ANNEX 3

A CONSERVATION MANAGEMENT PLAN FOR ARABIAN SEA HUMPBACK WHALES

This Conservation Management Plan was prepared by a coalition of stakeholders representing Arabian Sea humpback whale Range States, as well as members of the Arabian Sea Whale Network, the Secretariat and Scientific and Conservation Committees of the International Whaling Commission, and the Secretariat of the Convention on Migratory Species

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Executive Summary

The **Arabian Sea humpback whale (ASHW)** is one of the most endangered and genetically isolated whale populations in the world. Unlike other humpback whales, ASHWs do not migrate between polar or temperate feeding grounds and tropical areas, but instead remain year-round in the Arabian Sea. With fewer than 100 individuals remaining off the coast of Oman, this unique population faces several threats, including vessel strikes, entanglement in fishing gear, underwater noise, habitat degradation, and the accelerating impacts of climate change. Population estimates and mortalities recorded in Range States and evidence of impacts from escalating threats justify concern that this population is currently on a pathway towards extinction. Therefore, there is an urgent need for conservation intervention.

This **Conservation Management Plan (CMP)**—jointly supported by the **International Whaling Commission (IWC)** and the **Convention on Migratory Species (CMS)**—provides a strategic framework for coordinated regional conservation efforts. It aims to facilitate effective collaboration across ASHW Range States.

The CMP's overarching **aim** is to ensure the long-term survival and recovery of the ASHW population through collaborative science-based management and threat mitigation.

More specific objectives:

- **Short-term (by 2030):** Establish a governance framework, develop national action plans, address major data gaps, conduct risk assessments, and initiate mitigation measures within core habitat (e.g., ship routing measures for vessel strike reduction in Oman).
- **Medium-term (2030–2038):** Address key threats in selected areas with mitigation and protection measures that will halt population decline across Range States. These should include expanding monitoring of key ecological attributes, enhancing institutional capacity, and building networks with industry.
- **Long-term (by 2050):** Halt and if possible reverse population decline. Mitigation and protective measures of critical habitat to be conducted in the context of a nature-positive and regenerative economics-integrated stewardship approach.

Priority action categories

- **Coordination (COORD):** Creation of a regional Steering Committee, appointment of a CMP Coordinator, and establishment of effective communication platforms and reporting mechanisms.
- **Public awareness & capacity-building (PAC):** Stakeholder engagement through training, advocacy and citizen science initiatives to build public and institutional support for conservation actions.
- **Science (SCI):** Implementation of rigorous research and monitoring, including population surveys, tagging, photo-identification, health assessments, and acoustic studies.
- **Threat mitigation (THRT):** Data-driven strategies to reduce ship strikes, entanglement, habitat loss, and noise pollution—supported by risk assessments, regulatory tools, and engagement with industry.

This CMP is designed to be **inclusive**, **actionable**, and **accountable**, offering a roadmap for governments, NGOs, scientists, and funders to jointly safeguard this irreplaceable population. Its successful implementation will serve as a global model for regional cooperation in marine conservation.

1. Introduction

1.1 Arabian Sea humpback whales: background and context

The population of humpback whales (*Megaptera novaeangliae*) in the Arabian Sea is unique: it resides year-round in the Arabian Sea rather than undertaking annual migrations between high-latitude feeding grounds and low-latitude breeding grounds (Mikhalev 1997 section 10.2.2.2 , Minton et al. 2008, Minton et al. 2011). Research conducted off the coast of Oman from 2000 onwards has confirmed that individually identified humpback whales remain in Oman's waters year-round (Minton et al. 2011), and genetic analysis indicates that the population is discreet, diverging from southern hemisphere con-specifics roughly 70,000 years ago (Pomilla, Amaral et al. 2014). Mark-recapture analysis based on photographic and genetic evidence collected off the coast of Oman between 1999 and 2004 indicated that fewer than 100 individuals remain off the coast of Oman (Minton et al. 2008).

While most of the dedicated research on this population in the past 25 years has been conducted off the coast of Oman, there are multiple lines of evidence to suggest that the population spans the entire Arabian Sea, including the waters off the coasts of India and Pakistan (e.g. Moazzam and Nawaz 2017, Moazzam et al. 2019, 2020, Mahanty et al. 2015, Madhusudhana et al. 2018, D'Souza et al. 2023) with a limited number of records from the Arabian/Persian Gulf (Dakhteh et al. 2017, Natoli et al. 2021, Minton et al. 2023a). Satellite tracking data (Willson et al. 2018), opportunistic photographic matches, and similarity in their recorded song (Cerchio et al. 2018) indicate that whales move between the west side of the Arabian Sea (Oman) and the southeastern side (India), although the frequency and timing of these movements has not been determined.

Based on these available data, the current range of the Arabian Sea humpback whale population is thought to include the waters of the following states: India, Iran, Iraq, Kuwait, the Maldives, Oman, Pakistan, Sri Lanka, United Arab Emirates, and Yemen. Presence and/or the affiliation of observed humpback whales is considered uncertain in Bahrain, Qatar, Saudi Arabia and Somalia.

Ecological niche modelling conducted using satellite telemetry data from 14 humpback whales tagged off the coast of Oman, coupled with confirmed sightings data from Oman and Pakistan was used to generate habitat suitability maps for Arabian Sea Humpback whales (Willson et al. 2017). This can be considered the most robust estimation of the population's current range and critical habitat (see more detail under Section 4.1).

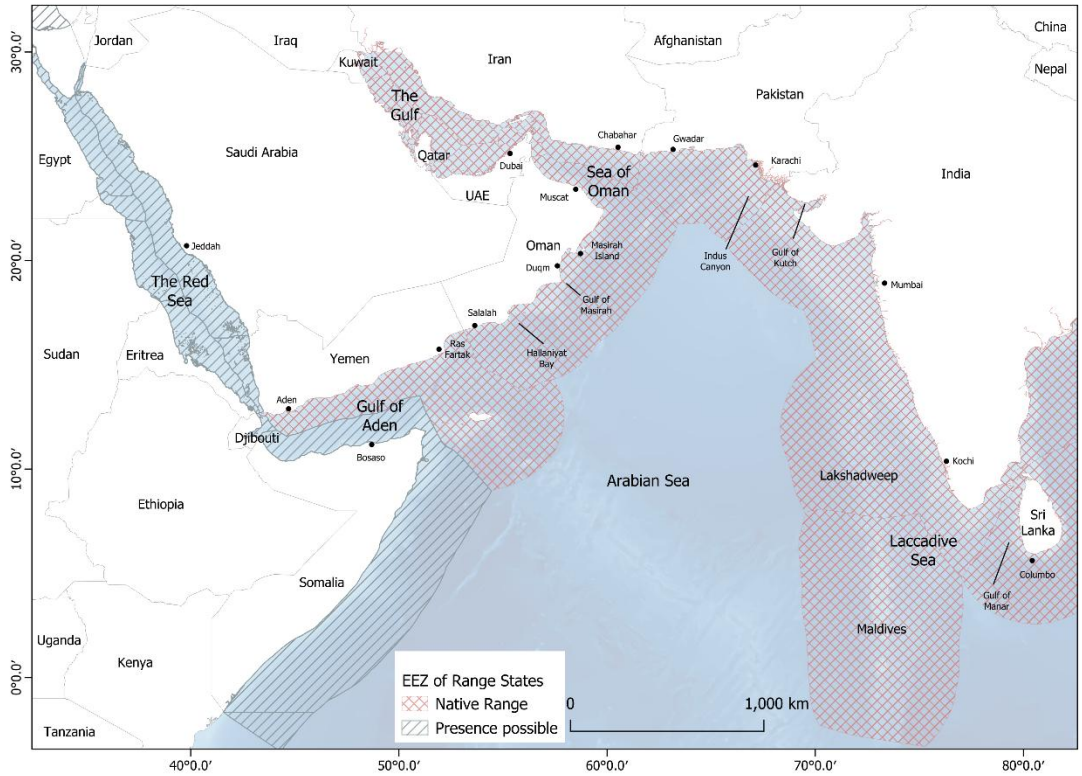

Figure 1: Current understanding of Arabian Sea humpback whale range. For maps based on habitat modelling see figure 3 in section 4.1.3 below.

1.2 Regional threats

The population was hunted in the 1960s by a Soviet whaling fleet, which was estimated to have taken 60% of the whales present at that time (Mikhalev 1997, 2000). Today, vessel strikes and entanglement are considered the two most severe threats to Arabian Sea humpback whales (Minton et al. 2022, Willson et al. 2023). Underwater noise from all vessel types and coastal development, habitat loss from coastal and offshore infrastructure development, prey depletion and increased vulnerability to disease due to climate change are also thought to be additional sources of pressure limiting the recovery of the population (Minton et al., 2022). More detailed information on threats to ASHW is provided in section 5.1.

1.3 Rationale for active regional management of the population

Recognizing the small population size, genetic isolation from neighbouring populations, and pervasiveness of threats throughout its range, the Arabian Sea humpback whale population has been assessed as Endangered on the IUCN Red List of Threatened Species (Minton et al. 2008), and humpback whales are listed on Appendix I and II of the Convention on Migratory Species.

Since 2015, an informal coalition of researchers and conservation organizations have collaborated under the auspices of the Arabian Sea Whale Network (ASWN). This informal coalition promotes awareness of this vulnerable population, through exchange of knowledge and best practice, to advocate for research to address knowledge gaps that are preventing effective management, and to promote conservation actions on the ground (Minton et al. 2015). While this collaborative action and the efforts of individual partners throughout the region have significantly advanced knowledge and understanding of the population (e.g. Minton et al. 2023a), many of the threats affecting Arabian Sea humpback whales, including shipping and fishing, can only be effectively addressed through governmental-level policy and regulation, and require cross boundary collaboration at state level.

For this reason, the IWC Scientific Committee recommended the Arabian Sea humpback whale population for a Conservation Management Plan (CMP) in 2011 (IWC 2012p. 25 section 10.2.2.2). Recognizing that Oman and India are the only ASHW Range States formally represented in the IWC, a parallel mechanism to promote government-level support for conservation management was sought through the Convention on Migratory Species (CMS). A Concerted Action for Humpback Whales of the Arabian Sea was endorsed at the CMS Conference of Parties in 2017 (CMS 2017). Figure 4 below demonstrates the complementarity of CMS and IWC member states in the region.

CMS Concerted Actions are defined as “priority conservation measures, projects, or institutional arrangements undertaken to improve the conservation status of selected Appendix I and Appendix II species or selected groups of Appendix I and Appendix II species that a) involve measures that are the collective responsibility of Parties acting in concert; or b) are designed to support the conclusion of an instrument under Article IV of the Convention and enable conservation measures to be progressed in the meantime or represent an alternative to such an instrument.” (See CMS Resolution 12.28).

The CMS Concerted Action is intended to be a time-bound instrument that works towards a more permanent regional framework for collaboration. It includes a range of recommended activities grouped into the broad categories of 1) addressing knowledge gaps, 2) information-sharing and awareness-raising, and capacity building, and 3) development and implementation of mitigation strategies. The Concerted Action has as its final objective ‘Development of a Range State-endorsed regional ASHW Conservation and Management Plan’. Because this latter objective had not yet been obtained, the Concerted Action was extended in 2020 and again in 2024.

Since the ASWN was formed, stakeholders throughout the ASHW range have been collaborating with the CMS and IWC to promote a joint IWC-CMS regional CMP, which would offer the optimal framework for a wide range of government, industry, and civil society stakeholders in all ASHW Range States to actively collaborate in conservation management of this threatened unique population of whales.

