

**PROGRESS REPORT REGARDING BOTTLENOSE DOLPHIN (*TURSIOPS TRUNCATUS*)
CONSERVATION MANAGEMENT PLAN (CMP) IN ACCOBAMS AREA**

Progress report regarding Bottlenose dolphin (*Tursiops truncatus*) Conservation Management Plan (CMP) in ACCOBAMS Area

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EXECUTIVE SUMMARY

This CMP is directed towards bottlenose in the Mediterranean Sea. As for other species CMPs (e.g. fin whales, Risso's dolphins, common dolphin), the overall goal is to manage human activities that affect this species in the Mediterranean Sea in order to maintain a favourable conservation status throughout its historical range, based on the best available scientific information.

However, the complexity of bottlenose dolphin population structure (see Section 3.1) within the Mediterranean Sea renders developing a CMP to meet this objective a more complex exercise than for species with less complex structure. Although the most recent 2021 IUCN listing (Natoli *et al.*, 2021), considers the species as a whole to be of 'Least Concern' within the basin, as noted in the listing, there are a relatively large number of 'units-to-serve' (see Sections 3.1) within the basin, each of which may have its own habitat requirements (Section 3.2), interactions with human activities (Section 4), conservation status (Section 3.4) and thus conservation needs. In addition, there are large areas of the basin where the information on bottlenose dolphins is poor or absent and this must be remedied to meet the overall goal of the plan.

For this reason, an important part of the present CMP relates to (a) properly defining the local units-to-serve using all the available data and a suite of techniques (including analysis of photo-identification, distribution and genetic data) where sufficient data exist and (b) obtaining sufficient data to undertake such analyses for data poor areas. The present section on threats and potential mitigation measures covers the known and suspected threats to bottlenose dolphins in at least some parts of the Mediterranean. The relative balance of these (and appropriate mitigation measures) will vary by unit-to-serve.

Developing Actions for specific units-to-serve will thus be an iterative process that will require additional local input especially after the units-to-serve have been defined given the different habitats, human activities and resources available. This will mean a more frequent updating of the CMP than usually envisaged.

Main threats identified:

- Habitat change, reduction and fragmentation
- Overfishing and prey depletion
- Conflict with fishermen, aquaculture and bycatch
- Chemical pollutants
- Epizootics
- Climate change
- Cumulative and synergetic effects

In its current form the bottlenose dolphin CMP includes 12 different actions to accomplish its objectives, divided in Coordination actions (2), Public awareness and capacity building actions (2 actions), Research actions (4 actions), Monitoring actions (2 actions) and Mitigations actions (2 actions).

Coordination actions:

1. Establishment of a coordinator and steering committee for the CMP for Mediterranean bottlenose dolphins.

2. Establish an interactive regional network for Mediterranean bottlenose dolphin research and conservation.

Public awareness and capacity buildings actions:

1. Develop and implement a strategy to increase public awareness of the Med bottlenose dolphin CMP.
2. Develop a strategy for building capacity where needed.

Research actions:

1. Identify the geographical/management units of bottlenose dolphins within the Mediterranean area and characterise their areas of occurrence.
2. Estimate the abundance (and possible abundance trends) of each management unit identified in RES-01.
3. Develop and/or support research campaigns in poorly covered Mediterranean areas to fill bottlenose dolphin knowledge gaps in relation to RES-01 and RES-02.
4. Identification of areas of detrimental interactions between bottlenose dolphins and human activities.

Monitoring actions:

1. Monitor for possible changes in the population attributes as referred to in RES-01 and RES-02 and in accordance with the ACCOBAMS LTMP.
2. Monitor human pressure (known and potential threats).

Mitigation actions:

1. Wider and stricter adoption of the management and conservation measures already in place to mitigate adverse impact of anthropogenic activities.
2. Assess the performance of existing mitigation measures and develop new tools to address specific needs.

1 INTRODUCTION

CMPs are developed under the umbrella of ACCOBAMS. All relevant bodies of ACCOBAMS must be fully involved: the Scientific Committee, the Secretariat, the National Focal Point (ACCOBAMS Res. 6.21) and the relevant stakeholders.

1.1 WHY A CONSERVATION MANAGEMENT PLAN IS NEEDED

ACCOBAMS has agreed to develop Conservation Management Plans (CMPs) for species/populations within its region following an agreed approach and template (Resolution 6.21). This CMP is a framework to stimulate and guide the conservation of the bottlenose dolphin in the Mediterranean Sea. Like all CMPs, the present is intended as a living document, and it will have to be re-evaluated and updated regularly. The bottlenose dolphin is regularly present in Mediterranean basin and is the most sighted species over the continental shelf, which represents its preferential habitat. Because of this habitat preference, the bottlenose dolphin is probably the dolphin whose habitat was mostly modified by human activities. Despite this human pressure on its habitat, the bottlenose dolphin is still present over most of the Mediterranean continental shelf, therefore showing a resilience to anthropic pressures. The Mediterranean bottlenose dolphin population has been recently reassessed as Least Concern by the International Union for Conservation of Nature (Natoli *et al.*, 2021), with the exception of the subpopulation inhabiting the Gulf of Ambracia (Greece), which has been assessed as Critically Endangered (Gonzalvo and Notarbartolo di Sciara, 2021).

Thanks to its behavioural flexibility and opportunistic behaviour, which make it able to exploit new resources and bypass impediments, the bottlenose dolphin seems to keep a relatively safe conservation status in the Mediterranean. However, the lack of available data, especially in the eastern and southern portion of the basin, and the fragmentation of knowledge, could prevent potentially negative trends in abundance to be detected, with considerable error bars on any basin-wide estimations. It is therefore urgent to fill up the knowledge gaps, identify outstanding potential threats and to put in place a consistent Conservation Management Plan (CMP) to consolidate the conservation status of the species and prevent or minimise future problems. The long-term conservation experience teaches that it may be very difficult to protect a species when its decline is highly manifested, while prevention is much safer, cheaper and successful. An effective CMP should be developed and implemented before populations become endangered (Donovan *et al.*, unpublished).

The bottlenose dolphin colonizes the continental platform forming geographical resident units whose size and home range may change according to the physiographic and ecological threats of the residency area (Gnone *et al.*, 2022). These units develop local specializations to better exploit the local resources, including the opportunistic feeding on gill nets, trawlers, aquaculture cages, etc.).

Because of the wide distribution (limited in most of the areas to the continental platform) and the frequent contacts and interactions with human activities (with special reference to fishing activities), the bottlenose dolphin needs a CMP that could guarantee (at least) the present status of conservation and a peaceful coexistence with man.

The main potential threats identified for the target species are the contraction and degradation of the

habitat (including marine traffic, noise pollution, marine debris), overfishing and conflict with fishermen, contamination of the food chain, epidemics and climate changes.

The geographical units (with their local specialization and traditions) should be considered as the basic conservation and management target of the CMP. Their number, the residency areas and home range, the size and size trend, the (local) anthropic pressures and threats should be known and monitored over time.

1.2 OVERALL GOAL OF THE CMP

The overall goal of the present CMP is to keep the common bottlenose dolphin Mediterranean (meta)population to the present level (distribution, density, abundance - see the attributes) or (if future findings should suggest) to a higher level that could guarantee the subsistence of the same (meta)population despite potential negative events such as epidemics, climatic change, striking pollution events (oil spills) or other.

The single geographical units of bottlenose dolphin should be considered as the basic target of the CMP (management units, units-to-serve), which should be designed to act on a local level to maintain a favourable conservation status of the bottlenose dolphin throughout its historical range, based on the best available scientific knowledge but following a 'precautionary principle'.

A proper implementation of the CMP should produce benefits also to the marine environment and related stakeholders.

- Aim for the species (*Tursiops truncatus*)
 - To keep the Mediterranean (meta)population size at present level or higher (if needed for safe conservation).
- Aim for the environment
 - To prevent further habitat constriction, deterioration, fragmentation.
 - To prevent further decrease of fishery resources.
 - To decrease the pollution level of the food chain.
- Aim for stakeholders
 - To prevent environment deterioration.
 - To promote environment valorisation.
 - To keep the fishery resources at the present level or higher.
 - To promote safer (less polluted) fish consumption.

To optimize the costs and improve the results, the bottlenose dolphin CMP should be developed and implemented together and consistently with the CMPs of the other cetacean species at the Mediterranean level and the results of the monitoring activity should be compared to detect possible correlations or deviations.

2 LEGAL FRAMEWORK

2.1 INTERNATIONAL CONVENTIONS AND AGREEMENTS

One of the main challenges of the CMP is to manage and protect the bottlenose dolphin in an area (the Mediterranean basin) where many different cultures and traditions coexist on the same seacoasts. This can make quite difficult to overcome the regional and national regulatory framework to establish a general management and conservation strategy for the target species. However, there are different agreements and conventions that can give continuity and homogeneity to the conservation effort (see below). Even though only one of these was designed specifically for the protection of cetaceans (ACCOBAMS), most of them have targets that support cetacean conservation on a certain level (see also the paragraph on the Marine Strategy Framework Directive).

The bottlenose dolphin is listed in Appendix II of Convention on the Conservation of Migratory Species of Wild Animals (CMS), in Appendix II of the Bern Convention, in Appendix II of CITES, and in Annex 2 of the Protocol on Specially Protected Areas and the Biological Diversity in the Mediterranean of the Barcelona Convention.

- CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention). The convention entered in to force in 1975 and is aimed at ensuring that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild. The Convention has 183 parties all over the globe.
- The UNEP/MAP Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. It is a regional convention adopted in 1976 to prevent and abate pollution from ships, aircraft and land-based sources in the Mediterranean Sea. The Convention has 22 contracting parties, including all the Mediterranean countries.
- In the context of the above-mentioned Barcelona Convention, the Ecosystem Approach (EcAp) is a strategy for the integrated management of land, water and living resources and is the guiding principle to all policy implementation and development undertaken under the auspices of UNEP/MAP Barcelona Convention. The Contracting Parties have committed to implement the ecosystem approach with the ultimate objective of achieving the good environmental status (GES) of the Mediterranean Sea and Coast. This process aims to achieve GES through informed management decisions, based on integrated quantitative assessment and monitoring of the Marine and Coastal Environment of the Mediterranean.

EcAp is based on 11 ecological objectives (ECOs) that should be able to target most of the threats identified by the present CMP (with the possible exception of the disturbance directly caused by marine traffic): 1. Biodiversity is maintained or enhanced; 2. Non-indigenous species do not adversely alter the ecosystem; 3. Populations of commercially exploited fish

and shellfish are within biologically safe limits; 4. Alterations to components of marine food webs do not have long-term adverse effects; 5. Human-induced eutrophication is prevented; 6. Sea-floor integrity is maintained; 7. Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems; 8. The natural dynamics of coastal areas are maintained and coastal ecosystems and landscapes are preserved; 9. Contaminants cause no significant impact on coastal and marine ecosystems and human health; 10. Marine and coastal litter does not adversely affect coastal and marine ecosystems; 11. Noise from human activities cause no significant impact on marine and coastal ecosystems.

Vice versa, the Tt-CMP should be able to target the ecological objectives of the EcAp, with special reference to biodiversity (ECO 1) and its associated common Indicators: CI4 (Population abundance), CI5 (Population demographic characteristics), CI3 (Species distributional range).

- Regional Activity Centre for Specially Protected Areas (SPA/RAC) was established by the Contracting Parties to the Barcelona Convention and its Protocols to assist Mediterranean countries in implementing the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean. Tunisia has been hosting the Centre since its establishment in 1985.
- The Bern Convention on the Conservation of European Wildlife and Natural Habitats. It is a binding international legal instrument in the field of Nature Conservation. The Convention came into force in 1982 and has 51 parties, including four in Africa. The appendices to the Bern Convention served as the model for the annexes to the Habitats Directive (see below).
- CMS (Bonn Convention) - The Convention on the Conservation of Migratory Species of Wild Animals. The Convention entered in to force in 1983 and is aimed at protecting the migratory animals and their habitats; CMS has 126 parties. The common bottlenose dolphin (*Tursiops truncatus*) is listed in Appendix II since 1991, while the Black Sea bottlenose dolphin subspecies (*Tursiops truncatus ponticus*) is listed in Appendix I since 2009.
- Habitats Directive - Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. It is a European Union directive adopted in 1992 as an EU response to the Bern Convention. Its goal is to protect nature and wildlife through a network (Natura 2000) of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). *Tursiops truncatus* is listed in Annex II and IV of the Directive as a priority species requiring designation of Special Areas of Conservation.
- ACCOBAMS - Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area. The Agreement entered into force in 2001 as a legal conservation tool to reduce threats to cetaceans by improving knowledge. ACCOBAMS has 24 parties which include almost all of the Mediterranean and Black Sea countries.
- Marine Strategy Framework Directive (MSFD). The MSFD is a EU directive adopted in 2008 and aimed at achieving or maintaining the Good Environmental Status in European seas and has descriptors (see below) that, similarly to the UNEP/MAP EcAp (see above), should be able

to target most of the threats identified by the present CMP (again with the possible exception of the disturbance caused by pleasure boating, where a specific awareness action may be needed - see Threats and Mitigation actions sections):

1. Biodiversity - The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions; 2. Non-indigenous Species - Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems; 3. Commercial Fish and shellfish - Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock; 4. Food Webs - All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity; 5. Eutrophication - Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters; 6. Sea-floor Integrity - Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected; 7. Hydrographical Conditions - Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems; 8. Contaminants - Contaminants are at a level not giving rise to pollution effects; 9. Contaminants in Seafood - Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards; 10. Marine Litter - Properties and quantities of marine litter do not cause harm to the coastal and marine environment; 11. Energy incl. Underwater Noise - Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

2.2 NATIONAL LEGISLATION AND MANAGEMENT ARRANGEMENTS

To be completed (ACCOBAMS, IWC if needed, other relevant management agreements...)

Table 1 – List of Mediterranean countries in relation to main international agreements

COUNTRY	CITES	UNEP/MAP	EcAp	SPA/RAC	BERN CONV.	CMS	HABITATS DIRECTIVE	ACCOBAMS	MSFD
Portugal	X	X		X	X	X	X	X	X
Spain	X	X		X	X	X	X	X	X
France	X	X		X	X	X	X	X	X
Monaco	X			X	X	X		X	
Italy	X	X		X	X	X	X	X	X
Slovenia	X	X		X	X	X	X	X	X
Croatia	X	X		X	X	X	X	X	X
Montenegro	X	X		X	X	X		X	
Albania	X	X		X	X	X		X	
Greece	X	X		X	X	X	X	X	X
Cyprus	X	X		X	X	X	X	X	X
Malta	X	X		X	X	X		X	

Türkiye	X	X		X	X			X	
Syria	X	X		X		X		X	
Lebanon	X	X	X	X		X		X	
Israel	X	X	X	X		X		X	
Egypt	X	X	X	X		X		X	
Libya	X	X	X	X		X		X	
Tunisia	X	X	X	X	X	X		X	
Algeria	X	X	X	X		X		X	
Morocco	X	X	X	X	X	X		X	

3 BIOLOGY AND STATUS OF MEDITERRANEAN BOTTLENOSE DOLPHIN

3.1 POPULATION STRUCTURE

The common bottlenose dolphin - *Tursiops truncatus* (Montagu, 1821) - is a cosmopolitan Delphinidae. Its distribution is usually contained within the 45th parallel in both hemispheres, in tropical and temperate waters, but in the North Atlantic it can reach the 65th parallel (Rice, 1998; Wells and Scott, 1999). This wide distribution is associated with a remarkable morphometric differentiation among populations, which led to 20 species being classified in the 1960s (Hershkovitz, 1966). At today, most authors identify only two species: the common bottlenose dolphin - *Tursiops truncatus* (Montagu, 1821) - widely distributed worldwide; the Indo-Pacific bottlenose dolphin - *Tursiops aduncus* (Ehrenberg, 1833) - distributed in coastal areas of the Indo-Pacific Ocean (Ross and Cockcroft, 1990; Hale *et al.*, 2000; Moura *et al.*, 2013, 2020). Within the species *Tursiops truncatus*, two sub-species with coastal distributions are currently listed by the SMM Committee on Taxonomy: *Tursiops truncatus ponticus*, in the Black Sea, and *Tursiops truncatus gephyreus*, in South American Atlantic coastal regions.

