Area) in 2017 by IUCN's Marine Mammal Protective Areas Task Force, on account of the above-mentioned two dolphin species.

ITALY

Appropriate regulations measures regarding deliberate killing, and measures regarding whale watching:

There are several regulations that govern both the conservation of cetaceans and also whale watching activities, these can be summarised as following:

- Decreti Ministero della Marina Mercantile 21.05.1980, 3.05.89: “Disciplina della cattura di cetacei, testuggine e storioni”.
- Law 157 of 11/02/1992 - Norme per la protezione della fauna selvatica omeoterma e per il prelievo venatorio (Corpo forestale dello Stato, guardia).
- Adoption of the EU Council Directive on the conservation of natural habitats and of wild fauna and flora 92/43/CEE on 21/05/1992 (Ministry in charge of Environment).
- Law n.391 of 11/10/2001 Ratifica ed esecuzione dell’Accordo relativo alla creazione nel Mediterraneo di un santuario per i mammiferi marini (Ministry in charge of Environment).
- Regolamento DM 469 de 06/12/2001 recante disposizioni in materia di mantenimento in cattività di esemplari appartenenti alla specie *Tursiops truncatus*, in applicazione dell’articolo 17, comma 6 della legge 23/03/2001, n. 93 (Autorità di gestione CITES tramite).
- Decree of Ministry dell’Ambiente e della tutela del Territorio e del mare 3 settembre 2002 “Linee Guida per la Gestione dei siti natura 2000 in attuazione della direttiva 92/43/CEE Ministero dell’Ambiente e della Tutela del territorio e del mare.
- European Council Regulation n. 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98 of 26/04/2004 Ministry of Agriculture, Food and forest policy.
- Law 41/82 (Fishery rationalisation and development plan) and following amendments, introduced the possibility to carry out, activities of “pesca-turismo” (fishery-tourism), under specific circumstances. This measure was introduced as a way to encourage alternatives to small-fishery activities and mitigate the human-impact on the environment.
- Law 61/2006 (Official Gazette no 52 of the 03-03-2006), establishing the Ecological Protection Zone.
- Law n. 394 of 06/12/1991 Protected areas.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The ACCOBAMS Survey Initiative was conducted successfully in Summer of 2018. Results are now pending for analysis.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

This is carried out for cetaceans and other marine top predators via reinforcement synchronous submission of catch, bycatch and discard data to both scientific and management bodies, and annually to the General Fisheries Commission for the Mediterranean (GFCM)-Timeline: every year from 2014 to 2019.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No information was provided regarding any strategy or framework for monitoring and regulating noise pollution.

Establishing conservation areas which are important to cetaceans:

The Pelagos Sanctuary which was created in February 2002 based on agreement between France, Italy, and Monaco to create a Sanctuary for Mediterranean Marine Mammals in the Corso-Liguro-Provençal Basin. The Sanctuary is a marine area of 87,500 km² subject to an agreement and management by the three countries. the sanctuary is also qualified as a Specially Protected Areas of Mediterranean Importance (SPAMI).

Also, the Waters around Ischia and Ventotene which was qualified as an IMMA. This is mainly due to the presence of vulnerable species such as the fin whale and common dolphin among other topographical and bathymetric features of the sea floor in that area.

LEBANON

Appropriate regulations measures regarding deliberate killing:

Based on the ratification of the ACCOBAMS Agreement, three national legislations were subsequently issues in Lebanon:

- Ministerial decision N° 69/2004 of July 2nd 2004: "Establishment of a permanent inter- ministerial committee to implement the ACCOBAMS agreement." 5
- Decision N° 524 of the General Secretary of Ministers Council of May 10th2005: "Designation of the National Centre for Marine Sciences - CNRS as the focal point of the ACCOBAMS agreement"
- Ministerial decision No1154, 2013, "General conditions to protect marine mammals (whales, dolphins and monk seal)".

Also, An Action Plan for the Conservation of Cetaceans in Lebanon was elaborated in 2009 by the National Center for Marine sciences-CNRS, the document contains some recommendations that can be converted into legislative text.