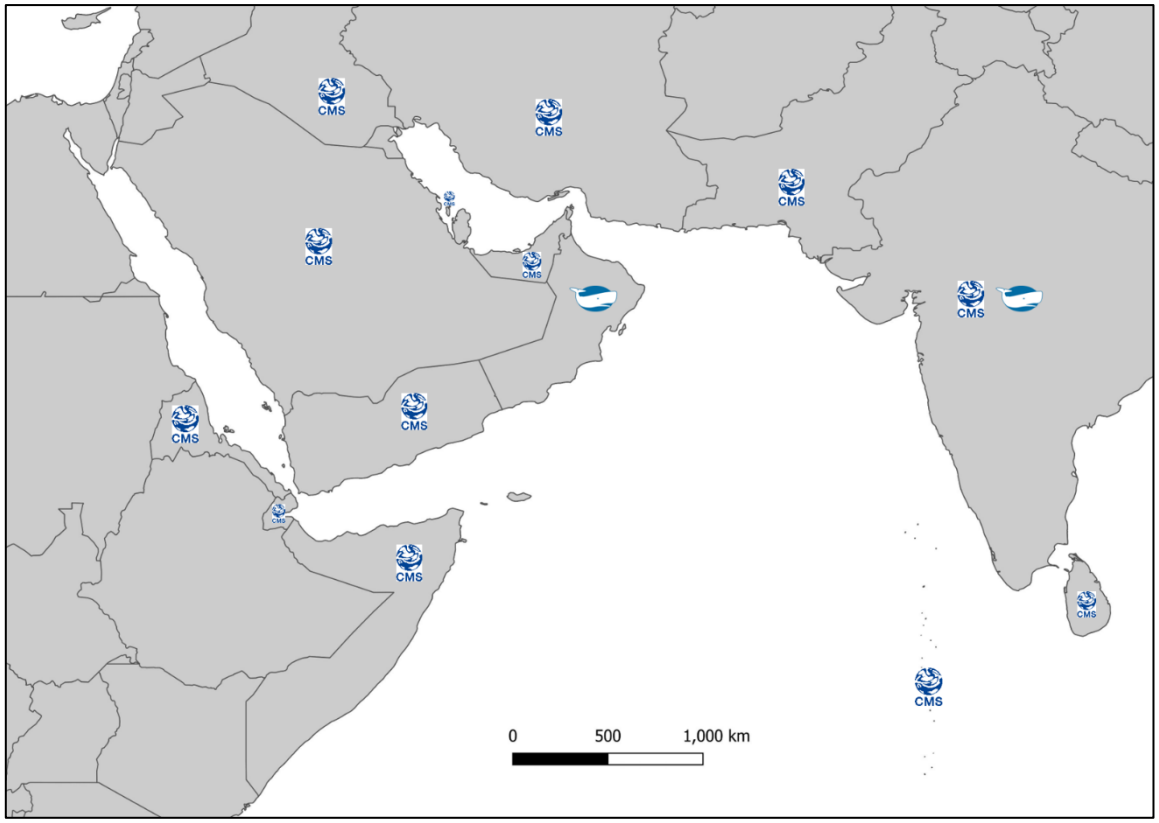

Figure 2: Map showing complementarity of IWC and CMS membership within the Arabian Sea humpback whale range.

1.4 Overall objectives of the CMP

Aim: The CMP aims to enhance collaboration among a wide range of stakeholders to improve the conservation outlook for Arabian Sea humpback whales across the population's range.
Short- and medium-term **objectives** of the CMP are defined by time periods that align with IWC and CMS review processes. The short term is defined as the time between the anticipated endorsement of the CMP in 2026, and the biennial Scientific Committee meeting of the IWC in 2030. The medium term is defined as the eight-year period after that, and the long term is defined as the objectives to be achieved by 2050.

- **Short term (by 2030):**
    - Establish a functional framework for regional collaboration to mitigate threats to ASHW, supported by existing tools and initiatives of the IWC and CMS.
    - Develop and endorse national ASHW action plans in at least three Range States.
    - Raise awareness of ASHW among relevant stakeholders in all ASHW Range States to create enabling conditions for management/mitigation measure implementation and acceptance.
    - Address major data gaps in at least three Range States that are currently preventing effective conservation management.
    - Enhance capacity for scientists and citizen scientists to address data gaps.
    - Refine distribution and core habitat mapping for ASWH in order to identify additional areas that merit mitigation measures or broader protections.
    - Conduct risk assessments for high-priority threats throughout ASHW range.
    - Begin risk mitigation on at least one threat in at least one Range State (e.g. introduce IMO measures to reduce vessel-strike risk – starting with the designation of a Particularly Sensitive Sea Area (PSSA) off the coast of Oman).

- **Medium term (by 2030-2038):**
    - Continue monitoring ASHW in core habitats and potential habitats to assess population status, distribution, threats, etc.
    - Enhance capacity for government stakeholders (e.g., managers and frontline staff) to support and contribute to ASHW research, monitoring, conservation management policy design and implementation.
    - Provide population status updates for ASHW in at least three Range States.
    - Apply threat mitigation and habitat protection measures to halt population decline in ASHW critical habitats found within at least three Range States.

- **Long term (by 2050):**
    - Halt and, if possible, reverse population declines of ASHW.
    - Ensure that tools and policies to eliminate or mitigate key threats are available and can be implemented throughout the ASHW habitat.
    - Evolve threat mitigation and habitat protection activities towards a conservation approach guided by integrated stewardship, economic value of natural capital, and community-based conservation.

2. LEGAL FRAMEWORK

2.1 International agreements and initiatives relating to ASHW and the development and implementation of the CMP

The following international conventions and processes apply to Arabian Sea humpback whales and their habitats:

- **International Whaling Commission (IWC):** Both Oman and India are members of the IWC, under which commercial whaling has been suspended, offering protection against direct hunts/takes. Furthermore, the IWC established the Indian Ocean Sanctuary in 1979, and this covers the whole of the Indian Ocean south to 55°S, including the Arabian Sea. The IWC Scientific Committee assessed the population of humpback whales in the Arabian Sea along with southern hemisphere populations as part of a Comprehensive Assessment of Southern Hemisphere humpback whales (IWC 2006), and in 2011 an intersessional working group was formed to assess the merit of proposing the population as a priority for a Regional Conservation Management Plan. The population has appeared as a standing agenda item for the Scientific Committee since that time, with repeated encouragement from the Scientific Committee and various Commission stakeholders to progress the CMP (e.g. IWC 2012, IWC 2016, 2018, 2024a).

- **Convention on Migratory Species (CMS)**: All humpback whales are listed on CMS Appendix I which requires Parties to strive towards strictly protecting these animals, conserving or restoring their habitats, mitigating obstacles to migration and controlling other factors that might endanger them. They are also listed on CMS Appendix II which lists species requiring international agreements for their conservation and management, or international cooperation that would significantly benefit their conservation status. Besides establishing obligations for each state joining the Convention, CMS promotes Concerted Actions among the Range States. Accordingly, Arabian Sea humpback whales have been the subject of a Concerted Action which was adopted in 2017 as CMS Concerted Action 12.4 (CMS 2017). This was formally extended by the CMS Conference of Parties in 2020 and again in 2024 to promote the work towards a Regional Conservation Management Plan.

- **Convention on Biological Diversity (CBD):** All ASHW Range States are CBD signatories. Articles 7(a-d) and 8 (b-d), (f) and (k-l) obligate signatories to address threats to biodiversity, and Article 6 requires signatories to include protective measures for endangered species in their National Biodiversity Strategies and Action Plans (NBSAPs). The CBD also provides the framework for the identification of Ecologically and Biologically Sensitive Areas (EBSAs), of which some in the Northwest Indian Ocean provide important habitat for ASHW.

- **International Union for the Conservation of Nature (IUCN):** Humpback whales in the Arabian Sea are recognized as a 'sub-population' under IUCN definition, and were assessed as Endangered on the IUCN Red List of Threatened Species in 2008 (Minton et al. 2008). The IUCN SSC/WCPA Marine Mammal Protected Areas Task Force also identified five Important Marine Mammal Areas (IMMAs) which include ASHW habitat. These are: 1) the Oman Arabian Sea IMMA; 2) the Dhofar IMMA; 3) the Gulf of Masirah and Offshore Waters IMMA; 4) the Northeast Arabian Sea IMMA; and 5) the Maldives Archipelago and Adjacent Oceanic Waters IMMA. Although neither the Red List nor the IMMAs offer any formal legal protections, they are internationally recognized tools designed to help all stakeholders, including government and industry to make management decisions.

- **Convention on the International Trade in Endangered Species (CITES):** All humpback whales are listed on Appendix I of CITES, which affords them the highest level of protection in relation to international trade. At the same time, the CITES regulations need to be taken into account when importing or exporting genetic or other tissue samples for scientific analysis.

- **International Maritime Organization (IMO):** The IMO was established on 6 March 1948 with the mandate to "…develop and maintain a comprehensive regulatory framework for shipping…" and to prevent and control marine pollution from ships. All ASHW Range States are members. The IMO has initiated a number of international conventions intended to regulate or prevent impacts of shipping activities on the marine and coastal environment as well as insure people's safety: Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter; International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78); The International Convention on Oil Pollution Preparedness, Response and Cooperation, known as the OPRC Convention. The IWC has worked with the IMO Marine Environment Protection Committee on a guidance document for the "Identification and protection of Special Areas and Particularly Sensitive Sea Areas (PSSA): Information on recent outcomes regarding minimizing ship strikes to cetaceans." (MEPC 69/10/3). This document outlines the process and components of PSSA proposals.

- **Indian Ocean Tuna Commission (IOTC):** The IOTC was established in 1996 under Article XIV of the FAO Constitution. India, Pakistan, Iran, Oman, Maldives and Somalia are members. Conservation and management measures (CMMs) are established to ensure the sustainable management of tuna and tuna-like resources in the Indian Ocean and adjacent seas. They can address various aspects of tuna fisheries, including fishing effort, fishing areas, bycatch reduction, and data collection. There are binding Resolutions and non-binding Recommendations: Resolution 12/12 which prohibits the use of large-scale driftnets on the high seas; various Resolutions on Fish Aggregating Devices (FADs), most recently 24/02; and Resolution 23/06 on the Conservation of Cetaceans. States are responsible for implementing CMMs, including establishing data recording and reporting systems. The IOTC requires data to be collected and reported on fishing activities, including catch, bycatch, and fishing effort.

- **US Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA):** Although the US ESA and MMPA are, strictly speaking, not elements of an international legal framework, they do have an impact on how US entities operating outside of US waters conduct business, and include obligations for non-US entities exporting fisheries products to the US. The ESA recognizes the Arabian Sea 'distinct population segment' of humpback whales as one of only two populations still classified as Endangered under the Act, while all other 12 populations were no longer considered endangered from 2015 onward (Bettridge et al. 2015). The US MMPA import ruling requires States exporting fisheries products to the US to demonstrate a comparability finding with the regulations in place to protect marine mammals in the US (NOAA 2016).

- Other relevant marine conventions:
    - Regional Organization for the Protection of the Marine Environment **(ROPME)**
    - International Convention on the Control of Harmful Anti-fouling Systems on Ships
    - International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM)

2.2 Range State laws, policies and management arrangements

The following national legal and regulatory measures are relevant to the conservation management of Arabian Sea humpback whales. This summary is based on information provided by Range State stakeholders and online (AI) searches, and may not be complete. Under the CMP, Range States will be encouraged to undertake a more thorough review of their current legislation, policy and management measures to identify potential gaps in protection and opportunities for improvement.