The divisions between several different coastal ecotypes and a globally distributed offshore ecotype, have been described by various authors in different areas of the world (e.g. Walker, 1981; Van Waerebeek *et al.*, 1990; Parsons *et al.*, 2006; Tezanos-Pinto *et al.*, 2008; Mirimin *et al.*, 2011; Louis *et al.*, 2014; Chen *et al.*, 2017; Bayas-Rea *et al.*, 2018; Segura-García *et al.*, 2018). This separation is particularly marked in the Atlantic coast of North America, where separation has been detected by several ecological, physiological and genetic measures (e.g. Duffield *et al.*, 1983; Hersh and Duffield, 1990; Mead and Potter, 1995; Hoelzel, 1998; Torres *et al.*, 2003; Moura *et al.*, 2013; Moura *et al.*, 2020).

According to Notarbartolo di Sciara and Demma (1994), the Mediterranean population is more akin to the coastal ecotype, while Cañadas *et al.* (2002), reporting the distribution of this species in the Alboran Sea, suggest a closer link with the Atlantic pelagic ecotype. This apparent contradiction could in fact derive from the different ecological habits of the dolphins that inhabit the Alboran Sea (Gnone *et al.*, 2022).

Natoli *et al.* (2005) investigated the genetic diversity of bottlenose dolphin populations along a continuous distributional range from the Black Sea to the eastern North Atlantic and found clear population structures over the geographical range, coinciding with transitions between habitat regions. Moore (2020) found a similar pattern based on genomic (3500 neutral RADseq) markers. Gaspari *et al.* (2015a, 2015b) noted that samples from deeper parts of the Mediterranean (e.g. Ionian Sea) were genetically more similar to samples from the Atlantic pelagic ecotype, and thus suggested a potential differentiation between coastal and nearshore waters also in the Mediterranean context. Further evidence for genetic differentiation within the Mediterranean were found by Gonzalvo *et al.* (2016) and Brotons *et al.* (2019).

However, the results from TursioMed, a networking project compiling census data on Mediterranean bottlenose dolphin, showed that most sightings occur within the 200 m isobath marking the border of the continental shelf, with sightings outside this limit being quite rare (despite the research effort). This habitat preference seems to be consistent in all the study areas covered by the network, except for the Alboran Sea (Gnone *et al.*, 2022). It is unclear, then, to what extent the genetic differences found by Gaspari and co-authors should be correlated to ecological habits. The issue deserves further investigation and the presence of different ecotypes in the Mediterranean Sea cannot be excluded at this stage (see also Louis *et al.*, 2014). Laran and co-authors reported of an offshore distribution of a large number of bottlenose dolphins detected during aerial surveys in the French territorial waters of the Pelagos Sanctuary (Laran *et al.*, 2017). Several offshore encounters of bottlenose dolphins were also reported by the FLT Med Net (Fixed Line Transect Mediterranean Network) but were likely linked to an opportunistic behaviour mainly performed during the spring-summer season (Azzolin *et al.*, 2016).

As already reported, the bottlenose dolphins form geographical resident units, which show a certain level of behavioural specialization on the area of residence and might be considered as “behavioural types” (Vassallo *et al.*, 2021), meaning a behavioural variety whose components all show similar behavioural traits, as a response to local ecological pressure and opportunities. These specialization behaviours are most probably transmitted from one generation to the next as a local tradition (culture), allowing the dolphins to better exploit the residency area and to colonize new habitats. The behavioural specialization, which is always associated with residency, could also produce a certain level of isolation (Gnone *et al.*, 2011; Carnabuci *et al.*, 2016), possibly producing the genetic fine-scale structure described by Gaspari *et al.* (2015a, 2015b).

Information gaps/needs

The single geographic units of bottlenose dolphin, being the basic target of the CMP effort, should be identified, together with the level of genetic differentiation (if any). This could be achieved by improving the efficiency of the stranding network to obtain samples and implementing biopsy campaign on different geographical units within the Mediterranean Sea.

3.2 DISTRIBUTION, MIGRATION AND MOVEMENTS

3.2.1 DISTRIBUTION

The bottlenose dolphin is considered a regularly present species in the Mediterranean basin (Pilleri and Gahr, 1969; Cagnolaro *et al.*, 1983; Notarbartolo di Sciara and Demma, 1994; Bearzi *et al.*, 2009). The available literature suggests that this species could be sighted over most (if not all) the continental shelf of the Mediterranean basin, wherever a proper sampling effort is performed, even if with different density.

Within the TursioMed project (Gnone *et al.*, 2021; Gnone *et al.*, 2022), the bottlenose dolphin is the only species whose sightings have been reported by all partners of the network, from Spain to Tunisia, mostly within the 200 isobaths marking the boundary of the continental shelf (see table 1 and figure 1). These findings seem quite consistent with the results of the ACCOBAMS Aerial Survey Initiative (ASI), although in this case the preference for the continental platform habitat is less clear (figure 2).

Information gaps/needs

There is a lack of data over a large portion of the continental shelf in the southern Mediterranean, especially in the eastern basin (Libya and Egypt). It would be crucial to verify the presence of the species also in these regions.

Table 2 – The sightings of the TursioMed network (from Gnone *et al.*, 2021). The bottlenose dolphin (*Tt*) is the only species sighted by all the partners of the network (the number of sightings from SEA ME Sardinia Onlus - in red - are a “false zero”, since the related data had already been uploaded to the Intercet platform).

Research Group	Study area	Country	n sight.	Tt	Sc	Dd	Gg	Gm	Zc	Pm	Bp	Sb	Oo	Pp	Mb	Ba	Mn
Alnilam Research and Conservation	Alboran Sea	Spain	1402	210	470	403	35	210	44	10	20	0	0	0	0	0	0
SUBMON	Spain SE	Spain	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
Association BREACH	Gulf of Lion	France	176	95	41	2	2	1	0	0	37	0	0	0	0	0	1
EcoOcéan Institut	Med French coast	France	1845	65	1277	2	24	27	1	94	355	0	0	0	0	0	0
GECEM	French riviera, Corsica	France	443	212	148	1	11	3	0	19	49	0	0	0	0	0	0
Tethys Research Institute - Cetacean Sanctuary Research	Pelagos W	Italy	2639	31	1924	3	52	25	34	310	261	0	0	0	0	0	0
CIMA Research Foundation	Savona - Bastia Nice - Calvi	Italy-France	2086	39	1152	10	42	16	32	70	725	0	0	0	0	0	0
Università di Genova - DISTAV	Liguria E, Elba Island	Italy	49	49	0	0	0	0	0	0	0	0	0	0	0	0	0
Delfini Metropolitani	Pelagos N, Liguria E	Italy	283	233	39	4	2	0	2	2	4	0	0	0	0	0	0
CE.TU.S. Cetacean Research Centre	Tuscany	Italy	503	428	54	7	4	0	0	3	11	0	0	0	0	0	1
Università di Pisa (LIBA)	Livorno - Bastia FLT	Italy-France	330	114	160	6	2	0	0	6	44	0	0	0	0	0	0
Università di Pisa (LIGA)	Livorno - Olbia FLT	Italy	321	79	183	3	3	0	5	10	38	0	0	0	0	0	0
Accademia del Leviatano ONLUS	Rome - Barcelona FLT	Italy-Spain	1006	44	490	5	16	2	16	38	394	0	0	0	0	1	0
Oceanomare Delphis Onlus	Rome, Naples	Italy	1084	103	521	33	26	2	0	359	40	0	0	0	0	0	0
Bottlenose Dolphin Research Institute	Sardinia NE	Italy	1660	1637	14	3	0	0	0	0	6	0	0	0	0	0	0
SEA ME Sardinia onlus	Sardinia NE	Italy	469	0	271	2	4	0	64	10	117	0	0	0	1	0	0
MareTerra Onlus	Sardinia NW	Italy	218	217	1	0	0	0	0	0	0	0	0	0	0	0	0
Associazione CRAMA	Sardinia NW	Italy	27	24	0	0	0	0	0	0	3	0	1	0	0	0	0
Ketos	Civitavecchia - Catania FLT	Italy	596	150	339	56	17	1	2	7	23	1	0	0	0	0	0
	Civitavecchia - Tunis FLT Palermo - Tunis FLT	Italy-Tunisia															
Associazione Me.Ri.S.	Agrigento	Italy	8	7	0	1	0	0	0	0	0	0	0	0	0	0	0
Università di Torino - DBios	Lampedusa Island	Italy	209	209	0	0	0	0	0	0	0	0	0	0	0	0	0
Morigenos	Gulf of Trieste	Slovenia	456	456	0	0	0	0	0	0	0	0	0	0	0	0	0
Gaia Research Institute Onlus	Ancona - Patras FLT	Italy-Greece	98	49	47	0	0	0	2	0	0	0	0	0	0	0	0
Thalassa	Ionian Greece, Gulf of Corinth	Greece	175	36	128	17	1	0	0	0	0	0	0	0	0	0	0
Tethys Research Institute - Ionian Dolphin Project	Gulf of Ambracia	Greece	859	838	5	16	0	0	0	0	0	0	0	0	0	0	0
Marine Mammal Research Association - DMAD	Montenegro coast	Montenegro	163	113	1	19	0	0	4	0	0	0	0	26	0	0	0
	Bosphorus, Turkey coast SW	Turkey															
Istanbul University and Turkish Marine Research Foundation	Turkey coast W	Turkey	114	63	29	21	2	0	0	1	0	0	0	0	0	0	0
	Beirut	Lebanon															
the Tunisian Dolphin Project	Bizerte	Tunisia	39	39	0	0	0	0	0	0	0	0	0	0	0	0	0

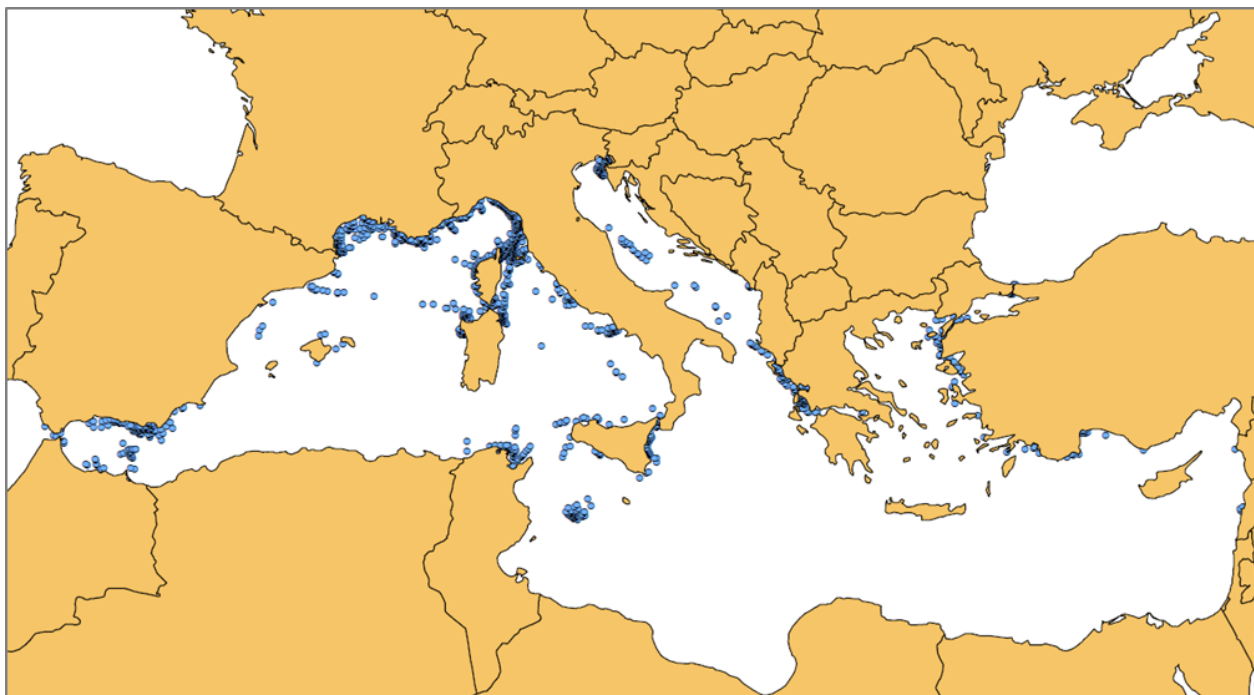


Figure 1 - Bottlenose dolphin sightings (5,550 points) shared on the Inter cet platform within the TursioMed project (from Gnone *et al.*, 2021).

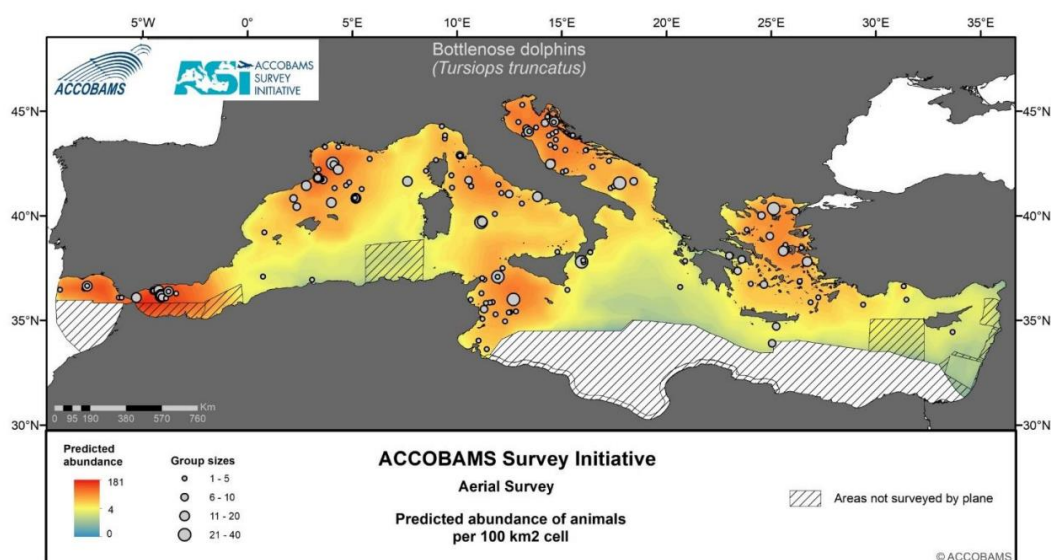


Figure 2 – Predicted abundance of bottlenose dolphin according to the ASI (Aerial Survey Initiative) from ACCOBAMS (ACCOBAMS, 2021).

3.2.2 HABITAT

As already reported, the bottlenose dolphin, in the Mediterranean context, can be found mostly within the bathymetric border of the continental shelf (Bearzi *et al.*, 2009). Genetic investigations, however, seem to suggest the presence of two ecotypes of bottlenose dolphin, coastal and pelagic, also in the Mediterranean Sea, as reported in the Atlantic (see the section Population structure). However most recent studies, based on sightings localization on a large scale and photo-ID data, strength the idea that the bottlenose dolphin finds its privileged habitat on the

continental shelf (figure 3), while sightings in deeper waters seem to be occasional (Gnone *et al.*, 2022). This pattern appears quite consistent in most of the areas sampled, except for the Alboran Sea, where bottlenose dolphins are sighted with good success also in deeper waters (Cañadas *et al.*, 2005).

