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Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic

Strategy on the Conservation of Cetaceans in the Adriatic Sea for the period 2016 - 2025

Let's grow up together
Adriatic IPA
Cross Border Cooperation 2007-2013

The project is co-founded by the European Union, Instrument for Pre-Accession Assistance.

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September 2015

Contents

List of acronyms

ACCOBAMS - Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
BPA - Biological Resource Protection Areas
BWI - Blue World Institute of Marine Research and Conservation
CBD - Convention on Biological Diversity
CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS - Convention on Migratory Species of Wild Animals (Bonn Convention)
EBSA - Ecologically or Biologically Significant Areas
EC - European Commission
EFPZ - Ecological and Fisheries Protection Zone
EIA - Environmental Impact Assessment
EIONET - European Environment Information and Observation Network
ENIA - Ecological Network Impact Assessment
EPZ - Ecological Protection Zone
EU MS - European Union Member States
FAO - Food and Agriculture Organization of the United Nations
GDP - Gross Domestic Product
GFCM - General Fisheries Commission for the Mediterranean
IGO - Intergovernmental Organisation
IMO - International Maritime Organisation
IMPEL - European Union Network for the Implementation and Enforcement of Environmental Law
IUCN - International Union for Conservation of Nature
IWC - International Whaling Commission
LNG - Liquid natural gas
MEDACES - Mediterranean Database of Cetacean Strandings
MEDPAN - Network of Marine Protected Area Managers in the Mediterranean
MPA - Marine protected area
MSFD - EC Marine Strategy Framework Directive
NAP - National Action Plan
NBSAP - National Strategy and Action Plan for Protection of Biodiversity
NETCET - Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic
NGO - Non-Governmental Organisation
NUTS 3 - Nomenclature of Units for Territorial Statistics with population from 150,000 to 800,000 people
PAC - Priority Area of Conservation
RAC/SPA - Regional Activity Center for Specially Protected Areas
SAP BIO - Strategic Action Programme for the Conservation of Biological Diversity
SBSTTA - Subsidiary Body on Scientific, Technical and Technological Advice
SEA - Strategic Impact Assessment
SINP - State Institute for Nature Protection (since 16th of September 2015 Croatian Agency for the Environment and Nature)
SPA/BD Protocol - Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean under the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)
SPAMI - Specially Protected Areas of Mediterranean Importance
SWOT - A tool that identifies the strengths, weaknesses, opportunities and threats of an organization
UNCLOS - United Nations Convention on the Law of the Sea
UNEP/MAP - United Nation Environment Programme/Mediterranean Action Plan
WG - Working group
WMS - Web Map Service
WWF - World Wildlife Fund

1. Introduction

Cetaceans are the largest animals on earth. These migratory species play an important role in the functioning of marine ecosystems. The human population is also attracted to the marine environment, both through the establishment of settlements in coastal areas and the use of marine resources. Under such circumstances, ensuring the harmonious co-existance between cetaceans and humans is a challenge, but also an obligation for future generations.

Due to their migratory nature, cetaceans do not recognize state borders and jurisdictions. Therefore, any conservation effort requires transboundary cooperation. This notion was the main premise for the development of the Project Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic - NETCET (www.netcet.eu), funded through the EU IPA Adriatic cross-border cooperation programme 2007 - 2013. In the scope of this project, a total of 13 partners from nearly all the Adriatic countries (Albania, Croatia, Italy, Montenegro and Slovenia) have been working together on a range of activities aimed at developing knowledge about the status of cetaceans, improving capacities for conservation, bettering awareness about the importance of cetacean conservation, and establishing a relevant regional cooperation network. Based on the analyses of the current situation, NETCET partners identified the future conservation needs for cetaceans and developed a Strategy for conservation of cetaceans in the Adriatic Sea for the next ten year period (2016 - 2025). The purpose of the Strategy is to focus the existing resources into concrete actions in a timely manner, to ensure the long-term conservation of cetaceans in the Adriatic Sea.

2. Summary

The Conservation of cetaceans as a migratory species requires efforts extending beyond national borders.
This is the spirit of the NETCET project, implemented by 13 partner institutions and organisations from nearly all the Adriatic countries, involved mostly in nature conservation.
One of the final project results has been the development of a Strategy for conservation of cetaceans in the Adriatic Sea for the 2016 – 2025 period. This was developed to determine the future actions needed to ensure the long-term existence of cetaceans in the Adriatic Sea.
The Strategy includes six main elements: Overview of the present state of cetaceans; Vision; Objectives; Action plan; Implementation; Monitoring and revision.

A comprehensive **review of the present state knowledge of cetaceans**, also prepared in the scope of the NETCET project, was the basis for the development of this Strategy. The review showed that there has been a significant improvement in the knowledge of the presence of cetaceans in the Adriatic, especially in recent years. At the same time there is a lack of knowledge about the abundance and distribution, particularly for some species, population structure and general conservation status, as well as the actual impacts of threats. Cetaceans are under pressure from human activities in the Adriatic Sea, with bycatch and marine debris currently identified as most sigificant direct threats. The international community has recognised a need for the conservation of cetaceans and their habitats in the Adriatic Sea and beyond through number of international agreements, as well as policies and directives at EU and national levels. National nature conservation governmental bodies, institutions and non-governmental organisations are operational, with different efficiency. Conservation mechanisms including the legal protection of species, the establishment of protected areas and stranding networks, are also being implemented in the majority of the Adriatic countries. However, the effectiveness of these efforts is still not sufficiently clear.
Ideally, in the future the Adriatic Sea should be a safe place for cetaceans and humans to coexist. This **vision** can become reality if the eight **objectives** and accompanying targets are accomplished within the next 10 years. This includes the improvement of knowledge about cetaceans, the reduction of impacts of threats, enhanced cooperation between different stakeholders, the establishment of a common conservation legislation framework in the Adriatic, the effective conservation of important habitats, the improvement of capacities for conservation issues, raising public awareness and ensuring adequate funding. These objectives are linked to global and regional strategies, such as the Aichi targets 2011

- 2020[1], the EU Biodiversity Strategy to 2020[2], the EU Strategy for the Adriatic and Ionian region[3] and the ACCOBAMS strategy 2014 – 2025[4].

The **Action plan** includes 57 actions that should be implemented to achieve these objectives. First of all, **the knowledge base** should be improved through further inventorying and monitoring of cetaceans in the Adriatic Sea, including the identification of units-to-conserve; setting up and implementing standard monitoring for the cetaceans in the Adriatic Sea; as well as better and more systematic data exchange and storage.
The management of threats should focus on the most significant threats, particularly accurately assessing bycatch rate and anthropogenic noise and identifying the appropriate mitigation measures and techniques. The issue of marine debris represents a much bigger challenge, which requires a shifting in the existing consumer practices. **Cooperation between institutions/sectors** is horizontal issue, tackling all conservation activities, particularly those under the management of threats. Continuation of the NETCET partnership should be ensured after the project's finished. **Legislation** should be harmonised in all of the Adriatic countries to one common platform which is the relevant EU acquis communitaire. Cooperation should be promoted between inspection services to help the enforcement of the relevant legislation. In order to ensure the **conservation of cetacean habitats**, it is important to identify significant habitats, particularly in countries where such areas have not been identified and the existing new data may show relevance. The effectiveness of the existing protected areas for cetaceans should be assessed and management practices modified or created accordingly.
The results gained from monitoring strandings can be valuable to understand the state of cetaceans. It is important to **build institutional and human capacities** to establish functional stranding networks and maintain the quality of necropsy and examination procedures and to ensure adequate capacities for monitoring.
Education programmes which include teaching about cetacean conservation should be further developed. The general public is an important ally in cetacean conservation, **public awareness** activities are needed through targeted campaigns, the celebration of relevant dates and similar activities. The City network promoted through the NETCET project provides an important structure on which these activities can be based.
Finally, no activities can be implemented without the adequate **funding**. The existing funding possibilities should be explored and linked to ongoing initiatives, including the better exchange of information and the development of the NETCET project follow-up.
The **Implementation of the Strategy** is a challenge. The absence of institutions with the appropriate mandate to develop and implement the Strategy is an issue. It is important, therefore, to make sure that elements of the Strategy are included in the future relevant regional strategies. In addition, the Strategy represents a guideline for development of the National Action Plans, also prepared under the NETCET project. The Strategy should be **revised** and updated every 10 years, or when appropriate, based on the evaluation of its effectiveness.

1. www.cbd.int/sp/targets/
2. eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0244&from=EN
3. www.adriatic-ionian.eu/
4. www.accobams.org/images/stories/MOP/MOP5/Documents/Resolutions/mop5.res5.1_accobams%20strategy.pdf

3. Methodology of the Strategy development

The development of the Strategy for conservation of cetaceans in the Adriatic was carried out through the IPA Adriatic NETECT project by a group of 13 partners from Albania, Croatia, Italy, Montenegro and Slovenia. By affiliation, these partners are research institutions, governmental agencies and NGOs dealing with nature conservation issues.
For the purpose of strategic planning, a working group (WG) was established (Annex 1), coordinated by the Croatian State Institute for Nature Protection.

The starting point was the preparation of the analysis of the present state of knowledge (Fortuna, C.M., Holcer, D., Mackelworth, P. (eds.) 2015. Conservation of Cetaceans in the Adriatic Sea. 135 pages. Report produced under WP 7 of the NETCET project, IPA Adriatic Cross-border Cooperation Programme) which includes the analysis of abundance, distribution, threats and human responses including legislation, institutional frameworks, existing conservation mechanisms and their implementation (reference to the document(s)). In addition, a SWOT analysis was carried out during one of the project team meetings.

The vision of the Strategy, the most relevant key issues and possible solutions, were identified through a half day workshop and further discussed during one session held in the scope of the regular project partner's meeting. The WG coordinator prepared the Strategy proposal taking into account the results of analysis of the present state and outputs of the meetings. The proposal was sent to partners for final comment.