Bahrain

- Legislative Decree No. (21) of 1996 with respect to the Environment, addresses pollution and environmental protection. Article 27 states that the destruction of the habitats and sanctuaries of marine life, wildlife and plants shall be prohibited. The Wildlife Law (Legislative Decree No. 2 of 1995) focuses on the preservation of wildlife species and the protection of their habitats. Both of these fall under the jurisdiction of the Supreme Council for Environment (SCE).

India

- The Indian Wildlife (Protection) Act, 1972, protects ASHW under Schedule I, which lists species that are granted the highest level of protection in India. Animals listed in Schedule I are protected from hunting throughout India. This Act ensures protection of ASHW from hunting throughout India's coasts and requires the safeguarding of its habitats.

- The Environment (Protection) Act, 1986 (EPA) is a significant Indian law enacted to protect and improve the environment, and to prevent and control environmental pollution. It grants the Central Government broad powers to take measures to address environmental issues, including coastal and marine pollution.

- The Coastal Regulation Zone Notification 2011 (Ecologically sensitive areas) (CRZ) in India is a regulatory framework aimed at protecting the coastal environment and promoting sustainable development in coastal areas. The CRZ regulates activities within a specific distance from the high tide line (HTL) and along the banks of tidal rivers, creeks, and estuaries

- The National Marine Megafauna Stranding Management Guidelines released in 2021 provide a framework for establishing stranding response mechanisms, enhancing capacity to report and monitor strandings, and create a national database and a nodal agency to coordinate these activities.

- The National Wildlife Action Plan (2017- 2031) prioritizes identification of areas with higher ecological value for protection, habitat restoration, reduction of marine pollution, establishment of marine mammal rescue and release teams, and preparation of recovery plans for endangered species including ASHW.

- Project Dolphin Action Plan (2022 – 2047) provides a framework for long-term monitoring plans for dolphins and other marine mammals, including ASHW, in Indian coastal waters and EEZ.

- The ASHW is one of the priority species under the Integrated Development of Wildlife Habitats (IDWH) scheme. Under the IDWH programme, the Ministry of Environment, Forests and Climate Change has launched a research programme to understand ASHW distribution across the west coast of India.

Iran

- The Law on the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran 2001 applies to inland and marine territorial waters under Iranian jurisdiction (art. 2).

- The Iranian Fisheries Company (Shilat) is the authority responsible for implementing Government fisheries policy, and its activities (research, management, protection and development of fisheries resources, ports). Article 71 entirely prohibits hunting marine mammals.

Kuwait

- The Environmental Protection Law No. 42 of 2014, Articles 80-81 list whales and dolphins as Protected Species and explicitly prohibits the catching, hunting, killing, collecting or harming of these species or destruction of their habitat. Articles 102-108 delineate special protections/restrictions in natural reserves, including fisheries regulations, and specifically names Kuwait Bay as an area for special protections.

- The 2017 Executive Regulation on Biodiversity (Decree No. 3) and the 2016 Aquatic/Coastal Environment Regulations are also relevant in delineating measures for fisheries management and protected area management.

Maldives

- The Fisheries Act of the Maldives (No.14/2019) regulates the management, conservation, and protection of fisheries and aquatic resources in the Maldives. Under paragraph 27, most types of net fishing are specifically banned (including purse seining, gillnetting and trawling, all of which are responsible for high levels of cetacean bycatch in other areas).

- The General Fisheries Regulation of the Maldives (Regulation No: 2020/R-75) prohibits killing and trading of certain species, as well as listing penalties for certain fishery methods used. Cetaceans are included in Schedule 2 ‘Prohibited types of fish for taking, catching, harvesting and killing in the maritime zones of the Maldives’ regulated under s17.

- The Constitution of the Maldives (as updated in 2008) includes, under Article 22 on the Protection of the Environment, a declaration that “The State has a fundamental duty to protect and preserve the natural environment, biodiversity, resources and beauty of the country for the benefit of present and future generations. The State shall undertake and promote desirable economic and social goals through ecologically balanced sustainable development and shall take measures necessary to foster conservation, prevent pollution, the extinction of any species and ecological degradation from any such goals.”

- The Maldives Environmental Protection and Preservation Act (Law No. 4/93, 19 April 1993) establishes the framework for environmental protection in the Maldives. The Protected Species Regulation (2021/R-25, 17 February 2021) aims to preserve and maintain the health of endangered species, their environments, and interconnected systems in a sustainable manner.

- International trade is regulated by the Export Import Act of 1979 (Law no. 31/79, 15 September 1979) and the Regulation on Export, Import and Re-Export (2012/R-34, 16 July 2012). All exports of cetacean products (with the sole exception of ambergris) are banned.

- The National Biodiversity Strategy and Action Plan 2016-2025 seeks to ensure that threats to biodiversity are addressed, biodiversity is conserved and sustainably used, and that benefits arising from them are shared equitably (MEE, 2015).

- The Second National Environment Action Plan provides a framework to guide efforts in ensuring that the Maldives continues to develop in a sustainable manner (MHHE, 1999).

- The Regulation on the Protection and Conservation of Environment in the Tourism Industry aims to regulate the tourism industry's impact on the environment, such as by requiring a permit for certain activities that may damage the environment or species' habitat. It also prohibits the keeping of marine living species in cages or other enclosed spaces for tourism.

Oman

- Royal Decree 114/2001 *Issuing the Law on Environmental Protection and Pollution Control:* Article 33 lists the penalties for poaching or killing wildlife, and dividing animals into two Appendices that carry different penalties. Appendix I offers the highest level of protection, and includes hawksbill turtles and a few terrestrial mammals. Appendix II includes all mammal species not listed in Appendix I (except for tamed mammals), thereby including Arabian Sea humpback whales.

- Royal Decree 20/2019 *Issuing the Aquatic Living Resources Law:* Article 10 prohibits fishing practices that may harm or disrupt marine ecosystems, as well as those that may harm the balance between the various components of marine ecosystems. Article 11 prohibits the capture of turtles and collection of their eggs, as well as the capture of whales, dolphins, cetaceans and marine birds, except when in accordance with the specified regulations. Penalties are in place for defying articles 10 and 11.

- Ministerial Decision 34/2019 by the Ministry of Agriculture and Fisheries *Issuing the Regulation Governing the Use of Al-Hiyal Nets* (gillnets) *for Fishing:* This decision describes the specifications around acquiring a license and the general use of gillnets. It specifies the length, height and net-hole size of gillnets. Article 14 notes that pingers must be used for the purpose of warning and driving off turtles, whales and other cetaceans. Not complying with the general rules stated in the decision may result in the temporary or permanent suspension of a person's license for using gillnets. There are no specific penalties stated for each rule.

- Ministerial Decision 71/2020 by the Ministry of Agriculture and Fisheries *Issuing the Regulation Governing the Use of Deep-Sea Gillnets:* Article 14 notes that the licensee must prevent turtles, marine mammals and any marine species from being caught in bottom gillnets, and must take the necessary measures to immediately return them to the sea if they are accidentally caught in the nets.

Pakistan

- The Pakistan Trade Control of Wild Fauna and Flora Act, 2012 prohibits the export, re-export or import into Pakistan of any specimen included in any Appendix of the CITES. Violation of the law shall be punishable with imprisonment for a term, which shall not be less than one year or more than two years or with a fine which shall be not less that Rs 0.5 million or more than Rs 1.0 million.

- The Fish Inspection and Quality Control Rules, 1998, made under the Pakistan Fish Inspection and Quality Control Act, 1997 prohibits export of any dolphins, porpoises or whales.

- State level rules in Balochistan and Sindh wildlife laws (Balochistan Wildlife Protection, Preservation, Conservation and Management Act, 2014, and Sindh Wildlife Protection, Preservation, Conservation and Management Act, 2020) list dolphins and whales as protected species.

- Government of Balochistan Notification No. SO(Coord:) Fish/2-1/ 2013/ 3148-54 dated 8 September 2016, under Balochistan Sea Fisheries Ordinance, 1971, and Government of Sindh Notification No. 5 (3) SO (FISH)/ (L&F)/16 dated 18 May 2016, amending First Schedule of the Sindh Fisheries Ordinance 1980) prohibit catch, retention, or marketing of dolphins, whales and porpoises. In addition, the Sindh Fisheries Ordinance of 1980, Notification No. SO (Fish)/(L&F)/5-3/2025 dated 13 March 2025, and the Balochistan Sea Fisheries Ordinance, 1971, and its amendments also restrict the use of certain nets, including seine or encircling nets.

- The Balochistan Wildlife Protection, Preservation, Conservation and Management Act, 2014 Notification No. SO(Devel) 5-20/FST/2017/2256-90 dated 15 June 2017, declared the Astola Island Marine Protected Area (MPA), where stricter fisheries regulations are in place. ASHW were included in the list of key animal and plant species recorded from Astola Island MPA and meriting extra protection.

Qatar

- Law No. 4 of 1983 defines ‘Living Aquatic Resources’, which includes all marine life, thus covering cetaceans, within Qatar's jurisdiction. It grants authority to relevant ministries and officials to monitor and enforce regulations related to aquatic resources.

- Law No 19 of 2004 Conservation of Wildlife and their Natural Habitats: Article 2 includes provisions for rehabilitation and administration of suitable natural habitat for wildlife, prohibition or restriction of human activities which would distort natural habitat or its ecological productivity, and preservation of endangered species. Article 3 stipulates that the relevant Directorate shall facilitate research and studies on the distribution, movement and natural habitat of wildlife, and prepare and publish the information accordingly. It recommends the designation of certain places as natural reserves for the conservation and rehabilitation of biodiversity, in coordination with the competent authorities, and recommends plans and programmes necessary to prevent negative effects resulting from development projects in areas of wild fauna and flora, as specified in the Schedules attached to this Law. This includes taking the necessary steps to prohibit overexploitation of animals listed in the Second and Third Annexes to the Law in any manner that would lead to their extinction, managing their sustainable harvesting by virtue of special licences, and taking the necessary measures to protect migrating populations of species listed in the Second and Third Annexes to this Law.

- Qatar is in the process of designating an MPA on its northwestern coast near the border with Bahrain, in light of its importance for dugongs and seagrass as well as cetaceans. The area is part of the Gulf of Salwa Important Marine Mammal Area. This designation is a component of the Qatar National Biodiversity Strategy and Action Plan and the UNESCO MAB Al Reem Man and Biosphere Reserve covering a marine area of 10,000 ha (see Al Reem Reserve http//mecc.gov.qa/Eng).

Saudi Arabia

- Executive Regulation for Sustainable Management of the Marine and Coastal Environment: This regulation focuses on the sustainable management of the marine and coastal environment, including the protection and development of wildlife species. It outlines definitions, scope, responsibilities of competent centres, and penalties for violations.

- Environmental Law (Royal Decree No. m/165, dated 19/11/1441 Hijri): The Executive Regulation (above) is based on this law. This law provides the overarching legal framework for environmental protection, including for marine and coastal environments.

- Agriculture Law (Royal Decree No. m/64, dated 10/8/1442 Hijri): This law defines living aquatic wealth, which is related to the definition of wildlife species within the Executive Regulation.

- The National Center for Environmental Compliance is responsible for controlling and monitoring environmental compliance. Its tasks include monitoring pollution, developing environmental controls for marine vehicles and anti-fouling systems, and issuing environmental licenses and permits.

- The National Center for Wildlife is responsible for the protection and development of wildlife in the marine and coastal environment. Its tasks include developing national plans for wildlife protection, regulating hunting, and managing invasive species.