Appropriate regulations measures regarding whale watching:

No whale watching activities is taking place in the country.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The ACCOBAMS Survey Initiative took place in the Lebanese water during the summer of 2018 in collaboration with the CNRS.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

The Lebanese Ministry of Agriculture had banned the use of dynamite fishing and trawling nets. The relevant legislation imposed minimum mesh size and regulated scuba-diving.

Moreover, fishing using firearms is not practiced in Lebanon. On the other hand, the Ministry of Agriculture has finalized a new draft framework law on fisheries and aquaculture and has submitted it to the Parliament for approval. This draft law also stresses on the conservation of marine endangered species and on banning the use of firearms and dynamite. 2- The Ministry of Agriculture issued the ministerial decision number 125/1 dated 23/9/1999 that prohibits the fishing of cetaceans, monk seals and marine turtles, and this decision is still applicable.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

Within the “Integrated Monitoring and Assessment programme (IMAP)” executed at regional level by the Specially Protected Areas Regional Activity Centre (SPA/RAC), a national monitoring programme for different Common Indicators in Lebanon was prepared in 2017 by SPA/RAC in close coordination with the Ministry of Environment.

Establishing conservation areas which are important to cetaceans:

No information regarding conservation areas for cetaceans was provided.

LIBYA

Appropriate regulations measures regarding deliberate killing and whale watching:

There is a general legislation regarding the protection and conservation of marine ecosystem and organisms. Apart from that, there is no specific legislation for cetaceans.

Implementation of the ACOOBAMS Survey Initiative (ASI):

Survey took place in Summer 2018 covering the majority of the Libyan waters excluding the gulf of Sirte region and the far western area.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No assessment of cetaceans’ bycatch took place in Libya.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No strategy framework for noise monitoring or assessment in Libya.

Establishing conservation areas which are important to cetaceans:

Farwa Lagoon MPA which contain costal species of odontocetes namely bottlenose and common dolphin.

Aim Gazallah MPA which also contain a resident bottlenose population with some sightings of Common dolphins.

The marine part of Al-Kouf national Park which also contain costal Odontoceti species, namely bottlenose and common dolphins.

MALTA

Appropriate regulations measures regarding deliberate killing:

Protection has been afforded through the Marine Mammals Protection Regulations (Subsidiary Legislation 549.35) and the Flora, Fauna and Natural Habitats Protection Regulations (Subsidiary Legislation 549.44), as amended. Cetaceans are also covered through the Trade in Species of Fauna and Flora Regulations (Subsidiary Legislation 549.38), also being afforded protection through relevant obligations of the EU acquis and international treaties.

Appropriate regulations measures regarding whale watching:

Whale watching activities are carried out in an environmentally sound and sustainable manner. This is ensured through permits granted by ERA through the Environment Protection Act (Cap. 549), with the obligation that this activity follows the whale-watching guidelines produced by ACCOBAMS.

Implementation of the ACCOOBAMS Survey Initiative (ASI):

The survey took place during the summer of 2018 covering the Maltese waters.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

By-catch data on cetaceans and other species groups is collected as part of the requirements of fisheries policy and used for assessment of the level of pressure and status assessment under environmental policy. Such data on by-catch is collected during scientific observer trips and through logbook completion by fishers in order to estimate the level of fishing and the impact of fishing activities on cetaceans. Malta is nevertheless seeking the continuous improvement of the data collection processes with respect to incidental by-catch to ensure that the data collected reflects the real scenario with respect to incidental bycatch of marine mammals.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

Under the EU co-founded QuietMed project, activities focused on regional cooperation, the identification and testing of methodologies and best practices (with Malta being one of the pilot project sites) and the creation of a joint register of impulsive underwater noise; Malta has reported its data on the ACCOBAMS Register on Noise in the following link: http://80.73.144.60/CTN_Geoportal/login/?next=/CTN_Geoportal/upload/upload_noise/. The mentioned data was also assessed as part of the assessment of environmental status (https://era.org.mt/wp-content/uploads/2020/06/MSFD-Art.-17-Update-Malta_FINAL.pdf).