Within the continental shelf, the bottlenose dolphin can inhabit a large variety of habitats, such as rocky coasts, large sandy platforms, archipelagos, enclosed seas, lagoons, etc. (Bearzi *et al.*, 2009), including highly anthropized contexts such as ports and channels (Akkaya Baş *et al.*, 2018). This variety in the habitat choice seems to be related to high levels of site-fidelity and behavioural plasticity, which produce a local specialization on the residency habitat (Gnone *et al.*, 2011; Vassallo *et al.*, 2020), and should be considered as a characteristic feature of the species. The local specialization can produce a segregation between neighbouring dolphins and a clusterization of the (meta)population in geographical units or subpopulations (Gnone *et al.*, 2011; Gnone *et al.*, 2022). The connectivity through the units seems to retrace the landscape traits and its habitat breakages (Carnabuci *et al.*, 2016; Vassallo *et al.*, 2020).

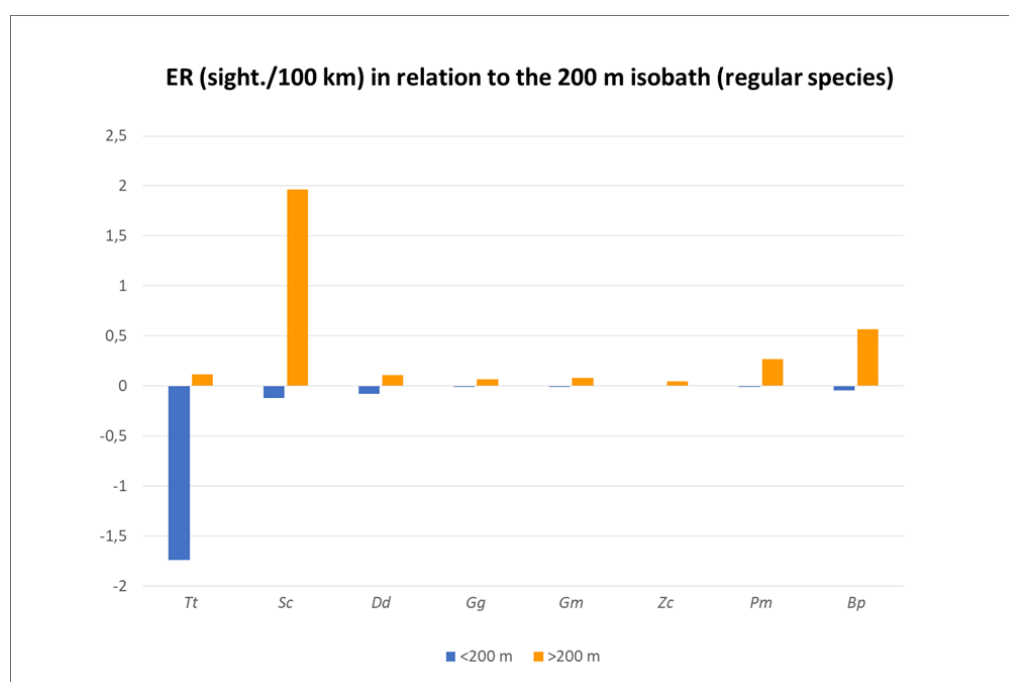


Figure 3 – Encounter rate (sightings/100 km) outside the continental shelf border (>200 m isobath) and within it (<200 m isobath). Tt: *Tursiops truncatus* - Sc: *Stenella coeruleoalba* - Dd: *Delphinus delphis* - Gg: *Grampus griseus* - Gm: *Globicephala melas* - Zc: *Ziphius cavirostris* - Pm: *Physeter macrocephalus* - Bp: *Balaenoptera physalus* (from Gnone *et al.*, 2021).

These findings are fundamental when designing a proper conservation and management plan, as the single geographical units show different and peculiar local specialization (depending on the physiographic and ecological traits of the residence area and the anthropic activities developed on site) and should be considered as the first target for conservation.

Information gaps/needs

Collection of (genetic) samples on stranded and free ranging individuals, coupled with the photo-ID data, could help to better understand the possible genetic differentiation of the Mediterranean bottlenose dolphin in relation to the habitat and the area of residence.

3.2.3 BEHAVIOURAL ECOLOGY

Bottlenose dolphins are found in a wide variety of habitats and this diversity in habitat preference is associated with a remarkable flexibility in feeding behaviours. Bottlenose dolphins can display a variety of tactics and strategies to capture different preys in different habitats, ranging from individual to highly coordinated group hunting techniques (Wells and Scott, 2002). These local specializations are most probably culturally transmitted through a matrilineal route (Barros and Odell, 1990; Kopps *et al.*, 2014), allowing a more efficient exploitation of local resources and a transgenerational update to environmental changes. The plasticity in foraging behaviour is accompanied with plasticity in the pattern of association, a flexible social model which was defined as “fission–fusion society” (Connor *et al.*, 2000).

As part of this opportunistic behaviour, bottlenose dolphins can learn to obtain fish from trawlers, gillnets and aquaculture fish cages, which can become an integral part of their feeding strategies. This behaviour can generate a partial dependence on human activity, triggering conflicts with fishermen, and is a concern in many areas of the world including the Mediterranean Sea (Barros and Odell, 1990; Corkeron *et al.*, 1990; Fertl and Leatherwood, 1997; Bearzi *et al.*, 1999; Chilvers and Corkeron, 2001; Pace *et al.*, 2003; Lauriano *et al.*, 2004; Diaz Lopez, 2006, 2019; Brotons *et al.*, 2008; Gonzalvo *et al.*, 2008; Buscaino *et al.*, 2009; Blasi and Boitani, 2012; Milani *et al.*, 2017a; Genov *et al.*, 2019a; Milani *et al.*, 2019; Papale *et al.*, 2020; Buscaino *et al.*, 2021).

Gill-net fisheries and finfish aquaculture introduced spatial habitat complexity and fragmentation, leading to an increase in food availability for bottlenose dolphins, either directly, through anthropogenic food (e.g., farmed fish and fish entangled in gillnets, Díaz López, 2006; 2017; 2019), but also indirectly in the form of modified habitat that could be favourable for feeding (e.g., increase input of nutrients from aquaculture activities: Díaz López *et al.*, 2008; Piroddi *et al.*, 2011).

Information gaps/needs

The opportunistic interaction between bottlenose dolphins and fishing gears is a common problem in many areas of the Mediterranean Sea. Nevertheless, the real extension of this problem (both in space and time) and the economic consequences on the fishing industries are still largely unknown. Proper mapping and monitoring of this phenomenon in space and time, also with the aid of automatic acoustic devices, would be necessary and could help find strategies to mitigate the conflict with fishermen.

3.2.4 HOME RANGE AND MOVEMENTS

Most of the studies based on photo-identification data are consistent in describing the bottlenose dolphin as a resident species. As already described in the previous sections, this species colonizes the continental shelf, forming resident geographical units whose connectivity appears to be related to geographical and ecological distance (Carnabuci *et al.*, 2016).

The physiographic characteristics of the area of residences seem to affect the home range and the group size of the different geographical units: in areas characterised by a wide continental platform, dolphins have wider home ranges and aggregate into larger groups, while in areas characterized by a narrow continental platform dolphins show much smaller home ranges and aggregate into smaller groups, possibly as a strategy to better exploit the local food resources (Gnone *et al.*, 2022).

According to Gnone *et al.* (2011), studying the bottlenose dolphin in the context of the Pelagos Sanctuary, the dolphins here perform maximum movements of about 50 km (on average), but a minority of individuals (the so called “long travellers”), can travel over 400 km. Bearzi *et al.* (2011) described 9 bottlenose dolphins who travelled 265 km in western Greece, confirming that some individuals can move outside the usual area of residence. These “long travellers”, despite being a minority, might represent a means of continuity between the different geographical units (Carnabuci *et al.*, 2016).

Information gaps/needs

Each management unit should be described in terms of site-fidelity, area of residence, home range and connectivity with the neighbouring units. The data aggregation on a common platform such as Intercet (<https://www.intercet.it/>) has proven to be a valuable strategy to improve our knowledges in this regard. This kind of networking experience should be encouraged to complete the picture, including new partners in the network and implementing field research campaign in poorly covered areas (see actions COORD-02, RES-01, RES-02, RES-03).

3.3 BASIC BIOLOGY

3.3.1 FEEDING

The shallow water preference of the bottlenose dolphin in the Mediterranean waters could be related to the feeding habits of the species, preying mostly on benthic and demersal fishes (Voliani and Volpi, 1990; Orsi Relini *et al.*, 1994; Mioković *et al.*, 1999; Blanco *et al.*, 2001; Giménez *et al.*, 2017; Milani *et al.*, 2017a).

Bottlenose dolphin preys include the hake (*Merluccius merluccius*) and a variety of other fish species (*Diplodus annularis*, *Pagellus erythrinus*, *Spicara flexuosa*, *Lesurigobius sp.*) and cephalopods (*Eledone cirrhosa*) (Scuderi *et al.*, 2011).

As already reported, bottlenose dolphins can include in their feeding habits the opportunistic exploitation of gillnets, trawlers, and fish cages. These opportunistic strategies can become predominant in the feeding economy of the dolphins, triggering conflict with fishermen (see Behavioural ecology section).

Information gaps/needs

Research on the stomach contents of stranded dolphins may be very useful to better know the feeding habits of the bottlenose dolphins in the different seasons and geographical contexts and should be increased and extended on a wider range.

3.3.2 LIFE HISTORY

Bottlenose dolphins are quite long-lived animals. Studies on dentin and cementum rings (Hohn *et al.*, 1989) have shown that females can live more than 57 years, while males up to 48 (Wells and Scott, 1999). The age at which females begin to reproduce varies from individual to individual (Connor *et al.*, 2000), but sexual maturity generally occurs between 7 and 12 years of age (Mann *et al.*, 2000). The males, on the other hand, mature around the age of 13 years (Wells and Scott, 2009).

Once sexual maturity is reached, the female bottlenose dolphin seems to remain fertile throughout her life (Cockroft and Ross, 1990), as individuals up to 48 years of age have given birth to young and have successfully raised them (Wells and Scott, 1999). As for males, paternity tests in Florida have shown that individuals can produce offspring between 13 and 40 years of age (Duffield and Wells 2002; Wells, 2003).

Gestation lasts just over a year: 12.3 months or 347 days (Cockroft and Ross, 1990). Bottlenose dolphins, like all cetaceans, in which twin births are very rare, give birth to one offspring at a time (Mann *et al.*, 2000), but if the calf dies prematurely, the female is immediately ready for a new gestation (Cockroft and Ross, 1990; Mann *et al.*, 2000).

There are very few studies investigating the reproductive parameters of the bottlenose dolphin in the Mediterranean Sea. According to Rossi *et al.* (2017), analysing the data of a long-lasting research program in the eastern Ligurian Sea, the fertility rate was 0.29-0.41, the calving interval 2.45-3.45 years, and the cub mortality rate (the mortality rate within the first year) 0.25.

Information gaps/needs

Research investigating the reproductive parameters are very important to assess the conservation status of the management units and to evaluate their resilience to mortality events. It would be crucial to extend and increased these kinds of studies.

3.4 ABUNDANCE AND TRENDS

According to Bearzi *et al.* (2004) deliberate killing, overfishing (prey depletion), and habitat degradation may have caused a considerable reduction (about 50%) of the bottlenose dolphin population in the northern Adriatic Sea. Bearzi and Fortuna (2006) and Bearzi *et al.* (2009) suggest a similar reduction should be applicable to the whole of the Mediterranean basin, with a current total population of less than 10,000 animals, representing a decrease of about 30% in the last 60 years. However, more recent studies suggest these estimates could be over conservative.

Fortuna *et al.* (2013) estimated a total of 10,000 bottlenose dolphins only in Italian waters, while according to Gnone *et al.* (2021), analysing the data coming from the TursioMed network, the Mediterranean (meta)population of bottlenose dolphins might exceed the 15.000 individuals (more conservative estimate) and could reach 40.000 individuals. This last estimate appears more consistent with the ASI results (ACCOBAMS, 2021), estimating about 60,000 individuals of bottlenose dolphin in the Mediterranean basin (57,120 individuals with Model-base analysis, 63,398 with Design-based analysis). However, all these estimates still present significant uncertainties and must be taken with due caution.

Table 3 summarizes some independent abundance estimates for different management units in the Mediterranean Sea.

Table 3 - Summary of some abundance estimates of bottlenose dolphins in the Mediterranean basin (modified and integrated from Bearzi and Fortuna, 2006).

Geographic Area	Study area (km ²)	Sampled Area	Years	Density (animals / km ²)	Estimate	CV	95% CI	Estimation method	Source
Strait of Gibraltar	500	in- & offshore	2005	0.51	258	0.08	226-316	Mark-recapture (closed population)	De Stephanis <i>et al.</i> , 2005
Strait of Gibraltar	500	in- & offshore	2002-2005	0.25-0.47	123-234	-	98-158 207-265	Mark-recapture	Tenan <i>et al.</i> , 2020
Alboran Sea (Spain)	11,821	in- & offshore	2000-2003	0.049	584	0.28	278-744	Distance sampling & GAMS	Cañadas & Hammond, 2006
Almeria (Spain)	4,232	in- & offshore	2001-2003	0.066	279	0.28	146-461	Distance sampling & GAMS	Cañadas & Hammond, 2006
Almeria (Spain)	-	-	2010-2011	-	812	0,12	655-1039	Mh jackknife	J. L. Murcia (unpublished)
Asinara island National Park (Italy)	480 2004	inshore	2001	0.05	22	0.26	22-27	Mark-recapture (closed population)	Lauriano <i>et al.</i> , 2003

North Eastern Sardinia (Italy)	750	inshore	2005 - 2013	0.016 – 0.09	12 - 68	-	12 – 13 62 – 87	Mark-recapture (Robust Pollock Open/closed population)	Díaz López 2019
North Western Sardinia (Italy)	200	inshore	2008 - 2011	0.275	55	-	45 – 70	Mark-recapture model (Open population)	Díaz López et al., 2013
Balearic Islands & Catalonia (Spain)	86,000	in- & offshore	2002	0.088	7,654	0.47	1,608-15,766	Distance sampling	Forcada <i>et al.</i> , 2004
Alboran sea and Murcia	17,987	in- & offshore	2004-2005	0.072	1,288	-	-	Distance sampling GAMs	Cañadas, unpublished
Gulf of Vera (Spain)	6,164	in- & offshore	2003-2005	0.042	256	0.31 1	88–592	Distance sampling & GAMs	Cañadas (unpublished)
Valencia (Spain)	32,270	in- & offshore	2001-2003	0.041	1,333	0.31 739-	2,407	Distance sampling	Gomez de Segura <i>et al.</i> , 2006
Tunisian waters	~ 750	inshore	2001 & 2003	0.19	-	-	-	Distance sampling (uncorrected)	Ben Naceur <i>et al.</i> , 2004
Lampedusa island (Italy)	200	inshore	1996-2000	-	140				
Lampedusa island (Italy)	2500	in- & offshore	2003-2006	-	135 (average value for the 4 years)		70-320	Mark-recapture (open population)	Azzolin <i>et al.</i> , 2007
Israeli Mediterranean coast (Israel)	-	inshore	1999-2004	-	85				
Ionian Sea (Greece)	480	inshore	1993-2003	-	48				
Ionian Sea (Greece)	5500	in- & offshore	2008-2010	-	94			Mark-recapture (open population)	
Amvrakikos Gulf (Greece)	400	inshore	2001-2005	0.38	152	-	136-186		
North Aegean Sea (Greece)	2000	in- & offshore	2005-2013	-	377	18.37	289–465	Distance sampling & GAMs	Milani <i>et al.</i> , 2017b
North-eastern Adriatic Sea (Kvarneric, Croatia)	800	inshore	1990-2004	-	120				
North-eastern Adriatic Sea (Kvarneric, Croatia)	1,000	inshore	1997	0.06	113				
North-eastern Adriatic Sea (Kvarneric, Croatia)	2,000	inshore	2003	0.05	102				
North Adriatic Sea (Gulf of Trieste, Slovenia)	600	inshore	2002-2004	0.08	47				

Adriatic Sea		in- & offshore (aerial survey)	2010, 2013, 2019		5,700		4,300-7,600	Aerial survey	Fortuna <i>et al.</i> , 2018
Pelagos Sanctuary	87,500	in- & offshore	2006	-	1,023	-	848-1234	Mark-recapture (closed population)	Gnone <i>et al.</i> , 2011
Western Mediterranean Sea		in- & offshore	2010-2011	0.005	1,676	0.3825	804-3492	Distance sampling (aerial survey)	Lauriano <i>et al.</i> , 2014
French Mediterranean continental shelf	2,350	inshore	2013-2015				1,827-3,135	Mark-recapture (closed population)	Labach <i>et al.</i> (in press)

In relation to abundance tendency in recent years, there seem to be very few research contexts where the data available (and their continuity over time in historical series) could allow to test for significant trends.