Sri Lanka

- The Fauna and Flora Protection Ordinance sets forth all of the regulations prohibiting hunting, import and export of wild species, which is presumed to include whales, dolphins and porpoises. It allows for the establishment of MPAs by the Department of Wildlife Conservation (DWC). Chapter 469, as well as Regulations under the Tourism Act and specific guidelines issued by the Sri Lanka Tourism Development Authority (SLTDA), include regulations related to vessel operation and licensing for marine mammal watching tours, requiring registration and annual registration fees. Only licensed vessels and trained guides are permitted to approach marine mammals.

The United Arab Emirates

- Federal Law No. (23) of 1999 concerning Exploitation, Protection and Development of Living Aquatic Resources in the State of the United Arab Emirates, Chapter Four Protection and Development, includes the following relevant articles:
    - Art. 26 which specifies banned fishing gear, including drift nets
    - Art. 28 which prohibits the capture of whales and all other marine mammals

- Federal Law No. (24) of 1999 for the Protection and Development of the Environment, Chapter VI on Natural Reserves, prohibits a wide range of human activities that could negatively impact wildlife in natural reserves, of which there are a few potentially relevant to ASHW (see https://www.protectedplanet.net/country/ARE).

- Federal Law No. 16 of 2007 on Animal Welfare, Article (5), discusses the protection of marine environments and biodiversity, likely inclusive of whales and large marine mammals. Article (13) indicates penalties for harming marine species or ecosystems.

- Furthermore, marine mammal conservation actions are included in the UAE National Biodiversity Strategy and Action Plan 2031 (NBSAP 2031), which commits to conserving marine biodiversity, including marine mammals, in alignment with the Kunming–Montreal Global Biodiversity Framework.

- The UAE has declared 16 MPAs (including Marawah Biosphere Reserve, Ras Ghanada, and others), which provide indirect protection to potential cetacean habitats.

- The UAE contributes to regional and international marine mammal stranding networks through representatives from the Environment Agency–Abu Dhabi, Zayed University (UAE Dolphin Project), and SeaWorld Abu Dhabi, all of which are formally members of the Global Stranding Network. At the national level, the Sharjah Environment and Protected Areas Authority (EPAA) launched a dedicated Marine Mammal Strandings Response Programme in 2021, allowing systematic monitoring and investigation of stranded cetaceans along UAE coasts.

Yemen

- Law No. 43 of 1997, regulates fishing, exploitation, and protection of aquatic resources, including marine mammals. Article 52(d) prohibits the catching of whales.

- The Environment Protection Law No. 26 of 1995 also plays a role by allowing for the establishment of protected areas for the conservation of biodiversity and ecosystems, potentially including areas important for cetacean populations.

- Article (52) of Law No. (2) of 2006 regarding the regulation, exploitation, and protection of aquatic life, prohibits the capture/hunting of whales, marine mammals and turtles, or the use of their eggs, except for those designated for scientific research with a license from the Ministry.

- Resolution No. 104 of 2002 regarding the regulation of trade in endangered species, includes a list of protected species, including some whales.

3. GOVERNANCE

The governance of the ASHW CMP will need to take into account the participation and accountability of participating states and stakeholders under the relevant frameworks for both the IWC and CMS.

3.1 Coordination of a CMP

- A Steering Committee will be formed that includes adequate representation from the IWC, the CMS, and participating Range States.

- A Scientific Advisory Board will be established through a nomination process overseen by the Steering Committee.

- A Coordinator will be appointed by the Steering Committee, who will draw up detailed terms of reference. The Coordinator can also count on support from members of the Arabian Sea Whale Network, building on communication channels that have been developed, such as the website, email distribution list, infographics, newsletters, social media accounts, working groups and various initiatives to assess capacity-building needs.

3.2 Timeline for a CMP

Preparation and endorsement:

- **December 2025:** Review by CMS Scientific Council, which will provide written comments that will be submitted along with the document to the CMS Conference of Parties.
- **March 2026**: Present the document for (provisional) endorsement by CMS Conference of Parties, with the understanding that amendments may be made to the document following the IWC review.
- **April 2026:** Submit draft to IWC Scientific Committee for review and potential endorsement.
- **May-July 2026:** Integrate IWC Scientific Committee feedback, and, depending on how extensive the changes are from the version reviewed by CMS, determine whether an additional CMS consultative process is required.
- **September 2026:** Review by IWC Conservation Committee before Commission meeting.
- **September 2026:** Potential endorsement by IWC Commission meeting.
- **Late 2026/early 2027:** Endorsement of (potentially) IWC-amended text by the CMS Standing Committee.

Post endorsement:

- **Q4 2026:** Establishment of the Steering Committee and appointment of the Scientific Advisory Committee
- **January 2027**: Appointment of a Coordinator
- **Q1 and Q2 2027:** Fundraising for implementation workshop
- **Q3 2027:** Hosting of regional implementation workshop

4. SCIENCE

To ensure that the actions agreed in the CMP have the greatest likelihood of improving the conservation status of ASHW, they need to be based on the best available scientific evidence on the population's current status, biology and ecology. While some background information is provided in the introduction, more detail is provided below.

4.1 Biology, status and environmental parameters

4.1.1 Population identity and range

ASHW comprise a discreet breeding and feeding population that does not undertake long seasonal migrations between high-latitude feeding grounds and low-latitude breeding grounds (Mikhalev 1997, Baldwin 1998, Minton et al. 2008, Minton et al. 2011, Bettridge et al. 2015). The population is genetically distinct from neighbouring populations in the southern portion of the Indian Ocean (Pomilla, Amaral et al., 2014).

Upwelling of cold, nutrient rich waters in the Arabian Sea during the southwest monsoon, which coincides with northern hemisphere summer months, was proposed to be the mechanism that allows this population to find both the sheltered warm waters associated with mating, calving and nursing, and the abundant prey associated with feeding grounds in the same location (Reeves et al. 1991, Papastavrou and Van Waerebeek 1997). However, this

was only confirmed in the late 1990s when information about the 242 humpback whales that had been taken and examined during illegal Soviet whaling operations within the Arabian Sea during the 1960s was published. These studies showed that the whales adhered to a northern hemisphere breeding cycle and had been feeding on krill (*Euphausia* spp.) and sardines (*Sardinella* spp.) at a time of year when neighbouring southern hemisphere populations would be expected to be feeding in the Southern Ocean (Mikhalev 1997, 2000). Research conducted off the coast of Oman since that time has confirmed that individually identified humpback whales remain in Oman's waters year-round (Minton et al. 2011), and genetic analysis indicates that the population is discreet, and diverged from southern hemisphere con-specifics roughly 70,000 years ago (Pomilla, Amaral et al. 2014).

While most of the dedicated research on this population in the past 25 years has been conducted off the coast of Oman, the Soviet whaling records indicated that the majority of humpback whales from the Arabian Sea were taken off the coasts of India and Pakistan (Mikhalev 1997, 2000). Fishing crew-based observer programmes in Pakistan (e.g. Moazzam and Nawaz 2017, Moazzam et al. 2019, 2020), reports from research networks, fisher networks and divers, along with dedicated passive acoustic studies off the coast of India (Mahanty et al. 2015, Madhusudhana et al. 2018, D'Souza et al. 2023) provide evidence that humpback whales are still present in these areas, and comparison of recorded song between India and Oman indicates that whales recorded on both sides of the Arabian Sea belong to the same population (Cerchio et al. 2018). The movement of one satellite-tagged female humpback whale between Oman and India in December 2017 (Willson et al. 2018), and the matching of an opportunistically photographed whale on the west coast of India to the Oman ASHW photo-identification catalogue in 2020, provides further evidence that humpback whales in the Arabian Sea comprise a single population, although the degree of interchange between Oman and other parts of the population's range remains unclear.

The vast majority of sightings of humpback whales off the coast of Oman have been from the southern, Arabian Sea coast rather than the northern Sea of Oman coast, despite considerable dedicated cetacean survey effort and opportunities for opportunistic sightings off Oman's capital and in the Musandam area (e.g. Ponnampalam 2009, Minton et al. 2010b). Humpback whale sightings off the coast of Iran, and in the Arabian/Persian Gulf are also rare, but do occur and have raised the question as to whether the Sea of Oman and Arabian/Persian Gulf comprise part of the population's core habitat or not (Dakhteh et al. 2017, Natoli et al. 2021, Minton et al. 2023a). Sightings of humpback whales off the coast of Somalia and in the Red Sea are similarly rare and the population affinity of the few whales that have been sighted in this area is unknown (Small and Small 1991, Notarbartolo di Sciara et al. 2017).

Humpback whales have also been recorded in Sri Lanka and the Maldives, and recordings of humpback whale song in Sri Lanka in the 1980s was believed to be from animals affiliated with the Arabian Sea population (Whitehead 1985). Historically, sightings of humpback whales in the Maldives indicated that both southern hemisphere and ASHW were likely to be present (Anderson et al. 2012). A more recent analysis of the timing and group composition of humpback whale sightings from Sri Lanka and the Maldives reported sightings during the Austral winter only, in keeping with southern hemisphere breeding seasons, and no recent sightings of the species during the Austral summer when ASHW would be expected to occur. The authors concluded that the ASHW range may be decreasing (Anderson et al. 2022).

Ecological niche modelling conducted using satellite telemetry data from 14 humpback whales tagged off the coast of Oman, coupled with confirmed sightings data from Oman and Pakistan, was used to generate habitat suitability maps for Arabian Sea humpback whales (Willson et al. 2017). This can be considered the most robust estimation of the population's current range and critical habitat (Fig. 1 above).

4.1.2 Abundance and population trends

The last published abundance estimate for ASHW was a mark-recapture estimate based on photographic data collected off the coast of Oman between 2000 and 2004, with a best estimate of 82 individuals (95% CI 60-111) (Minton et al. 2008, Minton et al. 2011). Updated, but as yet non-peer reviewed population modelling using photographic and genetic data collected off the coast of Oman through 2018 indicates that the population is still below 100 individuals and is likely declining, but these models are currently undergoing peer-review (Cooke et al. 2024, IWC 2024b).

4.1.3. Distribution, migration and movements

Knowledge about the distribution of ASHW is based on the following data sources:

- The catch positions of whales taken in the Arabian Sea in the 1960s and reported to the IWC by the scientists working on the Soviet whaling fleet in the late 1990s (Mikhalev 2000, Allison 2016);
- The locations of observations made during dedicated cetacean surveys off the coast of Oman (Minton et al. 2010b, Willson 2020, Environment Society of Oman 2025); and
- The satellite tracked movements of 13 whales that were tagged off the coast of Oman between 2014 and 2017 (Willson et al. 2018, Willson 2020).

Ecological Ensemble Niche modelling was conducted using these data to model the most suitable habitat for humpback whales in the Arabian Sea (Figure 3, taken from Willson 2020).