Public awareness on this matter was raised with relevant entities and as part of more generic awareness and outreach campaigns as part of the EU co-funded LIFE MIGRATE project

Establishing conservation areas which are important to cetaceans:

Through the EU LIFE MIGRATE co-funded project, which was on-going during the reporting interim, three proposed sites of Community Interest (pSCIs) were declared under the EU Habitats Directive in 2016 due to their potential importance for cetaceans and turtles, with the areas chosen also had a high

incidence of cetacean presence. The same sites have also been declared as MPAs under the Environment Protection Act (Cap. 549).

MONACO

Appropriate regulations measures regarding deliberate killing:

No information was provided regarding any relevant legislation

Appropriate regulations measures regarding whale watching:

No details were communicated apart from being part of The Habitats Directive of the European Commission. A point to add is that Monaco funded the development and translation of the CMS/CBI guidelines related to Whale Watching.

Implementation of the ACOOBAMS Survey Initiative (ASI):

The ASI survey (both with airplanes and research vessels) took place in Monaco during the summer of 2018.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

From a legal point of view, this aspect is covered by the application of Sovereign Ordinance No. 3.131 relating to the exploitation of living resources. This is also covered as part of the Pelagos Sanctuary framework and The Habitats Directive.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

This is done through the EU Marine Directive 2008/56/CE (MSFD) and Descriptor 11 (underwater noise and its impacts on the marine Biota).

Also, projects (such as QuiteMED) are addressing the identification of noise thresholds, provide guidelines on methodologies and policy.

Establishing conservation areas which are important to cetaceans:

Monaco has cooperated with neighbouring countries to set up the cetaceans' Pelagos sanctuary, of which Monaco is the custodian.

MONTENEGRO

Appropriate regulations measures regarding deliberate killing:

Several laws related to cetaceans' conservation and prohibiting direct capture or killing includes:

- The Law on Nature Protection ("Official Gazette of Montenegro", no. 54/16) is major legislative act for the protection of Species,

- Articles 89-90 refer to the establishment of the list of strictly protected and protected wild species of plants, animals, and fungi for which the Law prescribes specific management measures and procedures including cetaceans.
- Decree on protection of rare, declining, endemic and endangered plant and animal species ("Off. Gazette of MNE", no. 76/06) is act which put species under protection at national level cetaceans' species are protected by the Decree.
- The Law on Environment ("OG of MNE", 52/16) is the umbrella law in the area of environment and it lays down the principles of environmental protection and sustainable development, entities, environmental protection instruments and measures, access to information, public participation, access to justice in environmental matters, environmental financing and other issues relevant for the environment.
- Law on National Parks (Official Gazette of Montenegro, no. 28/14) prescribes rules within national parks, management measures, protection measures, control of activities,
- Law on Marine Fishery and Mariculture (Official Gazette of Montenegro, no. 56/09 and 47/15) prescribe measures in relation to fishery rules and procedures.
- COMAND ON HUNTING OF AGE CLASSES OF FISH AND OTHER MARINE ORGANISMS (Official Gazette of Montenegro, no. 56/09) forbids hunting of all marine mammals.

Appropriate regulations measures regarding whale watching:

- The Law on Nature Protection ("Official Gazette of Montenegro", no. 54/16) is major legislative act for the protection of Species.
- Articles 89-90 refer to the establishment of the list of strictly protected and protected wild species of plants, animals and fungi for which the Law prescribes specific management measures and procedures including cetaceans. In the Article 91 Protection and conservation of protected wild species of plants, animals and fungi are prescribed as follows: It is prohibited to pick, collect, use and destruct protected wild species of plants, to disturb, catch, shoot and injure protected species of wild animals, to reduce number of populations of protected wild species of plants, animals and fungi (removing and killing), to destruct or to endanger their habitats or to change their living conditions. Whale watching and other commercial tourism activities should be in line with the Law on Nature Protection provisions but since now those activities have not been recorder in Montenegro.

