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Important Marine Mammal Area Regional Workshop for the Western Indian Ocean and Arabian Seas

Salalah, Sultanate of Oman, 4-8 March 2019

**FINAL REPORT
of the FIFTH IMMA WORKSHOP**

**IMMA Secretariat, IUCN SSC-WCPA
Marine Mammal Protected Areas Task Force**

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This Final Report, along with maps and IMMA background data, is available for download from the IMMA website: marinemammalhabitat.org.

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Executive summary¹

From 4 to 8 March 2019, the IMMA Regional Workshop for the Western Indian Ocean and Arabian Seas was held in Salalah, Sultanate of Oman, with the goal to identify and delineate Important Marine Mammal Areas — IMMAs. These discrete portions of habitat, important for marine mammal species, aim to have the potential to be delineated and managed for conservation. Utilising 108 Areas of Interest (Aoi) submitted before and during the meeting, a total of 54 candidate IMMAs (cIMMAs)² were identified and proposed through an expert-based process, utilizing dedicated selection criteria. (See Annex IV for the complete list of cIMMAs, Annex V for Aoi.) These criteria were devised by the IUCN Marine Mammal Protected Areas Task Force (the “Task Force”) in consultation with the marine mammal science and wider conservation and stakeholder community. Following independent review and consideration of how the criteria supported IMMA identification, 37 IMMAs were accepted for full status. Full details are provided later on in this summary.

The Oman workshop followed the sequence of IMMA regional workshops for the Mediterranean (Chania, Greece, 24-28 October 2016), Pacific Islands (Apia, Samoa, 27-31 March 2017), North East Indian Ocean and South East Asian Seas (Kota Kinabalu, Malaysia, 12-16 March 2018) and the Extended Southern Ocean (Brest, France, 15-19 October 2018). The results from this fifth IMMA Regional Workshop will, it is hoped, help provide conservation priorities to, and strategic direction for, area-based marine mammal conservation within the Western Indian Ocean and Arabian Seas region.

The workshop was attended by 40 experts and observers (Fig. 1; Annex I) from 16 countries and 1 overseas territory, including Eritrea, France, India, Iran, Italy, Kenya, La Réunion (France), Madagascar, The Netherlands, Sultanate of Oman, Pakistan, South Africa, Spain, United Arab Emirates, United Kingdom, United States of America, and Zanzibar (Tanzania). The observers came from the Sultanate of Oman Ministry of Fisheries and Ministry of Environment & Climate Affairs, the Convention on Migratory Species (CMS), the Global Ocean Biodiversity Initiative (GOBI), and the IMMA Review Panel. The six members of the IMMA secretariat were from Italy and the UK. In a number of cases, the expert held a main residence in a country other than where the research was done, and a number of experts have worked in multiple countries in the region. The workshop was organised by the Task Force with support from a partner grant with GOBI funded by the German government’s International Climate Initiative (IKI) and a contribution from Whale and Dolphin Conservation. The Ministry of Environment and Climate Affairs, Sultanate of Oman, hosted the workshop in Salalah.

¹ This summary covers the work of the IMMA Regional Workshop for the Western Indian Ocean and Arabian Seas, held in Salalah, Sultanate of Oman, in March 2019, as well as subsequent review from the independent Review Panel with the tally of IMMAs, cIMMAs and Aoi made public in October 2019 and reported in Annexes IV and V.

² These 54 were revised from 55 due to one cIMMA being merged with another before the start of the review.

The Western Indian Ocean and Arabian Seas Region is an area of rich biodiversity. In advance of the meeting, 105 areas of interest (Aoi) were put forward, comprising 46 expert submissions, 39 Ecologically or Biologically Significant Areas (EBSAs) identified through the Convention on Biological Diversity (CBD) process, and 20 other existing areas consisting of MPAs from the World Database on Protected Areas (protectedplanet.net) and the Cetacean Habitat database (cetaceanhabitat.org). On the first day of the workshop the draft total of 105 Aoi was expanded to 108 due to three additional expert submissions. From these, during the workshop, the group merged some areas and deferred others, and then prepared concise profiles of the cIMMAs, proposing boundaries and detailing how each one met the various IMMA criteria.

For the first time, the experts identified IMMAs for the Arabian Sea humpback whales, Indian Ocean humpback dolphins and unprecedented concentrations of Omura's whale, as well as three different populations of blue whales. The full list of marine mammal species included in the region's IMMAs, together with the boundaries of accepted IMMAs, as well as other cIMMAs and Aoi, can be viewed on the IMMA e-Atlas: <https://www.marinemammalhabitat.org/imma-eatlas/>.

Still, it was recognized that there are substantial data gaps for marine mammals across many species groups in the region — partly due to the challenges from logistical issues, as well as lack of funding for larger scale surveys and other research, particularly in the High Seas.

The five-day workshop was honoured in the opening session by the welcoming remarks of Ahmad Abdullah Sayari, Director General of the Ministry of Environment & Climate Affairs in Dhofar, Sultanate of Oman. The introductory plenary presentations were given by his colleague in the Ministry, based in Muscat, Bader Al-Bulushi, along with Lyle Glowka from the Convention on Migratory Species office in Abu Dhabi, David Johnson who coordinates the Global Ocean Biodiversity Initiative (GOBI), Task Force co-chairs Erich Hoyt and Giuseppe Notarbartolo di Sciara and the IMMA co-ordinator Michael James Tetley. There were a number of plenary discussions throughout the workshop, but the focus was on the breakout groups that were divided into six groups covering the seven original subregions (Annex III), with the task of sorting through the Aoi, merging those areas that might be better considered together and deferring a number of Aoi back to the originating authority if the case for becoming a cIMMA was weak. In the days that followed, then, the subgroups prepared a solid proposal for each cIMMA. As most participants had expertise in multiple subregions and had worked together before, many cIMMA submissions were jointly prepared. The cIMMAs were then presented in plenary and considered to be a joint result of the workshop.

A number of points emerged from the plenary discussions regarding the IMMA tool including the following:

- It is anticipated that this work can only be undertaken in a given region every 8-10 years. However, it will be possible for Areas of Interest (Aoi) to be submitted at any time. Anyone

can propose an Aol by presenting evidence of marine mammals measured against the criteria and filling out the dedicated form.

- Regarding drawing the boundaries of cIMMAs, a question arose: How are IMMAs defined when one species is threatened on the IUCN Red List and others are less threatened, or not at all? Should that be a single IMMA or several, one for each species? The answer is that it all depends on how the species are linked and how the data satisfy the IMMA criteria. If Criterion A for Red List threatened status is not the only criterion being applied, another criterion may help spatially define the cIMMA more than Criterion A. During the review process, splitting and joining of cIMMAs may occur several times. The advice is to not create super IMMAs that cover everything, but to draw the lines to encompass the habitat that satisfies the criteria being used.
- What is the maximum or minimum size of an IMMA? Is there a limit? This depends on the information available, how much confidence there is in the data and whether there is confidence that the criteria are satisfied and sufficient to make a strong case for that particular size of IMMA. If the habitat suggests that a buffer might also be important, it can be added. The largest IMMA is over 430,000 km² in the Pacific Ocean – the Cook Islands Southern Group IMMA. It is a migratory crossroads for humpback whales based on tracking data. The smallest area is about 45 km², the Akrotiri IMMA in southern Cyprus, encompassing small breeding caves for Mediterranean monk seals.
- Can IMMAs be used to help a country meet its 10% Aichi Target 11? No, IMMAs carry no management prescription and are not considered to be “protected” and so cannot be counted in Aichi Target 11. However, as the marine mammal component of a biodiversity layer, IMMAs can help governments, managers and other stakeholders to identify places that may need protection. IMMAs can serve as monitoring sites against degradation and climate change, if baseline data are acquired that then allow later comparisons.
- Although it was not a new point, it was stressed that only one criterion was needed to make an IMMA. In addition, participants were encouraged to focus on criteria for which there are solid information. It is better to use one or a small number of criteria for which justifications are strong than to spend time trying to justify additional criteria for which evidence is weak.
- The workshop also afforded the chance for an Arabian Sea Humpback Whale meeting, attended by most participants. In addition, during breaks or in the evening, there were meetings to plan regional research; various participants were happy to note that it was rare for researchers from the Arabian Seas part of the region to be able to get together with those working in the South West Indian Ocean around Madagascar, eastern South Africa, and Mozambique.

