

## NEXT STEPS TOWARDS SPERM WHALE CMP

### Issue: Conservation Management Plans

#### 1. Action requested

The Scientific Committee is invited to:

- a. **consider** the draft CMP on Sperm whale;
- b. **discuss** the next steps to finalise this CMP;
- c. **provide recommendations** to the Parties on this issue.

#### 2. Background

During MOP6 and MOP8, Parties adopted Resolution 6.21 on “Species Conservation Management Plans” (CMPs) and Resolution 8.14 “Conservation Management Plans”, which are key to manage human activities affecting cetaceans in the Mediterranean Sea and to maintain a favourable conservation status throughout their historical range, based on the best available scientific knowledge. To date, four CMPs are under development for fin whales, Risso’s dolphins, common dolphins and bottlenose dolphins.

During the 15<sup>th</sup> Meeting of the Scientific Committee, The Scientific Committee prioritized drafting future CMPs on:

- Ziphius – to be led by Aurelie Moulins; and
- Sperm whale – to be led by Caterina Lanfredi

**DRAFT: ACCOBAMS CMP for  
Mediterranean sperm whale  
(*Physeter macrocephalus*)**

DRAFT

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## Executive Summary

TO BE FINALISED WHEN THE PLAN IS READY

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## 1. Why a Conservation Management Plan is needed

- Rationales for the development of CMP

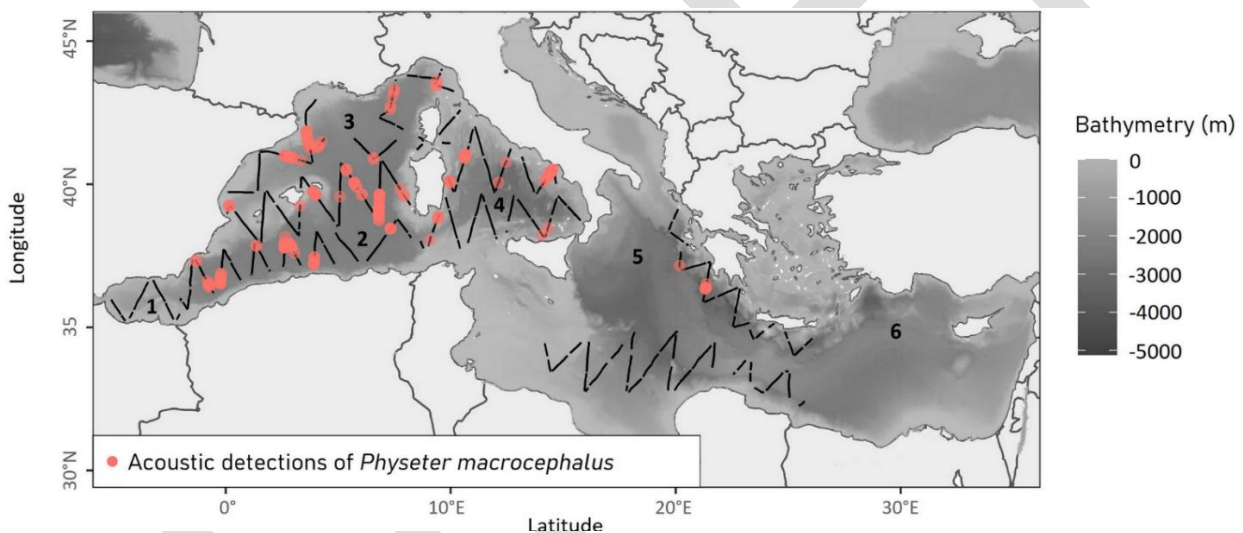
Main point to develop that warrant conservation concern over this population includes:

- Mediterranean sperm whales qualify as a subpopulation based on genetic data;
- The Mediterranean subpopulation is listed as Endangered [C2a(ii)] according to the recent IUCN assessment (Pirodda *et al.*, 2021) based on the following:
- The size of the population is limited (contains fewer than 2,500 mature individuals);
- A continuous decline of the subpopulation is inferred
- Sperm whale survival in the ACCOBAMS area is threatened by several potential pressure/human activities (entanglement in nets, collisions with ships, pollution including noise, ingestion of plastic debris and disturbance from vessels - all contribute to the species' assumed decline - detailed in chapter 4).
- ..