Implementation of the ACCOBAMS Survey Initiative (ASI):

Fieldwork of the ACCOBAMS Survey Initiative took place in summer of 2018 to cover the entire Adriatic Sea including Montenegro.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

Starting April 2017, Montenegro is implementing the National Marine Data Collection Program which is a fully compliant with DCF (Data Collection Framework - the European Commission Program and the DCRF (Data Collection Reference Framework- GFCM program). This monitoring also gathers information on accidental catches of marine mammals and has not recorded any incidental catches of

marine mammals in Montenegrin fisheries. The program is implemented by the Institute of Marine Biology through observers on vessels that record and catch the whole catch in the hull flies, swimmers, stagnants and longliners (demersal trawl nets, purse seines, gillnets and trammel nets and longlines).

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

In regard to noise pollution monitoring and mitigation, no information was provided for the state of Monaco. Having said that, Workshop titled “Mitigating the impact of underwater noise on marine biodiversity with specific focus on seismic surveys in the southeastern European waters of the Mediterranean Sea” was organised by OceanCare in cooperation with NRDC and co-sponsored by Deutsche Bundesstiftung Umwelt and took place on the 22nd and 23rd of November 2017 in Split in Croatia. Decision makers, key players in the industry organisations and the stockholders in the shipping sectors from Montenegro participated at the workshop which was an opportunity to raise awareness on anthropocentric noise impacts on cetaceans.

Establishing conservation areas which are important to cetaceans:

According to the database on coastal protected areas MAPAMED, there are 2 conservation sites in Montenegro that could be considered important to cetaceans. These are:

1-Kotorsko Risanski Zaliv, Municipal Protected Area.

2- Tivat Salina, Nature Reserve.

The marine coverage of the two areas represents 26.04 km² or 0.35% of waters under the national jurisdiction of Montenegro.

MOROCCO

Appropriate regulations measures regarding deliberate killing:

For cetacean conservation and protection, two pieces of legislation are relevant, these are:

- Law n° 19-07 (2010) which is amending and supplementing the Law n° 1-73-255 of 23 November 1973. Both laws are regulations maritime fishing vessels and prohibits fishing vessels from keeping on board or using drifting gillnets, the main bycatch cause for cetaceans in the region.

- Decree n° 2-10-341 of 7 Joumada I, 1432 (April 11, 2011) taken for the application of law n° 19-07 amending and supplementing Law n° 1-73-255 of 27 chaoual 1393 (23 November 1973) forming a regulation on fisheries.

Appropriate regulations measures regarding whale watching:

No whale watching activity is taking place in the country.

Implementation of the ACOOBAMS Survey Initiative (ASI):

The survey took place during summer 2018 and was completed by covering most of the Moroccan Mediterranean coast.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

A scientific monitoring programme for the interactions between bottlenose dolphins and Mediterranean purse seiners is under development by the INRH. This program is to understand the behaviour of this species toward this particular fishing gear, therefore limiting the negative impact of predation by this cetacean on fishing gear.

In this context, Morocco has allocated a budget of 2.5 million dirham (roughly 230,000€) for the manufacture and testing of a reinforced seine that can withstand predation by the Bottlenose Dolphin.

Another project that is taking place in Morocco is “**Understanding Mediterranean multi-taxa‘ bycatch ’of vulnerable species and testing mitigation- a collaborative approach**” known as the MedBycatch Project. The project is looking at identifying hotspots of bycatch issue relevant to all marine top predators including cetaceans, quantify it using a standard methodology, develop and test mitigation measures.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No activities on noise pollution were implemented in Morocco.

Establishing conservation areas which are important to cetaceans:

The Alboran Sea, Strait of Gibraltar and Gulf of Cádiz are all qualified as IMMAs for several species of cetaceans including the only Mediterranean habitat for the killer whale.

SLOVENIA

Appropriate regulations measures regarding deliberate killing and whale watching:

There are several laws and legislative text that are related to protection of cetaceans, not specifically from direct killing though. Very little is done regarding whale watching regulation and law. These are:

- Act of 24/09/ 19xx Ratifying the Convention on the Conservation of Migratory Species of Wild Animals (Ministry in charge of Environment).
- Act of 21.12.19xx, Ratifying the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Amendment to the Convention and Amendments I, II, III, and IV to the Convention (Ministry in charge of Environment).
- Act of 15.06.19xx, on Ratification of the Convention on the Conservation of European Wildlife and Natural Habitats (Ministry in charge of Environment).
- Act of 25.10.20 Ratifying the Protocol on Special Protected Areas and Mediterranean Biodiversity (Ministry in charge of Environment).
- Act of 16.05.19xx, Ratifying the Convention on Biological Diversity (Ministry in charge of Environment).