- A regional Task Force group and coordinating committee were set up to further the work of the Western Indian Ocean and Arabian Seas IMMA workshop. The volunteer coordinators are Gill Braulik, Violaine Drouot Dulau and Gianna Minton.

Following the workshop, the compiled 54 cIMMAs were sent to the independent Review Panel to assess whether the criteria were applied correctly and to verify that the evidence provided was sufficient to support the case for each cIMMA. When a cIMMA receives approval as an IMMA after peer review, the boundaries and a summary of the supporting evidence are made available on the IMMA e-Atlas. Those cIMMAs failing review and reverting to Aol, instead go forward as having strong potential but with insufficient information to satisfy the criteria. The Aol are then used to assist in highlighting reference areas for further marine mammal research and monitoring to help build an evidence basis on which future cIMMAs may be proposed. Once they are on the e-Atlas, the IMMAs, as well as the Aol, become available for implementation initiatives.

The decisions of the IMMA Review Panel were finalized in September 2019. In total, 37 IMMAs were accepted for full status, some of them after receipt of revisions or additional information that was required before their confirmation as IMMAs meeting the criteria. Of the remaining 17 candidate IMMAs, three areas were considered to show strong evidence of merit as future IMMAs so they will remain cIMMAs until they are able to fully satisfy the criteria. The other 14 areas were determined to have insufficient evidence at this time to be considered as either IMMAs or interim cIMMAs, and thus became Aol, joining the list of other Aol from the workshop and making a total of 23 Aol. These Aol, if given further monitoring and survey effort, could be reassessed as cIMMAs in a future IMMA expert identification workshop.

The list of 37 areas awarded IMMA status and the three areas with cIMMA status is as follows³:

³ See Annex V and VI for the complete list of IMMAs, cIMMAs and Aol in the Western Indian Ocean and Arabian Seas. More information is available in the IMMA e-Atlas at <https://www.marinemammalhabitat.org/imma-eatlas/>

IMMAs

1. Aldabra Atoll IMMA
2. Bazaruto Archipelago and Inhambane Bay IMMA
3. Cape Coastal Waters IMMA
4. Comoros Island Chain and Adjacent Reef Banks IMMA
5. Dhofar IMMA
6. Farasan Archipelago IMMA
7. Greater Pemba Channel IMMA
8. Gulf of Kutch IMMA
9. Gulf of Masirah and Offshore Waters IMMA
10. Gulf of Salwa IMMA (excluding the Northwest Gulf cIMMA)
11. Indus Estuary and Creeks IMMA (originally Indus Estuary and Creeks Extending to Mandvi Harbour cIMMA)
12. Kisite-Shimoni IMMA
13. Lakshadweep Archipelago IMMA
14. Lamu Offshore IMMA
15. Madagascar Central East Coast IMMA (originally Antongil Bay to Tamatave cIMMA)
16. Maldives Archipelago and Adjacent Oceanic Waters IMMA
17. Mascarene Islands and Associated Oceanic Features IMMA
18. Menai Bay IMMA
19. Miani Hor IMMA
20. Mozambique Coastal Breeding Grounds IMMA
21. Muscat Coastal and Shelf Waters IMMA
22. Nakhiloo Coastal Waters IMMA
23. North East Arabian Sea IMMA (merged from Ormara Sapat Area cIMMA and Northeast Arabian Sea Humpback Whale Area cIMMA, Murray Ridge cIMMA, and Indus Canyon cIMMA)
24. Northern Gulf and Confluence of the Tigris, Euphrates and Kuran IMMA
25. Northern Red Sea Islands IMMA
26. North West Madagascar and North East Mozambique Channel IMMA
27. Oman Arabian Sea IMMA
28. Seychelles Plateau and Adjacent Oceanic Waters IMMA
29. Shelf Waters of Southern Madagascar IMMA (originally Madagascar Deep South cIMMA)
30. Sindhudurg-Karwar IMMA
31. South East African Coastal Migration Corridor IMMA
32. South West Madagascar and Mozambique Channel IMMA

(originally Southern Mozambique Channel cIMMA)

33. Southern Coastal Shelf Waters of South Africa IMMA (merged from South African East Coast Seasonal Sardine Run Migration cIMMA, South African Inshore Bryde's Whale cIMMA, South African Coastal Sousa Habitat cIMMA)
34. Southern Egyptian Red Sea Bays, Offshore Reefs and Islands IMMA (merged from Marsa Alam bays cIMMA and Marsa Alam to Hala'ib Offshore Reefs cIMMA)
35. Southern Gulf and Coastal Waters IMMA (merged from Dubai Coastal cIMMA and Abu Dhabi Coastal Waters cIMMA)
36. Toliara, St. Augustine Canyon and Anakao IMMA
37. Watamu-Malindi and Watamu Banks IMMA

cIMMAs

1. Central Mozambique Channel cIMMA (remains a cIMMA)
2. Madagascar Ridge cIMMA (remains a cIMMA)
3. Gulf of Salwa and Northwestern Gulf cIMMA (originally Gulf of Salwa and Northern Saudi Arabia cIMMA)



Fig. 1. Participants of the Fifth IMMA Workshop in Salalah, Oman

Acknowledgments

A big thank you goes to Gill Braulik and Jeremy Kiszka for their assistance in selecting expert participants, and Lyle Glowka from CMS for his help with participants and observers from Oman. Travel and other logistics were arranged by the IMMA Secretariat, namely Margherita Zanardelli and Simone Panigada. We are grateful to the Ministry of Environment and Climate Affairs, Sultanate of Oman, and in particular to Ms. Thuraya Said Al-Sareeria, Deputy Director General of Nature Conservation, Ministry of Environment and Climate Affairs, for hosting the workshop in Salalah.