4. Vision

Desired ideal future for the cetaceans in the Adriatic is determined as follows:

"The Adriatic is a safe place for cetaceans and humans to coexist"

5. Overview of the present state of the cetaceans in the Adriatic Sea

The overview of the present state of cetaceans summons the existing knowledge about these species in the Adriatic Sea, the pressures and threats that they face, as well as efforts invested in their conservation. This endeavour also displays the key issues that need to be addressed to ensure the long-term conservation of cetaceans in the Adriatic Sea.

5.1. BASIC GEOGRAPHICAL, PHYSICAL AND POLITICAL FEATURES OF THE ADRIATIC SEA

5.1.1. GEOGRAPHICAL AND PHYSICAL FEATURES

The Adriatic Sea is a semi-enclosed basin linked to the Mediterranean Sea, with the surface area over 133,000 km^2. It includes over 1,200 islands, islets and reefs and has almost 8,500 km of shoreline. It is divided into three sub-basins: 1) northern Adriatic - a shallow basin with the bottom reaching a maximum of about 100 m (average depth = 35 m); 2) central Adriatic - characterised by three depressions located along the transversal line off the coast of Pescara (Jabuka/Pomo pit), with a maximum depth of about 280 m; and 3) southern Adriatic - separated from the central Adriatic by the 170 m deep Palagruža sill (Fig. 1).

Figure 1
Adriatic Sea: Map of the region with bathymetry and main locations used in this document (Prepared by: Draško Holcer, BWI, NETCET)

5.1.2. POLITICAL FEATURES

The Adriatic Sea is bordered by Albania, Bosnia-Herzegovina, Croatia, Italy, Montenegro and Slovenia. Of the six Adriatic countries Croatia has the longest total coastline, whereas Slovenia and Bosnia-Herzegovina has the smallest total coastline. The general maritime jurisdictional situation in the Adriatic Sea is rather complex.

Some of these boundaries are still not ratified by the relevant parties (Fig. 2). When adding the potential Ecological Protection Zone (EPZ) and Ecological and Fisheries Protection Zone (EFPZ), the waters under the jurisdiction of European Member States amount to 87% of the total area. Eight percent in the southern Adriatic is still officially unclaimed.

Figure 2
Maritime jurisdiction within the Adriatic Sea (Source: UNCLOS)

5.2. CETACEANS SPECIES IN THE ADRIATIC SEA

5.2.1. OCCURRENCE, ABUNDANCE AND DISTRIBUTION

Historically, only two cetacean species were considered to be regularly present in the Adriatic Sea: the common bottlenose dolphin (*Tursiops truncatus*), and the short-beaked common dolphin (*Delphinus delphis*). Other species were considered visitors or vagrant individuals. However, the dramatic decline in numbers of the short-beaked common dolphin in the past 40 years has led to regional extinction with only vagrant individuals recorded occasionally. Conversely nowadays, striped dolphins (*Stenella coeruleoalba*), Risso's dolphins (*Grampus griseus*) and Cuvier's beaked whales (*Ziphius cavirostris*) are now considered regular species in the southern Adriatic (Tab. 1). Fin whales are seasonally spotted in the central Adriatic. Two strandings of the sperm whales were recorded so far in the southern Adriatic and humpback whales visited the Adriatic on two occasions since 2009.

TABLE 1.

Cetacean species recorded and confirmed in the Adriatic Sea

(SA = Southern Adriatic, NCA= Northern and Central Adriatic, CSA = Central and Southern Adriatic)

Common name	Scientific name	Presence	Type of observation	Current distribution	Current type of occurrence
		Historic, Current	Wild, Stranded	All basin, north, central, south Adriatic	Regular, occasional, rare/visitor, not occurring*
Common bottlenose dolphin	*Tursiops truncatus*	Current distribution	Wild, Stranded	All basin	Regular
Short-beaked common dolphin	*Delphinus delphis*	Current type of occurrence	Wild, Stranded	All basin	Rare/visitor
Striped dolphin	*Stenella coeruleoalba*	Historic & Current	Wild, Stranded	Southern Adriatic	Regular (SA), occasional (NCA)
Risso's dolphin	*Grampus griseus*	Historic & Current	Wild, Stranded	South Adriatic	Regular (SA), occasional (NCA)
Long-finned pilot whale	*Globicephala melas*	Historic	Stranded	Caught	Not occurring
Cuvier's beaked whale	*Ziphius cavirostris*	Historic & Current	Wild, Stranded	South Adriatic	Regular (SA)
Sperm whale	*Physeter macrocephalus*	Historic & Current	Wild, Stranded	South Adriatic	Rare/visitor (all basin), potentially regular (SA)
Fin whale	*Balaenoptera physalus*	Historic & Current	Wild, Stranded	Central-south Adriatic	Seasonally regular (CSA)
False killer whale	*Pseudorca crassidens*	Historic	Caught	-	Not occurring
Humpback whale	*Megaptera novaeangliae*	Current	Wild	All basin	Rare/visitor/Not occurring

* The term "regular species" used in this report refers to species that are either always present or occurring in the Adriatic at regular intervals (e.g. seasonally). The term "occasional" means species that may enter the Adriatic from time to time with no detectable temporal pattern. "Rare" species are those that occur only a few times in a decade. "Not occurring" refers to two species with historic presence.

The results of recent research, particularly aerial surveys from 2010 and 2013 (the latter done in the scope of the NETCET project), confirmed that the common bottlenose dolphin is the most widely distributed species (Fig. 3). The observed distribution of cetacean species reflects their general ecology, with bottlenose dolphins more abundant on the continental shelf and striped dolphins, Risso's dolphins and Cuvier's beaked whales regularly present in the deeper waters of the southern Adriatic Sea.

Figure 3
Aerial survey 2013, sightings of cetaceans in the Adriatic Sea: common bottlenose dolphin (yellow dots), striped dolphins (green dots), Risso's dolphins (pink stars), Cuvier's beaked whales (red triangle) (Source: Draško Holcer, BWI, NETCET)

The minimum estimation for abundance of the common bottlenose dolphins is 10,573 in the Adriatic Sea. Densities are not particularly high; however, they are comparable to other areas of the Mediterranean Sea (Figure 4). Striped dolphins are regularly present in the southern and deepest part of the Adriatic basin in >300m waters depth (Fig. 5). Minimum estimation for striped dolphins is 41,533 in the Adriatic Sea.

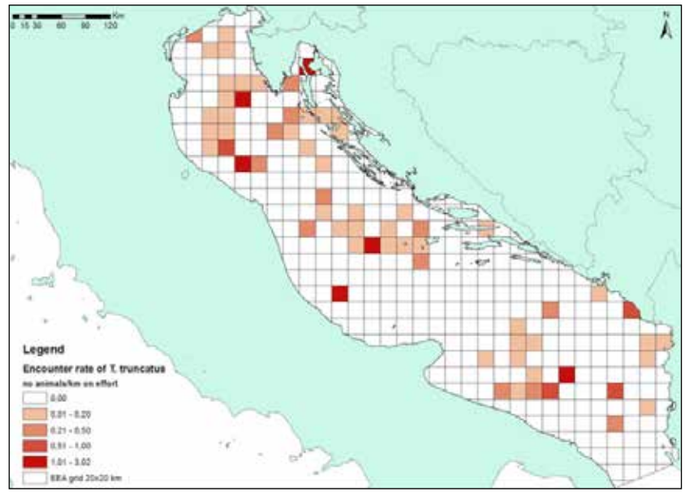

Figure 4
The common bottlenose dolphin pattern of distribution during the 2013 NETCET aerial survey: a) relative density of encounters (group/linear km of effort) and relative density of animals (n. of animals/linear km of effort) over a 400 km2 cell grid (Source: Drasko Holcer, BWI, NETCET)

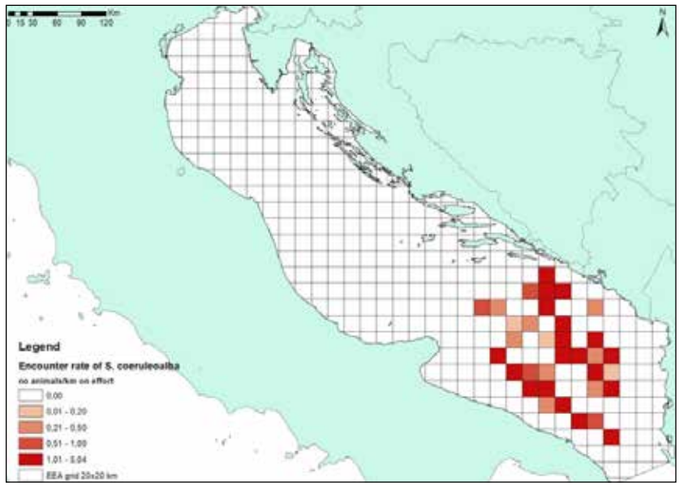

Figure 5
The striped dolphin distribution during the 2013 NETCET aerial survey: a) relative density of encounters (group/linear km of effort) and relative density of animals (n. of animals/linear km of effort) over a 400 km2 cell grid (Source: Draško Holcer, BWI, NETCET)

5.2.2. POPULATION STRUCTURE

The population structure of the common bottlenose dolphins in the Adriatic shows a sufficient degree of differentiation to be treated as separate “entity” from the bottlenose dolphins inhabiting the Ionian and Tyrrhenian seas. Females appear to be the principal gene flow mediators. It is suggested that the common bottlenose dolphins of the Adriatic Sea are structured into putative local populations. Little is known of the genetic population structure of striped dolphins in the Adriatic Sea. No data exists for other cetacean species in the Adriatic.

5.2.3. CONSERVATION STATUS

IUCN status and conservation status according to the Habitats Directive were estimated at the Mediterranean level. No red listings were given for species regular in the Adriatic, foremostly the common bottlenose dolphin. It is assumed that the species could probably be assessed as Near threatened (NT). The Short-beaked common dolphin is the most threatened species in the Mediterranean. No sightings of this species during the 2010 and 2013 Adriatic aerial surveys indicate the probability that this species is regionally extinct in the Adriatic Sea.