- Act of 23.06.20xx, ratifying the International Convention for the Regulation of Whaling and the Protocol to the International Convention for the Regulation of Whaling, signed at Washington under date December 2, 1946 (Ministry in charge of Environment).
- Act of 29.09.20xx, Ratifying the Agreement on the International Dolphin Conservation Program (Ministry of Agriculture, Forest).
- Act of 04/03/2016 Ratifying the Amendments to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (Parliament).
- Nature conservation Act 23/15 amended 46/14.
- Decree on important ecological areas 33/13 amended 99/13.
- Decree determining Special Protection Areas (Natura 2000) 8/12 amended 33/13, 3345/13 and 3/14.
- Transfer of European Union Council Directives and regulations Enacting on 12/02/1982 the Council Regulation (EEC) No 348/81 of 20 January 1981 on common rules for imports of whales or other cetacean products (Ministry in charge of Environment).
- Enacting on 22/07/1992 the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Ministry in charge of Environment).
- Enacting on 03/03/1997 the Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein (Ministry in charge of Environment).
- Enacting on 09/04/1999 the Council Directive.

Implementation of the ACOOBAMS Survey Initiative (ASI):

Survey took place in Summer of 2018 covering the entire Adriatic Sea.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No information was given regarding assessments on cetaceans' bycatch in Slovenia.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

Slovenia is participating in the project QuietMed and QuietMed2. There is underwater noise recorder at one site, to establish continuous underwater sound level noise. Other relevant activities are taking place as part of these two regional projects.

Establishing conservation areas which are important to cetaceans:

According to the Database on marine protected areas MAPAMED, there are 13 marine conservation sites in which cetaceans are present (mostly costal bottlenose dolphins). These are:

- Strunjan Landscape Park, 1990.
- Cape Madona, Natural Monument, 1990.

- Debeli Rtic, Natural Monument, 1991
- Skocjanski Zatok Nature Reserve, coastal lagoon, 1998
- Kanal Sv. Jerneja, N2000-SCI, 2004
- Sečoveljske Soline, Ramsar site, 1993
- Sečoveljske Soline in Estuary Dragonje, N2000-SCI and SPA, 2004
- Žusterna RastiščePozejdonke, N2000-SCI, 2004
- Piranski klif, N2000 SAC, 2004
- Škocjanskizatok, N2000-SAC, 2004
- Ankaran-Sv Nikolaj, N2000-SAC, 2004
- Debeli Rtic, N2000-SAC, 2004
- Med Izolo in Strunjanom-klif, N2000-SCI, 2012
- Med Strunjanom in Fieso, N2000-SCI, 2013

SPAIN

Appropriate regulations measures regarding deliberate killing, harassing and whale watching:

There are several regulation and legislative text that protect cetacean species and prohibit killing or harassing of cetaceans, these are:

- Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. All cetacean species are included in, and protected by, the Royal Decree. Article 10 of the Royal Decree 1997/1995 provides that, all species included in Annex IV (i.e., all species of cetaceans) should be granted the measures of protection set forth in the Law 4/1989 and in the Royal Decree 439/1990.
- Royal Decree 1997/1995 of 07/12/1995, concerning the conservation of natural habitats and of the wild Fauna and Flora. (National and Regional Governments).
- Law 42/2007 of 13/12/2007 on Natural Heritage and Biodiversity (National and Regional Governments).
- Law 33/2015 of 22/09/2015 amending Law 42/2007 of 13/12/2007 on Natural Heritage and Biodiversity (National Government).
- Royal Decree 139/2011 of 04/02/2011 for the development of the List of Wildlife Species under a Special Protection Regime and the Spanish Catalogue of Threatened Species (National and Regional Governments).
- Law 21/2013 of 11/12/2013, on Environmental Assessment (National Government).
- Royal Decree 1727/2007 of 21/12/2007, for the conservation of cetaceans (National Governments).