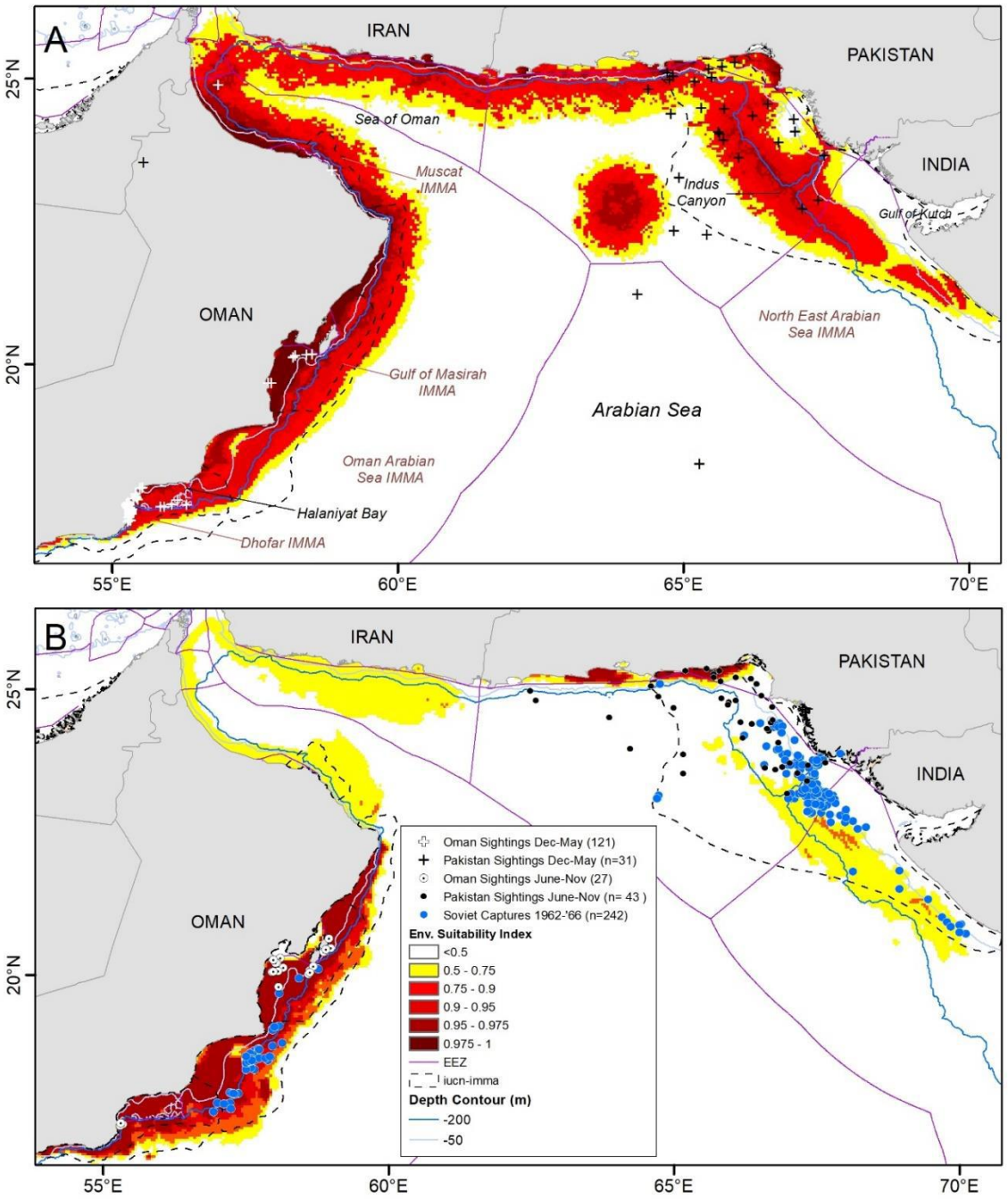

Figure 3: Detailed ensemble ecological niche model (EENM) results produced from satellite telemetry work in Oman overlaid with recent sightings from Season 1 (Dec-May) (A), and Season 2 (June-Nov) (B). Overlays include Pakistan sightings documented by a fisheries observer programme (2015-2019) (Moazzam et al. 2019), Soviet captures of humpback whales in the Northern Indian Ocean as documented in Soviet whaling (1962- 1966) (Mikhalev, 2000; IWC Catch Database, extracted 25 October 2013) and Oman sightings taken from all humpback whale encounters during dedicated humpback whale surveys in Oman (2000-2017). Taken from Willson (2020).

Differences in song between the Arabian Sea and other Indian Ocean populations (Cerchio et al. 2018), as well as a lack of photographic matches between Oman and Southern Indian Ocean catalogues (Minton et al. 2010a, and ESO and HappyWhale Unpublished data), suggest little or no mixing between the Arabian Sea and southern hemisphere populations. However, the boundary defining the range of ASHW is uncertain, with a lack of recent sightings off Sri Lanka and the Maldives during the Austral summer months when southern hemisphere

whales would be feeding in the Antarctic, and any whales present would be more likely to be ASHW (Anderson et al. 2022). Furthermore, southern hemisphere song has been detected during the Austral winter off the coast of Oman (Cerchio et al. 2018). Evidence is strong, however, that the whales observed and recorded off the coast of Oman and India belong to the same population, based on acoustic (Cerchio et al. 2018, D'Souza et al. 2023), photographic (ASWN unpublished data), and satellite tagging (Willson et al. 2018) studies.

4.1.4 Basic biology (feeding, reproduction and survivorship)

What little is known about the basic biology of ASHW has been predominantly derived from the data collected by scientists on board the Soviet whaling vessels in the 1960s. Of 85 sexually mature females examined in the Soviet catch, 39 (45.9%) were pregnant, and the size range (140-375 cm, mean 232 cm) of 36 examined foetuses indicated calving commencing in December, suggesting a January-May mating and calving season in line with northern hemisphere populations (Mikhalev 1997, 2000). Over the past 25 years of dedicated cetacean research off the coast of Oman, very few females with calves have been observed, and while song has been regularly detected and recorded, group sizes almost never exceed three individuals and the large competitive groups typically observed on humpback whale breeding grounds (e.g. Clapham 1993) have not been observed (Minton et al. 2011, Willson et al. 2016, Willson et al. 2018, Minton et al. 2023b). It is possible that calving occurs in another less-well studied part of the ASHW range, as indicated by observations of mother-calf pairs off the coasts of Sri Lanka and the Maldives (Anderson et al. 2022). However, more research is required to identify these possible sites and confirm the population affinity of mother-calf pairs observed in possible boundary/crossover areas.

Stomach contents analysed from the Soviet catch indicated that over 50% of the whales had stomach content fullness described as ‘moderate’ or ‘plentiful’. The main prey item was Euphausiids, supplemented by mackerels of the *Carangidae* or *Scomber* families, and sardines of the *Sardinella* family (Mikhalev 2000). Whales fed exclusively on fish (mostly sardines (*Sardinella* spp) off the coast of Oman, and mixed prey with a dominance of Euphausiids in the northeast Arabian Sea (off the coasts of India and Pakistan) (Mikhalev 1997).

Analysis of vertical and horizontal movements from satellite tracking studies conducted on ASHWs off the coast of Oman between 2014 and 2017 supports the hypothesis of habitat portioning in relation to sourcing of prey. Inshore movements of whales within an ‘area restricted search’ mode – a pattern associated with foraging – coincides with areas of high sardine densities over the continental shelf, the same area targeted by fishing fleets, and where foraging behaviour has been frequently observed during cetacean surveys. The same ‘area restricted search’ mode characteristic occurs off the shelf-break with dives over 200m, coinciding with dense prey assemblages known to be situated above the oxygen minimum zone at a similar depth (Willson 2020).

Preliminary analysis of body condition measurements using aerial photogrammetry on 9 individual ASHW sampled off the coast of Oman in November 2019 indicate that whales were between 11.8 and 14.2m long, and that their body condition was similar to that of whales from breeding stock D (Australia) at the beginning of the breeding season, but much higher than that of whales at the end of the breeding season, indicating that whales are not nutritionally stressed (Christiansen et al. 2020).

4.2. Critical habitats associated with the Arabian Sea humpback whales

To date, fine-scale habitat use data for this population is only available from the coast of Oman, where dedicated cetacean surveys with a focus on humpback whales have been conducted for over 20 years. These surveys have identified the Gulf of Masirah and the Hallaniyats Bay as two core habitats for the species, based on small-vessel surveys (Minton et al. 2010c, Corkeron et al. 2011, Minton et al. 2011), and satellite telemetry (Fig. 5, Willson et al. 2017, Willson 2020). However, a lack of humpback whale sightings during over 100 hours of survey effort in March 2021 (Minton et al. 2023b), coupled with a lack of humpback whale acoustic detections in recent passive acoustic monitoring in the Dhofar region in the same period (Cerchio et al. 2023) give rise to concerns that the population's core habitats may be shifting or contracting in relation to climate change and/or decline in abundance.

There is only limited recent data from India, Iran, Pakistan and the Arabian/Persian Gulf to confirm humpback whale presence in those areas. A lack of dedicated surveys to collect presence data in relation to survey effort means it is not possible to identify critical habitats outside of Oman. In the absence of these data, the results of the Ecological Ensemble Niche Modelling should be considered the best indication of most suitable environmental conditions throughout the population's range (Fig 3). This modelling was also used to help define the boundaries of the IMMAs that were identified in relation to their importance for ASHW (see section 2.1 above). The home range analysis derived from satellite tagging studies (Figure 4) was also employed to help define the boundaries of the Oman Arabian Sea IMMA.

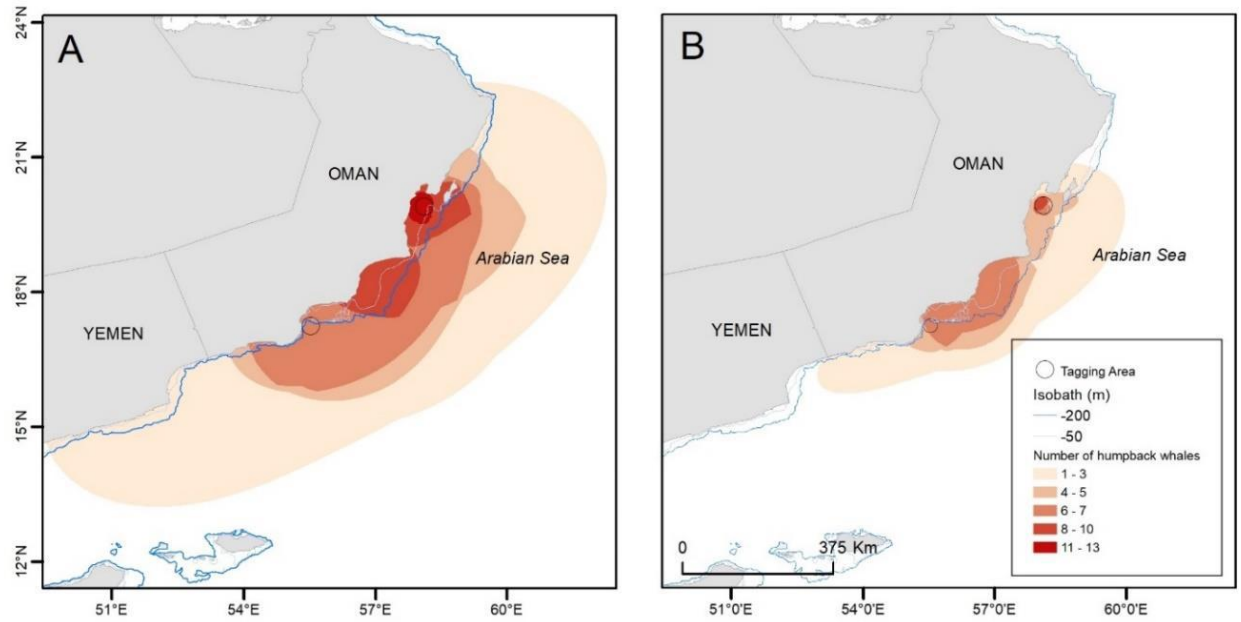

Figure 4: Composite home range auto kernel density estimate analysis of 14 humpback whales fitted with satellite tags off the coast of Oman between February 2014 and November 2017. Sample includes males= 10, females= 2, unknown sex= 2. (A) Home Range (95% isopleths) and (B) Core Home Range (50%) isopleths. AKDE analysis performed using Continuous Time Movement Modelling package in R (Calabrese et al., 2016) and derived from the Ornstein-Uhlenbeck Foraging (OUF) anisotropic model. Taken from Willson, 2020.