TABLE 2.

Status of cetaceans in the Mediterranean

(Sources: IUCN, EIONET)

Species	IUCN status	Conservation status under the Habitats Directive for the Mediterranean biogeographical region
Short-beaked common dolphin (*Delphinus delphis*)	Endangered (EN)	Unfavourable-Inadequate
Common bottlenose dolphin (*Tursiops truncatus*)	Vulnerable (VU)	Unkown
Striped dolphin (*Stenella coeruleoalba*)	Vulnerable (VU)	Unkown
Fin whale (*Balaenoptera physalus*)	Vulnerable (VU)	Unkown
Sperm whale (*Physeter macrocephalus*)	Vulnerable (VU)	Unkown
Risso's dolphin (*Grampus griseus*)	Data deficient (DD)	Unkown
Cuvier's beaked whale (*Ziphius cavirostris*)	Data deficient (DD)	Unkown
Humpback whale (*Megaptera novaeangliae*)	Least concern (LC) in Europe	Unkown


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5.3. MAIN HUMAN ACTIVITIES PRESSURING CETACEANS IN THE ADRIATIC SEA

5.3.1. POPULATION DENSITY

In terms of the human population potentially affecting the Adriatic area, Italy has the greatest and Montenegro has the lowest potential to have an impact (Fig. 6). The most obvious impacts in this sense are sheer byproducts of human existence, such as communal solid waste and waste waters.

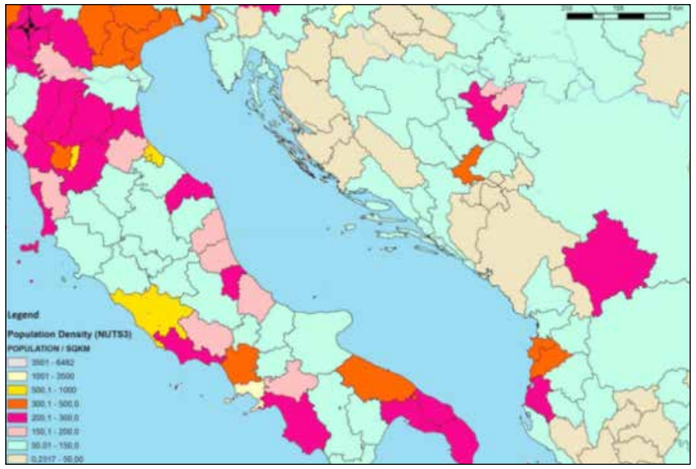

Figure 6
Population density (NUTS3) in the Adriatic region (persons per km2) (Prepared by: Draško Holcer, BWI, NETCET)

5.3.2. FISHERY

The Adriatic Sea is one of two Mediterranean areas with the largest continental shelf (the other being the Gulf of Gabès), it is the most heavily bottom trawled area in the region (Fig. 7).

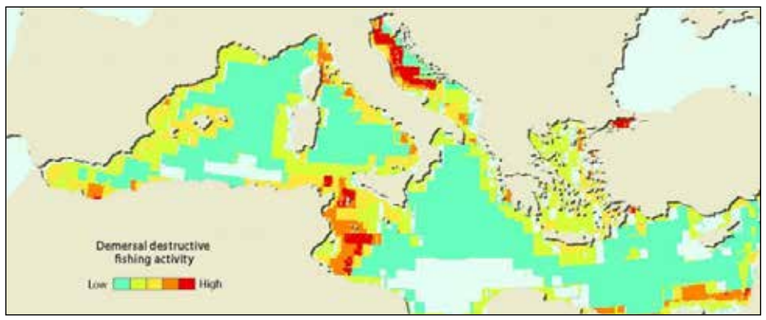

Figure 7
Demersal fishing impact in the Mediterranean Sea (Source: GRID-Arendal, http://www.grida.no/)

5.3.2.1 Fishery production

Croatia and Italy had the largest fishery production in 2012. Sardines and anchovies were the most represented species in the catch of the Adriatic (Fig. 8).

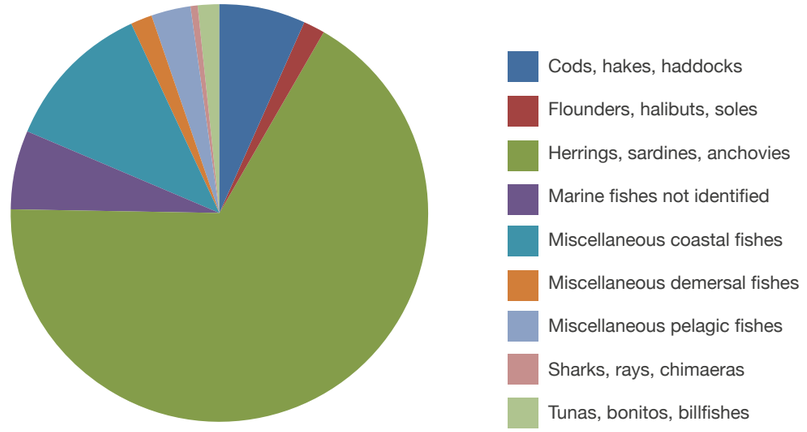

Figure 8
Fishery production according to fish species in 2012 in the Adriatic[5] (Source: FAO Fishery Statistical Collections and MSFD Italian report)

5.3.2.2 Fishing efforts

Within the Adriatic Sea fisheries are managed between two GFCM Geographical Sub-Areas (GSAs): the GSA 17 (north and middle Adriatic) and the GSA 18 (southern Adriatic) (Fig. 9). Croatia, Bosnia-Herzegovina, Italy and Slovenia border the GSA 17. Albania, Italy and Montenegro border the GSA 18, which extends down to the Albania-Greece border.

Figure 9
Adriatic Geographical Sub-Areas (GSA) of the General Fisheries Commission for the Mediterranean: GSA 17 (green) and GSA 18 (yellow) (Prepared by: Draško Holcer, BWI, NETCET)

The majority of fishing boats in the Adriatic belong to Croatia and Italy. In the GSA 17 (northern and middle Adriatic) traps are by far the most used fishing gear, followed by gill-nets and entangling nets, trawls and dredges. Trawls are by far the most used fishing gear in GSA 18 (southern Adriatic) area, followed by gill-nets and entangling and purse-seine.

5. Bosnia and Herzegovina do not have marine fishes identified; Montenegro did not report two groups of fish: 1) Flonders, haliputs, soles and 2) Miscellaneous demersal fishes; Slovenia did not report group of fish: Tunas, bomitos, billfishes.

5.3.3. MARITIME TRAFFIC

The Mediterranean Sea is among the busiest shipping routes in the world accounting for 15% of global shipping. The maritime traffic density over the Adriatic Sea shows that most of the traffic is concentrated in the northern and central parts (Fig. 10).

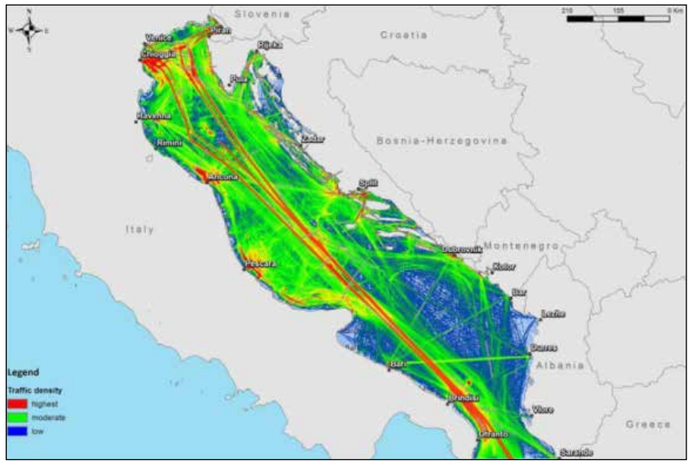

Figure 10
A snapshot of maritime transportation routes and traffic density (all types of vessels) in the Adriatic Sea (Source: SHAPE project WMS and www.marinetraffic.com)

Maritime traffic in the Adriatic includes transport routes for tankers with crude oil to the northern Adriatic ports, liquefied gas transport to the Rovigo LNG terminal, dry cargo and container ships, chemical tankers and passenger ships. In addition, fishing vessels, yachts, recreational boats, military and research vessels contribute to the general and heavy local maritime traffic. Such a busy shipping traffic increases the risk of negative effects on the marine environment. Particularly considering ballast waters, pollution and oil spills, collision, noise, all of which ultimately result in habitat degradation. Therefore the Adriatic Sea is regarded as a high risk area for accidents. Furthermore, the International Maritime Organization (IMO) has recorded a five times higher level of accident frequency in the Adriatic Sea than the world average, mostly due to accidents related to seasonal nautical tourism.

5.3.4. OIL AND GAS EXPLORATION AND EXPLOITATION

Currently, there are 131 different gas and oil extraction platforms in the Adriatic, around 87% of them are in Italy. They are mostly situated in the north part of the Adriatic. Seismic surveys have been regularly carried out in search for gas and oil, including surveys in Italy and Croatia and planned in Montenegro. In addition, since 2009, a liquid natural gas (LNG) offshore terminal has operated in the northern Adriatic (Italy) with two more planned in the future (Slovenia and Croatia). Given the high intensity of maritime traffic and the importance of the Adriatic for oil and gas exploration, this appears to be one of the Mediterranean regions with the highest potential for both chronic and acute hydrocarbon pollution (Fig. 11).