- Order APM / 427/2017, of 4/5/2017, that approves the protection measures, and the Conservation Plan of the Killer Whale of the Strait and Gulf of Cádiz.

- Law 41/2010 of 29/12/2010, on the protection of the marine environment (National and Regional Governments).

- Law 31/2003 of 27/10/2003, on the conservation of wild fauna in zoological parks (National Government).

Implementation of the ACOOBAMS Survey Initiative (ASI):

Survey took place in the Spanish waters (mainly the Mediterranean) during the summer of 2018.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

The Tramuntana dolphins Project (<https://www.submon.org/project/tramuntana-dolphins/>) involves the assessment of interaction between fisheries and bottlenose dolphin in the area of the Creus Canyon and the Western Underwater Canyons System of the Gulf of León.

The pilot project “Killer whale and fisheries interactions in the Strait of Gibraltar area” which aims at investigating the issue of depredation and interaction between Tuna fisheries and the killer whale population of the Strait of Gibraltar.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

Spain was/is part of both QUITEMED and QUITEMED 2 Projects that address the issue of noise and its impact on marine organizations. Spain contain one of the western main site of monitoring noise emissions (Cabrera of the Balearic Islands) in which constant monitoring is taking place.

The project also touches on developing noise indicators, building database on noise pollution and promote mitigation actions.

Establishing conservation areas which are important to cetaceans:

According to the Database on marine protected areas MAPAMED there are 190 conservation sites in Spain. The marine coverage represents 30,459.03 km² or 11.66% of waters under national jurisdiction. Some of these sites are:

- MPA Corredor de Migración de Cetáceos del Mediterráneo.
- MPA/SAC ES90ATL01 El Cachucho.
- Marine Reserve for Fisheries Cabo de Gata-Níjar.
- Marine Reserve for Fisheries Cabo de Palos-Islas Hormigas.
- Marine Reserve for Fisheries Cala Ratjada-Levante de Mallorca.
- Marine Reserve for Fisheries Isla de Alborán.
- Marine Reserve for Fisheries Isla de la Graciosa e Islotes del Norte de Lanzarote.
- Marine Reserve for Fisheries Isla de la Palma.

- Marine Reserve for Fisheries Isla de Tabarca.
- Marine Reserve for Fisheries Islas Columbretes.
- Marine Reserve for Fisheries Masía Blanca.
- Marine Reserve for Fisheries Punta de la Restinga - Mar de las Calmas.
- SAC ES7010016 Área Marina de la Isleta.
- SAC ES5310108 Área marina del cap Martinet.

SYRIA

Appropriate regulations measures regarding deliberate killing:

In 2013, the "Action Plan for the conservation of cetaceans in Syria" was under preparation. Until now there is no National Conservation Plan, but there are some indirect measures introduced to protect cetaceans such as:

- Measures related to the reduction of pollution.
- Measures introduced to strengthen the national capacities.
- Measures introduced to create and maintain a network of specially protected areas to protect Marine biodiversity including cetaceans and their habitats.

Appropriate regulations measures regarding whale watching:

No whale watching activity is taking place in Syria.

Implementation of the ACOOBAMS Survey Initiative (ASI):

The ASI survey was delayed in Syria and only took place in Summer of 2019.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

No assessment of cetaceans bycatch was elaborated in Syria.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No measure, monitoring or activities were implemented in Syria regarding noise pollution.

Establishing conservation areas which are important to cetaceans:

No information was provided regarding conservation areas that may be important to cetaceans.