Within the TursioMed project (Gnone *et al.*, 2021), only for two geographical units the continuity of sampling (≥ 8 years) allowed to carry out a trend analysis: the small unit residing between Corsica and Sardinia and the larger unit of Liguria-Tuscany. In the first case, no significant trend emerges (2005-2013), while in the case of Liguria-Tuscany a statistically significant positive trend has been detected (2004-2016). It is important to remind that, due to the diversity of the Mediterranean basin and the different ecological contexts where the bottlenose dolphin is present, it is not possible to generalize this trend to other areas.

Information gaps/needs

As the single geographical units of bottlenose dolphin are the basic target of the CMP, the size and size trend of these units should be monitored over time. Research activity in the field should be encouraged and supported to improve the data collection. The survey effort should be strongly increased in those area poorly covered, such as the south-eastern basin, where there are virtually no data available. To detect possible trends in abundance, the management units should be monitored over time with continuity (≥ 8 years).

3.5 ATTRIBUTES OF THE POPULATION(S) TO BE MONITORED

In line with the main legislative framework (e.g. MSFD, HD, EcAp) the attribute to be monitored intends to give indication to assess the status of the population in the Mediterranean basin to be linked to the anthropogenic pressures that can adversely affect its long-term viability.

The bottlenose dolphin is distributed over the Mediterranean continental platform with distinct geographical (and demographical) units, inhabiting a certain area and with a potential local specialization on the (micro)habitat and/or the ecological context of the area of residence (including human activity). For a proper CMP implementation and monitoring it is crucial to

identify these units, their area of residence (and its geographical borders), their size consistency and trend and possibly also the level of genetic differentiation. At the present time, these knowledges are partially available only for a few geographical units. Great effort should be implemented to increase the data coverage on a Mediterranean level.

Attributes to be monitored:

MONITORING THE SPECIES

- Distribution of the target species including habitat characteristics.
- Abundance estimates and trend of the geographical units under observation, using mark recapture technique where possible or other methods (distance sapling).
- Demographic parameters (reproduction, survival rate, migration).
- Stranding monitoring and necropsy to detect the cause of mortality.

MONITORING HUMAN ACTIVITY AND THREATS

- Fishing effort
- Bycatch
- Vessel traffic (pleasure boating)
- Noise
- Chemical pollution

4 SUMMARY OF ACTUAL AND POTENTIAL ANTHROPOGENIC THREATS

4.1 ACTUAL AND POTENTIAL ANTHROPOGENIC THREATS

The bottlenose dolphin, thanks to its behavioural flexibility and opportunistic habit, was able to adapt to a changing environment, with an increasing anthropogenic presence, to survive to the present day. Still, it is possible to identify potential threats to its good conservation status, based on literature available and precautionary principles. We should consider, however, that it is quite difficult to measure the long-term impact of an underhand threat such as prey depletion or chemical pollution.

Table 4 - Initial draft summary of information on actual and potential threats

Actual/potential threat	Human activity	Strength of evidence	Possible impact	Priority for action	Relevant actions
HABITAT CHANGE, REDUCTION AND FRAGMENTATION	MARITIME TRAFFIC	HIGH	REDUCTION OF EXPLOITABLE HABITAT	HIGH	RES-01, RES-02, RES-03, RES-04, MON-01, MON-02, MIT-01, MIT-01
OVERFISHING AND PREY DEPLETION	OVERFISHING	HIGH (for some species)	PREY DEPLETION	HIGH	RES-01, RES-02, RES-03, RES-04, MON-01, MON-02, MIT-01, MIT-01

CONFLICT WITH FISHERMEN AND COASTAL AQUACULTURE, BYCATCH	SMALL-SCALE FISHERIES AND COASTAL AQUACULTURE	HIGH	BYCATCH (INCLUDING OBSTRUCTION), DELIBERATE KILLING	HIGH	RES-01, RES-02, RES-03, RES-04, MON-01, MON-02, MIT-01, MIT-01
CHEMICAL POLLUTANTS	INDUSTRIAL DISCHARGES, AGRICULTURE, URBAN-WASTE, ETC.	HIGH	IMMUNODEFICIENCY, DECREASED FERTILITY, INCREASED NEONATAL MORTALITY	HIGH	RES-01, RES-02, RES-03, RES-04, MON-01, MON-02, MIT-01, MIT-01
EPIZOOTICS	URBAN-WASTE, CHEMICAL POLLUTION	HIGH	INCREASED MORTALITY OR MASS MORTALITY	MEDIUM	RES-01, RES-02, MON-01
CLIMATE CHANGES	HOME EATING, TRANSPORT, FARMS, ETC.	HIGH	HABITAT CHANGE, HABITAT REDUCTION, DECREASE OF FOOD RESOURCES, OTHERS	MEDIUM-HIGH	RES-01, RES-02, RES-03, MON-01, MON-02

Following a survey conducted in 2013 within the ACCOBAM framework through the subarea coordinators, asking to rank the potential threats for the bottlenose dolphin in their area of competence, overfishing, chemical pollution, and boat traffic (including noise) were identified as the most impacting threats for the species. Conflicts with fisherman (possibly resulting in deliberate killing) and bycatch are also described as a potential threat in many areas of the basin. Epidemics could represent an unpredictable phenomenon that can severely affect some demographic units or subpopulations (see table 4).

4.1.1 HABITAT CHANGE, REDUCTION AND FRAGMENTATION

In the Mediterranean context the bottlenose dolphin seems to find its preferential habitat over the continental shelf, being the only Mediterranean dolphin sighted mostly in shallow waters <200 m. This species can exploit all the shelf waters, up to the coastline (Bearzi *et al.*, 2009; Gnone *et al.*, 2011), but the anthropogenic pressure in its privileged habitat has strongly increased in the last century, due to demographic growth and technological achievements (such as the petrol engine), which have produced a rapid improvement in the fishing, transport and tourism industries. In some touristic areas the recreational maritime traffic (pleasure crafts) can produce a (seasonal) reduction and fragmentation of the habitat potentially exploitable by the bottlenose dolphin in its vital activities, such as foraging, breeding, and nursing (David, 2002; Papale *et al.*, 2011; La Manna *et al.*, 2013). Especially in those areas where the continental shelf is very narrow, pleasure crafts can saturate the habitat of the bottlenose dolphin, breaking its continuity and forcing animals to aggregate in other areas (Manfredini *et al.*, 2007). The impact is given by acoustic pollution produced by the engines but also (and possibly more heavily) by the direct disturbance caused by the boats, especially high-speed boats. Continued vessel traffic can make it difficult to exploit a large portion of habitat, since the animals must keep continuous attention to boats to avoid collisions and harassment. The disturbance increases as the speed of the boats

increases, forcing the ability of the dolphins to get safely away. However, since touristic activity is not traditionally associated to negative impact to wild animals, there is no limitation to the presence of crafts, neither limitation to their speed (with few exceptions). Even the EU Marine Strategy Framework Directive does not mention pleasure boating as a potential impact for wild marine population and no limitations are foreseen in this respect. Still the impact of pleasure crafts in some sensitive areas of the bottlenose dolphin habitat might be significant and a further (and uncontrolled) development of this human activity should be of concern in the bottlenose dolphin CMP.

Information gaps/needs:

Research on the short and long-term impact of pleasure boating on bottlenose dolphins in the different areas of residence should be encouraged.

4.1.2 OVERFISHING AND PREY DEPLETION

Overfishing has led to a drastic reduction of some fish stocks, overexploited with new and more efficient fishing techniques, including some bottlenose dolphin preys such as the Mediterranean hake (*Merluccius merluccius smiridus*), which is usually fished with trawlers (Orsi Relini *et al.*, 2002). On the other hand, the bottlenose dolphin has learned to opportunistically feed on trawlers and gillnets, taking advantage of the collection action of the net, and in some areas this opportunistic feeding has become a fundamental food intake strategy for the dolphins (see section 3.2.3 Behavioural ecology). In this context, it can be difficult to understand whether the benefit of opportunistic feeding can outweigh the negative impact of overfishing.

Information gaps/needs

The fishing effort and the fishing success should be monitored over time to detect possible overfishing phenomena. At the same time, the opportunistic behaviour of the dolphins on fishing gears (i.e. trawlers and gillnets) should be monitored and quantified to understand how much different units rely on this feeding strategy for their own sustenance.

4.1.3 CONFLICT WITH FISHERMEN, COASTAL AQUACULTURE AND BYCATCH

Interactions between cetaceans and fisheries have been documented for centuries, and an increase in frequency and intensity has been reported in recent decades (Read *et al.*, 2006). Because of their opportunistic behaviour, bottlenose dolphins may be perceived as competitors by the fishermen. Furthermore, their opportunistic action on the nets can cause damages to the fishing gear, exacerbating the conflict (Diaz Lopez, 2006; Milani *et al.*, 2017a; Snape *et al.*, 2018; Milani *et al.*, 2019; Giménez *et al.*, 2021). Fishers can take brutal solutions to discourage the dolphins and protect their fishing activity. Deliberate killing, as the most extreme action, could impact on small demographic units.

Bycatch can also be a consequence of the opportunistic activity of dolphins on the fishing gears (Cuvertoret-Sanz *et al.*, 2020) and coastal aquaculture (Díaz López and Shirai, 2007). Opportunistic behaviour on gillnets can also lead to the ingestion of shreds of net, causing the obstruction of the oesophagus or digestive system (Gomerčić *et al.*, 2009).

Information gaps/needs

The interactions between bottlenose dolphins and fishing gears and aquaculture should be monitored in the different management units (also with the support of passive acoustic devices), to characterise the impact on fishing activity over time and space. Fatal events, such as bycatch and occlusions, should also be monitored and quantified through stranding analysis.

4.1.4 CHEMICAL POLLUTANTS

Preying mostly on benthic and demersal fish, bottlenose dolphins are exposed more than other cetaceans to chemical pollution from persistent organic compounds, through bioaccumulation and biomagnification mechanisms. High level of PCB, DDT and heavy metals were found in the tissues of bottlenose dolphins sampled in the Mediterranean Sea, when compared with Atlantic individuals (Marsili and Focardi, 1997; Aguilar *et al.*, 2002; Fossi and Marsili 2003; Storelli *et al.*, 2007; Shoham-Frider *et al.*, 2009; Romanić *et al.*, 2014; Barón *et al.*, 2015a; Barón *et al.*, 2015b; Genov *et al.*, 2019b). These pollutants may cause a decrease of the fitness of the individual on a long term, leading to immunodeficiency, decreased fertility and an increase in neonatal mortality (as the mother releases pollutants during lactation). The pollution of the food chain may therefore take part in decreasing the survival potential of the bottlenose dolphin Mediterranean (meta)population.

Physical harassment by marine litter is also cause of concern for the species and entanglement and ingestion of marine debris is reported also for bottlenose dolphin, with potential detrimental consequences, such as physical injuries, reduced mobility and predation success, digestive tract obstructions, and malnutrition (e.g. Poeta *et al.*, 2017; Claro *et al.*, 2019).

Information gaps/needs

Since the bottlenose dolphin tend to form discrete geographical units, scattered over the continental shelf, it would be useful to map the pollution levels in the tissue of the bottlenose dolphins belonging to the different units, looking for possible differences related to the area of residence and/or feeding habits (including opportunistic feeding).

4.1.5 EPIZOOTICS

Epizootics such as Morbillivirus can cause mortality in bottlenose dolphin, especially on those individuals already debilitated by malnutrition and/or pollution by persistent organic pollutants. Local demographic units could be severely impacted by these epizootic outbreaks (Birkun, 2006). Morbillivirus is known to be lymphotropic, causing potentially compromising immune response

to other opportunistic infections (Van Bressem *et al.*, 2014). Epidemiological studies on other Mediterranean dolphins show co-infections with other pathogens, such as *Brucella* and *Toxoplasma* (e.g. Profeta *et al.*, 2015). These pathogens are commonly found in human associated animals, and there is evidence that they can be discharged into the sea from urban and industrial runoff with high lethality to susceptible wildlife (e.g. Shapiro *et al.*, 2019). Therefore, local populations showing high site-fidelity to coastal areas with high human density, could be particularly vulnerable to this type of threat.

Information gaps/needs

The data from the analysis of stranded individuals should be compared with the analysis of urban waste waters, to identify the possible anthropogenic origin of epidemic events. The data of strandings should also be integrated with those relating to connectivity between geographical units, in an attempt to predict the possible spread of infections through forecasting models.

4.1.6 CLIMATE CHANGE

The Mediterranean is an oligotrophy sea, due to the anti-estuarine circulation of the Strait of Gibraltar, which causes an export of nutrients to the Atlantic (Huertas *et al.*, 2012; Tanhua, 2013). The Mediterranean relies therefore on the main rivers for the nutrients supply, as in the case of the Rhone, which contributes to the productivity of the Gulf of Lion and north-western Mediterranean, and of the Po in the northern Adriatic Sea (Béthoux, 1981; Estrada, 1996; Notarbartolo di Sciara *et al.*, 2008). According to Ludwig *et al.* (2010), in 2050 the Mediterranean could have lost more than one fourth of the freshwater flow from rivers compared to 1960, mainly because of climate change. In the sub-basins of the north, the flux of nitrates is predicted to decrease in the future, in consequence of climate change, population decrease and implementation of antipollution measures. This could negatively affect the productivity of some areas and the availability of prey for bottlenose dolphins and other cetaceans. Furthermore, the potential effects of global climate change or ocean acidification on bottlenose dolphin in the Mediterranean cannot be neglected and need further investigation and monitoring.

Information gaps/needs

The short- and long-term effect of climate changes should be investigated, both on a Mediterranean and local scale.

4.1.7 CUMULATIVE AND SYNERGISTIC EFFECTS

The above sections discuss threats individually. However, some or all of them may interact temporally and/or spatially (Maglio *et al.*, 2016). Cumulative and synergistic effects can be considered as the loss of suitable habitat, changes in reproduction and/or survivorship that negatively affect population dynamics because of repeated exposure to the same stressor(s) over time or the combined effects of multiple stressors. Developing robust ways to evaluating this is a complex problem. An ecosystem approach is needed (Pavan *et al.*, 2015) to understand the

complex relationship among all the components of the sea environment. Perhaps the best-developed framework to date is the Population Consequences of Disturbance (PCoD) model (New *et al.*, 2014), which has been extended to consider the Population Consequences of Multiple Stressors (PCoMS) (National Academies of Sciences, 2017). This approach moves through the effects of stressors on behaviour and physiology of individuals, which are converted into effects on vital rates and therefore on population trends and sustainability. However, the approach is extremely data demanding, as it requires quantitative temporal and spatial information on cetaceans (distribution, demographics, and physiology), their prey and environment and human activities (and models linking these), and contains inherent large levels of predictive uncertainty. In view of this, the present iteration of the CMP focuses initially on addressing individual threats, whilst recognising the need ultimately to work towards evaluation of cumulative effects, should mitigation measures on the individual threats proves insufficient.

4.2 MONITORING

Monitoring is a fundamental component of the CMP, to assess the conservation status of the target species, to evaluate the goodness and effectiveness of the mitigation measures implemented, and to identify the knowledge gaps. The CMP Monitoring system should be able to observe possible trend or deviation in the attributes selected for the target species and to report these to the CMP Coordinator and Steering committee.