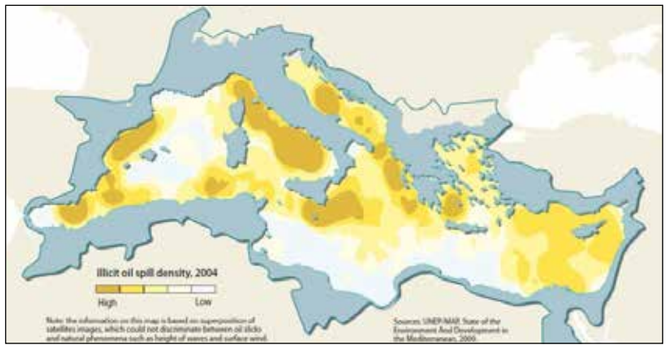

Figure 11
Potential oil slicks detected by satellites (Source: GRID-Arendal, based on UNEP/MAP report 2013)

5.3.5. TOURISM

All six countries bordering the Adriatic Sea are important tourist destinations with about 69,3 million tourist arrivals per year. Tourism is a significant source of income for Croatia and Montenegro relative to their Gross Domestic Product (GDP). Nautical tourism is the most relevant pressure for cetaceans. In the last decade the nautical tourism and the resulting maritime traffic in the Adriatic Sea has significantly increased, particularly personal watercraft and cruising. This type of tourism has a classic peak in the summer months. In addition, tourism generates traffic in terms of ferries, large hydrofoils and fast catamarans.
Cetacean-watching an activity already sporadically present in the Adriatic, for instance in the area of Cres and Lošinj archipelago. However, this activity has a potential to intensify in the Adriatic.

5.4. THREATS AND THEIR IMPACTS ON CETACEANS IN THE ADRIATIC SEA

Human activities are a particular source of threat to cetaceans. To date, eight types of threats have been identified, with bycatch and marine debris being assessed as the most significant ones in terms of severity of impacts and number of cetacean species they may affect (Tab. 3 and Fig. 12). However, it should be stressed that assumptions were given based on scarce data about actual impact. For instance, existing stranding data indicates relevance of bycatch, but do not show the accurate state.

The significance of climate change is least known, but due to geographical features of the Adriatic, it it expected this is an important issue to tackle in the future.

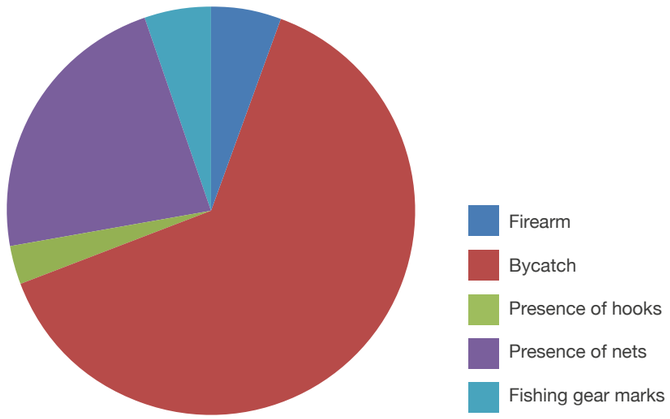

Figure 12
Cetacean strandings caused by fisheries in the Adriatic (Italy and Croatia) (Prepared by: Ana Maričević, SINP/CAEN, NETCET)

TABLE 3.
Summary of threats for cetacean in the Adriatic Sea

Threats	Human activities causing threats	Impact of threat	Extent	Significance of threats	Species affected	Source of information for the region
Bycatch	Fishery	Direct mortality	Individual level Potential for population level	High	All cetacean species	Fortuna et al. 2010; Fortuna & Filidei 2013, Italian and Croatian stranding networks
Marine debris	Tourism Fishery	Direct mortality	Individual level (potential for population level)	Medium/High	All cetacean species	Pribanic et al. 1999; Mazzariol et al. 2011
Chemical pollution	Agriculture Sewage (communal)	Direct and indirect mortality (habitat degradation)	Individual level (direct mortality) Population level (indirect mortality)	Medium	All cetacean species	
Anthropogenic noise	Oil and gas exploitation Shipping Military activities Constructions	Behavioural changes, direct and indirect mortality (habitat degradation)	Individual level and sub-population level	Medium	All cetaceans species	
Anthropogenic noise	Tourism (seasonal)	Behavioural changes	Individual level and sub-population level	Medium	Common bottlenose dolphin	Fortuna 2006; Rako et al 2003
Biological pollution	Communal waste (sewage)	Direct mortality	Individual level	Low	All cetacean species	
Collisions with boats	Tourism (seasonal)	Direct mortality	Individual level and sub-population level	Low	Common bottlenose dolphin	Fortuna 2006; Rako et al 2003
Depredation	Fishery	Behavioural changes, direct mortality	Individual level and sub-population level	Low	Common bottlenose dolphin	
Climate change	All activities with high fossil fuels consumption	Indirect mortality	Population level	Unknown	All cetacean species	UNEP-MAP RAC/SPA 2009; IWC 2011

5.5. CETACEANS CONSERVATION EFFORTS

5.5.1. LEGISLATIVE FRAMEWORK

5.5.1.1. International legislation

Ten international conventions and agreements for cetacean conservation, with associated protocols, are in place. Their scope ranges from biodiversity conservation in general to setting of various mechanisms for conservation of specific species and habitats and supporting environmental protection mechanisms. All Adriatic countries (except Bosnia and Herzegovina) are parties of all or the majority of these agreements (Annex 2).

In addition, there are number of conventions, agreements and associated protocols addressing a range of human activities that have potential to affect cetaceans. Within the Adriatic there is a variable degree of adherence to these international legislative frameworks.

5.5.1.2. EU legislation

Three Adriatic countries are members of the European Union (EU MS): Italy, Slovenia and Croatia. There are a number of EU Directives and Regulations relevant for conservation of cetaceans in the Adriatic region, such as Directive on the conservation of natural habitats and wild fauna and flora (Habitats Directive, 92/43/EEC) and the Directive establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive, 2008/56/EC). There are also a number of other regulations addressing human activities that can have an impact on marine species (e.g. fisheries, maritime traffic and pollution). The Adriatic countries which are non-member of the EU have started to harmonisation their respective legislations to EU legislation, supported by the European Commission funding opportunities.

5.5.1.3. National legislation

All Adriatic countries have established a nature conservation legislative framework, regulating overall nature conservation as well as addressing specifically the conservation of cetaceans. The majority of countries have at least one nature conservation regulation (usually a nature protection act), in force both at national and regional levels. Only in Italy does each region enact specific regional nature conservation acts. The majority of Adriatic countries also have legislative frameworks to regulate anthropogenic activities with potential impact on cetaceans.

5.5.2. POLICY DOCUMENTS

The Strategic Plan for Biodiversity 2011-2020 (Aichi targets) adopted in the scope of Convention on Biological Diversity (CBD) represents the main biodiversity conservation policy document at global level. Two policy document address conservation of biodiversity at the European level: the Pan-European 2020 Strategy for Biodiversity and EU Biodiversity Strategy to 2020. The Strategic Action Programme for the conservation of Biological Diversity (SAP BIO) developed in the framework of the Barcelona Convention aims at conservation of the biodiversity in the Mediterranean region. The ACCOBAMS Strategy 2014 – 2023 specifically focuses on conservation of cetaceans in the Mediterranean Sea, Black Sea and contiguous Atlantic area. Its overall objective is the improvement of current conservation status of cetaceans and their habitats in the ACCOBAMS area.

There are also several regional conservation plans for particular cetacean species in the Mediterranean, such us Conservation Plan for short-beaked common dolphins in the Mediterranean Sea (2004), adopted in the framework of ACCOBAMS. Regional Activity Centre for Specially Protected Areas (RAC/SPA) developed Draft Updated Action Plan for the conservation of Cetaceans in the Mediterranean Sea (2015).

National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the Convention on Biological Diversity at the national level. All Adriatic countries have developed and adopted their National Biodiversity Strategies and Action Plans.

National conservation/management or action plans are developed specifically to ensure conservation of cetaceans. Albania is the only Adriatic country to have adopted a NAP for cetaceans (2006). However, very few actions from the Albanian species action plans have been implemented. Italy prepared the draft document - National Action Plan for the Conservation of Cetaceans in the Italian Seas (2001) that is still not in force.

5.5.3. COOPERATION FOR BIODIVERSITY CONSERVATION IN THE ADRIATIC

In addition to membership in international agreements, countries have established regional programs and partnerships. There are also a considerable number of projects in progress in the Mediterranean region that deal with conservation of marine biodiversity, marine protected areas, and fishery and pollution related issues. Albania, Croatia, Montenegro and Italy are the most represented countries in the regional projects in progress.

In addition, the three regional projects are planned to be implemented in the following years in the scope of the ACCOBAMS: ACCOBAMS survey initiative; Mapping anthropogenic noise hot spots in the ACCOBAMS area and Regional programme for assessing and reducing the impact of ghost fishing on marine biodiversity.

5.5.4. INSTITUTIONAL AND HUMAN CAPACITIES

Regional institutions and organisations relevant for conservation of cetaceans are mostly intergovernmental organisation (IGOs) managing global or regional nature conservation agreements. Several non-governmental organisations are also active in the Mediterranean region, like IUCN and WWF. There are also organisations, mostly intergovernmental, addressing range of activities affecting cetaceans, particularly fisheries, and marine traffic like GFCM and IMO.

In the majority of Adriatic countries ministries for environment are decision-making bodies competent for nature conservation at national level. Specific institutions performing expert tasks of nature conservation, like nature conservation institutes or agencies, exist in all Adriatic countries.

NGOs focusing on cetacean conservation operate in the majority of countries, except Bosnia and Herzegovina (Fig. 13).