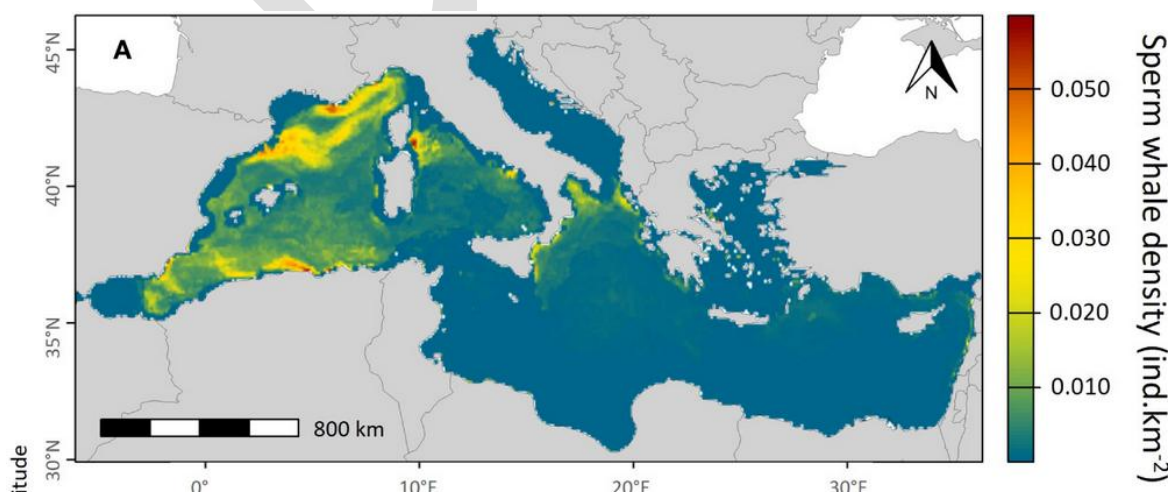
- Map of Geographical Range

Recent evidence from the analysis of ACCOBAMS Survey Initiative (ASI) data:

- Lerebourg, C., Boisseau, O., Ridoux, V. and Virgili, A., **2023**. Summer distribution of the Mediterranean sperm whale: insights from the acoustic Accobams survey initiative. *Frontiers in Marine Science*, 10, p.1229682. <https://doi.org/10.3389/fmars.2023.1229682>