This report was prepared by Erich Hoyt with contributions from Giuseppe Notarbartolo di Sciara, Michael J. Tetley, Caterina Lanfredi, Simone Panigada and Margherita Zanardelli. The documents presented at the workshop as a support for IMMA delineation were prepared by Michael J. Tetley, who together with Caterina Lanfredi led the mapping efforts during the workshop. Gill Braulik and Gianna Minton kindly acted as rapporteurs during the meeting, supplemented by Margherita Zanardelli and Caterina Lanfredi. The post-workshop submissions to the Review Panel and follow-ups as needed were handled by Michael J. Tetley. The independent Review Panel was coordinated by Randall R. Reeves. Our observers contributed hugely to the success of our work; in particular, the attendance by several representatives from Omani Fisheries and Environment ministries as well as Suaad Al Harthi from the Environmental Society of Oman led to informal comments and supplementary information supporting our efforts. We were saddened to learn, only one week before our meeting, that Moamer Eltayeb Ali, the invited scientist from Sudan, an authority on dugong, succumbed to Dengue fever; we extend our sincere condolences to his family, friends and colleagues.

Additional thanks are due to David Johnson in terms of operational comments, and to Bob Brownell for his expertise regarding the species and the region. Donna Kwan contributed her background in dugongs and the CMS process. The SeaSketch platform, acting partly as an IMMA facility for the collection of pre-workshop AoI proposals, was kindly provided by the McClintock Lab at the Marine Science Institute at the University of California Santa Barbara. Our deepest thanks go to the International Climate Initiative (IKI) of the Government of Germany for funding the five southern hemisphere IMMA workshops and three IMMA implementation efforts, and to GOBI and Seascope Consultants, especially David Johnson and Vikki Gunn, for their superb administration of the GOBI-IKI programme. We are also grateful to our other sponsors, especially Whale and Dolphin Conservation for their timely funding to supplement the GOBI-IKI grant.

INTRODUCTION AND BACKGROUND

The IUCN Marine Mammal Protected Areas Task Force⁴ and the IMMA Initiative

The Important Marine Mammal Area (IMMA) initiative, developed by the IUCN Joint SSC⁵/WCPA⁶ Marine Mammal Protected Areas Task Force (the “Task Force”), is modelled on the successful example of the BirdLife International process for determining Important Bird and Biodiversity Areas (IBAs). The intention is that the identification of IMMAs through a consistent expert process, independent of any political and socio-economic concerns, will provide valuable inputs about marine mammals and their habitat which will contribute to existing national and international conservation initiatives. Yet the application or implementation process is separate from and occurs later than the identification process.

IMMAs are an advisory, expert-based classification. It is important to realize that they have no legal standing as MPAs but are intended to be used in conservation planning by a variety of stakeholders, including *inter alia*, governments, intergovernmental organisations, conservation groups, and the general public. In application, IMMAs may merit specific place-based protection and/or monitoring and, in some cases, reveal additional zoning opportunities within existing MPAs. By pointing to the presence of marine areas of particular ecological value, IMMAs can serve the function of promoting the conservation of a much wider spectrum of species, biodiversity and ecosystems, well beyond the specific scope of conserving marine mammals.

The identification of IMMAs can also help to spotlight marine areas valuable in terms of biodiversity during the process of marine spatial planning (MSP). IMMAs may become an effective way of building institutional capacity at the international and national levels, to make substantial contributions to the global marine conservation agenda. Marine mammals are indicators of ocean ecosystem health and thus, the identification of IMMAs will support the Convention on Biological Diversity (CBD) marine portfolio of Ecologically or Biologically Significant Areas (EBSAs). EBSAs aim to provide a basis for promoting awareness of marine biodiversity, leading to conservation in specific areas of the world’s oceans. IMMAs will also support the creation of Key Biodiversity Areas

⁴ IUCN SSC/WCPA Marine Mammal Protected Areas Task Force (<https://www.marinemammalhabitat.org/>)

⁵ Species Survival Commission (www.iucn.org/theme/species/about/species-survival-commission)

⁶ World Commission on Protected Areas (<https://www.iucn.org/theme/protected-areas/wcpa>)

(KBAs) identified through the IUCN KBA Identification Standard. Finally, IMMAs can contribute to the designation of International Maritime Organisation (IMO) Particularly Sensitive Sea Areas (PSSAs) and other shipping directives related to the threat of ship-strikes of whales and increasing noise in the ocean.

For the period 2016-2021, the Task Force has launched a process to apply criteria to identify a worldwide network of IMMAs and to enhance the prospects for their protection. Regional expert workshops have been focusing on seven large marine regions, beginning with the Mediterranean (October 2016), funded by the MAVA Foundation, followed by five workshops in the southern hemisphere funded by the German International Climate Initiative (IKI) through the Global Ocean Biodiversity Initiative (GOBI): Pacific Islands (March 2017), North East Indian Ocean and South East Asian Seas (March 2018), Western Indian Ocean and Arabian Seas (March 2019), Australia-New Zealand Waters and South East Indian Ocean (February 2020), and finally the South East Tropical and Temperate Pacific Ocean (late 2020). An additional workshop covering the Extended Southern Ocean (October 2018) has been funded by the French Agency for Biodiversity through the IUCN Global Marine and Polar Programme. Supplemental funding for the various workshops has been provided by the Eulabor Institute and by Whale and Dolphin Conservation (WDC), with administrative support by Tethys Research Institute.

Purpose of the IMMA Regional Workshop

The aim of the IMMA Regional Workshop for the Western Indian Ocean and Arabian Seas was to identify and delineate discrete habitat areas — important for one or more marine mammal species — that have the potential to be managed for conservation. This was achieved through an expert-based process utilizing specially created selection criteria devised by the Task Force, in consultation with the marine mammal science and conservation community (see pp. 5-6). This IMMA Regional Workshops also aimed to assist in providing strategic direction and conservation priorities to the further development of area-based marine mammal and biodiversity conservation. Through the participation of IMMA regional coordinators, this will in future lead to recommendations on how to address conservation concerns through the implementation of IMMAs using appropriate conservation tools.

Summary of the Process of the IMMA Regional Workshop and Follow-up

The general outline of the workshop programme consisted of:

- a plenary session to introduce the IMMA selection criteria, to present the submitted Aol, to select the subgroup facilitators and discuss the proposed cIMMAs;
- a reading session of the IMMA documents including an IMMA Guidance Document, Inventory of Knowledge, and a list of the Areas of Interest (Aol) submitted in advance of the meeting by experts; and
- multiple working group sessions to select and document the cIMMAs to go forward on a subregional basis that accounts also for species.

The Workshop is part of a three-stage process that works toward producing the final IMMAs:

STAGE 1 – Nomination of initial Aol: Aol proposed by experts via a dedicated online system (SeaSketch) or through completion of the Aol forms provided, are then summarized in the Areas of Interest report. This document is provided to regional experts in order to evaluate the submitted Aol, along with existing marine mammal place-based conservation measures. Participants attending the workshop are also encouraged by the IMMA Coordinator to submit additional Aol by the end of the first day.

STAGE 2 – Development of cIMMAs: participants are invited to use their regional knowledge to develop cIMMAs, based upon their review of Aol submitted in advance or proposed during the workshop. Candidate areas must start out as Aol first, and only then can they have the chance to graduate to cIMMAs.

There are four categories of main criteria and eight criteria or sub-criteria, at least one of which must be met in order to propose a cIMMA:

Criterion A – Species or Population Vulnerability (based on the IUCN Red List Status)

Criterion B – Distribution and Abundance

Sub-criterion B(i) – Small and Resident Populations: Areas supporting at least one resident population, containing an important proportion of that species or population, that are occupied consistently.

Sub-criterion B(ii) – Aggregations: Areas with underlying qualities that support important concentrations of a species or population.