The data collected on a local level should be aggregated in a network to produce results on a larger scale. For this purpose, the data collected in each study area could be shared and aggregated on a common Web-GIS platform, such as Intercet (<https://www.intercet.it/>), which will act as a common tool for the network implementation and activity.

In the starting phase of the CMP, we should expect an inhomogeneous covering of the Mediterranean area (especially in the southern portion of the basin some areas could have no data available). However, the system should be able to monitor the data production over space/time and to plan and support specific local campaigns to fill the gaps. At the same time the monitoring system will allow to plan scientific research on specific items such as genetic, toxicology, pathology, etc.

Methodology for data collection should be normalized as possible and the results produced over time (possibly on a yearly basis) should be consistent enough to be compared in historical series, to observe possible trends and deviation in the attributes. The data will be analysed at subarea and basin level, according to the survey effort performed.

It would be important that the monitoring and research systems developed for the bottlenose dolphin could be integrated as much as possible with the research and monitoring system

designed and implemented for the other cetacean species, to optimize the costs (especially in data collection) and to improve the results (as each species can work as a control for the others). The data collected on free ranging animals should be integrated with the data coming from stranded individuals to identify and monitor death causes (bycatch, occlusions, epizootics, etc.). This will involve a further work of connection with local stranding network.

5 MITIGATION MEASURES

At the present state of the knowledge the bottlenose dolphin CMP does not identify new specific conservation measures (in addition to those already in place), believed that a strict compliance of the regulations already in force should guarantee the protection of the bottlenose dolphin (meta)population at the present level.

However, due to the organization of the bottlenose dolphin in discrete units, with local behavioural specializations, specific management and mitigation measures may be required for certain areas/geographical units (see Mitigation actions).

Particular attention should be paid to overfishing and recreational maritime traffic, the uncontrolled development of which could limit the ability of the bottlenose dolphin to exploit its privileged habitat.

The mitigation actions are directed on three main items: a) political and regulatory; b) stakeholder engagement; c) education and awareness (which should also include the valorisation of the natural environment).

5.1 HABITAT CHANGE, REDUCTION AND FRAGMENTATION

- a. Political and regulatory
 - Promote a stricter regulation regarding pleasure boating, acting on local, national and supranational level, with special reference to navigation speed (enforce speed limit in the coastal zones in critical habitats of bottlenose dolphins).
 - Avoid a further anthropization of the coasts, limiting the construction of new marinas, acting on local, national and supranational level (MSFD – descript. 1, 11).
- b. Stakeholder engagement
 - Local, national and supranational authorities.
 - Port Authorities and Coast Guard.
 - Boaters and related trade associations.
 - Whale watching operators.
 - Research organizations.
 - MPA and ASPIM.
 - NGOs.
 - Schools (see education and awareness).

- c. Education, awareness and valorisation
 - Develop and promote an education and awareness campaign focused on the bottlenose dolphin to be disseminated to and through the stakeholders (ecology, threats, and relationships with man). The awareness campaign should also be aimed at valorising the marine environment, outputting the importance of the cetacean fauna in this regard.
 - Develop an education and awareness campaign to outline and promote a sea tourist respectful of the sea environment and its fauna, with special focus on cetaceans and potential impact of human activity on their habitat.

5.2 OVERFISHING AND PREY DEPLETION

- a. Political and regulatory
 - Promote a stricter compliance of the regulations already in force to guarantee a sustainable fish taking (fishing seasonal closures, maximum size of the net, minimum size of the fish, etc.), control and prosecute illegal and destructive practices, acting at local, national and supranational level (MSFD - descript. 3, 4).
- b. Stakeholder engagement
 - Local, national and supranational authorities.
 - Fishermen and related trade associations.
 - Port Authorities and Coast Guard.
 - Research organizations.
 - MPA and SPAMI.
 - NGOs.
 - Schools (see education and awareness).
- c. Education, awareness and valorisation
 - Work in close relationship with fishers and related trade associations to promote sustainable fish taking and limit overfishing.
 - Develop and promote an education and awareness campaign focused on the bottlenose dolphin to be disseminated to and through the stakeholders (ecology, threats, and relationships with man). The awareness campaign should also be aimed at valorising the marine environment, outputting the importance of the cetacean fauna in this regard.

5.3 CONFLICT WITH FISHERMEN, COASTAL AQUACULTURE AND BYCATCH

- a. Political and regulatory
 - Promote a stricter compliance with the regulations already in force that prohibit harming cetaceans to limit as far as possible deliberate killing, acting at local, national and supranational level.

- Improve the monitoring activity of the interactions between bottlenose dolphins and fishing gears/coastal aquaculture and related bycatch events.
- Promote possible reimbursement for damaged fishing gears (after verifying the origin of the damage), acting at local, national and supranational level.
- Promote sustainable fishing methods.
- b. Stakeholder engagement
 - Local, national and supranational authorities.
 - Fishermen and related trade associations.
 - Aquaculture industry.
 - Port Authorities and Coast Guard.
 - Research organizations.
 - MPA and SPAMI.
 - NGOs.
 - Schools (see education and awareness).
- c. Education, awareness and valorisation
 - Work in strict relationship with fishermen to mitigate the conflict with the dolphins and develop new (feasible) methods to limit the damages on the fishing gears.
 - Develop and promote an education and awareness campaign focused on the bottlenose dolphin to be disseminated to and through the stakeholders (ecology, threats, and relationships with man).

5.4 CHEMICAL POLLUTANTS

- a. Political and regulatory
 - Promote a stricter compliance with the regulations already in force that ask to keep contaminants levels in the marine environment and sea food within safety limits (MSFD - descript. 8, 9).
- b. Stakeholder engagement
 - Local, national and supranational decision makers.
 - Port Authorities and Coast Guard.
 - Zoo Prophylactic Inst.
 - Research organizations.
 - MPA and SPAMI.
 - NGOs
 - Schools (see education and awareness).
- c. Education, awareness and valorisation
 - Develop and promote an education and awareness campaign focused on the bottlenose dolphin to be disseminated to and through the stakeholders (ecology, threats, and relationships with man). The awareness campaign should also be

aimed at valorising the marine environment, outputting the importance of the cetacean fauna in this regard.

5.5 EPIZOOTICS

Epidemics are quite unpredictable events (especially when caused by novel pathogens) that may affect demographic units or (sub)populations, causing the death of a certain percentage of individuals. It may be very difficult to prevent this kind of events, even if some research from striped dolphins shows that Morbillivirus epizootics have occurred with a certain regularity (i.e. Gaspari *et al.*, 2019). The level and direction of dispersal should depend on the level of connectivity between neighbouring geographical units, particularly for pathogens with a direct transmission mechanism (such as Morbillivirus). It is therefore important to determine this level of connectivity between units with some degree of resolution, to possibly predict the epizootic dispersal (see also Carnabuci *et al.*, 2016). However, a (sub)population in good health (in terms of the quality of the habitat, good food supply, low contaminants levels) has higher probabilities to support and overcome an epizootic event. The best mitigation action in relation to this threat is then to act successfully to prevent habitat deterioration and constriction, overfishing and contaminants pollution. The collection and analysis of data on stranded animals should allow to recognize these events and possibly to identify the pathogenic agent.

5.6 CLIMATE CHANGES

In the current state of knowledge, it is very difficult to predict the short- and long-term effect of climate change on the Mediterranean bottlenose dolphin population. It is necessary to close the knowledge gap, increase the monitoring effort and develop reliable forecasting models. Based on the results, existing mitigation measures may need to be reviewed or new and more stringent ones developed, targeting other threats as well (see 4.1.7 Cumulative and synergistic effects).

6 PUBLIC AWARENESS, EDUCATION AND CAPACITY BUILDING

Public awareness and involvement are a fundamental component for promoting wildlife conservation. If citizens know the value of a species or habitat, they are also more willing to commit to contributing to its conservation. The CMP should therefore promote greater knowledge of cetacean fauna and awareness that it is a common heritage to be protected.

While in some Mediterranean countries there are effective educational programmes and multimedia campaigns to raise awareness about cetaceans, in many others there is a lack of such activities. There is an urgent need to fill this gap in the context of the objectives of the CMP, by activating a network of experts acting on a local level but with a common target.

Awareness-raising campaigns should also be addressed and involve local authorities and public administration, to encourage a greater commitment of resources and promote capacity building in cetacean research, monitoring and conservation.

7 EXECUTIVE SUMMARY OF ACTIONS

7.1 DEALING WITH INADEQUATE DATA

While ideally, all CMPs and associated management actions are based on adequate scientific data, there are occasions when the potential conservation consequences of waiting for confirmatory scientific evidence mean that it is better to take action immediately whilst collecting the necessary information. This has become known as following the “precautionary principle” or taking a “precautionary approach.” However, application of this principle must be carefully considered and well justified.

7.2 MONITORING

Establishing baseline information as a scientific reference for conservation actions is an important step towards effective conservation. Once this is achieved, monitoring (of the species or population, human activities, implementation and effectiveness of mitigation measures) **must** be an integral and essential part of management.

7.3 LIFE OF THE CMP

Any CMP needs to be reviewed periodically so that the actions called for can be adjusted as appropriate in response to new information or changed circumstances. Once a coordinator has been appointed and a steering committee is functioning, it is expected that a regular review and revision process will be implemented. It is suggested that this CMP would be reviewed every three years and that an in-depth review would be conducted every six years (to match the work-programme time frame of ACCOBAMS).

7.4 IMPLEMENTATION OF THE CMP, COORDINATION, INVOLVEMENT OF STAKEHOLDERS

Experience has shown that in order to be effective, CMPs must have a recognized Coordinator, who is either hired half-time under contract for the role or is situated professionally such that his or her investment of time and other resources (e.g. travel costs) is paid for as part of a salaried position. This is particularly true where effective conservation requires action (including legislative or regulatory action) by multiple stakeholders including, for example, intergovernmental and national authorities, scientists from several disciplines, representatives from industry, local communities, and NGOs. Ideally, the Coordinator should have a strong scientific and management background and be capable of communicating effectively with the various stakeholders. The importance of actively involving stakeholders, especially those whose livelihoods are likely to be affected by management measures, cannot be overemphasized. The

Coordinator should report to a small Steering Committee appointed after consultation with appropriate authorities.

CMP are developed under the umbrella of ACCOBAMS. All relevant bodies of ACCOBAMS must be involved: strong links with the Scientific Committee, the Secretariat and regular information to National Focal Point (ACCOBAMS Res. 6.21) and other relevant stakeholders.

Amongst other things, the Coordinator and Steering Committee would be expected to:

- promote and coordinate implementation of the CMP (including investigating and pursuing funding opportunities and options), giving particular attention to stakeholders;
- make efforts to ensure that implementation of all high- and medium-priority actions has been initiated;
- determine and track the state of implementation of actions, the results obtained, the objectives reached, and the difficulties encountered;
- communicate this information through regular reporting in an open, accessible format;
- appoint a group of experts to evaluate effectiveness and update the CMP every three years on a six-year cycle. The conclusions of this group should be made public in some way.

Finally, we stress that a CMP will not be effective without sufficient funding. At the very least, funds must be available to allow the Coordinator and the Steering Group to function.

7.5 TABLE OF ACTIONS

Coordination actions

Nr.	Action	Importance	Feasibility	Crossref.
COORD-01	Establishment of a Coordinator and Steering committee for the Mediterranean bottlenose dolphin CMP. <i>(Need to check for mutualisation with other CMP)</i>	ESSENTIAL	HIGH	ALL
COORD-02	Establish an interactive regional network of groups involved in Mediterranean bottlenose dolphin research and conservation. <i>(Need to check for mutualisation with other CMP)</i>	ESSENTIAL	HIGH	ALL

Public awareness and capacity building actions

Nr.	Action	Importance	Feasibility	Crossref.
PACB-01	Develop and implement a strategy to increase public awareness of the Mediterranean bottlenose dolphin CMP. <i>(Need to check for mutualisation with other CMP)</i>	MEDIUM	HIGH	COORD-01 COORD-02
PACB-02	Develop a strategy for building capacity where needed. <i>(Need to check for mutualisation with other CMP)</i>	HIGH	MEDIUM-HIGH	COORD-01 COORD-02 PACB-01

Research actions essential for providing adequate management advice

Nr.	Action	Importance	Feasibility	Crossref.
RES-01	Identify the geographical/management units of bottlenose dolphins within the Mediterranean area and characterise their areas of occurrence.	HIGH	MEDIUM-HIGH	COORD-01 COORD-02
RES-02	Estimate the abundance (and possible abundance trends) of each management unit identified in RES-01.	HIGH	HIGH	COORD-01 COORD-02 RES-01
RES-03	Develop and/or support research campaigns in poorly covered Mediterranean areas to fill bottlenose dolphin knowledge gaps in relation to RES-01 and RES-02.	HIGH	MEDIUM	COORD-01 COORD-02 RES-01 RES-02
RES-04	Identification of areas of detrimental interactions between bottlenose dolphins and human activities.	HIGH	MEDIUM-HIGH	COORD-01 COORD-02 RES-01

Monitoring actions

Nr.	Action	Importance	Feasibility	Crossref.
MON-01	Monitor for possible changes in the population attributes as referred to in RES-01 and RES-02 and in accordance with the ACCOBAMS LTMP.	HIGH	MEDIUM-HIGH	COORD-01 COORD-02 RES-01 RES-02
MON-02	Monitor human pressure (known and potential threats).	HIGH	MEDIUM-HIGH	COORD-01 COORD-02 RES-04

Mitigation measure actions

Nr.	Action	Importance	Feasibility	Crossref.
MIT-01	Wider and stricter adoption of the management and conservation measures already in place to mitigate adverse impact of anthropogenic activities.	HIGH	MEDIUM-HIGH	MON-01 MON-02
MIT-02	Assess the performance of existing mitigation measures and develop new tools to address specific needs.	HIGH	MEDIUM	RES-04 MON-01 MON-02

8 ACTIONS

The Actions are described below, with each action beginning on a new page. One of the first tasks for the Coordinator and Steering Committee will be to develop detailed specifications for each action and, where appropriate, assign costings and likely sources of funding.

ACTION COORD-01: ESTABLISHMENT OF A COORDINATOR AND STEERING COMMITTEE FOR THE CMP FOR MEDITERRANEAN BOTTLENOSE DOLPHIN

DESCRIPTION OF ACTION

- **Specific objectives:** (1) to ensure timely progress is made on implementation of the CMP and the specific actions described in it, and (2) to provide progress reports to appropriate bodies including: ACCOBAMS, CMS, IWC, range states and regional stakeholders, thereby maximising the chances of survival and maintaining a favourable conservation status throughout its range.
- **Rationale:** this CMP requires considerable coordination for it to be effective. Its implementation will depend on stakeholders in several countries and a broad range of expertise. A dedicated, well-supported coordinator and a similarly committed Steering Committee are essential.
- **Methods:** appointment of a suitably qualified Coordinator and Steering Committee (initially an interim Steering Committee and later the final Steering Committee) with the required logistical and financial support. The Tasks for the coordinator and interim steering committee are provided below.
- **Timeline:**

	WHAT	WHO*	WHEN (starting month being 0)
(1)	Identification of a host institution for the CMP Coordinator and agreement on hosting conditions.	CMP Interim Steering Committee (CMP-ISC)	0-3 months
(2)	Development of detailed job description for the Coordinator and conditions of work based on the tasks outlined below.	CMP-ISC, ACCOBAMS Secretariat	0-3 months
(3)	Identification of source of initial funds.	CMP-ISC	0-12 months
(4)	Recruitment of CMP Coordinator (initial 3-year contract).	CMP-ISC	15 months
(5)	Development of proposed terms of reference and <i>modus operandi</i> for the CMP Steering Committee (CMP-SC).	ACCOBAMS, IWC, CMP-ISC, funders	15-18 months
(6)	Appointment of CMP-SC.	ACCOBAMS, IWC, CMP-ISC, funders and CMP Coordinator	21 months
* In each case with assistance from the ACCOBAMS Secretariat if required			

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - To assess the need for the establishment of sub-area and/or national coordinators for the implementation of the Mediterranean Bottlenose Dolphin CMP based upon the identified units-to-serve, recognising that the definition of such management units will take some time (RES-01).