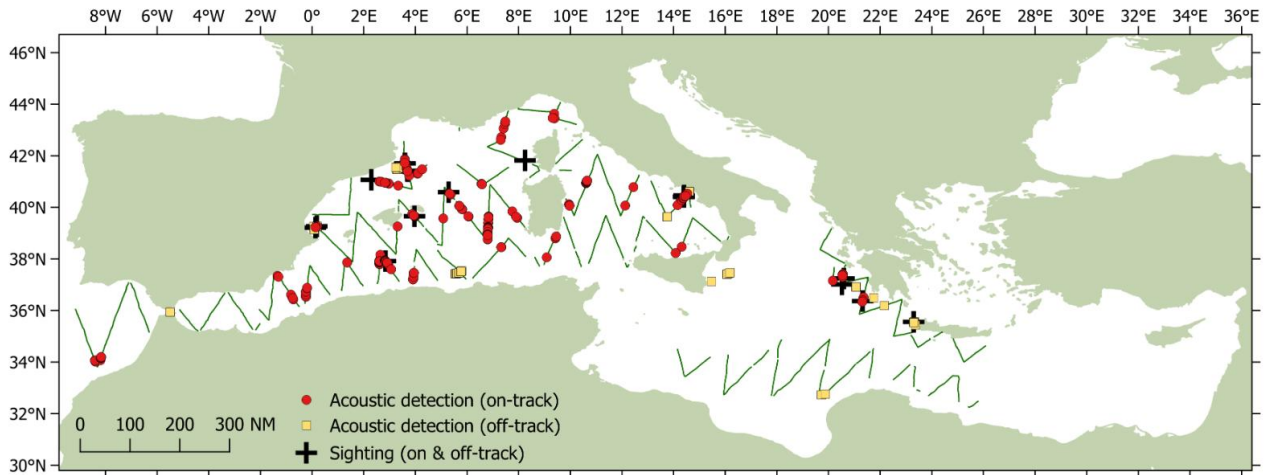


Performed effort transects and acoustic detections of sperm whales collected during the ASI survey in the Mediterranean Sea in 2018 (Larebourg *et al.*, 2023).

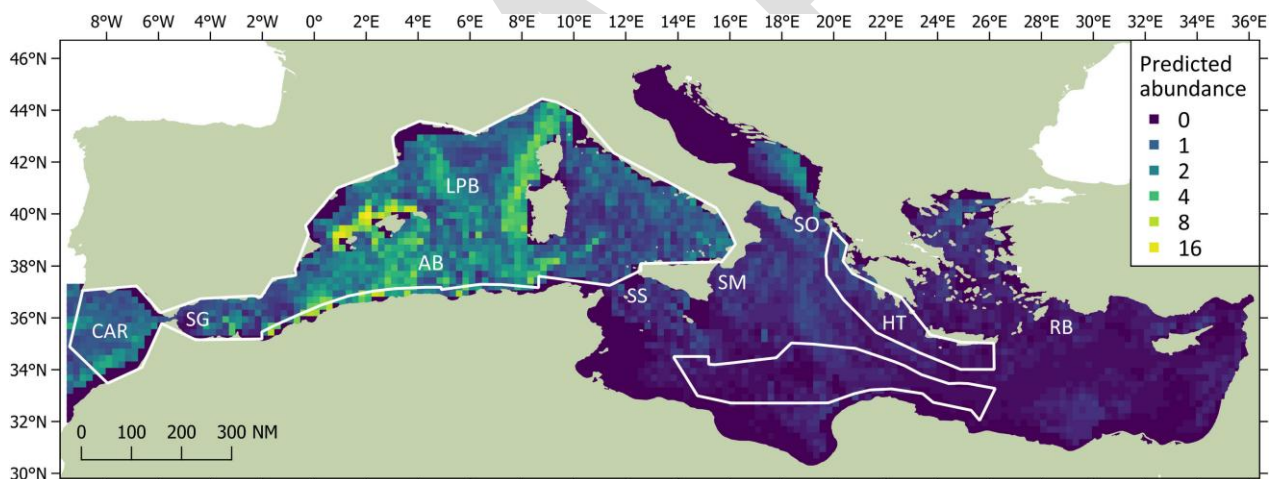


Mean predicted summer densities of sperm whales over the entire sampling period in individuals.km<sup>-2</sup> (June to September) (Larebourg *et al*, 2023).

- Boisseau, O., Reid, J., Ryan, C., Moscrop, A., McLanaghan, R. and Panigada, S., **2024**. Acoustic estimates of sperm whale abundance in the Mediterranean Sea as part of the ACCOBAMS Survey Initiative. *Frontiers in Marine Science*, 11, p.1164026. <https://doi.org/10.3389/fmars.2024.1164026>