Criterion C – Key Life Cycle Activities: Areas containing habitat important for the survival and recovery of threatened and declining species.

Sub-criterion C(i) – Reproductive Areas: Areas that are important for a species or population to mate, give birth, and/or care for young until weaning.

Sub-criterion C(ii) – Feeding Areas: Areas and conditions that provide an important nutritional base on which a species or population depends.

Sub-criterion C(iii) – Migration Routes: Areas used for important migration or other movements, often connecting distinct life-cycle areas or the different parts of the year-round range of a non-migratory population.

Criterion D – Special Attributes

Sub-criterion D(i) – Distinctiveness: Areas which sustain populations with important genetic, behavioural or ecologically distinctive characteristics.

Sub-criterion D(ii) – Diversity: Areas containing habitat that supports an important diversity of marine mammal species.

For Sub-criterion Dii, the overall average species richness for the region and IMMA subregions (based on the species richness considered via the Knowledge Assessment present in the Inventory of Knowledge report) is provided as a baseline for participants to consider suitable Aol for which to develop rationales for cIMMAs using the Dii criterion.

STAGE 3 – Final review and IMMA status qualification: an independent panel chaired by Randall R. Reeves, IUCN Cetacean Specialist Group Chair, reviews the cIMMAs and decides whether they can be accepted as IMMAs.

Workshop Facilities

To aid in the efficient running of the workshop, participants are provided with a number of facilities and resources. These include the following:

- guidance documentation of the IMMA selection criteria and process,
- the Inventory of Knowledge (IoK) Document for the workshop region,
- the Areas of Interest (Aol) Report of submissions and existing sites in the workshop region,

- the IMMA SeaSketch facility,
- on hand instruction on the use of ArcMap, QGIS, and Google Earth, and
- the candidate IMMA submission review template (in Microsoft Word format).

The workshop organizers create a joint Dropbox space for the workshop, in which the above materials are shared and made available for download in the weeks before the workshop. Additional useful data are also made available on the shared Dropbox space.

As these workshops contain a technical mapping element, workshop participants are advised to find a means to access and edit common geospatial data, e.g. Shapefiles (.shp; .shx; .dbf) and Keyhole Markup Language (.kml).

The following two free access mapping programs are recommended for use:

QGIS: <https://www.qgis.org/en/site/forusers/download.html>

Google Earth: <http://www.google.co.uk/earth/download/ge/agree.html>

REPORT OF THE WORKSHOP

IMMA Workshop Day 1, 4 March 2019

WELCOMING ADDRESSES FOR THE IMMA WESTERN INDIAN OCEAN AND ARABIAN SEAS REGION WORKSHOP

Giuseppe Notarbartolo di Sciara, co-chair, IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, welcomed the group to Salalah including the distinguished guests from the Fisheries and Environment ministries in the Oman government, some from Muscat, the capital, and others from Salalah. He conveyed his excitement about our work in this fascinating biodiverse region of the world's oceans. He outlined the programme for the morning, beginning with a talk from Task Force co-chair, Erich Hoyt.

Presentation by Erich Hoyt, co-chair, IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force • The Origin of IMMAs

Erich Hoyt talked about how IMMAs came about and how we got here. There was a recognition that marine mammals were being missed out in various conservation planning processes. This awareness came through the International Committee on Marine Mammal Protected Areas (ICMMPA) which was formed in 2008 and had its first conference in 2009, as well as through Hoyt's book *Marine Protected Areas for Whales, Dolphins and Porpoises* (2nd ed., 2011) and Tetley and Hoyt's experience bringing marine mammal data to various EBSA workshops.

There was no systematic process for presenting marine mammal data at the CBD EBSA workshops or at other international meetings. Much of the data was unpublished. There was a realization in the ICMMPA and in the Task Force when it was founded in 2013, that many MPAs were designated for political or socioeconomic reasons without ecological boundaries and not based on marine mammal habitat considerations. There was a need to highlight important marine mammal habitat based on science first and then to move forward with efforts to try to protect that habitat through spatial and other measures and through monitoring in the future. Hoyt then talked about the various speakers planned for this morning and introduced Mr. Ahmad Abdullah Sayari.

Presentation by Oman Ministry of Environment and Climate Affairs (Dhofar)

Ahmad Abdullah Sayari, Director General of the Ministry of Environment and Climate Affairs (MECA) in Dhofar (southern Oman), welcomed all the participants to Salalah and to the expert workshop. He explained that Oman was committed to the protection of the environment. As early as 1974, the first legislation on protection of the environment and marine pollution was passed. Now there are many regulations and laws that protect the environment in Oman. He extended his great thanks to all the participants for their long travels, which indicated the importance of the workshop. He wished the group success for a productive workshop and also that they would enjoy a pleasant stay in Salalah.

Presentation by Oman Ministry of Environment

Next **Badar Al-Bulushi**, Head of the Department of Marine Environment Conservation in the Ministry of Environment and Climate Affairs in Muscat, the capital city, gave an opening address illustrated with his photographs. He explained that Oman has 3,165 km of coastline, and faces three seas, including the Gulf of Oman, Arabian Sea and Persian Gulf, sometimes called the Arabian Gulf, or simply “the Gulf”. Coastal Zone management plans for many areas were conducted in association with IUCN. There are 14 MPAs which include the Dimaniyat Islands Nature Reserve, an archipelago of nine pristine islands, the Qurm Nature Reserve, which is a large mangrove forest, and Ra’s al Hadd Turtle Reserve, which can be visited by 600 green turtles in a single night.

As for humpback whales, there were fewer than a hundred of the Arabian Sea humpback whales resident off Oman. Threats include pollution, entanglements including tuna fishing nets, ship strikes, and tourism. Mr. Al-Bulushi related how, over a one-year period, more than eight whales had stranded along the coast. Three were killed by a ship strike, three were entangled in fishing nets and, for two, the cause of death could not be diagnosed. The government collects samples from whales in association with the Environment Society of Oman and Five Oceans Environmental Services. There have been workshops to train local stakeholders in stranding response and now the government is engaged in responding to stranded cetaceans. Through efforts led by Mr. Al-Bulushi’s colleague, Aida Al-Jabri, the Ministry of Environment regularly conducts public awareness activities with local communities and schools to inform them about whales and dolphins and other important aspects of marine life. Their philosophy is to protect natural resources for future generations. Mr. Al-Bulushi stressed the importance of collaboration between stakeholders, including different government bodies, NGOs, communities and the private sector.

Presentation by Convention on Migratory Species (CMS) - United Nations Environment Programme

Lyle Glowka from the CMS office in Abu Dhabi gave a summary of the CBD Ecologically or Biologically Significant Areas (EBSA) process and its importance. He then provided a brief overview of the journey made by the female humpback whale Luban who was satellite-tagged during research by the Environment Society of Oman (ESO) and Five Oceans Environmental Services in the Gulf of Masirah. Luban was documented making a journey to the southern tip of India and back again. This event provides a strong rationale for international cooperation on conservation of Arabian Sea humpback whales. In October 2017, the CMS Conference of the Parties (COP) endorsed an Arabian Sea humpback whale Concerted Action, which outlines a number of research and conservation activities. The CMS is hoping that this can lead to the development of a regional Conservation Management Plan (CMP) which, if undertaken in collaboration with the International Whaling Commission (IWC), could be implemented with India, Oman and other range states.