4.3 Attributes of the population to be monitored

Table 1 below summarises the biological and ecological attributes of the ASHW population that should be monitored throughout the implementation of the CMP in order to understand whether the conservation measures being employed are having the desired impact and improving the conservation status of the population (or at least halting further deterioration).

Table 1: Attributes of the population to be monitored

Attribute	How to monitor	Indicator/Metric
Population size and dynamics	Vessel surveys and photo identification work	Number of groups/ individuals observed
		Mark recapture population and trend estimate
		Group composition/ Number of mother-calf pairs observed
	Stranding surveys/ response	Annual number of mortalities
	Biopsy sampling	Pregnancy rates (through hormone analysis)
Whale distribution, behaviour and ecology	Vessel-based survey transects	Vessel effort in known/suspected ASHW habitat
		ASHW encounter rates
		Categorisation of behaviour during encounters (e.g. feeding, traveling, resting)
		Categorisation of group composition during encounters (especially feeding)
		Effort-corrected frequency of detections of ASHW song during vessel-based surveys
	Passive acoustic monitoring	Frequency of whale song occurrence from passive acoustic monitoring detections
	Stranding surveys/response	Distribution (location) of strandings and diet (stomach contents)
	Satellite tagging	Range of movement and size of core habitats, categorisation of behaviour based on movement patterns in different locations
Population health	Stranding surveys/ response	Causes of mortality, body condition, and pathology
		Contaminant analysis
	Aerial or vessel-based photography	Number of whales sampled for body condition
		Body condition trend males
		Body condition trend females
		Prevalence of fisheries scarring
		Prevalence of vessel-strike scarring
	Biopsy sampling	Presence of contaminants
		Indication of dietary shifts through stable isotope analysis

5. THREATS, MITIGATION MEASURES AND MONITORING

5.1. Identification of threats

5.1.1 Vessel strikes and underwater noise related to shipping

Vessel strikes from commercial shipping are considered one of the two most severe threats to large whales since the cessation of commercial whaling (Thomas et al. 2015). The Arabian Sea, which includes approaches to the Arabian/Persian Gulf and the Red Sea/Suez Canal, hosts some of the densest shipping traffic in the world (Kaluza et al. 2010, Pirotta et al. 2018). A recent analysis of Automatic Identification System (AIS) data in relation to humpback whale habitat (modelled from satellite telemetry data) and documented sightings indicated a high risk of vessel strike in several parts of the species range (Fig. 5) (Willson et al. 2023). Additionally, the intense shipping in the region is also a source of underwater noise that can mask communication between whales and impact their prey distribution and behaviour (Erbe et al. 2019, Minton et al. 2021, Lemos et al. 2022).

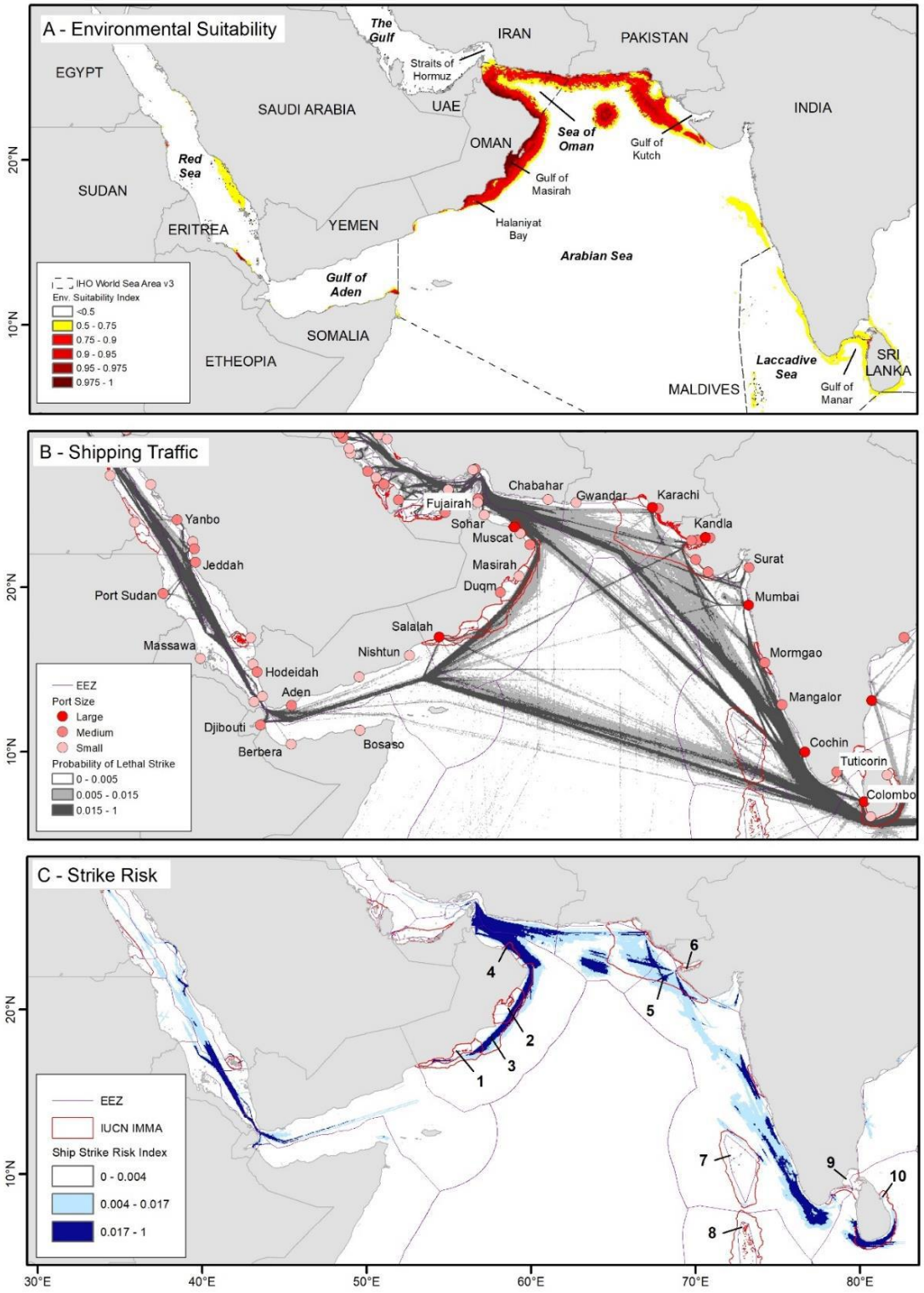

Figure 5: Strike risk framework components and important maritime features. (A) Ensemble ecological niche model (EENM) of environmental suitability for ASHWs (source: Chapter 3), (B) probability of lethal strike, and (C) vessel strike risk index (SSRI; A x B) Important Marine Mammal Areas (IMMAs; red empty polygon). IMMAs are labelled as 1) Dhofar, 2) Gulf of Masirah and Offshore Waters, 3) Oman Arabian Sea, 4) Muscat Coastal Waters and Offshore Canyons, 5) North East Arabian Sea, 6) Gulf of Kutch, 7) Lakshadweep Archipelago, 8) Maldives Archipelago, and Adjacent Oceanic Waters, 9) Gulf of Mannar and Palk Bay and 10) South West to Eastern Sri Lanka. Taken from Willson et al. 2023.

5.1.2 Fisheries entanglement

The upwelling phenomenon that provides prey for humpback whales at tropical latitudes also supports an active fishing industry in the region, with many fleets in the Arabian Sea predominantly using gillnets to target large finfish such as tuna, presenting a significant bycatch risk to all cetaceans (Elliott et al. 2023). These large-mesh gillnets present an entanglement risk to humpback whales, and a recent study found that 66% of all humpback whales examined bore scarring consistent with entanglement (Minton et al. 2022). A recent analysis using the Bycatch Risk Assessment (ByRA) Toolkit (Hines et al. 2020, Verutes et al. 2020), identified areas in the Gulf of Masirah as being particularly high-risk areas for entanglement of humpback whales in large-mesh gillnets used throughout this core habitat for the population (Farinelli et al. 2024). Even entanglements that are not lethal may lead to reduced fitness and ability to reproduce, hindering recovery of the population (Knowlton et al. 2022).

There is some anecdotal evidence that bycaught whales in Yemen are in demand due to the high value of ambergris, and the high profile case of Yemenis fishermen who were able to recover and sell a large piece of ambergris from a dead sperm whale in 2021 (see https://www.bbc.com/news/av/world-middle-east-57288265). This may reduce the incentive to free entangled whales in some parts of the ASHW range, with many fishers unlikely to understand the difference between humpback whales and sperm whales.

5.1.3 Coastal and offshore infrastructure and other sources of underwater noise and habitat degradation

Additional threats to the population include changes to their habitat from coastal construction, such as ports and liquified natural gas (NLG) facilities, as well underwater noise and the risk of oil spills or chemical pollution related to offshore oil and gas exploration and production (Weilgart 2017, Broker 2019). One area of particular concern is the Gulf of Masirah, in Oman, where previously almost uninhabited isolated areas of coastline with relatively high humpback whale encounter rates prior to 2004 now hosts the Port of Duqm, a large container and military port with a growing city and infrastructure around it.

Offshore seismic exploration is a known threat to humpback whales in their core habitats (Broker 2019). This is a particular concern in the Gulf of Masirah, Oman, where seismic surveys have been conducted during the whale breeding season (Baldwin et al. 2015). Military activity in this region, which likely includes sonar, presents an unknown and unquantified threat to all cetaceans. Persistent underwater noise masks whale communication and may interfere with nursing or reproductive activities (Indeck et al. 2020, Sprogis et al. 2023) and contribute to increased stress levels, in turn reducing overall fitness, resilience and ability to reproduce (Rolland et al. 2012, Rolland et al. 2017).

Marine pollution from various sources, including run-off from land-based agriculture, waste products from aquaculture, harmful anti-fouling chemicals and oil spills also presents an unquantified, but likely, risk to ASHW. Chemical pollution has been demonstrated to negatively impact cetacean reproductive health (e.g. Wells et al. 2005, Schwacke et al. 2012) and increase susceptibility to disease (Tanabe 2002, Schwacke et al. 2012, Williams et al. 2025).

5.1.4 Climate change and disease

Climate change already appears to be affecting the strength and duration of the northeast and southwest monsoons that regulate sea temperatures and productivity in the region, as well as outbreaks of harmful algal blooms that can affect cetaceans and their prey (Goes et al. 2005, Al-Azri et al. 2010, Goes et al. 2020). Climate change and other pressures may lead to

changes in prey availability and subsequently decreased fitness. Minton et al. (2022) speculated that an observed increase in the percentage of humpback whales with tattoo skin disease-like lesions in recent decades may be linked to climate change or reduced fitness. Fisheries landing statistics throughout the Arabian Sea have documented a high variability and declines of sardine stocks linked to seasonal influence of the monsoons, climate change, the shifting of the oxygen minimum zone and unsustainable fishing (George et al. 2012, Hamza et al. 2020, Piontkovski et al. 2014, Goes et al. 2020). Further studies are required to understand if reduced prey availability is a current and future concern for ASHWs.

5.2 Prioritisation of threats

'Priority for Action' was determined based on a risk assessment matrix that considers likelihood and possible impact of each threat as well as the feasibility of addressing it (Figure 6). Note that some highly likely and high impact threats may not be feasible to address within the context of the CMP.