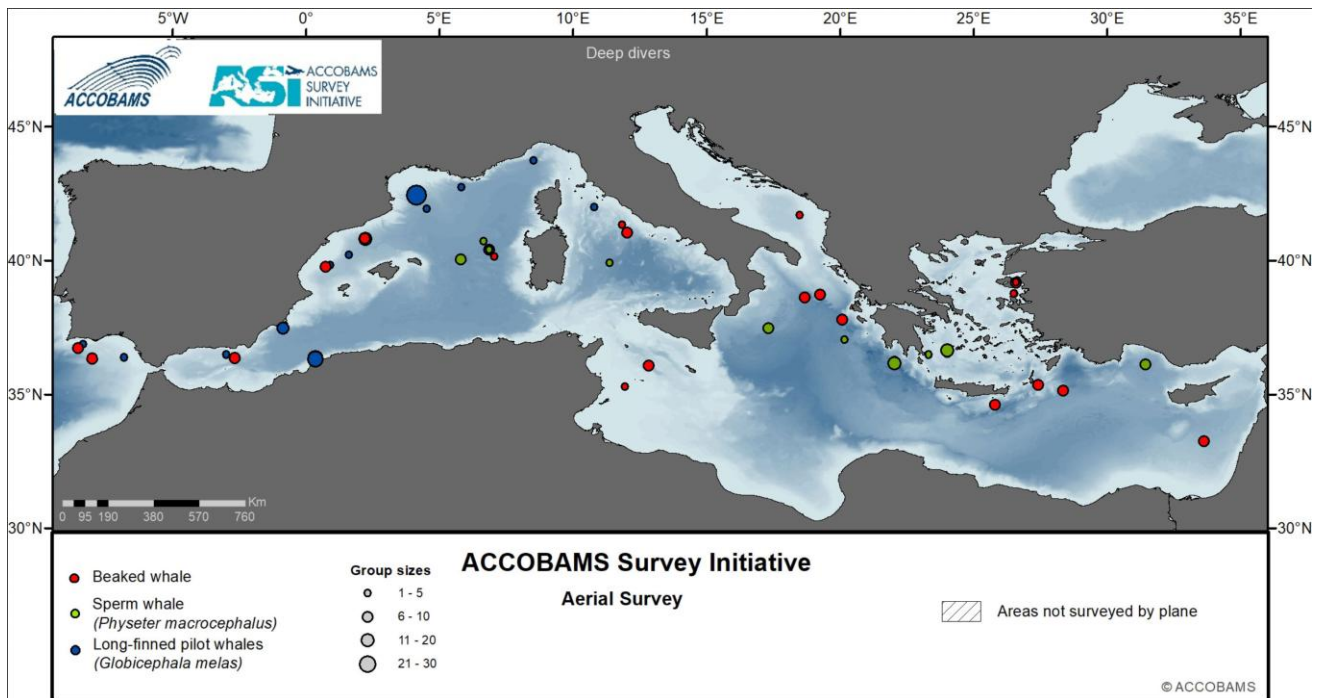


Sperm whale acoustic detections and sightings from *Song of the Whale* during the ASI survey (Boisseau *et al.*, 2024).



Predicted abundances of sperm whales (expressed as number of animals per grid cell) derived from Density Surface Modelling (Boisseau *et al.*, 2024).

- Cañadas, A., Pierantonio, N., Araujo, H., David, L., Di Meglio, N., Doremus, G., Gonzalvo, J., Holcer, D., Laran, S., Lauriano, G. and Perri, M., **2023**. Distribution patterns of marine megafauna density in the Mediterranean Sea assessed through the ACCOBAMS Survey Initiative (ASI). *Frontiers in Marine Science*, 10 p.1270917. <https://doi.org/10.3389/fmars.2023.1270917>



Observations of beaked whales, sperm whales and long-finned pilot whales (Cañadas et al., 2023)

- Future data will be available from an ongoing analysis at basin scale [Not published, Cañadas et al., 2024]
- Recognition of Range by countries

Recent IUCN Assessment (Mediterranean and European)

ACCOBAMS documents

Literature

## 2. LEGAL FRAMEWORK

## 3. BIOLOGY AND STATUS OF MEDITERRANEAN SPERM WHALES

### 3.1 POPULATION STRUCTURE

- Photo-id data
- Genetic Analyses

Violi, B., de Jong, M.J., Frantzis, A., Alexiadou, P., Tardy, C., Ody, D. et al. **2023**. Genomics reveals the role of admixture in the evolution of structure among sperm whale populations within the Mediterranean Sea. *Molecular Ecology*, 32(11), 2715–2731. <https://doi.org/10.1111/mec.16898>



- Analyses of the vocalizations

Pace, D.S., Lanfredi, C., Airoidi, S., Giacomini, G., Silvestri, M., Pavan, G. and Ardizzone, D., **2021**. Trumpet sounds emitted by male sperm whales in the Mediterranean Sea. *Scientific reports*, 11(1), p.5867.