Glowka recalled that the third International Marine Protected Area Congress in 2013 (IMPAC3) focused on the aim of achieving the Aichi Target 11 to protect 10% of the world's oceans by 2020. A key message was to use MPAs of varying scales nesting into ecologically coherent networks to achieve conservation goals. CMS's main concern and contribution to the process was to find ways to ensure that effective MPA networks cover the complete ranges of migratory species. As described in an earlier presentation, the MMPA Task Force was launched in 2013 at that meeting. Also in 2013, CMS joined the Global Ocean Biodiversity Initiative (GOBI). CMS examined CBD-designated EBSAs and migratory species overlap and there was a strong correlation. This led to CMS COP Resolution 11.25, Advancing Ecological Networks and Connectivity to Address Migratory Species.

At the 2017 CMS COP, Resolution 12.13 referred directly to IMMAs, establishing that IMMAs can promote ecological networks and connectivity, and acknowledging the IMMA criteria and process, requesting Parties and inviting Range States to identify specific areas where the identification of IMMAs could be beneficial. The resolution also invited the CBD, IMO and IUCN to consider IMMAs as useful contributions for the determination of EBSAs, PSSAs and KBAs. A NW Indian Ocean EBSA workshop was held in Dubai in 2015 and identified a number of EBSAs which feature or include marine

mammals. Worldwide, some 144 of the designated EBSAs worldwide have included migratory species, of which 20 featured migratory whales or dolphins.

In short, CMS's view is that EBSAs and IMMAs are both very important for CMS to reach the Aichi Targets and UN Sustainable Development Goals. The EBSA process has also provided the basis and a good foundation and baseline for the IMMA discussions.

After Glowka's presentation, Hoyt introduced **David Johnson**, Coordinator of the Global Ocean Biodiversity Initiative (GOBI). Hoyt said that after Johnson, Task Force co-chair Giuseppe Notarbartolo di Sciara would talk more about the Task Force process of creating IMMAs and give an overview of our work.

David Johnson gave a brief presentation on the Global Ocean Biodiversity Initiative (GOBI) to provide context for the IMMA Workshop. He explained that the GOBI-IKI Project is financially supported by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. Efforts to establish Important Marine Mammal Areas are one of six inter-related work strands over a 5-year period until 2021. However, GOBI is a larger partnership of ocean science organisations, several of which have a specific interest and expertise in marine mammals. GOBI is also at the science / policy interface, engaging with international processes to protect marine biodiversity and intent on promoting best available marine science.

Johnson provided examples of recent work. He then recalled the inception of GOBI, formed in 2008 in response to the adoption of the EBSA criteria by the Convention on Biological Diversity (CBD), with the support of Germany, the CBD COP9 President. GOBI's involvement in the EBSA process in terms of information provision and advice has been recognized by CBD.

GOBI's research topics are intended to provide a solid framework for the development of management options for specific regions, ecosystems and individual species across the world's oceans. In turn, this contributes towards achieving Aichi Target 11, Sustainable Development Goal 14 and the International Legally Binding Instrument currently being negotiated for the conservation and sustainable use of biodiversity beyond national jurisdiction. GOBI is strongly supporting supplementary analysis to inform future update and revision of the EBSA Workshop results based on the identification of scientific needs. This is why in GOBI's view IMMAs are key to helping shape future marine conservation.

Next, Hoyt asked that the microphone be passed around the room for short participant introductions, name, affiliation and a sentence or two about their work in the region.

Then, **Giuseppe Notarbartolo di Sciara** presented the closing talk of the first session. He said that it all started in Marseille at IMPAC3 with the birth of the Task Force and the criteria workshop. The purpose of IMMAs was to develop a place-based conservation tool identifying discrete portions of habitat, important for one or more marine mammal species, that have the potential to be delineated and managed for conservation. IMMAs are not MPAs and are not identified based on management considerations. The identification of IMMAs is a scientific product generated by the best science we can access. IMMAs come from an evidence-driven, purely biocentric process based on the application of scientific criteria and on the best available science. There are many processes and organisations that can use the IMMAs; they are not created in a vacuum. Other initiatives including CBD EBSAs, MSP, MPAs, IMO PSSAs and KBAs can utilize products of the IMMA process. A very significant step was made when CMS adopted a resolution recognizing the IMMAs, which has put them into the global arena.

Notarbartolo di Sciara showed the maps illustrating how the Mediterranean in 2016 was the first workshop, followed by the Pacific Islands in 2017 and the North East Indian Ocean and South East Asian Seas in 2018. This year the Task Force has come to the Western Indian Ocean and Arabian Seas. Over the next two years, workshops will cover Australia-New Zealand waters and the South East Indian Ocean, followed by the Pacific coast of Latin America, from the southern tip of Chile to the northern border of Mexico. Last year, outside of the GOBI-IKI process, there was a meeting to identify IMMAs in the Extended Southern Ocean. By the end of the year the Task Force hopes that the e-Atlas will include IMMAs from two more regions: the Western Indian Ocean and Arabian Seas, as well as the Extended Southern Ocean.

Each workshop follows a predefined process developed in consultation with regional marine mammal science and conservation communities, to identify candidate IMMAs on the basis of received proposals for Areas of Interest (Aoi). After the workshop, cIMMAs are submitted to the independent IMMA Review Panel of experts to verify them and final approval is given to approximately 70% of them. Those close to passing review but short of information stay as candidate IMMAs, while others requiring more data to support the choice of criteria revert to Aoi. These Aoi go on the e-Atlas along with the cIMMAs and IMMAs.

Introduction to Important Marine Mammal Areas: IMMA Selection Criteria, Identification Process and Inventory of Knowledge (IoK) for the Western Indian Ocean and Arabian Seas Region

Michael Tetley began speaking after the coffee break. He showed the “ground zero” world ocean map that was produced by Hoyt revealing the various spatial tools, including MPAs, EBSAs, particularly sensitive sea areas (PSSAs) of the International Maritime Organisation (IMO) whose boundaries were based to varying degrees on political and socioeconomic considerations whereas IMMAs have adopted an expert-based biocentric identification process in open consultation with the wider marine mammal knowledge community and subject to independent peer review.

Tetley showed how this workshop would fill a major geographic gap in the current IMMA process. He outlined the eight criteria and sub-criteria and how they were aligned with EBSA, KBA, biologically important area (BIA) and Cetacean Critical Habitat criteria under the ACCOBAMS treaty. More than 1000 experts were engaged during the development of the IMMA criteria. The workshop participants must check whether the information they have fulfils the criteria and the detailed description of that criteria.

In terms of mapping against the criteria selected, the University of Santa Barbara online SeaSketch tool allows users to draft candidate IMMAs. It is important to remember that the ocean is a three-dimensional space and therefore the depth that is used by the target species should be considered. Tetley next gave guidance on definitions of population, subpopulation and distinct geographic populations, population segment, community and group. In terms of species, subspecies and special population names, the Society of Marine Mammalogy list was to be followed (<https://www.marinemammalscience.org/species-information/list-marine-mammal-species-subspecies/>).

Tetley opened the plenary to questions. He clarified that only one criterion was needed to make an IMMA. Participants should only use criteria for which there is strong information. It is better to focus on one or a small number of criteria for which justifications are strong than to spend time trying to justify additional criteria for which evidence is weak.