Threat Ranking Matrix

Severity of impact if the threat occurs

Likelihood

	Minor	Moderate	Major
Less likely	Low 1	Low 1	Medium 2
Likely	Low 1	Medium 2	High 3
Very likely	Medium 2	High 3	Very High 5

Figure 6: Risk assessment matrix

Table 2: Summary of actual and potential threats to the nominated population. Note that that the relevant actions refer to the specific research actions in Table 4 below.

Actual or Potential Threat	Cause or Related Activity	Type of Impact	Likelihood	Severity of Impact	Feasibility of monitoring or mitigating	Priority for Action	Relevant Actions
Vessel strike	Commercial shipping	Mortality and/or serious injury	Likely	Major	High	Very high	SCI01-SCI07, THRT01, THRT07-THRT09, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06
Entanglement in fishing gear (Vessel classification from FAO – Oman data)	Fishing vessels of medium size with multiday endurance and between 12 and 24m length (e.g. dhows). Classified as semi-industrial or artisanal. Predominantly targeting large pelagic (tuna and kingfish) with gillnets.	Mortality and/or serious injury from direct physical trauma and/or inability to reach surface to breathe.	Very likely	Major	High	Very high	SCI01-SCI07, THRT02-THRT06, PAC01- -PAC10, COORD01-COORD06
	Small-scale fishing vessels with single day endurance and < 12 m length. Multi-gear use including beach seine, gillnets, longline, hook and line.		Likely	Moderate	High	High	SCI01-SCI07, THRT02-THRT06, PAC01- -PAC10, COORD01-COORD06
	Industrial fisheries (e.g. boats > than 24 meters using trawling, purse seining or longlines and sometimes gillnets)		Likely	Major	High	High	SCI01-SCI07, THRT02-THRT06, PAC01- -PAC10, COORD01-COORD06
Underwater noise	Vessel traffic	Disruption to feeding, communication and reproductive behaviours, leading to reduced fitness and likely lower reproductive rates	Very likely	Moderate	High	High	SCI01-SCI07, THRT10-11, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06
	Offshore oil and gas exploration (seismic survey)		Very likely	Moderate	High	High	SCI01-SCI07, THRT11, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06
	Coastal construction and infrastructure development		Likely	Moderate	High	Medium	SCI01-SCI07, THRT11, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06
	Military vessels and sonar		Very likely	Major	Low	Medium	SCI01-SCI07, THRT11, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06

Actual or Potential Threat	Cause or Related Activity	Type of Impact	Likelihood	Severity of Impact	Feasibility of monitoring or mitigating	Priority for Action	Relevant Actions
Habitat degradation	Coastal construction	Loss of (access to) important feeding or breeding habitat, direct contamination or fouling of whales or their prey, disruption to feeding, communication and reproductive behaviours leading to reduced fitness and likely lower reproductive rates	Likely	Moderate	High	Medium	SCI01-SCI07, THRT12-14, PAC01-PAC03, PAC05-PAC10, COORD01-COORD06
	Offshore oil and gas installations		Less likely	Moderate	High	Medium	SCI01-SCI07, THRT12-14, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
	Oil Spill		Highly likely	Major	Medium	Very high	SCI01-SCI07, THRT12-14, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
	Chemical pollution (including microplastics, anti-fouling, ballast water, and industrial, agriculture or aquaculture contaminant run-off)		Likely	Moderate	High	Medium	SCI01-SCI07, THRT12-14, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
	Tourism		Less likely (marine tourism in Oman and India focuses on dolphins)	Minor	High (the tourism sector is likely to be more motivated to protect whales)	Medium	SCI01-SCI07, THRT12-14, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
Disease	Natural (e.g. tattoo skin disease-like lesions, parasitic infection), with potential additional environmental stressors that increase vulnerability.	Reduced fitness/resilience and likely lower reproductive rates	Highly likely	Moderate	High (highly feasible to monitor, but perhaps not to mitigate)	Very high	SCI01-SCI07, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
Prey depletion	Overfishing	Reduced body condition, resilience, and likely lower reproductive rates	Likely	Minor (based on body condition data to date, but could change rapidly)	High	High	SCI01-SCI07, THRT15, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06
	Climate Change	Changes in prey distribution or availability and/or thermal stress, resulting in increased energy expenditure and reduced (reproductive) fitness	Likely	Moderate	Low to mitigate (because beyond the actions of the CMP) but High to monitor	High	SCI01-SCI07, PAC01-PAC04, PAC06-PAC11, COORD01-COORD06

5.3 Mitigation measures and monitoring

Table 3 below provides an overview of monitoring strategies and indicators that can be used to monitor the effectiveness of the proposed CMP actions to address current threats. These complement the monitoring measures and indicators for the population itself in Table 1 above. Details on the planned mitigation measures are included in Table 4 in Section 6 below.

Table 3: Indicators that can be used to monitor environmental and anthropogenic stressors, as well as the effectiveness of CMP actions

Stressor/threat	Monitoring method/tool	Indicator
Environmental stressors	Satellite imagery/ sensing analysis	Number of days per year Sea Surface Temperature (SST) over threshold
		Monthly and annual SST anomaly trends
		Productivity (net primary productivity) threshold
Anthropogenic threats	AIS analysis of commercial vessels	Number of unique vessels traveling into area of interest
		Total distance of vessels through area of interest
		Total distance of vessels exceeding 10 knots
		Total distance of vessels below 10 knots
	Artisanal fishing national data	Number of fishermen registered
		Number of licensed vessels as environmental stressors
		Number of licensed vessels using net in critical habitat
	Remote sensing risk assessment	Vessel strike risk assessment; lethal strike index value
		Bycatch risk assessment index value
		Noise thresholds in critical habitat
	Various	Mapping of other industrial activities
Management measures	GIS and statistical analysis	Area designated for special planning zone/coastal zone management
		Area designated for restricted net fishing activity
		Area designated for vessel speed reduction
		Proportion of licensed & accredited whale watch tour operators
Coordination of strategy	Strategy metrics	Number of steering group, technical and industry meetings
		Number of adopted regional, national and local mitigation plans
		Financial fundraising targets
		Financial budget auditing
Awareness raising	Strategy metrics	Number of posts and press releases
		Social media views
		Number of industry stakeholders contacted and participating

6. ACTIONS

6.1 Summary and implementation of actions

Table 4 below provides an overview of the main actions planned under the CMP. Activities are to be prioritised nationally, through consideration of species and habitat conservation requirements and informed by broad stakeholder and community engagement. It is hoped that the actions listed here can all be viewed in the context of their contributions to national and global policy frameworks. In particular, Range States are encouraged to align and integrate these actions into existing national strategies, whether they are dedicated ASHW or marine mammal Conservation Plans, or elements of National Biodiversity Strategy and Action Plans (NBSAPs). In this way this regional CMP can help Range States to achieve the goals of the Kunming–Montreal Global Biodiversity Framework (KMGBF) and other relevant international goals and targets (e.g., SDGs) and contribute to broader ecosystem-based management objectives.

The CMP actions are divided into four main categories:

1) **Science (SCI)** includes all of the activities that require scientific investigation related to the population's biology and ecology (this correlates to the 'research' element in other CMPs).

2) **Threats (THRT)** includes the threat assessment, monitoring, mitigation and management actions that will directly or indirectly reduce the threats identified in Table 2 above (this includes elements of both the Monitoring and Mitigation categories in other CMPs).

3) **Public awareness and capacity-building (PAC)** includes creating outreach tools and training/learning opportunities for a broad range of stakeholders who are involved in either directly implementing or indirectly supporting the actions of the CMP. However, it should be emphasized that capacity-building should run through *all* other elements of the plan. It is critical that research, monitoring and risk assessments include, and help to reinforce capacity of Range State scientists and managers, and that mitigation measures include opportunities for government and industry stakeholders to improve their capacity for conservation action. Although some activities can clearly be identified as having capacity-building as their main aim, every boat survey, deployment of equipment and analysis of data should include capacity-building elements. Similarly, awareness-raising and education should run through all of the activities listed in each category below.

4) **Coordination (COOR)** will also be essential to ensure that the CMP moves forward and that there is cohesion and cross-fertilization between actions undertaken in different Range States. This will be especially important to ensure that the CMP adheres to the monitoring and reporting requirements and time frames of both the IWC and CMS. Setting up the CMP coordination framework will likely be a focus of the first phase of CMP implementation.

Table 4: Recommended Actions. Note that the Activity codes correspond to those listed in Table 2 detailing the threats and threat indicators above. Under implementing actors, the 'IWC SC' is the International Whaling Commission's Scientific Committee, the IWC CC is the IWC's Conservation Committee, and the IWC BMI is the IWC Bycatch Mitigation Initiative.

Activity Code	**Threats addressed**	**Desired outcome (short, med, long)**	**Proposed action** (more details and quantifiable indicators provided in Table 2 above)	**Implementing Actors**	**Cost** (in GBP – if known)	**Priority level**
SCIENCE (including research, monitoring and risk assessment): SCI						
SCI-01	All threats	Continued and regularly updated knowledge of ASHW distribution, population status, behaviour, relative abundance, absolute abundance, and trends and monitoring of fishing effort	Conduct **vessel surveys** using (modified) line transect methodology to assess distribution and (relative) abundance, group composition, and behaviour. Include photo-identification, use of boat-based hydrophones to detect song, and observation and mapping of fishing effort. Surveys should focus on building capacity for Range State scientists, and consider 'scientist survey exchanges' to promote transfer of experience and expertise between Range States.	Science teams in participating states, IWC SC	TBD - state by state	Very high
SCI-02	All threats	Continued and regularly updated knowledge of ASHW distribution, population status, behaviour, relative abundance, absolute abundance, and trends and monitoring of fishing effort	Conduct desk-based exercises to **collate existing data** on fishing effort and annual yields, oceanographic parameters, and other attributes listed in Tables 1 and 3 through desk-based reviews of government and RFMO reports, remotely sensed data, etc.	Science teams in participating states, IWC SC		High
SCI-02	All threats	Continued and regularly updated knowledge of ASHW distribution, population status, behaviour, relative abundance, absolute abundance and trends, and increased public awareness and participation	Collect sightings information through **fisheries interviews**, **citizen science**/social media, platforms of opportunity (e.g. seismic vessels, coast guard, tourists), and local rangers to expand photo-identification catalogue and understanding of individual movements and behaviour.	Science teams in participating states, IWC SC	TBD- state by state	Very high
SCI-03	All threats	Continued and regularly updated knowledge of ASHW health and body condition	Use **drones to assess body condition** and health (e.g. tattoo skin disease-like lesions).	Science teams in participating states, IWC SC	TBD- state by state	Very high
SCI-04	All threats	Continued and regularly updated knowledge of ASHW health, body condition and satellite tag site healing	Conduct full **visual health assessment** on all ASHW photos following Minton et al. (2022) every 5 years. This includes assessment of entanglement scarring, skin disease, and evidence of vessel strike.	Science teams in participating states, IWC SC	TBD- state by state	High