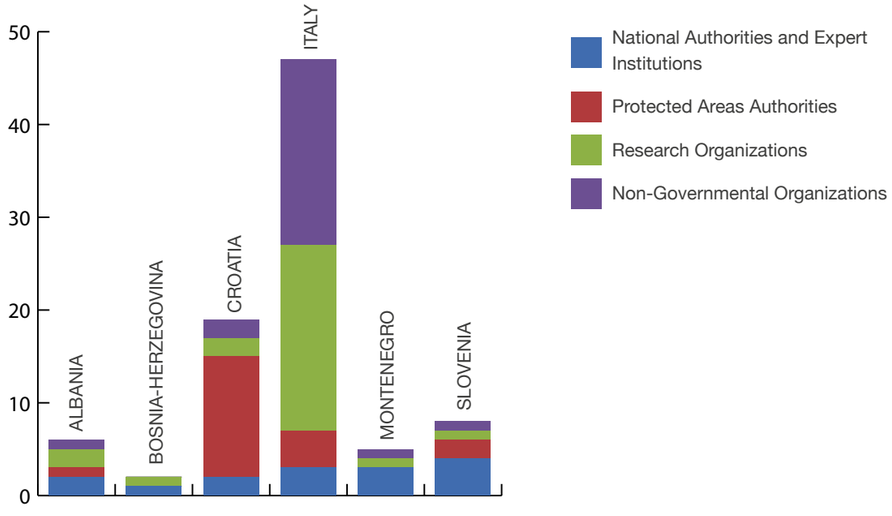

Figure 13
National nature conservation institutions active in the field of research and conservation of cetaceans in the Adriatic (Prepared by: Ana Maričević, SINP/CAEN, NETCET)

There is no information whether the existing human capacities are sufficient, although one of the main complaints often expressed by countries is lack of human resources, more specifically number of employees. In addition, there is a lack of knowledge on some issues, such as procedures related to strandings. This particular topic was addressed in the scope of the NETCET project through organisations of several regional workshops and trainings.

5.5.5. EXISTING CONSERVATION MECHANISMS AND MEASURES

The conservation of species is generally ensured through mechanisms aimed at the formal protection of target species and their habitats. It primarily means granting the legal status of a protected species to vulnerable, threatened or endangered species. This overarching mechanism is further supported through other mechanisms and measures, such as control of captivity, trade and traffic of specimens of wild species; organisation of stranding networks, rescue centres and tissue banks; cetacean-watching code of conduct, etc.

The protection of habitats is ensured through establishment of protected areas, including the Natura 2000 network and accompanying procedure of ecological network impact assessment (ENIA). Strategic Impact Assessment (SEA) and Environmental Impact Assessment (EIA) are mechanisms that also respond to environmental conservation concerns in certain situations. Knowledge on species, as basis for planning conservation measures and assess their conservation effectiveness, is usually gained through inventorying and monitoring of species and organisation of data through various data basis.

In order to standardise conservation practices in the region, a number of guidelines and recommendations are produced and adopted in the scope of the relevant international agreements or by other relevant international associations, like ACCOBAMS, RAC/SPA, International Whaling Convention dealing with different cetacean conservation topics (Annex 3).

5.5.5.1. Inventory and monitoring

There is lack of systematic inventorying and monitoring of cetaceans at regional level. Apart from the 2010 and 2013 aerial surveys and efforts in the scope of the NETCET project, information about abundance and distribution of cetaceans have been collected sporadically through single actions by different bodies/organisations. Furthermore, storage and availability of data has been limited. The most operational database at the Mediterranean level is the Mediterranean Database of Cetacean Strandings (MEDACES), run by the University of Valencia. Supported by the Spanish government, RAC/SPA and ACCOBAMS, this database has been in operation since 2001.

Within the NETCET project a preliminary Adriatic database on cetacean strandings has been created at the University of Padua (Department of Comparative Biomedicine and Food Science, Italy).

5.5.5.2. Species protection

At the Adriatic level there is an absence of a coherent Adriatic stranding network, including regional emergency task forces. Some form of stranding network is operational in the majority of Adriatic countries, with systematically organised national stranding networks only in Croatia and Italy. Bosnia and Herzegovina and Montenegro do not have established any mechanisms to address strandings. There is no regional tissue bank, although it was foreseen in the past that the University of Padua could serve as the regional (Mediterranean) marine mammal tissue bank. Rescue centres for cetaceans exist only in Italy. Due to rare events of injured cetaceans, it was concluded that no such facilities are needed in Croatia. The majority of Adriatic countries have national databases on cetacean strandings (except Albania), but not normally available to the public. The systematic monitoring of cetaceans has not yet been established and implemented in any Adriatic country. However, there are some inventorying activities which have been conducted so far and which can serve as basis for future national monitoring. National codes of conduct for cetacean-watching are still not developed in any Adriatic country.

5.5.5.3. Habitat protection

The protection of habitats is based on several of spatial protection mechanisms (Fig. 17). These have different objectives and thus different management measures, which can have beneficial impacts on the conservation of cetaceans. Particularly there are areas established specifically for biodiversity conservation, such as EU Natura 2000 network; Proposed Specially Protected Areas of Mediterranean Importance (SPAMI); Proposed Ecologically or Biologically Significant Areas (EBSA) and national marine protected areas (MPAs) established more or less based on IUCN criteria.

There are a few hundred protected areas already regulated or restricted with different mechanisms, some with extensions into the sea (sometimes very little) with specific spatial management measures in all Adriatic countries except Bosnia and Herzegovina. Montenegro does not have any marine protected areas or coastal protected areas with extensions into the sea, except for a part of the Bay of Kotor that is protected under UNESCO as a Natural and Culturo-Historical Site. However, only 21 designated sites actually list cetaceans as species of conservation importance within their boundaries, including six SCIs designated by Croatia that identify the bottlenose dolphin as the primary conservation target species.

Some areas were identified as important for marine biodiversity conservation in the framework of different international agreement. Within the framework of the SPA/BD Protocol, part of the Adriatic Sea has been proposed as a Priority Area of Conservation (PAC) by experts that recognised it importance for sea turtles, small pelagic fish, nursery ground of elasmobranchs

and deep-sea coral reefs. In 2014 three rather large portions of the Adriatic have been identified by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the Convention for Biological Diversity (CBD; Rio, 1992) as areas meeting the EBSA criteria. There are also areas of special importance for cetaceans identified in the ACCOBAMS area: Sazani Island – Karaburuni Peninsula (Albania) is area of special importance for the common dolphin and waters along east coast of the Cres-Lošinj archipelago (Croatia) is area of special importance for the common bottlenose dolphin (Fig. 14).

Figure 14
Map of the MAPs in the scope of ACCOBAMS (Source: ACCOBAMS)

Additionally, there are some areas that have a positive indirect influence on cetaceans, such as the fishery-regulated areas in Italy, managed through spatial measures establishing Biological resource Protection Areas (BPAs; Zone di Tutela Biologica). Although oil and gas exploration activities have a negative impact on the marine environment; platforms act as de facto spatial protected areas for habitats and species.
Management practices in protected areas for nature conservation vary. Not all areas have management plans or active management authorities. Generally, there is lack of knowledge whether these protected areas are effective for the conservation of cetaceans and what is the requirement for improvement of management.

5.5.5.4. Other cetaceans conservation efforts

5.5.5.4.1. Awareness raising

Informing the interested public about cetaceans and need for their conservation contributes to a better understanding and affects attitudes of people generally towards conservation. There is no systematic public awareness activities related to cetaceans at the Adriatic level, apart from the activities in the scope of the NETCET project. However there are individual activities in the almost all of the Adriatic countries e.g. the public awareness activities on the Croatian coast carried out by the BWI, including the 'Dolphin Day' that has been celebrated every year in Veli Lošinj, since 1992. In addition, since 2015 ACCOBAMS has promoted the celebration of the cetaceans' day on the 5th of June in the entire Mediterranean region and beyond.

6. Objectives

Eight objectives were identified to bridge the gap between the present situation and the long-term vision for the conservation of cetaceans in the Adriatic Sea over the next 10 years (Table 4). They address topics such as knowledge base, management of threats, cooperation between sectors/institutions for cetaceans conservation, legislation and enforcement, cetaceans habitat conservation, capacity building, public awareness and financing. These objectives are strongly linked to the objectives and targets stipulated in the relevant global and regional strategies, such as the Aichi targets, EU Biodiversity Strategy, Strategy for the Adriatic and Ionian Region and the cetacean specific ACCOBAMS Strategy 2014 – 2023.

TABLE 4.

Objectives for the conservation of cetaceans in the Adriatic Sea in the period between 2016 and 2025