Poupard, M., Ferrari, M., Best, P. *et al.* **2022**. Passive acoustic monitoring of sperm whales and anthropogenic noise using stereophonic recordings in the Mediterranean Sea, North West Pelagos Sanctuary. *Scientific Report* 12, 2007. <https://doi.org/10.1038/s41598-022-05917-1>

Lelong, D.M., Cosentino, L., Fossati, C., Riccobene, G., Speziale, F. and Pavan, G., **2024**. Sperm whale (*Physeter macrocephalus*) coda patterns in the Gulf of Catania, South-Western Ionian Sea, Italy. *Bioacoustics*, pp.1-15.

- Anatomical measurements

Glarou, M., Gero, S., Frantzis, A., Brotons, J.M., Vivier, F., Alexiadou, P., Cerdà, M., Pirotta, E. and Christiansen, F., **2023**. Estimating body mass of sperm whales from aerial photographs. *Marine Mammal Science*, 39(1), pp.251-273.

Azzolin, M., Bellomo, S., Bono, A., Cipriano, G., Crugliano, R., Fanizza, C., Frassa, V., Pelagatti, M., Pietroluongo, G., Ricci, P. and Santacesaria, F.C., **2023**, October. Individuals size estimations of the sperm whales from the Gulf of Taranto (Northern Ionian Sea, Central Mediterranean Sea) employing clicks' Inter-Pulse-Interval (IPI) measurements. In *2023 IEEE International Workshop on Metrology for the Sea; Learning to Measure Sea Health Parameters (MetroSea)* (pp. 340-345). IEEE.

Pierantonio *et al.* **2024**. Unpublished. Size, growth and age of Mediterranean male sperm whales. *Proceedings of the 35 European Cetacean Society*. 10-12 April 2024, Catania, Italy

- Information gaps/needs

### 3.2 HABITAT AND ECOLOGY

- Distribution and movements

Snape, R.T.E., Çiçek, B.A., Hadjioannou, L., Öztürk, A.A. and Beton, D., **2020**. Two sperm whale (*Physeter macrocephalus*) sightings in Cyprus from social media. *Journal of the Black Sea/Mediterranean Environment*, 26(2), pp.238-248.

Torreblanca, E., Báez, J.C., Real, R., Macías, D., García-Barcelona, S., Ferri-Yañez, F. and Camiñas, J.A., **2022**. Factors associated with the differential distribution of cetaceans linked with deep habitats in the Western Mediterranean Sea. *Scientific Reports*, 12(1), p.12918.

Awbery, T., Akkaya, A., Lyne, P., Rudd, L., Hoogenstrijd, G., Nedelcu, M., Kniha, D., Erdoğan, M.A., Persad, C., Amaha Öztürk, A. and Öztürk, B., **2022**. Spatial distribution and encounter rates of delphinids and deep diving cetaceans in the eastern Mediterranean Sea of Turkey and the extent of overlap with areas of dense marine traffic. *Frontiers in Marine Science*, 9, p.860242.

Cañadas, A., Pierantonio, N., Araujo, H., David, L., Di Meglio, N., Doremus, G., Gonzalvo, J., Holcer, D., Laran, S., Lauriano, G. and Perri, M., **2023**. Distribution patterns of marine megafauna density in the Mediterranean Sea assessed through the ACCOBAMS Survey Initiative (ASI). *Frontiers in Marine Science*, 10, p.1270917.

Lerebourg, C., Boisseau, O., Ridoux, V. and Virgili, A., **2023**. Summer distribution of the Mediterranean sperm whale: insights from the acoustic Accobams survey initiative. *Frontiers in Marine Science*, 10, p.1229682.