Another question concerned how to draw the borders of the cIMMAs and how to define IMMAs where one species is threatened on the Red List and others are not, and whether that should therefore be a single IMMA or several, one for each threatened

species. Tetley replied that it depends on how those species are linked and how the data satisfy the IMMA criteria. If Criterion A is not the only criterion being applied, the other criterion may help spatially define the cIMMA more than the Red List threatened status. During the review process, splitting and joining of cIMMAs may occur several times. The advice is to not create super IMMAs that cover everything, but to draw the lines to encompass the habitat that satisfies the criteria.

The next question concerned the maximum or minimum size of an IMMA and whether there was a limit. Tetley said that there is no size limit. Everything depends on the information available, how much confidence there is in the data and whether there is confidence that the criteria are satisfied and sufficient to make a strong case for that particular size of IMMA. It is also possible to place a buffer around the area. If the habitat suggests that the buffer might also be important, it can be added to the map. The largest IMMA is over 400,000km² in the Pacific Ocean surrounding the Cook Islands, a migratory crossroads for humpback whales based on tracking data. The smallest area is just over 45 km² in Cyprus, encompassing the small breeding caves for Mediterranean monk seals.

Next Cockcroft asked for an explanation of a “functional reproductive unit” in the criteria. This refers to the measurable indicators of KBA criteria relevant to the possible advisory thresholds that could be used for the IMMA categories Bi (small and resident populations) and Di (special attributes: distinctiveness). When referring to birds, a functional reproductive unit may be two birds, a male and a female breeding pair. For marine mammals, it’s more complicated. Under IUCN definitions for mammals, the reproductive unit is one male and one female, but in marine mammals with fission-fusion societies this might not apply and therefore a cIMMA proposal can make an argument for the appropriate functional unit in terms of reproduction where they have used the advisory thresholds to justify their meeting of the IMMA criteria.

Findlay wanted clarification on the point about whether human threats to marine mammals play a part in the assessment. Tetley said that threats are not considered as part of the selection criteria or process. It can be provided as additional information especially under the Criterion A, where vulnerability is important and threats are related to vulnerability. But threat data will not influence whether an area becomes an IMMA or not. Later on, when an area is published as an IMMA on the e-Atlas, it is valuable to have the threat information in the background PDF.

Findlay also asked whether the designation of an IMMA can be used to help a country meet its 10% Aichi Target 11. This spoke to the question of management and was helpful in clarifying the precise nature of what an IMMA is. IMMAs do not carry any management aspects, and are not considered protected from any human activity. Therefore they don't help meet the Aichi target. Hoyt added that at a workshop in Vancouver in 2017 focused on understanding the meaning of "other effective conservation measures" this was discussed at length. Part of the Aichi Target 11 wording is not only 10% of a country's waters in marine protected areas but also this can include "other effective conservation measures". However, at the Vancouver workshop, it was determined that IMMAs could not constitute, on their own, conservation measures. However, IMMAs can help managers and other stakeholders in identifying places that can be protected. IMMAs can serve as important monitoring sites against degradation and climate change; if baseline data is acquired, then that allows later comparisons.

Next the Omani Ministry of Environment and Climate Affairs (MECA) government representative enquired about the political challenges in identifying IMMAs. Tetley replied that IMMAs are not designated as they are not legal entities; rather they are identified on biocentric criteria without any political or management consideration. As such, they are usually not controversial in a political sense. But after identification, they can be used by managers for protection, governance and implementation of other measures. Notarbartolo di Sciara added that the Task Force and the Workshop has no authority to designate IMMAs. Instead the Task Force through the scientific expertise of the workshop provides a scientific tool, and then it is up to the authorities in the places where the IMMAs occur to make use of the tool. Hoyt concluded that although the Task Force might not have authority, through its affiliation with the IUCN, the involvement of recognized Species Survival Commission experts, and the rigorous review process in place for IMMAs, that IMMAs are earning respect that gives this initiative some gravitas.

Collins explored the variable size of IMMAs and how size might be influenced by the species and their behaviour and how they use the space. For example, the Arabian Sea humpback whales could merit the designation of the entire Arabian Sea as an IMMA.

Tetley replied that, although this was possible, the risk in describing a large area is that we might miss some of the detail and nuance in how the habitat is used. If possible, it's ideal to try to highlight smaller important areas for specific activities.

Cerchio wondered what level of evidence and robustness would be required in terms of data, especially in areas that are data poor. Was there a risk that areas would be

identified simply because those are the places that someone has made an effort to look for marine mammals? Tetley addressed the first remark, saying that it's about the confidence that can be presented in the importance of an area and whether that convinces the Review Panel. He said that it's not about peer-reviewed publications and that it's possible to accept raw unpublished data or reports for the Review Panel to examine. Regarding the risk of identifying only areas that have been favorite study areas, this is a concern and something that we keep in mind. Areas not identified are not necessarily areas with no marine mammals. But we have to start somewhere.

Himansu Das wondered whether it was better to have one big cIMMA proposal rather than several smaller cIMMAs because the bigger cIMMA proposal might have a stronger case for using the diversity criteria. But Tetley said that it comes down to the type of data and what criteria are met. The habitat, based on the data, has to support diversity, not just take in lots of species. Still, even if the area is created based on the presence of a particular species, it's good to list all the other species that occur in that IMMA even if they are not the basis for the identification of the IMMA.

Inventory of Knowledge (IoK), Areas of Interest (Aoi) and Assignment of Working Groups for the Western Indian Ocean and Arabian Seas Region

After lunch, Tetley continued in plenary to talk about the division of the region into 7 subregions (see Table 1, Fig. 2). This designation is based on the Longhurst Marine Provinces and WWF marine ecoregions of the world (MEOW). There are only 7 subregions included here as an eighth, usually considered in this region, was covered in the Extended Southern Ocean IMMA workshop.

Tetley explained the process of compiling the Inventory of Knowledge (IoK) document. As part of a data appraisal process in the months before the workshop, various experts, including those in the room, were asked to summarize the level of knowledge in each area. They were to determine whether there were low, moderate or high levels of information for each area and to give a rating for the amount of information available for each species. Recommendations for evaluating the level of knowledge are defined in the document. Generally only areas where repeated dedicated cetacean surveys have been conducted are considered high.

As summarized in the IoK document, there is a difference in the perception of knowledge in different areas by different people. Much of the information in OBIS data for this region is from historical whaling records except for recent data on humpback

whales. Tetley summarized the compiled datasets that we have available for our assessment process. The IoK is as a living document and includes a list of experts. After the workshop, this document will not be updated or changed. It is essentially a tool for the workshop process to identify candidate IMMAs. For this region, based on the overall regional diversity noted in the IoK document, Tetley proposed that if there are six species or more it can be considered as being used to create a rationale for a candidate IMMA to meet the criterion Dii diversity; if there are 11+ species, that would be considered exceptional and would almost certainly fulfil the criterion when the rationale related to the habitat supporting that diversity is presented to the Review Panel.

Next Tetley turned to the Areas of Interest (Aoi) document. This featured all the submissions to be considered as potential candidates for IMMAs. It came from information that the participants and others submitted for consideration about each Aoi, plus the background information available on EBSAs and the database on protected areas with marine mammals for this region. The Aoi document thus contained 49 expert submissions, 39 EBSAs that list marine mammals as a feature and 20 MPAs listed in the World Database on Protected Areas (WDPA) and assessed by Hoyt as having marine mammals on the cetacean protected habitat database (cetaceanhabitat.org).