Activity Code	Threats addressed	Desired outcome (short, med, long)	**Proposed action** (more details and quantifiable indicators provided in Table 2 above)	Implementing Actors	**Cost** (in GBP – if known)	Priority level
SCI-05	All threats	Improved and updated understanding of ASHW core habitat, ranging patterns and movements, to inform risk assessments and mitigation	Deploy **satellite tags** only on whales that meet selection criteria agreed in IWC Scientific Committee and using teams and methods that comply with best practice regarding safety and ethical considerations (e.g. Andrews et al. 2019).	Science teams in participating states, IWC SC	TBD-state by state	High
SCI-06	All threats	Continued and regularly updated knowledge of ASHW presence/absence and anthropogenic underwater noise levels in core habitats	Conduct **passive acoustic monitoring** using bottom-mounted recording devices in core habitats (especially where they overlap with ports and other infrastructure).	Science teams in participating states, IWC SC	TBD-state by state	Very high
SCI-07	All threats	Understanding of rates and causes of mortality to assess urgency and eventual success of mitigation measures	**Monitor strandings** through national strandings network (requires response to strandings by trained veterinary pathologists).	Science teams in participating states, IWC SC & Stranding Initiative.	TBD-state by state	High
Addressing Threats (including threat assessment, monitoring and mitigation) THRT						
THRT-01	Vessel strike, underwater noise	Improved understanding of the threat of vessel strikes to ASHW to inform mitigation strategies	**Monitor and map shipping traffic**, through compilation and analysis of remotely sensed data (AIS), and risk assessment following Willson et al. (2023). Report any event to the IWC vessel strike data base.	Science teams in participating states, IWC SC & CC	TBD-state by state	Very high
THRT-02	Entanglement / bycatch	Improved understanding of the threat of bycatch to ASHW to inform mitigation strategies	**Monitor fishing effort** in ASHW habitat using AIS, national fisheries statistics, and high-resolution satellite imagery (Elliott et al. 2024), and conduct regular **risk assessments** for fisheries using the ByRA toolbox (Hines et al. 2020, Farinelli et al. 2024) and of shipping using AIS and whale distribution data (Willson et al. 2023).	Science teams in participating states, IWC SC & Bycatch mitigation initiative (BMI)	TBD-state by state	Very high
THRT-03	Entanglement / bycatch	Entanglement response teams are trained and equipped to disentangle whales in all Range States	Conduct **entanglement response workshops** in collaboration with the IWC Global Entanglement Response Network	Participating governments and scientists and IWC		High
THRT-04	Entanglement / bycatch	Reduced bycatch risk for cetaceans throughout the IMMA	Conduct scientific **trials of gear adaptations to reduce entanglement** (e.g. subsurface gillnetting (Kiszka et al. 2021), or use of alternative gear types on vessels (i.e. hook and line fishing for tuna instead of use of gillnets).	Fishers, fisheries management organizations,	TBD-state by state	High

Activity Code	Threats addressed	Desired outcome (short, med, long)	Proposed action (more details and quantifiable indicators provided in Table 2 above)	Implementing Actors	Cost (in GBP – if known)	Priority level
				IWC BMI, and science teams in participating states, IWC SC & CC.		
THRT-05	Entanglement / bycatch		Use outcomes of **bycatch risk analysis** and trials to conduct simulations, and work with fishers and managers to assess effectiveness and feasibility of different management options (gear switching, gear deployment adaptations, time-area closures, license quotas, etc.)	Fishers, fisheries management organizations, IWC BMI, and Science teams in participating states, IWC SC & CC.	TBD-state by state	Very high
THRT-06	Entanglement / bycatch		Implement and enforce **fisheries policies** - reduction of fishing effort using non-selective gears like gillnets through reduction of number of licenses, seasonal or area-based closures.	Range State government and fisheries stakeholders	TBD-state by state	High
THRT-07	Vessel strike	Reduced ship-strike risk for whales ASHW throughout range	Run simulations on the **cost-benefit of vessel strike reduction measures**, including re-routing or mandatory/voluntary speed reductions.	Range States and IMO	TBD-state by state	Very high
THRT-08	Vessel strike		Launch pro-active and **voluntary industry campaigns for whale avoidance,** reporting and routing planning based on available scientific data (refer to California Blue Whales and Blue Skies project).	Range States and IMO	TBD-state by state	Very high
THRT-09	Vessel strike		Submit **proposals to IMO for Particularly Sensitive Sea Areas** (PSSA) in the ASHW range; implement and monitor PSSA 'Associated Protective Measures' for the control of shipping traffic through important whale habitat.	Range States and IMO	TBD-state by state	Very high
THRT-10	Underwater noise	Reduced underwater noise in the ASHW range	Link **underwater noise reduction** scenarios to the vessel strike risk mitigation options.	Range States and IMO	TBD-state by state	Very high

Activity Code	Threats addressed	Desired outcome (short, med, long)	**Proposed action** (more details and quantifiable indicators provided in Table 2 above)	Implementing Actors	**Cost** (in GBP – if known)	Priority level
THRT-11	Underwater noise		Work with industry stakeholders to encourage best practice for **underwater noise mitigation** (Weilgart 2023), initially focusing on vessels operating in important marine mammal habitat.	Range States, IWC, IMO, CMS	TBD-state by state	High
THRT-12	Habitat degradation	Reduced risk of marine pollution/oil spill in the ASHW range, and increase preparedness if contamination/oil spill does occur	Identify and implement **navigation and route planning measures** that address reduction of ship wreck and collision with other maritime users.	Range States, IMO	TBD-state by state	Very high
THRT-13	Habitat degradation		Work with industry stakeholders to encourage best practice in **Environmental Impact Assessment, mitigation and monitoring** – using best practice available from CMS, and other sources	Range States, IUCN, CMS	TBD-state by state	High
THRT-14	Habitat degradation		Review and **update oil spill response plans**	Range States, CMS, ROPME	TBD-state by state	High
THRT-15	Prey depletion	Reduced risk of prey depletion for ASHW	**Assess potential effectiveness of measures to prevent declines of prey species**, such as catch quotas, licensing quotas, or time-area closures for species such as sardines.	Range States, IOTC	TBD-state by state	High
Public Awareness and Capacity Building (PAC)						
PAC-01	All threats	Increased capacity and motivation among government stakeholders to conduct ASHW monitoring and management	Conduct regular workshops to **promote exchange of experience and expertise** between researchers and government stakeholders as well as between scientists and managers in different Range States	Range States, IWC	TBD-state by state	High
PAC-02	All threats	Improved national legislation, policy and action for whale conservation	Support government stakeholders in the drafting and/or improving of **national ASHW, marine mammal, or biodiversity action plans**.	Range States, IWC, CMS	TBD – state by state	High
PAC-03	All threats	Improved ability to assess carcasses and contribute to understanding of rates and causes of ASHW mortality	**Train and empower stranding responders** to be able to examine stranded cetaceans for potential causes of mortality – including entanglement and vessel strike	IWC Stranding Initiative, Range States	TBD-state by state	High
PAC-04	All threats	Increased capacity among government agencies to document and monitor whale presence/absence	**Training and mentorship for managers and rangers** to include whale reporting in any coastal survey work they undertake for other species (e.g. turtles), or MPA surveillance.	Range States, international scientists and	TBD-state by state	Medium

Activity Code	Threats addressed	Desired outcome (short, med, long)	Proposed action (more details and quantifiable indicators provided in Table 2 above)	Implementing Actors	Cost (in GBP – if known)	Priority level
				academic institutions		
PAC-05	Entanglement/Bycatch	Identified high-risk areas for entanglement to inform mitigation	Conduct **Bycatch Risk Assessment (ByRA) training** workshops (see THRT-02) to empower Range State scientists (could be done in conjunction with first CMP implementation meeting)	IWC Bycatch BMI, Range States	70,000 GBP	Medium
PAC-06	All threats	Increased capacity and motivation among Range State scientists to conduct monitoring and management of ASHW	Continue **training and mentorship programmes for Range State scientists**, including support to conduct Masters, PhD projects focusing on cetaceans or ASHW	Range States, international scientists and academic institutions	TBD-state by state	High
PAC-07	All threats	Increased industry awareness and support for mitigation measures	Develop **outreach materials for industry** that can be distributed electronically to increase awareness of voluntary (and hopefully eventually mandatory) mitigation measures to reduce risks (e.g. shipping speed restrictions, routing measures, fishing quotas or closures, reporting schemes, etc.)	Range States Coordinator, Industry stakeholders	TBD-state by state	High
PAC-08	All threats		Conduct ASHW conservation advocacy through **participation in relevant regional and global meetings** (e.g. IMO, IOTC)	IWC, Coordinator,	TBD-state by state	Very high
PAC-09	All threats	Increased public awareness and support for mitigation and conservation, improved knowledge of ASHW distribution and movements, and expanded ASHW photo-ID catalogues	Develop **outreach materials for the general public,** including social media to raise awareness of cetaceans and the value of reporting sightings and strandings.	Coordinator, Range States	TBD-state by state	High
PAC-10	All threats		Form new and/or **support existing citizen science** reporting schemes	Range State scientists, government stakeholders, IWC Stranding Initiative	TBD-state by state	Very high
PAC-11	All threats		Host **public lectures, webinars**, presentations, information stands etc.	Range State NGOs, scientists, Coordinator	TBD-state by state	Medium

Activity Code	Threats addressed	Desired outcome (short, med, long)	**Proposed action** (more details and quantifiable indicators provided in Table 2 above)	Implementing Actors	**Cost** (in GBP – if known)	Priority level
Coordination (COOR)						
COOR-01	All threats	Coordinated and sustained communication and action among relevant stakeholders to ensure momentum and implementation	Appointment of a **CMP Coordinator** (full time) – ideally an ASHW Range State national, but more importantly with an understanding of whale ecology and conservation as well as the political context for regional collaboration	CMP Steering Committee, IWC, CMS	25,000 GBP per year	Very high
COOR-02	All threats	Representation of all relevant stakeholder groups in IMMA management	Formation of a **Steering Committee** with adequate representation from the IWC and the CMS and participating Range States; should hold in-person meeting in first year of CMP	Range States, IWC, CMS	70,000 GBP for meeting	Very high
COOR-03	All threats	Regular reporting on implementation progress to external stakeholders	**Biennial reporting** to the IWC Scientific Committee and Commission, annual reports to the CMS Scientific Council, and triennial reports to the CMS Conference of Parties	Coordinator, participating states	Incl. in Coordinator tasks	Very high
COOR-04	All threats	Sufficient funds available to support implementation of recommended activities	**Raise funds** through all possible means, drawing on leverage of IWC, CMS and Range State governments and NGOs.	Coordinator, IWC, CMS, participating states	Incl. in existing roles	Very high
COOR-05	All threats	Ongoing communication between relevant stakeholders across all participating states	Establishment and maintenance of **thematic working groups**, to be determined by Steering Committee and supported by Coordinator.	Steering Committee, Coordinator	Incl. in Coordinator role	High
COOR-06	All threats		Establishment of communication tools for the CMP- e.g. a **website** (could be sub-section of ASWN website), newsletter, online meetings,	Coordinator	10,000 GBP per year	Very high

6.2 Stakeholder engagement, public awareness and education

Stakeholder engagement, public awareness and education can build on the work undertaken by the Arabian Sea Whale Network, making use of the existing infographic, website, Facebook and LinkedIn accounts, as well as other tools developed. The expanded support for coordination and outreach should enable the development of additional outreach tools for industry stakeholders who will be responsible for implementing many of the mitigation measures. Additional materials and campaigns will also be needed to support the formation of sighting and stranding reporting networks.

6.3 Reporting process

Reporting will need to follow the frameworks and timelines of both the CMS and the IWC. Centralized progress reports on CMP implementation at regional level should be prepared by the CMP Coordinator for each triennial CMS Conference of Parties and for each biennial IWC Scientific Committee meeting, which will then be integrated into the documentation for the IWC Commission meeting in the same year. In addition to the central reporting at regional scale, Range State scientists and managers should be encouraged to submit reports to the IWC Scientific Committee on the results of research, monitoring or mitigation actions undertaken in their locations.

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