Objectives	Targets	Indicator/Source of verification	Link to the Aichi targets	Link to the EU biodiversity targets	Link to the EU Strategy for the Adriatic and Ioanian Region	Link to the ACCOBAMS Strategy 2014 - 2023
1. KNOWLEDGE BASE						
1.1. Improve knowledge about the state of cetaceans in the Adriatic Sea, as a basis for conservation planning	1.1.1. Accurately estimate population size and dynamics of cetaceans in the Adriatic	GES Indicators[6]: 1.1. (species distribution), 1.2. (population size), 1.3 (population condition)/MSFD reports	Aichi Target 12 Aichi Target 19	EU Biodiversity Target 1	Horizontal issues - Building on the Biodiversity knowledge base	Specific objective B.1.
	1.1.2. All existing and newly collected data about cetaceans promptly available to the experts	Strandings and emergency events data/Web-site (NETCET follow up)				
2. MANAGEMENT OF THREATS						
2.1. Reduce the (impact of) threats to cetaceans, particularly interactions with fisheries	2.1.1. Decreased mortality rate and number of animals injured through activities caused by humans	Cetacean mortality trends for the Adriatic Sea in relation to abundance/ Annual reports about mortality in the Adriatic Sea GES Indicators: 4.3 . (Abundance/distribution of key trophic groups/ species), 8.2. (Effects of contaminants), 10.2. (Impact of litter on marine life), 11.2. (Continous low frequency sound)/ MSFD reports	Aichi Target 6 Aichi Target 8	EU Biodiversity Target 4 EU Biodiversity Target 2		Specific objective B.2.
3. COOPERATION between INSTITUTIONS/SECTORS for CETACEANS CONSERVATION						
3.1. Enhance cooperation between stakeholders, particularly those involved in nature conservation and fisheries	3.1.1. All strategic decisions (e.g. preparation of the Adriatic (relevant) strategic/ management plans related to cetaceans) made with active involvement of all relevant stakeholders	Affiliation of stakeholders participating in development of strategic documents for the Adriatic/Lists of participants in the document developments				Specific objectives A.1 and A.2.
4. LEGISLATION AND ENFORCEMENT						
4.1. Establish a common cetacean conservation legislation framework in the Adriatic	4.1.1. All Adriatic countries follow the EC acquis communitaire	Evaluations of the EC for the non-EU countries/ Progress reports by the EC EU nature directives fitness check	Aichi Target 2 Aichi Target 17	EU Biodiversity Target 6		Specific objective B.2.
5. CETACEANS HABITAT CONSERVATION						
5.1. Ensure effective conservation of important cetacean habitats through targeted protection and appropriate governance of areas	5.1.1. State of cetaceans in at least 5 protected areas in the Adriatic containing critical habitats is maintained or improved	Identified areas representing important habitats for cetaceans in the Adriatic / ACCOBAMS database - NETCCOBAMS Management effectiveness level of existing protected areas for cetaceans /Evaluations of management effectiveness	Aichi Target 2 Aichi Target 11	EU Biodiversity Target 6 EU Biodiversity Target 1		Specific objective B.5.
6. CAPACITY BUILDING						
6.1. Improve human capacity for cetaceans conservation issues, particularly for addressing strandings, inventorying and monitoring	6.1.1. Functional stranding network(s) and responses to emergency situation	Accurate and adequate responses to emergency situations/ Annual reports about strandings in the Adriatic	Aichi Target 19		Horizontal Issues - Building on the Biodiversity knowledge base	Specific objective B.4.
	6.1.2. Adequate human capacity with knowledge about inventorying, monitoring and applying cetacean conservation	Trained participants/ Lists of participants of the programmes				

6. Commision decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (notified under document C (2010) 5956) (Text with EEA relevance) (2010/477/EU): http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010D0477%2801%29&from=EN

Objectives	Targets	Indicator/Source of verification	Link to the Aichi targets	Link to the EU biodiversity targets	Link to the EU Strategy for the Adriatic and Ioanian Region	Link to the ACCOBAMS Strategy 2014 - 2023
7. PUBLIC AWARENESS						
7.1. Raise awareness about cetacean conservation in the Adriatic	7.1.1. General public and other relevant stakeholders are aware about cetaceans and a need for their conservation	Level of awareness -public awareness index/Surveys	Aichi Target 1	EU Biodiversity Target 1		Specific objective B.3.
8. FINANCING						
8.1. Ensure funding for cetacean conservation activities at the Adriatic level	8.1.1. Funding for training for strandings, inventorying and monitoring cetacean species in the Adriatic Sea	Level of awareness -public awareness index/Surveys	Aichi Target 1	EU Biodiversity Target 1		Specific objective B.3.

7. Action Plan

In order to achieve the eight objectives and related targets, altogether 57 actions were identified with different levels of priority (Table 5). These actions were linked to the ACCOBAMS Strategy, as the strategic document specifically targeted to cetaceans in the Mediterranean Sea. These should be implemented in the first 5 years of the Strategy period (i.e. 2016 – 2020).

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TABLE 5.

Action plan for conservation of cetaceans in the Adriatic Sea in the period 2016 – 2025

1. KNOWLEDGE BASE

Objective 1.1. Improve knowledge on the state of cetaceans in the Adriatic Sea, as a basis for conservation planning

TARGET 1.1.1. ACCURATELY ESTIMATED POPULATION SIZE AND DYNAMICS OF CETACEANS IN THE ADRIATIC SEA

No.	Activities	Subject(s) in charge[7]	Expected results (outputs)	Target species[8]	Relevant Adriatic Countries (based on existing knowledge)	Priority[9]	Possible sources of funding[10]	Link to ACCOBAMS Strategy Activities
1.1.1.1. INVENTORY								
1.1.1.1.1.	Carry out distribution and abundance surveys of the least known species and least known populations	N*	Abundance and distribution assessment report(s)	BP, GG, ZC, SC	Albania, Croatia, Italy, Montenegro	Very high	IP, NF, O	B.1.1.1.
1.1.1.1.2.	Identify the population structure of the least known species	N*	Population structure reports	BP, GG, SC, ZC	All countries	High for BP and ZC, for other species Medium	IP, NF, O	B.1.2.1.
1.1.1.1.3.	Identify units-to-conserve	N*		TT	All countries	High	IP, NF, O	
1.1.1.2. MONITORING CETACEAN STATUS								
1.1.1.2.1.	Standardise monitoring methodologies and procedures in the Adriatic (relation to the MSFD and HD)	N*	Monitoring programme for cetaceans in the Adriatic	All species[11]	All countries	Very high	IP, NF	B.1.1.1.
1.1.1.2.2.	Implement fully standardised monitoring programme for cetaceans in the Adriatic (as foreseen in 1.1.1.3.) using aerial surveys and all relevant tools (link to the ACCOBAMS Survey Initiative)	N*	Regular regional overviews of the state of cetacean populations	All species	All countries	High	IP, NF, O	
1.1.1.2.3.	Systematically monitor mortality trends and cases of injured animals (relation to the Capacity building section)	N*	Annual mortality trend/ injured animals reports	All species	All countries	Very high (and ongoing)	NF, O	B.1.3.1.
1.1.1.2.4.	Assess the IUCN status for the Adriatic of resident species	N,I*	Listing of the species IUCN Red List Status (IUCN report)	TT	All countries	High	IP, NF, O	B.1.3.2.

TARGET 1.1.2. ALL EXISTING AND NEWLY COLLECTED DATA ABOUT CETACEANS PROMPTLY AVAILABLE TO THE EXPERTS

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
1.1.2.1. DATA STORAGE AND EXCHANGE								
1.1.2.1.1.	Maintain the Adriatic databases on cetacean strandings, preliminary created at the University of Padua in the scope of NETCET	N*	Adriatic cetaceans stranding database Act of cooperation between NETCET partners	All species	All countries	High	NF, IP	
1.1.2.1.2.	Establish the Adriatic catalogue of dorsal fins	N*	Database	All species	All countries	Medium	NF, IP	
1.1.2.1.3.	Regularly exchange other relevant data between NETCET partners after the project is finished	N	Act of cooperation between NETCET partners Active mailing lists	All species	All countries	High	NF	
1.1.2.1.4.	Upload data regularly on the existing data platforms, f.e. OBIS SeaMap and MEDACES (used already in the ACCOBAMS area)	N, I	Formal agreements; data holders (starting with those under 1.1.2.1.1. and 1.1.2.1.2.) and data providers	All species	All countries	Medium	NF	

7. N = national institutions and organisations (to be elaborated in more details in the National Action Plans), I = international institutions and organisations, such as RAC/SPA, ACCOBAMS, IUCN, WWF etc., * - emphasising the need for coordinated efforts between relevant institutions/organisations
8. TT – T.truncatus, GG – Grampus griseus, ZC – Z. cavirostris, SC – Stenella coeruleoalba, BP - Balaenoptera physalus,
9. Very high = activity should be implemented in the first year of the Strategy implementation, High = activity should be implemented by the end of the first triennium, Medium = activity should be implemented in the second Strategy triennium, Low =activity should be implemented by the end of the Strategic period
10. IP = international public (EC, CMS etc.), NF = national funding, O = other such as private foundations etc.
11. All species regular or vagrant in the Adriatic

2. MANAGEMENT OF THREATS

Objective 2.1. Reduce (impact of) threats to cetaceans in the Adriatic Sea, particularly interactions with fisheries

TARGET 2.1.1. DECREASED MORTALITY RATE AND NUMBER OF ANIMALS INJURED THROUGH ACTIVITIES CAUSED BY HUMANS

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
2.1.1.1. INTERACTION WITH FISHERIES								
2.1.1.1.1.	Assess accurately current bycatch rate and hot-spots of cetaceans/ fisheries interactions	N* (involved in cetacean conservation and fisheries)	Bycatch rate assessment report with maps of hotspots	All species	All countries	Very high	IP, NF	B.2.1.2.
2.1.1.1.2.	Assess accurately depredation level and hot-spots of cetaceans/ fisheries interactions	N* (involved in cetacean conservation and fisheries)	Depredation level assessment report with maps of hotspots	All species	All countries	High	IP, NF	
2.1.1.1.3.	Explore, test and if adequate implement new techniques and devices to mitigate bycatch and depredation	N,I* (involved in cetaceans conservation and fisheries)	Report about adequate bycatch and depredation mitigation measures	All species	All countries	High	IP, NF	
2.1.1.1.4.	Set up a systematic bycatch and depredation monitoring (including monitoring effectiveness of mitigation measures) (link with 1.1.1.2.3.)	N (involved in cetaceans conservation and fisheries)	Bycatch and depredation monitoring programme Periodical overviews of state of bycatch and depredation	All species	All countries	Very high	IP, NF	
2.1.1.2. MARINE DEBRIS								
2.1.1.2.1.	Raise awareness of negative impact of plastic waste and ghost nets on marine environment, (link with 7.1.1.1.2.)	N, I	Information campaigns	All species	All countries	High	NF, IP	
2.1.1.2.2.	Change existing waste management practices (new waste collection practices, coastal cleanups etc.) in cooperation with responsible subjects	N	New formal decisions to introduce new practices	All species	All countries	Medium	NF, IP	
2.1.1.2.3.	Introduce and promote new market measures to reduce reliance on plastics in retail packaging	N*	New market decisions to regulate use of plastic bags	All species	All countries	High	NF, IP	
2.1.1.3. ANTHROPOGENIC NOISE								
2.1.1.3.1.	Identify noise/cetacean interactions hot spots	N, I*	Study to create a map of noise and hot spots	All species, focus on ZC	All countries	High	NF, IP	B.2.3.1.
2.1.1.3.2.	Develop standards specific for the Adriatic for carrying out the EIA, AA and SEA studies for projects and plans with noise component, including operational rules for carrying out seismic surveys and other activities (build on the existing ACCOBAMS guidelines, IWC standards etc.)	N, I*	Guidelines/ manual for preparation of the EIA, AA, SEA studies	All species, focus on ZC	All countries	High	NF, O	B.2.3.4.
2.1.1.3.3.	Establish a common code of conducts for recreational boats focussing on hot spots areas and areas containing important habitats	N*	Code of conducts formally adopted (f.e. by-law, management authority decision)	All species, focus on TT	All countries	High	NF, O	
2.1.1.3.4.	Develop market mechanisms to reduce noise input to the marine environment in cooperation with industry and businesses sector	N*,I	Agreements with businesses developing new technologies	All species	All countries	High	NF, IP, O	
2.1.1.3.5.	Monitor impacts of noise, with focus on the interaction hot spots areas, as well as effectiveness of mitigation measures	N*	Study	All species	All countries	Medium	IP, NF	