- To facilitate (and if necessary, adapt or modify existing) data-sharing agreements to ensure that data are made available in timely fashion to maximise their value for conservation (and see COORD-2).
- To liaise with ACCOBAMS and its Scientific Committee to ensure appropriate interactions at regular intervals, including provision of data/results from the various actions to facilitate integration of the information on dolphins and humans to determine the timing of the periodic (normally every 6 years but potentially earlier if a need is identified) expert reviews of the CMP and the development of new or modified actions or recommendations to the ACCOBAMS Meeting of Parties as appropriate.
- To liaise with relevant authorities to facilitate the necessary authorisations to undertake Actions of the CMP.
- To produce concise annual progress reports on the implementation of the CMP for all stakeholders.
- To promote and explain the CMP and progress with its implementation to stakeholders, including:
 - International and regional bodies.
 - Range state officials.
 - Industry representatives including, fisheries, nautical tourism, coastal developers.
 - Local authorities and communities in selected areas.
 - NGOs.
- To raise funds for and manage an ACCOBAMS Mediterranean Bottlenose Dolphin CMP Fund including, where necessary, assigning contracts to ensure that the Actions of the CMP are undertaken and completed.
- To maintain and update the existing list of international and national regulations and guidelines relevant to the conservation of Mediterranean bottlenose dolphins.
- To work with the ACCOBAMS Secretariat to provide information for a web page on the Mediterranean Bottlenose Dolphin CMP within a section of the ACCOBAMS website dedicated to CMPs as a resource for researchers, stakeholders and the general public.

BUDGET CONSIDERATIONS

- Recruitment process (e.g. advertising, travel and subsistence for Interim Mediterranean *Tursiops truncatus* Steering Committee - IMedTtSC - and shortlisted candidates).
- Host institution annual costs (needs to be negotiated by IMedTtSC).
- Salary of Coordinator (level, tax and benefits issues, if any).

- Initial working budget for Coordinator (travel and subsistence including visits to range states and meetings with stakeholders).

ACTORS

- **Responsible for coordination of the action:** initially the IMedTtSC, then the Coordinator and the IMedTtSC and finally the Coordinator and the MedTtSC, with assistance from ACCOBAMS [and IWC]
- **Stakeholders:** as listed above under 'Tasks'.

EVALUATION

- ACCOBAMS, IWC.
- Regular (*e.g.* biennial or triennial) meetings open to stakeholders.

PRIORITY

- **Importance:** Essential
- **Feasibility:** High (with institutional support)

ACTION COORD-02: ESTABLISH AN INTERACTIVE REGIONAL NETWORK OF GROUPS INVOLVED IN MEDITERRANEAN BOTTLENOSE DOLPHIN RESEARCH AND CONSERVATION¹

Coordination Action

Priority: High

DESCRIPTION OF ACTION

- **Specific objectives:** (1) establish an interactive regional network of research groups involved in bottlenose dolphin research, conservation, and public awareness; (2) facilitation of data exchange and research cooperation between neighbouring regions and public awareness initiatives; (3) support the existing research units of the network and facilitate (also with training activities) the genesis of new research units in the areas not covered.
- **Rationale:** as the bottlenose dolphin is a widely distributed species (forming discrete geographical units, with local characteristics and threats), it is essential to have all of the regional groups that collect/hold data on a local level and raise local public awareness, connected in a collaborative network. Networking/data sharing/collaboration is essential for effective conservation of the species throughout the Mediterranean.
- **Target:** Involve local research units to establish a network that will enable the aims of the CMP and individual action to be most effectively met and implemented.
- **Methods:** Members of the network will agree to share the CMP aims (see RES-01, RES-02, RES-04, MON-01, MON-02, MIT-02) and follow agreed protocols for data collection, sharing and analysis (taking into account local situations as appropriate). Members will collect data to target the research objectives (RES-01, RES-02, RES-04) and monitoring objectives (MON-01, MON-02). It is essential for effective conservation that data are shared and cooperatively analysed in an aggregated form - the value of uploading data on a common platform (such as Intercet, <https://www.intercet.it/>), with appropriate data safeguards, will be evaluated. The members of the network will also be involved in the implementation of PACB actions on a local level (see PACB-02).
- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Draft an initial MoU to be discussed and approved by the potential network members.	CMP Coord., CMP-SC and ACCOBAMS secretariat	15-22 months (after recruitment of CMP Coord. and CMP-SC)

¹ NB: Given the potential overlap with research groups for other species within the region, including those with actual or potential CMPs such as the common dolphin, it is important that the relevant Steering Committees work together, as much of the work (and many of the research groups) will be very similar if not identical. For practical purposes to maintain the internal completeness of each CMP, each draft CMP will keep its own Action along with this footnote.

(2)	Confirmation of network membership (MoU signing).	CMP Coord. and CMP-SC, ACCOBAMS Secretariat	22-28 months
(3)	Identification of need for and source of initial funds.	CMP Coord. and CMP-SC, ACCOBAMS Secretariat	15-28 months
(4)	First Workshop/Training to agree on common protocols for data collection, data sharing and analysis.	CMP Coord. and CMP-SC, ACCOBAMS Secretariat	30 months
(5)	Develop a template and elaborate the first periodic (annual) report.	CMP Coord. and CMP-SC, ACCOBAMS Secretariat	30-36 months

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Draft of the MoU for the members of the network (1) (with assistance from ACCOBAMS Secretariat).
 - List of potential members of the CMP network to be contacted (with assistance from ACCOBAMS Secretariat).
 - Identification of need for and source of initial funds (3) (with assistance from ACCOBAMS Secretariat).
 - Organization of the first Workshop/Training (4) to agree on common protocols for data collection, data sharing and analysis (with assistance from ACCOBAMS Secretariat).
 - Periodic (annual) report.
 - To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs for hosting the first Workshop/Training (4).
- Costs for supporting data uploading on the common platform.

ACTORS

- **Responsible for coordination of the action:** Relevant CMP Coordinators and interim Steering Committees in collaboration with the ACCOBAMS secretariat.
- **Stakeholders:** local research units being able to provide data to target RES-01, RES-02, RES-04, MON-01, MON-02. Local groups being able to support PACB-02, MPAs, WW companies, “ARPA”, others.

ACTION EVALUATION

- Evaluation by Relevant Coordinators and SC
 - Number of members actively participating to the network (annual report).

- Distribution of the units in the network (annual report).
- Data flow to the common platform (annual report).
- Data covering on a Mediterranean level (annual report).

PRIORITY

- **Importance:** High
- **Feasibility:** High

ACTION PACB-01: DEVELOP (AND SUBSEQUENTLY IMPLEMENT) A STRATEGY TO INCREASE PUBLIC AWARENESS OF THE MEDITERRANEAN BOTTLENOSE DOLPHIN CMP²

Coordination Action

Priority: High

DESCRIPTION OF ACTION

- **Specific objective:** Raise awareness throughout the Range States on the existence of the Bottlenose Dolphin CMP with the objective of achieving or maintaining favourable conservation status.
- **Rationale:** While in some Mediterranean countries there are effective educational programmes and multimedia campaigns to raise awareness about cetaceans, in many others there is a lack of such activities. There is an urgent need to fill this gap in the context of the objectives and prioritised actions of the CMP, several of which require collaboration of stakeholders (see below). Informing the relevant stakeholder groups is crucial to fully implement the conservation measures presented in this CMP.
- **Target:** The main targets of the awareness campaign include, in no specific order: the general public; schools and educational centres; NGOs; whale watching/dolphin watching operators and nautical tourism companies; shipping companies; marina and port authorities; fishing industry (large and small scale); oil and gas companies; Coast Guards and navies, local authorities. This action is to be executed by professionals and experts in communication and consideration should be given to the development of a dedicated central website (see Actions COORD-01 and COORD-2).

² NB: Given the potential overlap with actual or potential CMPs for other species within the region, it is important that the relevant Steering Committees work together, as much of the work will be very similar if not identical. For practical purposes to maintain the internal completeness of each CMP, each draft CMP will keep its own Action along with this footnote.

- **Methods:** An overall common strategy will be tailored specifically for each State and target audience, including the production of education and awareness materials providing key information on the species, its ecology and conservation needs, latest research findings, as well as guidelines on how to behave when encountering them at sea or stranded. A dedicated workshop of experts will be organized to develop the appropriate strategy.

The workshop will:

- Identify issues to be addressed and identification of the target groups in each state.
- Review/evaluate previous education and awareness tools/campaigns to assist in identifying priority actions and materials to be developed, in accord with the various stakeholder groups and national requirements.
- Identify most appropriate communication channels by stakeholder groups and national requirements, including consideration of a central resource website (see COORD-01).
- Develop a prioritised list of actions to implement (and evaluate the effectiveness) of the strategy, including resources required (personnel and costs) and a mechanism to update the strategy as necessary.

Workshop participants should include:

- Relevant CMP Coordinators and Steering Group members.
- Representatives of the stakeholder groups.
- Communication and public awareness professionals.
- Scientists familiar with the CMP.
- Researchers/groups with experience in developing existing awareness campaigns (including use of citizen science).

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Preparation for an expert workshop to develop the strategy.	CMP Coord., CMP-SC, ACCOBAMS Secretariat	15-24 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Workshop to develop the strategy and a prioritised list of actions.	CMP Coord., workshop participants, ACCOBAMS Secretariat	30 months
(3)	Execution of the actions defined by the strategy established by workshop in agreement with all participants.	National and regional organizations identified during workshop in	Timeline to be established at workshop

		coordination with CMP Coord. and CMP-SC	
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- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Preparation for an expert workshop to develop the strategy (1) (with assistance from ACCOBAMS Secretariat).
 - Coordination of the actions defined by the expert workshop (3) in conjunction with regional organizations (with assistance from ACCOBAMS Secretariat).
 - To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs associated with preparatory materials and holding of a workshop (1, 2).
- Costs associated with the implementation of the action (3)

ACTORS

- **Responsible for coordination of the action:** Relevant CMP Coordinators and Steering Committees in collaboration with the ACCOBAMS secretariat.
- **Responsible for carrying out the action:** To be determined at workshop for each state/stakeholder group.

ACTION EVALUATION

- ACCOBAMS, IWC
- Feedback system built into materials, on the basis of the number of subjects reached and the effectiveness of the communication on each subject (i.e. verification questionnaires).

PRIORITY

- **Importance:** Medium
- **Feasibility:** High

ACTION PACB-02: DEVELOP A STRATEGY FOR BUILDING CAPACITY WHERE NEEDED³*Public Awareness and Capacity Building Action*Priority: **HIGH****DESCRIPTION OF ACTION**

- **Specific objective:** to develop a strategy or strategies consistent in message but specific to each range State and key stakeholders, for the timely production of a series of resources to build capacity of range states on data collection, analysis and design and implementation of conservation measures for bottlenose dolphins.
- **Rationale:** long-term systematic programmes to collect and analyse data on cetacean population attributes, human threats and mitigation and management measures are required to implement the CMP and meet national and international commitments but are not uniformly distributed throughout the Mediterranean Sea. This action will complement (and be undertaken in conjunction with) other actions including COORD-01, COORD-02, RES-01, RES-02, RES-03, RES-04, MON-01, MON-02 to identify those areas where specific targeted and focused capacity building measures are needed.
- **Target:** to develop a strategy and initiatives to produce a variety of targeted research and management resources that will inform representatives of national authorities and other targeted stakeholders on the status of Mediterranean bottlenose. This will include provision of resources to both establish new long-term projects and strengthen the existing ones, to facilitate the implementation of national and international research and conservation priorities, including those listed in the CMP.
- **Methods:** Specific research and management resources, ranging from basic to more advanced, will be provided both through theoretical lessons and practical sessions. To achieve this the CMP Coordinators and SC, taking into account the work being undertaken under the actions listed in the Rationale above, will oversee preparations for a small expert working group to determine a strategy for developing and disseminating building capacity materials, including:
 - Identification of priority target groups, by range state where appropriate, and identification of who will benefit from the capacity building actions and resources.
 - Identification of existing/development of new research and management training modules/materials for cetaceans in general, with a specific emphasis on bottlenose dolphins, including, but not limited to, data collection, storage and analysis, policy and management frameworks. Consideration should be given to whether, and if so how, this material needs to be modified for any of the priority target groups.

³ NB: Given the potential overlap with actual or potential CMPs for other species within the region, it is important that the relevant Steering Committees work together, as much of the work will be very similar if not identical. For practical purposes to maintain the internal completeness of each CMP, each draft CMP will keep its own Action along with this footnote.

Working group members should include:

- Coordinator of the CMP and representatives of the stakeholder Steering Committee.
- Experts familiar with the Mediterranean bottlenose dolphin situation and familiar with other relevant actions (see list under Rationale)
- Experts familiar with the research, management and conservation resources considered.

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Identification of priority target groups, by range state where appropriate.	CMP Coord., CMP-SC (CMP-ISC), experts	15-24 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Identify potential resources (e.g., ACCOBAMS Training Modules, University courses, internships) within and outside the Mediterranean.	CMP Coord., CMP-SC (CMP-ISC), experts	24-28 months
(3)	Identification and <i>modus operandi</i> for a small expert working group to develop a strategy for building capacity, including identification of existing materials and development of new materials (and trainers) by range state and target group, measures to review success in light of agreed objectives.	CMP Coord., CMP-SC working group of experts	28-34 months
(4)	Implement the strategy and dedicated actions agreed under (3) following an established timeline (probably a staged process).	CMP Coord., CMP-SC working group of experts, trainers	36 months ongoing
(5)	Assess and if needed update strategic plan according to indicators.	CMP coordinator, CMP Steering Committee (CMP-SC)	48 months

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Coordination of activities (1-5) as described in the above table.
 - To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs associated with preparatory materials and holding of training sessions, both online and in situ (2, 3).
- Costs associated with the implementation of the action (4)

ACTORS

- **Responsible for coordination of the action:** CMP coordinator and CMP-ISC to identify and establish the expert working group
- **Responsible for carrying out the action:** working group
- **Stakeholders:** to be determined

ACTION EVALUATION

- ACCOBAMS, IWC.
- Feedback system built into materials, on the basis of the subjects reached and the effectiveness of the communication on each subject (i.e. verification questionnaires).

PRIORITY

- **Importance:** High
- **Feasibility:** Medium-High

ACTION RES-01: IDENTIFY THE GEOGRAPHICAL/MANAGEMENT UNITS OF BOTTLENOSE DOLPHINS WITHIN THE MEDITERRANEAN AREA AND CHARACTERISE THEIR AREAS OF OCCURRENCE

Research Action

Priority: HIGH

DESCRIPTION OF ACTION

- **Specific objective:** Identify appropriate management units (units-to-serve) for bottlenose dolphins throughout the Mediterranean Sea as the basis for the evaluation of status, threats and mitigation measures and evaluate the extent of any connectivity between Mediterranean individuals with those from the Black Sea and contiguous Atlantic waters.
- **Rationale:** Bottlenose dolphins are widely distributed throughout the Mediterranean Sea but there is sufficient evidence (e.g., from analysis of photo-identification and other data) that these dolphins form relatively small, broadly demographically isolated groupings that are the appropriate 'units-to-serve' in order to meet the CMP objective of favourable conservation status throughout the historical range. Understanding population structure and defining management units requires a multidisciplinary approach (e.g. integrating information on spatial distribution, movements and social connectivity, feeding ecology etc. from analyses of data from photo-identification studies, sightings surveys, genetic studies, isotopic studies and acoustic studies). This is fundamental to determining workable definitions (e.g. geographical borders recognising that they are not perfect) of management units and thus effective monitoring and mitigation strategies. It should be noted that most of the available information is limited to the summer and that ideally seasonal changes in distribution should be incorporated when defining management units. Once defined, it will be possible to allow an assessment of the conservation status (e.g. see RES-02) and help to prioritise threats and monitoring and mitigation efforts in each of the different management units throughout the ACCOBAMS region (e.g. see RES-04, MON-01, MON-02).
- **Target:** Determine bottlenose dolphin management units (including characterisation to the extent possible of the habitat drivers leading to the spatio-temporal distribution) within the Mediterranean Sea (and potential links with the Black Sea or adjacent Atlantic waters). Given the disparity in available data throughout the Mediterranean this may be a staged process with the identification of management units in data rich areas occurring first whilst the collection of adequate data for areas with little or no data proceeds in accordance with RES-03 before management units for those areas can be determined.
- **Methods:** Existing information (see above) will be used to identify its suitability and adequacy for identifying management units and characterising habitat. Where information is lacking this will be identified and research programmes to collect the necessary data will be developed under RES-03. Experience has shown (e.g. within the IWC Scientific Committee) that an iterative approach is needed to finalise the definition of management units – even in data rich circumstances and it is likely that at least three such workshops will be needed if this action (critical to the ultimate success of the CMP) is to be completed relatively quickly.