Thompson, K.F., Webber, T., Karantzas, L., Gordon, J. and Frantzis, A., **2023**. Summer and winter surveys of deep waters of the Hellenic Trench, Greece, provide insights into the spatial and temporal distribution of odontocetes. *Endangered Species Research*, 52, pp.163-176.

Gnone, G., et al., **2023**. Cetaceans in the Mediterranean Sea: encounter rate, dominant species, and diversity hotspots. *Diversity*, 15(3), p.321.

Ascheri, D. and Fontanesi, E., **2023**. New records of sperm whale social units in the Pelagos Sanctuary, Mediterranean Sea. *J. Cetacean Res. Manage.*, 24, pp.1-5.

Thompson, K.F., Gordon, J., Webber, T., Zuriel, Y., Kobo, K., Tchernov, D., Airoidi, S., Violi, B., Verga, A., Gannier, A. and Fontanesi, E., **2024**. Threatened cetaceans off the coast of Israel and long-range movement of a sperm whale. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 34(5), p.e4155.

- Diet

Tonay, A.M., Öztürk, A.A., Salman, A., Dede, A., Danyer, I.A., Danyer, E. and Öztürk, B., **2021**. Stranding records of sperm whale (*Physeter macrocephalus*) on the Turkish coast in 2019-2020 with a note on the opportunistic sampling of stomach content. *Journal of the Black Sea/Mediterranean Environment*, 27(3), pp.281-293.

Neri, A., **2024**. Feeding and biodiversity study by stomach contents of marine predators in the northwestern Mediterranean Sea. University of Siena. PhD Dissertation.

- Life history

Maio, N., Fioravanti, T., Latini, L., Petracchioli, A., Mezzasalma, M., Cozzi, B., Mazzariol, S., Podestà, M., Insacco, G., Pollaro, F. and Lucifora, G., **2022**. Life History Traits of Sperm Whales *Physeter macrocephalus* Linnaeus, 1758 Stranded along Italian Coasts (Cetartiodactyla: Physeteridae). *Animals*, 13(1), p.79.

- Information gaps/needs

### 3.3 ABUNDANCE AND TRENDS

- Strandings?
- Photo-id data
- Sighting data and Acoustic data

Lerebourg, C., Boisseau, O., Ridoux, V. and Virgili, A., **2023**. Summer distribution of the Mediterranean sperm whale: insights from the acoustic Accobams survey initiative. *Frontiers in Marine Science*, 10, p.1229682.

Boisseau, O., Reid, J., Ryan, C., Moscrop, A., McLanaghan, R. and Panigada, S., **2024**. Acoustic estimates of sperm whale abundance in the Mediterranean Sea as part of the ACCOBAMS Survey Initiative. *Frontiers in Marine Science*, 11, p.1164026. <https://doi.org/10.3389/fmars.2024.1164026>

- Information gaps/needs

### 3.4 'ATTRIBUTES' OF THE POPULATION(S) TO BE MONITORED

## 4. SUMMARY OF ACTUAL AND POTENTIAL THREATS

### 4.1 ACTUAL AND POTENTIAL ANTHROPOGENIC THREATS

Mediterranean sperm whales face a broad spectrum of anthropogenic threats, at higher intensity than oceanic counterparts because of the confined and heavily used nature of Mediterranean waters. Activities that result in direct mortality, such as entanglement in illegal driftnets and collisions with ships, together with the noxious effects of noise, pollution, ingestion of debris, disturbance from whale watching operations, and possibly prey depletion and climate change (Pirodda *et al.*, 2021).

Notarbartolo di Sciara G., Tonay A. **2021**. *Conserving whales, dolphins and porpoises in the Mediterranean Sea, Black Sea and adjacent areas: an ACCOBAMS status report* (Monaco: ACCOBAMS).