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
2.1.1.4. CHEMICAL POLLUTION								
2.1.1.4.1.	Ensure high standards are met during transports of oil derivatives through the Adriatic, particularly in the central Adriatic	N,I*	Overview of existing practices and proposal of mitigation measures	All species	All countries, focus on Italy and Croatia	High	NF, IP	
2.1.1.4.2.	Improve existing sewage systems and agricultural practices, particularly in the northern Adriatic	N*	Overview of existing practices and proposal of remedy measures	All species	All countries, focus on Italy and Croatia	Medium	NF, IP	
2.1.1.4.3.	Assess and monitor impact of pollution on cetaceans, particularly in the northern Adriatic	N*	Chemical pollution impact assessment report with monitoring scheme	All species	All countries, focus on Italy and Croatia	High	NF, IP	B.2.2.1.
2.1.1.5. CETACEANS WATCHING								
2.1.1.5.1.	Standardise cetacean watching using the existing high quality labels (such as ACCOBAMS/Pelagos label)	N,I*	Cetacean watching formally licensed	All species	All countries, focus on Italy and Croatia	Medium	NF	B.2.5.1.
2.1.1.6. CLIMATE CHANGE								
2.1.1.6.1.	Identify species sensitive to climate changes and establish monitoring	N,I*	Monitoring proposal	All species	All countries	Medium	NF, IP	B.2.7.1.

3. COOPERATION BETWEEN INSTITUTIONS/SECTORS FOR CETACEANS CONSERVATION

Objective 3.1. Enhance cooperation between stakeholders, particularly those involved in nature conservation and fisheries

TARGET 3.1.1. ALL STRATEGIC DECISIONS RELEVANT TO CETACEANS (F.E. PREPARATION OF THE ADRIATIC (RELEVANT) STRATEGIC/MANAGEMENT PLANS RELATED TO CETACEANS) MADE WITH ACTIVE INVOLVEMENT OF ALL RELEVANT STAKEHOLDERS

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
3.1.1.1. BUILDING ACTIVE PARTNERSHIP								
3.1.1.1.1.	Establish transboundary partnerships between relevant practioners for conservation of cetaceans in the Adriatic	N,I*	Adriatic cetaceans conservation interest group (continuation of the NETCET partnership) Joint projects	All species	All countries	Very high	NF	
3.1.1.1.2.	Establish active partnership between cities „friendly“ to cetaceans (formalisation of the NETCET initiated “City network“)	N*	Formalised agreement between cities Joint (public awareness) activities	All species	All countries	High	NF	
3.1.1.1.3.	Promote cooperation between different organisations/institutions at national, regional and local levels	N	Joint involvement in development of national action plans Joint projects	All species	All countries	High	NF	
3.1.1.1.4.	Establish an active communication channel between national representatives to the regional (Mediterranean) international organisations such as GFCM, ACCOBAMS etc.	N	Exchange of information on relevant topics	All species	All countries	High	NF	

4. LEGISLATION AND ENFORCEMENT

Objective 4.1. Establish a common cetacean conservation legislation framework in the Adriatic Sea

TARGET 4.1.1. ALL ADRIATIC COUNTRIES FOLLOW THE EC ACQUI COMMUNITAIRE

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
4.1.1.1. HARMONISATION OF LEGISLATION								
4.1.1.1.1.	Harmonise fully the existing national legislation relevant for cetaceans conservation in the non EU Member States with the EC acquis communitaire, particularly with EU Habitats Directive and MSFD	N	Amended existing national legislation	All species	Albania, Bosnia and Herzegovina and Montenegro	High	NF	
4.1.1.1.2.	Improve transposition of the EC directives and regulations into the national legislation in the EU Member States	N	Amended existing national legislation	All species	Croatia, Italy, Slovenia	High	NF	
4.1.1.2. ENFORCEMENT								
4.1.1.2.1.	Stimulate transboundary cooperation between inspection services in the Adriatic countries using the existing platforms like IMPEL etc.	N	Joint activities	All species	All countries	Medium	IP, NF	

5. CETACEANS HABITATS CONSERVATION

5.1. Ensure effective conservation of important cetacean habitats through targeted protection of areas

TARGET 5.1.1. STATE OF CETACEANS IN AT LEAST 5 PROTECTED AREAS IN THE ADRIATIC CONTAINING CRITICAL HABITATS IS MAINTAINED OR IMPROVED

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
5.1.1.1. IDENTIFICATION AND DESIGNATION OF IMPORTANT AREAS FOR CETACEANS								
5.1.1.1.1.	Identify important habitats for cetaceans in the entire Adriatic, based on new data	N*	Proposal of important habitats for cetaceans	All species	All countries, focus on countries with no areas idenified yet such as Albania and Montenegro	High	NF, IP, O	B.5.1.1.
5.1.1.1.2.	Based on important habitats identified under 5.1.1.1.1. and existing protection areas network, propose and implement the most appropriate ways of habitats conservation (such as establishment of new national/transboundary protected areas, revision of the management of the existing protected areas etc.)	N, I*	Proposal for spatial protection of important habitats	All species	All countries, focus on countries with no areas idenified yet such as Albania and Montenegro	Medium	NF, IP, O	B.5.1.1.
5.1.1.2. EFFECTIVE MANAGEMENT OF THE EXISTING PROTECTED AREAS								
5.1.1.2.1.	Evaluate effectiveness of the existing NATURA 2000 sites with cetaceans as target features at the beginning and at the end of the Strategy period	N, I*	Evaluation effectiveness studies	TT	Croatia, Italy	Medium	NF, IP, O	B.5.1.2. B.5.1.3.
5.1.1.2.2.	Based on results of the 5.1.1.2.1. undertake measures for improvement of the management, using the existing guidelines for management of protected areas important for cetaceans (guidelines developed by MedPan in cooperation with ACCOBAMS)	N, I*	Evaluation effectiveness studies	TT	Croatia, Italy	Medium	IP, NF	B.5.1.2.

6. CAPACITY BUILDING

Objective 6.1. Improve institutional and human capacities for cetaceans conservation issues, particularly for addressing strandings and monitoring

TARGET 6.1.1. FUNCTIONAL STRANDING NETWORK(S) AND RESPONSES TO EMERGENCY SITUATION

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
6.1.1.1. OPERATIONAL STRANDING NETWORK(S)								
6.1.1.1.1.	Establish the Adriatic Emergency Task Force and national and regional satelites task forces	N*	Nominated and operational Adriatic Task Force	All species	All countries	Very high	NF, IP	B.4.1.3.
6.1.1.1.2.	Establish stranding networks in the countries with no such mechanisms	N	National stranding networks	All species	Bosnia and Herzegovina, Montenegro	Very high	NF	
6.1.1.1.3.	Organise periodical regional trainings on necropsies and diagnostic techniques with special emphasis to those aimed to reveal possible interaction with human activities	I,N*	Trained national experts	All species	All countries	High (ongoing)	IP, NF	B.4.1.1.
6.1.1.2. TISSUE BANKS								
6.1.1.2.1.	Enhance the cooperation with the existing Mediterranean Marine Mammal Tissue Bank (at University of Padua) and the delivery of cetaceans samples					High	NF, IP	
6.1.1.2.2.	Establish national tissue banks in Adriatic countries without any and revise the existing in other countries	N	Adequate national tissue banks	All species	All countries, with the focus on Albania	Medium	NF	

TARGET 6.1.2. ADEQUATE HUMAN CAPACITIES WITH KNOWLEDGE ABOUT MONITORING AND OTHER CETACEANS CONSERVATION ISSUES

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
6.1.2.1. CAPACITY BUILDING FOR MONITORING								
6.1.2.1.1.	Organise periodic regional training for research and monitoring of cetaceans targeted to researchers and nature conservation professionals (f.e. protected areas managers/staff)	N*	Trained national experts	All species	All countries	Medium	NF, IP, O	B.4.2.1.
6.1.2.1.2.	Organise trainigs for monitoring and similar educational activities for general public (citizen science)	N	Trained	All species	All countries	Medium	NF, IP, O	B.4.2.1.
6.1.2.2. EDUCATION ABOUT CETACEANS CONSERVATION								
6.1.2.2.1	Introduce learning about cetaceans conservation in the existing high-educational programmes (B.Sc., M.Sc courses) and „life-long learning“. Make use of the already existing tools, f.e.module developed in the scope of ACCOBAMS	N,I	Higher and further education programmes with cetaceans conservation component	All species	All countries	Medium	NF, IP, O	B.4.4.1.
6.1.2.2.2.	Develop local educational activities (potentially licensed through national schemes)		Local educational scheames	All species	All countries	Medium	NF, O	

7. PUBLIC AWARENESS

Objective 7.1. Raise awareness about cetaceans conservation in the Adriatic

TARGET 7.1.1. GENERAL PUBLIC AND OTHER RELEVANT STAKEHOLDERS ARE AWARE ABOUT CETACEANS AND A NEED FOR THEIR CONSERVATION

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
7.1.1.1. INFORMATION								
7.1.1.1.1.	Celebrate regularly Cetaceans Day(s) (link with the „ACCOBAMS Cetaceans Day“ (5 June) and similar events (such as existing Dolphin days, coastal cleaning events etc.)	N (incuding City network)	Events dedicated fully or partly to cetaceans	All species	All countries	High	NF, IP, O	B.3.1.1.
7.1.1.1.2.	Undertake thematic information campaigns f.e. campaigns on actions to mitigate different impacts on cetaceans (fisheries, seasonal tourism, plastic bags, ghost nets)	N	Information campaigns	All species	All countries	High	NF, IP, O	
7.1.1.1.3.	Undertake information campaigns for school children	N	Information campaigns	All species	All countries	High	NF, IP, O	B.3.1.3.
7.1.1.1.4.	Organise public awareness related surveys	N*	Survey reports	All species	All countries	Medium	NF, IP, O	B.3.1.6.