TUNISIA

Appropriate regulations measures regarding deliberate killing:

no direct national legislation to regulate deliberate killing of cetaceans in Tunisia. however, there are general legislations and laws regarding the conservation of nature and endangered species. these are present as:

- Loi 94-13 sur l'exercice de la pêche de 1994, ministère de l'Agriculture, des Ressources Hydrauliques et de la Pêche – MARHP).
- Arrêté règlementant l'exercice de la pêche en Tunisie du 28/11/1995 (MARHP).
- Loi 2009-17 du 16 mars 2009 relative au régime de repos biologique dans le secteur de la pêche et à son financement (MARHP).
- Loi 2009-49 relative aux aires marines et côtières protégées (ministère de l'Environnement).
- Loi 2001-68 du 11 juillet 2001 ratifiant ACCOBAMS.
- Décret 2005-1991 de 2005, sur les Etudes d'Impact sur l'Environnement.
- Loi n° 94-13 amendé par les lois 97-34, 99-74, 2009-17, 2009-59 et 2010-21 sur les activités de pêche et d'aquaculture.

Appropriate regulations measures regarding whale watching:

No whale watching activities are taking place in Tunisia.

Implementation of the ACCOBAMS Survey Initiative (ASI):

The ASI survey (both with airplanes and research vessels) took place in Tunisia during the summer of 2018.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

Although no direct assessment of cetaceans' bycatch was carried out, the issue is addressed by several projects operating in Tunisia. The total results of these projects could give an overall assessment of the interaction with fisheries, especially in relation to the bottlenose dolphin (*Tursiops truncatus*). The projects are:

- ACCOBAMS-GFCM Project on mitigating interactions between endangered marine species and fishing activities.
- Understanding Mediterranean multi-taxa 'bycatch' of vulnerable species and testing mitigation- a collaborative approach.
- the Depredation Project.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No measure, monitoring or activities were implemented in Tunisia regarding noise pollution.

Establishing conservation areas which are important to cetaceans:

There are two MPAs in Tunisia the containing dwelling populations of cetacean species, these are:

- Zembra-Zembretta, SPAMI,
- Archipel de la Galite, SPAMI.

TURKEY

Appropriate regulations measures regarding deliberate killing:

In Turkey, there are general laws about the protection of biodiversity and endangered species such as:

- The Environmental Law 2872
- National Parks Law 2873 -1983 amended by Law 5400 in 2005
- Natural & Cultural Heritage Law 2863 – 1983 amended 2009 and 2011
- Law on Hunting No. 4915 of 01/06/2003
- Fisheries Law No. 1380 last consolidation by Law No. 4950 of 22/07/2003
- Fisheries Regulation No. 22223 of 1995,
- Decree Law 383 for the establishment of the Environment Protection Agency for Special Areas SEPASA

Appropriate regulations measures regarding whale watching:

No whale watching activities are taking place in Turkey.

Implementation of the ACOOBAMS Survey Initiative (ASI):

Survey took place in the Turkish waters I the summer of 2018.

Assessment of cetaceans Bycatch, depredation, and the adoption of mitigation measures:

The issue of Bycatch is being addressed by several projects such as The MAVA funded Project “Understanding Mediterranean multi-taxa ‘bycatch’ of vulnerable species. it is taking place in Turkey since 2017 and it is looking at identifying hotspots of bycatch relevant to all marine top predator species (including cetaceans), quantify and estimate the amount of bycatch using a standard methodology, develop and test mitigation measures to reduce the threat.

Implementation of Noise pollution strategy framework, development of acoustic maps, and raise awareness about the impact of noise:

No measure, monitoring or activities were implemented in Tunisia regarding noise pollution.

Establishing conservation areas which are important to cetaceans:

There are marine conservation areas in Turkey with a total coverage of 1,495,513 Ha. some of these areas are known to hold one or more cetaceans’ species. These are:

- Dilek peninsula, National Park, 1966.

- Fethiye – Goccek, SEPA, 1988.
- Gokova, SEPA, 1988.
- Koycegiz-Dalyan, SEPA, 1988.
- Foca, SEPA, 1990.
- Datca Bozburum, SEPA, 1990.
- Patara, SEPA, 1990.
- Kas Kekova, SEPA, 1990.
- Ayvalik Island, Nature park, 1995.
- Marmaris National park, 1996.
- Saros Korfezi, SEPA, 2010.
- Finike seamounts, SEPA, 2013.
- Troya National Park, 1996.
- Karaburun-Ildır Bay SEPA, 2019.