The Aoi, in terms of geographic spread, were well distributed. Aoi overlaps were considerable especially in the northern Mozambique Channel and along the coast of Mozambique, Tanzania and South Africa. The number of Aoi will drop once those are resolved. The criteria used as the basis for selection of the expert Aoi covered all the criteria but A, Cii and Dii were the most used.

Tetley said that the number of Aoi submitted in advance of the workshop — 105 — was not only encouraging but record breaking. The Western Indian Ocean and Arabian Seas Region is an area rich in biodiversity. Tetley advised participants that it was not too late to submit new Aoi on day one of the workshop. They could then be discussed the next day when we break into subregions and start to work on them. Indeed, by the end of the day, there were three additional expert submissions, expanding the Aoi number to 108.

Tetley next displayed the map of the region and discussed rearranging the subregions into five (see Table 1, Fig. 3), rather than the full eight divisions. Thus some areas with only a few Aoi would be combined with others, and this could streamline the process of dividing the group to go through them all. Tetley explained that, in the process of examining each Aoi, some would most likely be merged; some will be deferred for later

consideration. Also, some of the boundaries overlapped. For those that were originally EBSAs, if marine mammals were a significant feature behind their designation, then there will be background information available that can be captured for the cIMMA template.

Table 1. Subregions for each breakout group and the group facilitators

Breakout group (Table) number	Original subregion	Group facilitator
G-1	i, iv	Caterina Lanfredi
G-2	i, ii, iii	Simone Panigada
G-3	ii, iii, iv, vii	Erich Hoyt
G-4a	iv	Margherita Zanardelli
G-4b	vi	Ada Natoli
G-5	v	Giuseppe Notarbartolo di Sciara

Code:

[i] East Africa and Mozambique Channel (EAMC)

[ii] Southwestern Indian Ocean (SWIO)

[iii] Northwest Indian Ocean and Monsoon Gyre (NIMG)

[iv] East Africa and Arabian Sea (EAAS)

[v] Red Sea (RESE)

[vi] The Arabian / Persian Gulf (GULF)

[vii] Arabian Sea and Central Indian Ocean Islands (ASOI)

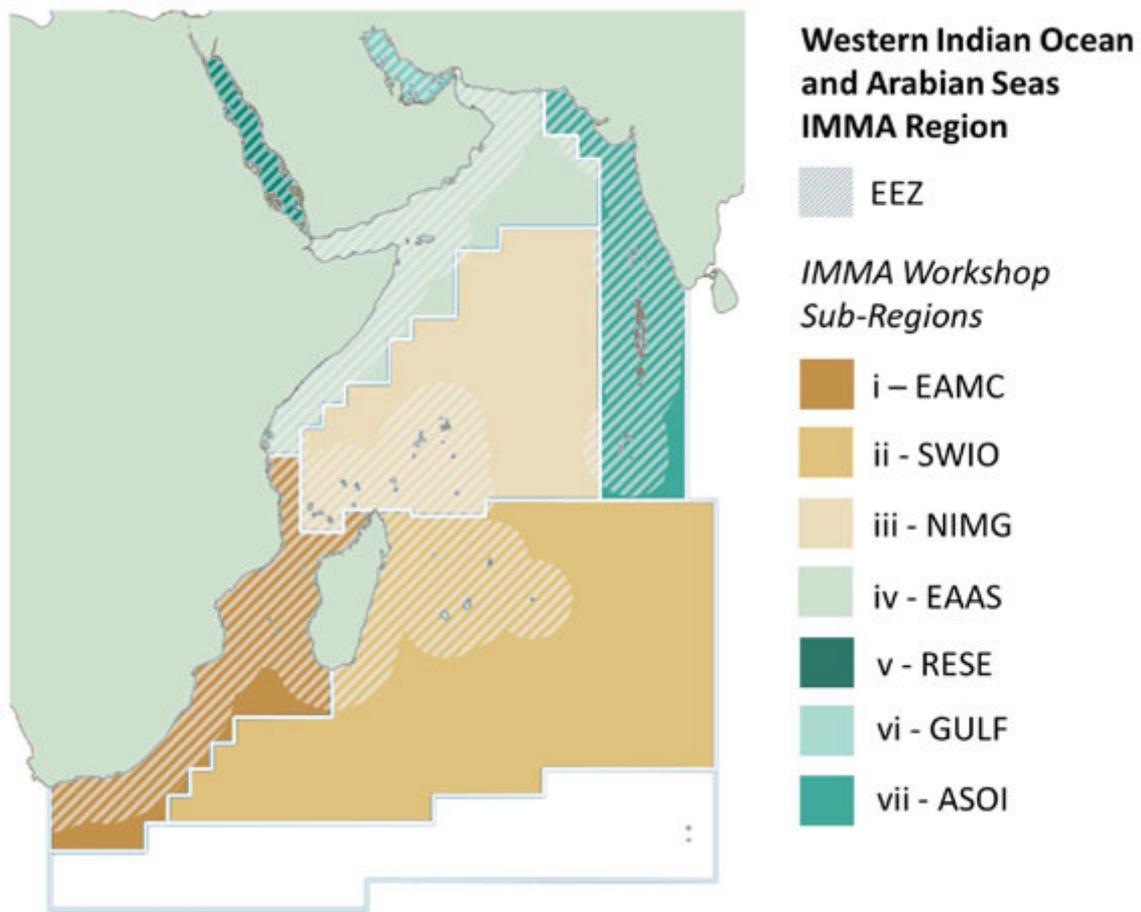


Fig. 2. *IMMA subregions used to assist participants with the collation of information relevant to marine mammals for the identification of candidate IMMAs in the Western Indian Ocean and Arabian Seas Region include [i] EAMC – East Africa and Mozambique Channel, [ii] SWIO – Southwestern Indian Ocean, [iii] NIMG – Northwest Indian Ocean and Monsoon Gyre, [iv] EAAS – East Africa and Arabian Sea, [v] RESE – Red Sea, [vi] GULF – the Arabian / Persian Gulf, and [vii] ASOI – Arabian Sea and Central Indian Ocean Islands. The aggregated Exclusive Economic Zone (EEZ) for the Western Indian Ocean and Arabian Seas Region is shown by the hatched lines.*

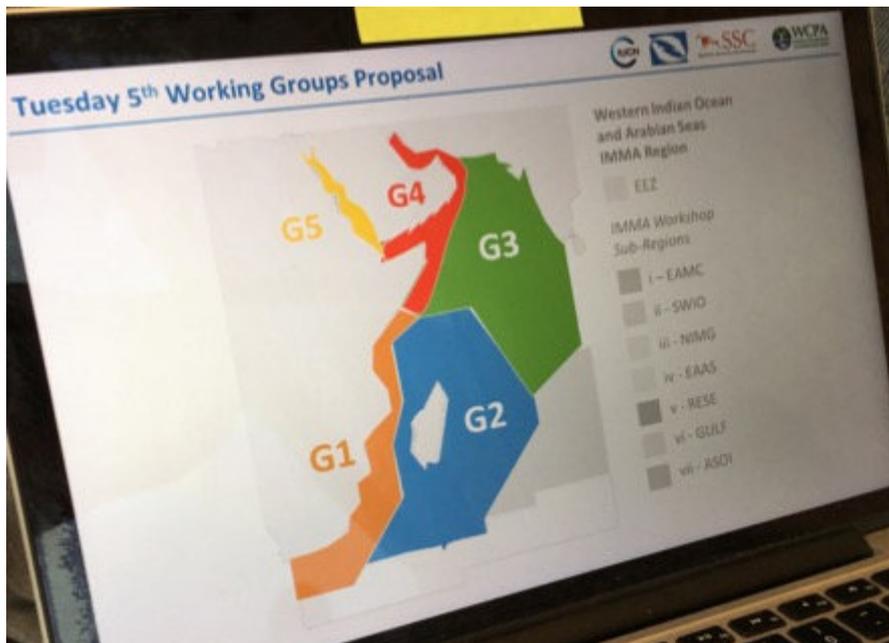


Fig. 3. The IMMA subregions were combined and slightly re-arranged in some cases to fit the expertise and number of AoI submissions from the group. Each subregion was considered by breakout groups arranged into five tables in the room. G-4 was later split into G-4a and G-4b.