8. FINANCING

Objective 8.1. Ensure funding for cetacean conservation activities at the Adriatic level

TARGETS 8.1.1. FINANCIAL SUPPORT AVAILABLE AND USED FOR IMPLEMENTATION OF THE MOST OF THE ACTIVITIES STIPULATED IN CONSERVATION STRATEGY

No.	Activities	Responsible subjects	Expected results (outputs)	Target species	Relevant Adriatic Countries	Priority	Possible sources of funding	Link to ACCOBAMS Strategy Activities
8.1.1.1. NEW FUNDING POSSIBILITIES								
8.1.1.1.1.	Develop follow-up of the NETCET project to implement the Strategies for the Adriatic	N	Joint project	All species	All countries	Very high	IP, NF	A.3.1.4.
8.1.1.1.2.	Assess potential synergies in funding conservation activities in the framework of the implementation of relevant EU Directives (Habitat Directive, Marine Strategy Framework Directive)	N	Overview of funding possibilities	All species	All countries	High	NF	A.3.1.3.
8.1.1.1.3.	Regularly exchange information about funding possibilities (tenders) between NETCET partners	N	Active mailing list	All species	All countries	Very high (ongoing)	NF	A.3.1.3.
8.1.1.1.4.	Investigate Public Private Partnerships (PPP) to leverage funds from the business sectors and foundation to cofinance conservation	N	Report	All species	All countries	Medium	NF, IP, O	
8.1.1.1.5.	Investigate the potential for the creation of an Adriatic conservation trust fund	N	Report	All species	All countries	Medium	NF, IP, O	

8. Implementation of the Strategy

There is no international institution/organisation responsible for the development and implementation of the Strategy for conservation of cetaceans in the Adriatic Sea. In the development of this Strategy one concept was to establish a specific Adriatic body/agreement for cetaceans conservation. However, this issue was not further promoted during the NETCET project. The only way to make this document a living document is to include the proposed objectives and actions into other strategies and documents developed for the Adriatic Sea, that are directly or indirectly linked to cetaceans, such as Conservation plan for bottlenose dolphins in the Mediterranean Sea, developed in the scope of ACCOBAMS. In addition, formal recognition will be sought from ACCOBAMS, as the relevant regional agreement.

Furthermore, this Strategy also represents a guideline for development of national action plans for cetaceans in the Adriatic countries. Namely, at the national levels there are functional institutions with the competences for development and/or adoption of such plans. Elaboration of the regional Strategy also helps in focusing the existing international public funds, particularly those of the EU, in actions that are needed in the Adriatic to achieve the good status of cetaceans and the environment in general. Funding for particular actions should also be ensured through national public funds and other sources (f.e. private foundations etc.). Possibilities for public-private partnerships should be investigated.

9. Monitoring implementation and revision

Under these circumstances, monitoring the implementation of this Strategy could be performed by the interested NETCET partners (who prepared the Strategy) and presented to the relevant regional and national bodies, such as ACCOBAMS. It is suggested that a comprehensive evaluation of implementation effectiveness should be performed every ten years, and pursuant to this, the Strategy would be revised.

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ANNEX 1.

Working group for the preparation of the Strategies for conservation of the cetaceans and sea turtles in the Adriatic

Partner	Cetaceans	Sea Turtles
State Institute for Nature Protection (SINP) / Croatian Agency for the Environment and Nature (CAEN)	Ana Štrbenac (coordinator), Jasna Jeremić, Katja Jelić, Ana Maričević	
Italian National Institute for Environmental Protection and Research (ISPRA)	Sasa Raicevich, Caterina Fortuna, Giulia Mo	
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Cetacea Foundation (CF)	Valeria Angelini	Sauro Pari
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Blue World Institute of Marine Research and Conservation (BWI)	Draško Holcer, Peter Mackelworth	
Marine educational centre Pula (MEC)		Karin Gobić
Institute for Marine biology (IMB)	Mirko Đurović, Zdravko Ikica	
Herpetofauna Albanian Society (HAS)		Vilma Piroli, Idriz Haxhiu
Association for Protection of Aquatic Wildlife of Albania (APAWA)	Sajmir Beqiraj	

ANNEX 2.

International conventions, agreements and related protocols relevant to cetaceans conservation in the Adriatic region

INTERNATIONAL CONVENTIONS/ AGREEMENTS	SIGNATURES AND RATIFICATIONS					
	Italy	Slovenia	Croatia	Bosnia and Herzegovina	Montenegro	Albania
MULTIPLE PURPOSE CONVENTIONS						
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona 1995; www.unepmap.org)	09/07/2004	28/11/2002	08/10/1991	22/10/1994	19/12/2007	26/10/2001
United Nations Convention on the Law of the Sea (1982; www.un.org/depts/los/convention_agreements/texts/unclos/closindx.htm)	13/01/1995	16/06/1995	05/04/1995	12/01/1994	23/10/2006	23/06/2003
CONSERVATION OF BIODIVERSITY IN GENERAL						
Convention on Biological Diversity (CBD; Rio de Janeiro, 1992; www.cbd.int)	14/07/1994	29/12/1993	07/10/1996	26/08/2002	03/06/2006	05/04/1994
CONSERVATION OF CETACEANS AND THEIR HABITATS						
International Convention for the Regulation of Whaling (ICRW; Washington, 1946; http://iwc.int)	12/02/1998	20/09/2006	10/01/2007	/	/	/
Convention on International Trade in Endangered Species of Fauna and Flora (CITES; Washington, 1973; www.cites.org)	31/12/1979	23/04/2000	12/06/2000	21/04/2009	03/06/2006	25/09/2003
Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979; http://www.coe.int)	01/06/1982	01/01/2000	01/11/2000	01/03/2009	01/02/2010	01/05/1999
Convention on the Conservation of Migratory Species of Wild Animals (CMS; Bonn, 1979; www.cms.int)	01/11/1983	01/02/1999	01/10/2000	/	01/03/2009	01/09/2001
Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 1994 and Monaco 1995) – A Barcelona Convention Protocol	17/06/1999	29/11/2002	12/05/2002	/	19/12/2007	26/10/2001
Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS; Monaco, 1996; www.accobams.org)	01/09/2005	01/12/2006	01/06/2001	/	01/08/2009	01/10/2001
Protocol on Integrated Coastal Zone Management in the Mediterranean (Barcelona 2008) – A Barcelona Convention Protocol	21/01/2008	24/03/2011	28/02/2013	/	08/02/2012	24/03/2011

ANNEX 3.

Guidelines for cetaceans conservation issues in the Mediterranean region

TOPIC	TITLE OF GUIDELINES	SOURCE
Captivity	Guidelines for the release of captive cetaceans into the wild (2007)	ACCOBAMS
Interactions with humans	Principles and guidelines for large whale entanglement response efforts	IWC
	Guidelines for technical measures to minimise cetacean-fishery conflicts in the Mediterranean and Black Seas (2004)	ACCOBAMS
	Guidelines for the use of acoustic deterrent devices (2004)	ACCOBAMS
	Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area (2010)	ACCOBAMS
Conservation Plans	Guidelines for Cetacean Conservation Management Plans	IWC
Marine Protected Areas	Guidelines for the Establishment and Management of Marine Protected Areas for Cetaceans (2007)	ACCOBAMS
	Guidelines for the criteria for the selection of Marine Protected Areas for cetaceans (2007)	ACCOBAMS
	Guidelines for the Establishment and Management of Marine Protected Areas for Cetaceans (2011)	RAC/SPA
Research	Guidelines on the granting of exceptions to article II, paragraph 1, for the purpose of non-lethal in situ research in the Agreement area (2010)	ACCOBAMS
Strandings	Guidelines for the Development of National Networks of Cetacean Strandings Monitoring (2004)	ACCOBAMS
	Guidelines for the establishment of Tissue Banks and Ethical Code (2007)	ACCOBAMS
	Guidelines for a coordinated cetacean stranding response during mortality events caused by infectious agents and harmful algal blooms (2010)	ACCOBAMS
	Guidelines concerning best practice and procedure for addressing cetacean mortality events related to chemical, acoustic and biological pollution (2010)	ACCOBAMS
	Guidelines for the Development of National Networks of Cetacean Strandings Monitoring (2004)	RAC/SPA
Whale watching	Guidelines for commercial cetacean-watching in the ACCOBAMS area (2010)	ACCOBAMS
	Guidelines for implementing a Pelagos-ACCOBAMS Label for commercial whale watching activities (2010)	ACCOBAMS
	Guidelines for Commercial Cetacean-Watching Activities in the Black Sea, the Mediterranean Sea and Contiguous Atlantic Area (2004)	RAC/SPA
	General Principles for Whale watching (Agreed general principles to minimise the risks of adverse impacts of whale watching on cetaceans)	IWC
	Review of Whale watching guidelines and regulations around the World (version 2012)	IWC

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