The proposed steps to complete this Action are:

(1) Compilation of existing information and availability of data on the spatio-temporal distribution of the species and research effort carried out across the study area, making use of existing efforts such as TursioMed (Gnone et al., 2021), with an emphasis on trying to ensure that all of the known data for the region are made available (see COORD-02), ideally in light of an agreed protocol to provide safeguards for data owners in respect of combined analysis of the datasets. This first step will make it possible to determine (a) the areas/periods for which sufficient data are available to determine at least 'draft' management units in some parts of the basin and (b) areas/periods in which additional sampling is necessary (RES-03).

(2) This information (and agreed analyses of the existing data) will be discussed at a first expert workshop to:

- (a) determine at least 'draft' management units for bottlenose dolphins in the Mediterranean Sea where adequate data/analyses exist;
- (b) develop additional analyses to help finalise the drafts at a second workshop and
- (c) to assist with developing research programmes for poorly covered areas to enable management units to be defined and thus contribute to RES-03.

(3) At this first expert workshop, emphasis will be placed on receiving information from agreed (by the workshop Steering Group in conjunction with relevant scientists) analyses of:

- (a) the available mark-recapture data to look at movements, connectivity, home ranges;
- (b) the available sightings data with respect to spatial and temporal distribution (including gaps in these even where good effort exists);
- (c) possible relationships between environmental variables and the presence/absence of bottlenose dolphins using spatial modelling techniques;
- (d) genetic data to determine if genetic signals can be identified and used to provide practical information on population structure of management units, recognising that several analytical techniques and markers should be explored in light of their strength/weaknesses;
- (e) analyses of other available data (e.g. isotopes and acoustics) that may provide information on management units and/or associated habitat characterisation;
- (f) for each of (a)-(e) the Workshop will develop proposals for additional analyses as necessary to try to finalise management units for data rich areas at a Second Workshop;
- (g) also in light of (a)-(f), the workshop will develop proposals for dedicated research to facilitate the identification of management units for data poor areas taking into account local conditions to the extent possible (in conjunction with RES-03) and recognising that a minimum of two years of data collection will be required (and probably more).

(4) Hold a second expert workshop to (a) receive the results of the analyses identified at the first workshop to try to finalise management units to be used up to the next iteration of the CMP; and (b) receive any new information for data poor areas and provide additional advice if needed.

(5) Hold a Third workshop when it is deemed that sufficient data are available and have been suitably analysed for it to be successful in identifying management units for the remainder of the Mediterranean.

- **Timeline:** This will be an iterative process with the objective of completing the work before the next iteration of the CMP. The timeline is approximate and dependent on funding and cooperation amongst data holders

	WHAT	WHO*	WHEN (starting month being 0)
(1)	Inventory of the organizations and institutions working on studies related to stock structure of bottlenose dolphins in the Mediterranean (especially but not only, photo-identification, distribution, genetics) (see COORD-2).	CMP Coord. and CMP-SC	15-22 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Approach all identified in (1) with respect to data sharing/combined analyses in the context of the CMP, ideally with an agreed data sharing protocol (see COORD-2).	CMP Coord. and CMP-ISC	22-28 months
(3)	Identification of funds for a dedicated First Workshop, list of participants, budget and expected papers/analyses/leaders.	CMP Coord., CMP-SC, ACCOBAMS Secr.	15-28 months
(4)	Hold the First WS and submit report to ACCOBAMS SC.	CMP Coord., CMP-SC, workshop experts and ACCOBAMS Secr.	28 months
(5)	Undertake and complete additional analyses identified at the First Workshop and report to ACCOBAMS SC.	CMP Coord., analysts	28-36 months
(6)	Data collection in data poor areas following the established protocol and sampling needs developed at the First Workshop and in conjunction with RES-03.	Research units in the CMP Network, other local res. units	Ongoing (up to three years of field work)
(7)	Hold Second Workshop with the objective of finalising the management units for the data rich areas and reviewing progress for data poor areas and submit report to ACCOBAMS SC.	CMP Coord., CMP-SC, workshop experts and ACCOBAMS Secr.	40 months
(8)	Provide progress report for ACCOBAMS MoP including any recommended management units.	CMP coordinator	48 months
(9)	Hold Third Workshop to determine, where possible, the management units for the data poor areas – the timing will depend on the success of the data collection/analyses (see RES-03).	CMP Coord. and Workshop Steering Group	Before next CMP review
(10)	Periodic review of the management units to confirm its validity.	CMP Coord., CMP SC, CMP network and experts	Ongoing through the action

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Coordination of activities (1-10) as described in the above table.
 - To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs associated with preparatory materials and holding of the workshops (5, 8, 10).
- Costs associated with data analysis and reporting (6, 11)

ACTORS

- **Responsible for coordination of action:** CMP Coord. and appointed steering committee
- **Stakeholders:** Range State Authorities, ACCOBAMS Secretariat, Local research groups, NGOs.

ACTION EVALUATION

- ACCOBAMS SC

PRIORITY

- **Importance:** High
- **Feasibility:** Medium-High

ACTION RES-02: ESTIMATE THE ABUNDANCE OF EACH MANAGEMENT UNIT IDENTIFIED IN RES-01*Research Action**Priority: HIGH***DESCRIPTION OF ACTION**

- **Specific objective:** Estimate the abundance of each management unit (unit-to-conserve) of bottlenose dolphins identified in RES-01 in the Mediterranean Sea.
- **Rationale:** Knowledge of abundance (and associated demographic parameters) is essential to determine a reference level as part of determining the conservation status for each management unit (See RES-01), to understand the likely effects of human activities and to apply appropriate management measures for those. This will form the basis for designing the long-term monitoring discussed under MON-01 and contribute towards the ACCOBAMS LTMP. It will also be complementary to the requests of the Barcelona Convention (IMAP) and the Habitat Directive and Marine Strategy of the EU.
- **Target:** The target of the action RES-02 are the geographical units of bottlenose dolphins (see RES-01), whose abundance will have to be estimated.
- **Methods:** Existing data will be used to estimate the abundance of the species in the different management units (through the use of different sampling techniques based on the characteristics of each geographical area: mark-recapture and distance sampling will probably be the chosen methods). This will require development of a collaborative network (see COORD-2) to share existing information (mark-recapture and distance sampling), and to establish a Mediterranean dataset (ideally through a single catalogue for photo-identification data or at least a protocol for regular cross-referencing of local catalogues). This and the development/promotion of the use of common protocols of data collection and analytical approaches will greatly assist future monitoring (see MON-01) and obtaining good data for data poor areas (see RES-03). It should be noted that the management units will not all be defined at the same time as discussed under RES-01, with units being defined first for data rich areas (expected about 3 years after the adoption of the CMP).

The proposed steps to complete this Action are:

(1) Compilation of existing information and availability of data about mark-recapture and distance sampling for the species in each management unit with a view to creating a collaborative network to share existing information. This is related to COORD-02 and will also assist in identifying areas where additional data are required (RES-03).

(2) Whenever possible (taking into account management unit size and location), priority will be given to mark-recapture analyses to provide the abundance estimates by management unit (particularly since these provide an estimate of abundance of animals using the area at any time rather than the 'snapshot' provided by distance sampling surveys but also because they provide additional estimates of other population attributes for monitoring related to reproduction and survivorship).

(3) Based on (1), great efforts should be made to develop (a) a protocol for data sharing and combined analyses of photo-identification data and (b) a regional catalogue (using existing and new data); this will provide the best way to enable prompt, robust analyses (mark recapture, movements) of not only abundance (and monitoring of abundance) but other questions directly relevant to developing and/or evaluating mitigation measures. This will be best achieved by holding an in-person workshop.

(4) Targeted collection of new data to enable the abundance estimation for those management units in areas where information is lacking at the moment – initially this might be by distance sampling (see RES-03).

(5) Once the first management units are defined, an expert workshop will be convened to carry out the abundance estimation of each management unit. It will also be valuable to review basin wide estimates (e.g., ASI, TursioMed and the ACCOBAMS LTMP) for comparison. A similar workshop will be held when the remaining management units are defined.

- **Timeline:** This will be an iterative process

	WHAT	WHO*	WHEN (starting month being 0)
(1)	Inventory of the organizations and institutions working on the species with relevant data and identifying available datasets (see also COORD-02).	CMP Coord. and CMP-ISC	15-22 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Develop a data sharing agreement/MoU and investigate the development of a single photoidentification catalogue and/or an arrangement for regular comparisons of local catalogues (see also COORD-02).	CMP Coord., CMP-ISC, potential data sharers	22-28 months
(3)	If agreement on a single catalogue is reached, plan for a small specialist workshop to develop a proposal for implementing this. Appoint workshop steering group to develop detailed agenda, list of participants and budget, ensuring participation from each defined management unit.	CMP Coord., CMP-SC, Workshop Steering Group	22-28 months
(4)	Hold expert workshop to agree abundance estimates for each management unit, this may include Integration of results from different data sources (mark-recapture and distance sampling) and analytical methods (e.g., open and closed population methods) and report to the ACCOBAMS SC.	CMP Coord., workshop steering group, potential data sharers	28 months
(5)	Submit a report about the abundance of each management unit identified to the ACCOBAMS SC.	CMP Coord., and CMP-SC	36 months
(6)	Follow steps (3), (4) and (5) whenever the remaining management units are defined.		Ongoing through the action

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Coordination of activities (1-6) as described in the above table.

- To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs associated with preparatory materials and holding of the workshops (5).
- Costs associated with data analysis and reporting (6)

ACTORS

- **Responsible for coordination of action:** CMP Coord., CMP-SC, appointed steering group
- **Stakeholders:** Network members (COORD-02), Range State Authorities, ACCOBAMS, IWC, NGOs.

ACTION EVALUATION

- ACCOBAMS SC

PRIORITY

- **Importance:** High
- **Feasibility:** High (once management units are defined; RES-01)

ACTION RES-03: DEVELOP AND/OR SUPPORT RESEARCH CAMPAIGNS IN POORLY COVERED MEDITERRANEAN AREAS TO FILL BOTTLENOSE DOLPHIN KNOWLEDGE GAPS IN RELATION TO RES-01 AND RES-02

Research Action

Priority: HIGH

DESCRIPTION OF ACTION

- **Specific objective:** To collect data in poorly covered areas to fill the knowledge gaps required to identify management units (units-to-serve) of bottlenose dolphins throughout the Mediterranean, characterise their areas of occurrence (RES-01) and estimate their abundance (RES-02) and ultimately monitor their status through the ACCOBAMS LTMP.
- **Rationale:** The objective of the CMP is to achieve favourable conservation status throughout the historical range of bottlenose dolphins. For several areas within the Mediterranean there is little or no information on matters required for good conservation e.g. management units, distribution and abundance - these are necessary to determine status and assist in the development and implementation of any needed mitigation measures. This action has been developed to fill those gaps either by establishing new research campaigns or supporting existing ones.
- **Target:** develop and/or support research campaigns in collaboration with national researchers, in order to fill necessary knowledge and data gaps.
- **Methods:** Collating of information, knowledge gaps and poorly covered areas identified in COORD-02, RES-01 and RES-02 and then developing and/or support research programmes to fill these gaps.

This will include:

- Identification of local research groups or the establishment of new ones as necessary (see COORD-02) to address the knowledge gaps.
- Identification of adequate method(s) to apply to address the knowledge gaps taking into account local conditions and ACCOBAMS guidelines (e.g. initial aerial campaign especially for offshore areas, photo-ID for any identified coastal areas, see RES-01) – this may require one or a series of local workshops.
- Identification of resources (human, platform, material, funds) to implement these methods and build capacity when necessary (see PACB-02).
- Data collection and sharing (see COORD-02).
- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Collate the knowledge gaps and uncovered areas.	CMP Coord., CMP-SC, CMP Network (COORD-02), local/national res. groups	15-24 months (after recruitment of CMP Coord. and CMP-SC)

(2)	Develop new and/or support existing research campaigns (may require one large or several local workshops).	CMP Coord., CMP-SC, local/national res. groups	24-36 months and ongoing
(3)	Implement these campaigns and link to COORD-02, RES-01, RES-02, MON-01, MON-02.	CMP Coord., CMP-SC, local/national res. groups, national institutions	Ongoing through the action

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**

- Coordination of activities (1-3) as described in the above table.
- To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs associated with preparatory materials and holding of the workshops (2).
- Costs associated with data implementation of research campaigns (3).

ACTORS

- **Responsible for co-ordination of the action:** CMP Coordinator.
- **Stakeholders:** local/national research groups, national institutions.

ACTION EVALUATION

- ACCOBAMS SC
- The action will be evaluated on its capability to include new research groups/areas in the CMP Network to fill the knowledge gaps (see COOR-02, RES-01, RES-02).

PRIORITY

- **Importance:** High
- **Feasibility:** Medium

ACTION RES-04: IDENTIFICATION OF AREAS OF DETRIMENTAL INTERACTIONS BETWEEN BOTTLENOSE DOLPHINS AND HUMAN ACTIVITIES.

Research Action

Priority: HIGH

DESCRIPTION OF ACTION

- **Specific objective:** Identify the areas where detrimental interactions between the bottlenose dolphin and human activities occur or are likely to occur.
- **Rationale:** Given that interactions between bottlenose dolphins and human activities (such as fishing, fish farming, recreational boat traffic, coastal development, etc.) are likely to negatively impact the conservation status of at least some management units, it is imperative to understand where, how and at what level these interactions occur, as well

as whether these interactions are specific to a certain area or anthropogenic activity, so that tailored mitigation measures can be implemented. This action is in line with two other ACCOBAMS-related processes: the identification of IMMAs and of CCHs (see relevant recommendation).

- **Target:** To identify areas of intense, potentially detrimental, interactions, based on existing literature and expert opinion. Once identified to obtain more detailed information about the nature and scale of the interactions via the same process. Finally, consider the cumulative effects, at population level, of multiple types of interactions. This information will allow the development of prioritised targeted management actions.
- **Methods:** This work shall be conducted in conjunction with the ACCOBAMS SC working groups on Cetacean Critical Habitats (CCHs) or by following the same ToRs and working methods (see relevant recommendations).

To achieve the objectives, for each of the potential threats, the following steps are envisaged:

- (1) Obtain information on reported interactions based on existing literature and expert opinion, solicited through the regional network of research groups (COORD-02). A small working group may be set up to meet remotely, to present and compile the available relevant evidence.
- (2) Determine whether the available information is up to date and obtain potential new information via relevant experts, research groups and dedicated surveys (if needed).
- (3) Existing results of actions RES-01, RES-02, RES-03, MON-01 may provide additional relevant insights that may help clarifying the context.
- (4) Place the resulting information into a management unit level context, based on results of actions RES-01 on management units and RES-02 and MON-01 on abundance and distribution (e.g., in line with available abundance estimates, interactions in certain areas may be more detrimental than in others).
- (5) The results of step (4) shall be endorsed by the ACCOBAMS Scientific Committee before feeding this information into MON-02, MIT-O1 and MIT-02.
- (6) Disseminate the results.