Table 1

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
<b>Major threats (lethal or sub-lethal)</b>					
<b>Other threats</b>					

#### 4.1.2 ENTANGLEMENT

Blasi, M.F., Caserta, V., Bruno, C., Salzeri, P., Di Paola, A.I. and Lucchetti, A., **2021**. Behaviour and vocalizations of two sperm whales (*Physeter macrocephalus*) entangled in illegal driftnets in the Mediterranean Sea. *PloS one*, 16(4), p.e0250888. <https://doi.org/10.1371/journal.pone.0250888>

#### 4.1.3 VESSEL STRIKES

Grossi, F., Lahaye, E., Moulins, A., Borroni, A., Rosso, M. and Tepsich, P., **2021**. Locating ship strike risk hotspots for fin whale (*Balaenoptera physalus*) and sperm whale (*Physeter macrocephalus*) along main shipping lanes in the North-Western Mediterranean Sea. *Ocean & Coastal Management*, 212, p.105820. <https://doi.org/10.1016/j.ocecoaman.2021.105820>

#### 4.1.4 ANTHROPOGENIC NOISE

#### 4.1.5 MARINE LITTER INGESTION

Perna, M., Brandini, C., Bondoni, M., Lapucci, C., Galgani, F., Panigada, S., Cañadas, A., Panti, C. and Fossi, M.C., **2024**. Evaluation of the exposure of the Mediterranean biodiversity to marine litter: the ASI-plastic busters MPAs projects connection. *Frontiers in Marine Science*, 11, p.1352059 <https://doi.org/10.3389/fmars.2024.1352059>

#### 4.1.6 CHEMICAL CONTAMINANTS

Schweizer, S., Halder, K., Schäfer, A., Hauns, J., Marsili, L., Mazzariol, S., Fossi, M.C., Muñoz-Arnanz, J., Jiménez, B. and Vetter, W., **2024**. High Amounts of Halogenated Natural Products in Sperm Whales (*Physeter macrocephalus*) from Two Italian Regions in the Mediterranean Sea. *Environment & Health*, 2(4), pp.233-242.

López-Berenguer, G., Bossi, R., Eulaers, I., Dietz, R., Peñalver, J., Schulz, R., Zubrod, J., Sonne, C. and Martínez-López, E., **2020**. Stranded cetaceans warn of high perfluoroalkyl substance pollution in the western Mediterranean Sea. *Environmental Pollution*, 267, p.115367.

4.1.7 PHYSICAL DISTURBANCE

4.1.8 CLIMATE CHANGE

4.1.9 CUMULATIVE EFFECTS

## 5 MITIGATION MEASURES

5.1 ENTANGLEMENT

5.2 VESSEL STRIKES

5.3 ANTHROPOGENIC NOISE

5.4 MARINE LITTER INGESTION

5.5 CHEMICAL CONTAMINANTS

5.6 PHYSICAL DISTURBANCE

5.7 CLIMATE CHANGE

5.8 CUMULATIVE EFFECTS

## 6 PUBLIC AWARENESS, EDUCATION AND CAPACITY BUILDING

### 7 EXECUTIVE SUMMARY OF ACTIONS

7.1 DEALING WITH INADEQUATE DATA

7.2 MONITORING

7.3 LIFE OF THE CMP

7.4 Implementation of the CMP; co-ordination, involvement of stakeholders

7.5 TABLE OF ACTIONS

#### Coordination actions

Nr.	Action	Importance	Feasibility	Crossref.

#### Capacity building and public awareness actions

Nr.	Action	Importance	Feasibility	Crossref.

### Research actions essential for providing adequate management advice

Nr.	Action	Importance	Feasibility	Crossref.

### Monitoring actions

Nr.	Action	Importance	Feasibility	Crossref.

### Mitigation measure actions

Nr.	Action	Importance	Feasibility	Crossref.

## 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:

*Coordination Action*

Priority:

### ○ DESCRIPTION OF ACTION

- Specific objectives:.

Rationale:.

Target:

.

- Timeline:

	WHAT	WHO	WHEN


- Tasks of Coordinator in conjunction with Steering Committee:

- INITIAL BUDGET ITEMS TO BE CONSIDERED BY ISC

- ACTORS

- Responsible for coordination of the action:

- Stakeholders:

- ACTION EVALUATION

- PRIORITY

- Importance:

- Feasibility:

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