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Obtain information on reported interactions based on existing information.	CMP Coord. with the help of CMP network	15-22 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Potentially update information based on new evidence and dedicated surveys (if needed).	CMP Coord. with the help of CMP network	22-28 months

(3)	Place the resulting information into population-level context, based on results of actions RES-01, RES-02 and MON-01, and obtain ACCOBAMS SC endorsement.	CMP Coord. and CMP-SC, with the help of CMP network	28-36 months
(4)	Feed this information into MON-02 and MIT-01.	CMP Coord., CMP-SC	36 months ongoing

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Coordination of activities (1-4) as described in the above table.
 - To assist with fund raisings.

BUDGET CONSIDERATIONS

- Costs for organizing meetings of small working groups to undertake steps (1), (2), (3).
- Possible costs associated to the need of dedicated surveys to collect more info (2).

ACTORS

- **Responsible for coordination of the action:** CMP Coord. and CMP SC.
- **Stakeholders:** Experts, research groups, industry representatives (fisheries, tourism offices, ports) where needed.

ACTION EVALUATION

- ACCOBAMS SC.
- Regular meetings open to stakeholders.

PRIORITY

- **Importance:** High
- **Feasibility:** Medium-High (depending on the type of pressure)

ACTION MON-01 MONITOR FOR POSSIBLE CHANGES IN THE POPULATION ATTRIBUTES AS REFERRED TO IN RES-01 AND RES-02 AND IN ACCORDANCE WITH THE ACCOBAMS LTMP

Monitoring Action

Priority: HIGH

DESCRIPTION OF ACTION

- **Specific objective:** Monitoring possible changes in the population attributes identified in the CMP (i.e. absolute abundance, distribution of the target species, including habitat characteristics and demographic parameters) for each 'unit-to-serve' to update the status of the species regularly.

- **Rationale:** The ‘conservation status’ of any species must be assessed regularly (e.g. every six years) by comparison of selected attributes using accepted methods over time. This allows Parties to evaluate whether the objectives of favourable conservation status throughout the range are met. Agreed methods within the ACCOBAMS Long-Term Monitoring Programme (LTMP) shall be used (RES-02). This action also allows Parties to meet their national commitments under e.g. the Barcelona convention EcAp/IMAP and the EU MSFD. This action is an integral part of the ACCOBAMS LTMP (ACCOBAMS SC recommendation 14.1).
- **Target:** To monitor absolute abundance, distribution (including habitat characteristics) and demographic parameters of the bottlenose dolphin management units (see RES-01 and RES-02), at appropriate frequencies to detect changes should they occur.
- **Method:** After completion of RES-01 and RES-02 (in conjunction with RES-03 for poorly known areas), periodic monitoring will be carried out, normally through collection of data on individual identification, but in special cases distance sampling may be used, according to methods identified by the ACCOBAMS LTMP and it will be performed on each identified unit-to- conserve (see RES-01 and RES-03).

Mark-Recapture models applied to individual identification data (usually using photo-identification data) will be used to estimate abundance and demographic parameters (e.g., reproduction, survivorship, migration).

N.B. It is important to run power analyses (see Component 1 of the ACCOBAMS LTMP) to evaluate whether the data are sufficient to detect changes over the agreed timeline (e.g., every six-years).

Regular reporting of progress (every 3 years) and results every 6 years to the ACCOBAMS SC (see COORD-01). Reports may be provided earlier in case of emergency situations. (i.e. where the analysis of the data imply a conservation issue).

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Undertake the broad scale monitoring (see LTMP aerial surveys strategy).	CMP Coord. in conjunction with LTMP coordinator	15-24 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Develop monitoring plan for each ‘unit-to- conserve’ through a series of local expert workshops (in coordination with COORD-01, COORD-02, RES-01, RES-02 and RES-3).	CMP Coord., CMP SC, ACCOBAMS PS and local Tt groups	24-36 months
(3)	Regular reporting of progress to the ACCOBAMS SC (see COORD-01).	CMP coordinator and CMP SC	Every 3 years
(4)	Regular reporting of results to the ACCOBAMS SC (see COORD-01) probably via an expert workshop.	CMP coordinator and CMP SC	Every 6 years

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - To assist with fund-raising.
 - Coordination of activities (1-4) as described in the above table.
 - To facilitate data-sharing to ensure that data are made available in a timely fashion to maximise their value for conservation.
 - To produce concise triannual progress reports on the implementation of the action.
 - To arrange for periodic expert review/workshop of the results every six years that may develop new or modified action(s) as appropriate.

BUDGET CONSIDERATIONS

- This will be determined after the programmes are established and whether they are extensions of existing programmes or new programmes (see RES-03).

ACTORS

- **Responsible for coordination of the action:** CMP Coord in conjunction with ACCOBAMS LTMP coordinator.
- **Stakeholders:** National competent authorities and implementation bodies, CMP network as in COORD-02.

ACTION EVALUATION

- ACCOBAMS Scientific Committee

PRIORITY

- **Importance:** High
- **Feasibility:** Medium (based on the ongoing EcAp/IMAP and MSFD efforts) to High

ACTION MON-02: MONITOR HUMAN PRESSURE (KNOWN AND POTENTIAL THREATS)*Monitoring Action*

Priority: HIGH

DESCRIPTION OF ACTION

- **Specific objective:** Identify and monitor the main known and potential threats for the species within the identified geographical/management units and evaluate the effect over time.
- **Rationale:** Different threats (individual or cumulative) could have a negative impact on bottlenose dolphin geographical/management units, the level of which can vary among different areas. It is essential to categorise the most harmful threats for each unit, identify areas at particular risk (see RES-04, MON-01), and to monitor the effect over time to early detect situation that require further mitigation actions (see MIT-01, MIT-02).
- **Target:** Based on the results of actions RES-01 and RES-04, the most harmful threats are categorised, targeting the geographical/management units (target local sites, sub-regional and regional) and the local human activities (i.e. fishery, fish farming, maritime traffic, others) they interact with.
- **Methods:** The results of action RES-01 and RES-04 will be integrated with risk analysis to identify the most harmful threats, at different spatial-temporal scales (target local sites, sub-regional and regional). These will be monitored over time through the CMP Network (see COORD-02) and available information on a local level. The results will be transferred to action MIT-01 or MIT-02 to strength/develop proper mitigation measures. This will require:
 - get the resulting maps of distribution of the geographical/management units from RES-01 and the identified areas of detrimental interactions between bottlenose dolphins and fishing and other human activities from RES-04;
 - for each area compile or find existing information including Local Knowledge on human activities at sea (maps, density, position, type of activity, etc.) that can have an impact on local dolphin population;
 - assess the level of impact based on risk assessment analysis also based on outputs from RES-01 and RES-02 to categorise the most harmful threats for each area on which prioritise the monitoring and mitigation activities (MIT-01, MIT-02);
 - establish monitoring programmes of the identified threat/s based on standard methodologies (the same programme can be performed including contiguous areas-geographical/management units-areas of detrimental interaction);
 - periodically inform action MIT-01 on the results of the monitoring.

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Revision and inventory of the human activity that determine a known and potential threats on species.	CMP Coord., CMP Network, local experts and stakeholders	15-22 months (after recruitment of CMP Coord. and CMP-SC)
(2)	Acquire the GIS layers resulting from actions RES-01 and RES-04.	CMP Coord. and CMP Network	36 months (after RES-01, RES-02 and RES-04)
(3)	Perform risk assessment analysis to categorise the more harmful threats.	CMP Coord., CMP-SC, experts	36-42 months
(4)	Identify the already existing monitoring protocol for the specific threats.	CMP Coord., CMP-SC, experts	36-42 months
(5)	Plan monitoring programmes on the identified most harmful threats considering linking contiguous areas where to implement the same activity (also considering methods for data collection and storing).	CMP Coord., CMP SC and CMP Network	36-48 months
(6)	Implement the monitoring.	CMP Coord., CMP Network and local units	48 months ongoing
(7)	Periodical data analysis.	CMP Coord., CMP SC, experts	Every 3 years
(8)	Transfer results to action MIT-01.	CMP Coord. and CMP SC	Ongoing

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - To assist with fund-raising.
 - Coordination of activities (1-8) as described in the above table.

BUDGET CONSIDERATIONS

- Costs to plan and implement the monitoring programmes (4, 5).
- Costs for specific data analysis (7).

ACTORS

- **Responsible for coordination of action:** CMP Coord., CMP SC, ACCOBAMS PS, National Focal Points of relevant bodies.
- **Stakeholders:** ACCOBAMS (including the Follow up Committee), stakeholder representatives of the main pressures sectors, local, regional and national management authorities.

ACTION EVALUATION

- ACCOBAMS
- Regular meetings open to stakeholders.

PRIORITY

- **Importance:** High
- **Feasibility:** Medium - High

ACTION MIT-01: WIDER AND STRICTER ADOPTION OF THE MANAGEMENT AND CONSERVATION MEASURES ALREADY IN PLACE TO MITIGATE ADVERSE IMPACT OF ANTHROPOGENIC ACTIVITIES

*Research Action**Priority: HIGH*

DESCRIPTION OF ACTION

- **Specific objective:** To ensure that ACCOBAMS Parties fully implement their national and international policy commitments, particularly on fisheries, pollution and shipping (not only ACCOBAMS Resolutions and agreement commitments but also GFCM (General Fisheries Commission for the Mediterranean) decisions and recommendations and EU Regulations (Barcelona Convention protocols against pollution and on biodiversity, EU Water Directive, Habitats Directive, Marine Strategy Framework Directive, IMO decisions on pollution, shipping noise, security at sea and traffic, etc.) and all related national implementing laws (see also section 2 – Legal framework).
- **Rationale:** Believed that rigorous adoption of management and conservation measures already in place should ensure the conservation of the bottlenose dolphin at the present status in most of the Mediterranean areas, Parties must ensure that national and international environmental laws, directly or indirectly related to cetacean conservation, are fully implemented and enforced. MIT-01 should be focused on those areas/countries where this action is most needed, based on the available knowledge and the results of the research and monitoring actions (see COORD-1, COORD-2, RES-4, MON-1, MON-02), allocating the necessary financial and human resources to the investigation activity.
- **Target:** National and international authorities of the Mediterranean countries. Increase financial and human resources for implementation and enforcement of legislation.
- **Methods:** The Parties will be asked to produce a triennial report on the enforcement of national laws directly or indirectly related to cetacean conservation. Based on the report, a checklist of requirements for each country will be submitted to a follow-up committee (ACCOBAMS Secretariat, CMP SC) and a targeted promotion of existing ACCOBAMS guidelines (or any other relevant guidelines) will be developed to assist Parties in implementing conservation and management measures. Research and monitoring actions (RES-04, MON-01, MON-02) will help to alert on potential detrimental situation and to

target action MIT-01, through the Follow-up Committee. Action MIT-01 will have to be coordinated with actions PACB-01 and PACB-02 to favour its implementation.

- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Develop/update a repository of existing national and international legislation and a checklist of all different measures/objectives.	ACCOBAMS Secretariat	0-6 months
(2)	National reports on needs to improve implementation and enforcement.	Each Party	By 2025 MoP9
(3)	Triennial national reports on enforcement.	Each Party	6 months before each Follow-up Committee
(4)	Based on (3) and CMP report a summary by country on the checklist requirements will be forwarded to the Follow-up Committee.	ACCOBAMS Secretariat; CMP Coord. and CMP-SC	3 months before each Follow-up Committee
(5)	Targeted promotion of existing ACCOBAMS, or any other relevant guidelines, that assist Parties with the implementation of conservation and management measures.	ACCOBAMS Secretariat CMP Coord. and CMP-SC	Throughout the action

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Analysis of the national triennial report (3) in conjunction with ACCOBASM Secr.
 - Assist ACCOBAMS Secr. in targeted promotion of existing ACCOBAMS guidelines (or any other guidelines relevant to cetacean management and conservation).

BUDGET ITEMS CONSIDERATIONS

- Costs associated with the implementation of step (5).

ACTORS

- **Responsible for co-ordination of the action:** CMP Coord. in conjunction with CMP SC and ACCOBAMS PS

- **Stakeholders:** ACCOBAMS Parties, ACCOBAMS Secretariat, ACCOBAMS SC, ACCOBAMS Follow-up Committee, Parties' relevant authorities, relevant Inter-Governmental Organisations.

ACTION EVALUATION

- ACCOBAMS SC, ACCOBAMS Follow-up Committee

PRIORITY

- **Importance:** High
- **Feasibility:** Medium to high

ACTION MIT-02: ASSESS THE PERFORMANCE OF EXISTING MITIGATION MEASURES AND DEVELOP NEW TOOLS TO ADDRESS SPECIFIC NEEDS
Research Action
Priority: HIGH
DESCRIPTION OF ACTION

- **Specific objective:** To assess the performance of implemented management and conservation measures to mitigate conflicts between bottlenose dolphins and human activity in the Mediterranean context and develop new tools to address specific needs.
- **Rationale:** In order to improve the conservation status of the species and reduce conflicts with human activities (with particular reference to fisheries and maritime traffic), it is important to reconsider existing measures, assess their performance, updated their implementation and develop new tools if needed.
- **Target:** National and international authorities of the Mediterranean countries.
- **Methods:** ACCOBAMS and its institutional bodies, on the recommendation of the CMP Coord and CMP SC, will consider the need to develop new tools (or update existing ones) to meet specific management and conservation needs and mitigate the conflicts, with particular reference to interactions between dolphins and fisheries (including fish farming) and maritime traffic. The need will be assessed based on the periodic reports of the CMP itself (see also RES-04, MON-01, MON-02, MIT-01), the latest assessments of other internationally recognized organizations, the bibliographic review, the meetings of experts and stakeholders and on local knowledge and specificities.
- **Timeline:**

	WHAT	WHO	WHEN (starting month being 0)
(1)	Analysis on performance of mitigation tools, based on RES-04, MON-01, MON-02, MIT-01 and bibliographic review, to identify potential detrimental situations.	CMP Coord. and CMP SC	Every 3 years since the research and monitoring actions are implemented
(2)	Meetings with local experts and stakeholder to further investigate the situation (including socio-economic aspects related to the interactions).	CMP Coord. and CMP SC	Every 3 years since the research and monitoring actions are implemented
(3)	Organization of a dedicated workshop of experts to review existing protocols and/or develop new tools to target specific needs and mitigate the conflicts.	CMP Coord., CMP SC, experts	Every 3 years since the research and monitoring actions are implemented
(4)	Transfer results to ACCOBAMS SC for approval and Parties.	CMP Coord., CMP SC, ACCOBAMS Secretariat	Every 3 years since the research and monitoring actions are implemented

- **Tasks of CMP for Mediterranean Bottlenose Dolphins Coordinator in conjunction with the (Interim) Steering Committee (with assistance from the ACCOBAMS Secretariat as required):**
 - Coordination of activities (1-4) as described in the above table (with assistance from ACCOBAMS Secretariat)

BUDGET CONSIDERATIONS

- Costs associated with the organization of a dedicated workshop of experts (3).

ACTORS

- **Responsible for coordination of the action:** CMP Coord., CMP SC, ACCOBAMS Secretariat.
- **Stakeholders:** National and local competent authorities, CMP network, local experts, local stakeholders (depending on the kind of alert reported).

ACTION EVALUATION

- ACCOBAMS Scientific Committee

PRIORITY

- **Importance:** High
- **Feasibility:** Medium (the MIT-02 feasibility is directly linked to the feasibility of MON-01 and MON-02 actions. The adoption of new specific management and conservation measures could be rejected by the country/countries involved).

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