The session was then opened to questions and discussion. The first question was how to handle situations where there are overlapping proposals for the same areas (e.g. between two different expert submissions or an expert submission and an EBSA). The solution, explained Tetley, comes through discussion with the other experts as to how best to resolve the issue, either through consolidation into a single cIMMA or creation of two cIMMAs with re-negotiated boundaries. Experts should then adjust their supporting evidence and data during the cIMMA proposal writing process.

Another question concerned whether and how traditional knowledge featured in IMMA designations. It was noted that this was a priority in CBD. This was discussed at some length at the previous IMMA workshop covering the North East Indian Ocean and South East Asian Seas, and is reflected in the main text of the report as well as in an annex. Expert knowledge, no matter where it comes from, is valued as a contribution to the AoI and cIMMA process. Traditional knowledge contributed to proposals for some of the areas identified in previous workshops. In future, however, traditional knowledge will become even more prevalent as a contribution particularly in Australia-New Zealand waters, in the river dolphin areas and in the Arctic region when these regions are assessed for cIMMAs.

Braulik wondered how many EBSAs, compared to the expert Aol proposals, actually become IMMAs. Tetley replied that the EBSAs are often a starting point for discussion and when the experts have more information to supplement the EBSA information, this can be valuable to use in creating a candidate IMMA that might represent a portion of the EBSA as EBSAs are typically much larger than IMMAs, and are identified based on wider biodiversity data. The several year process and expertise that went into identifying EBSAs across most of the world ocean helps to inform the IMMA process. But, in future, our IMMAs, and even those that remain as Aol, may inform the EBSA process and enable EBSAs to be refined or enhanced in light of substantially more marine mammal data.

Regarding Aol, Hoyt offered, whether they are failed cIMMAs or areas that the group feel should not be proposed as cIMMA in the first place, the Aol are important in their own right. Identifying Aol and putting the Aol that go through the review process on the e-Atlas allows us to flag them up as clear indications of areas that merit more research and monitoring. Notarbartolo di Sciara added that bringing areas as Aol to a workshop like this elevates them to some level of importance and further interest because even if evidence is insufficient now, they will be reconsidered in future as part of the IMMA process. It's a living process.

This led to a discussion about whether IMMAs can be considered outside the bounds of the organized regional workshops. Tetley explained that the Task Force has been considering ways to extend the IMMA review/and re-assessment process so that it is similar to a peer-reviewed publication process. Authors could be assigned for each IMMA. Then the regional group as a body could make the decision about reshaping or designating an IMMA and passing it to the Review Panel.

For now, the Task Force decided that the reassessment of evidence might be able to work within focus groups who correspond remotely, but drawing boundaries really requires the collaboration of the various individuals working in the same location, and agreeing on which areas to progress to cIMMAs. This benefits from the authority of a collective body and can't be done as well in isolation. Furthermore, the integrity and credibility of the IMMA process relies on the highly standardized, consistent approach of the workshops which ensures that the way the criteria are applied for IMMAs is comparable across the globe. As things stand now, the Task Force thinks that the remote peer review option might work for re-assessment of previously identified Aol,

cIMMAs or IMMAs, but not for the initial identification process conducted in the expert workshops. This is something that is still under discussion and debate.

Regarding the criteria, one workshop expert noted that the highest percentage of IMMAs draw on Criterion A as their main justification. If IMMA identification is based purely on biocentric criteria, how do we weigh Criterion A against criteria B-D? Criterion A contains a “human” element in the sense that the assignment of endangered or vulnerable species is usually the result of the human pressures and threats that led to population decline. Are the IMMA criteria applied less rigorously if the area involves a vulnerable species? Tetley pointed out that the IUCN Red List process often draws attention to species/populations, and serves as a driver to focus the research on the species/population in question. As a result, Criterion A will usually be accompanied by strong evidence for one or more of the sub-criteria under Criterion B or C.

Several participants wondered how the review process worked and who was on the IMMA Review Panel. Notarbartolo di Sciara responded that Randall Reeves is the chair, and that 1 -2 additional reviewers are involved in each regional assessment (Robert Brownell, present at this meeting as an observer, has also been a reviewer). The process is much like a peer-review process for a scientific journal. Reviewers will make comments on the proposals and suggest edits and/or request additional information/clarifications where required. Some cIMMAs are returned for further clarification, additional information or references, or changes may be requested. About 30% are turned down and revert to AoI, leaving about 70% as IMMAs. A few are left as cIMMAs pending a small amount of adjustment or if further editing is needed. The focus is on the strength of the evidence presented to support the application of each criterion. Therefore, the advice for those at this fifth IMMA workshop was to cite as much robust evidence as possible to support the relevant criteria, and not to “shoehorn” criteria where they are not well supported.

Before the afternoon coffee break, Tetley said that participants could have the choice of carrying on in the meeting room or elsewhere with a 3.5 hour reading session before dinner. Or they could attend the meeting of the Arabian Sea Whale Network (ASWN), an informal network focused on research and conservation of the endangered sub-population of Arabian Sea humpback whales and other whale species in the northern Indian Ocean. For those who wanted to attend, there would still be time for reading before and after dinner.

Side event: Meeting of Arabian Sea Whale Network

As there were a large number of Arabian Sea Whale Network (ASWN) members at the IMMA workshop, it was decided to convene an opportunistic meeting to discuss progress toward goals, with an emphasis on the Convention on Migratory Species' (CMS) Concerted Action for Arabian Sea humpback whales.

The meeting started with a short PowerPoint presentation outlining the history of the ASWN and various actions related to international efforts to conserve the Arabian Sea Humpback Whale (Fig. 4). The presentation included brief updates on progress against the 10 objectives identified at the ASWN founding meeting in Dubai in January 2015. While there has been good progress in establishing a network with a website, regular communication among members, a newsletter, and a regional online data platform, a number of challenges still remain. These include the need for:

- more capacity building, particularly for local scientists and researchers in the region,
- improved fundraising - both for national/project level initiatives and regional level initiatives,
- improved threat mitigation-focused projects, and
- increased participation in conservation efforts from stakeholders other than researchers (particularly government and industry) in order to enable management and mitigation measures that researchers do not have the remit or capacity to implement.

The last challenge could be addressed in large part through a regional conservation management plan (CMP), and parties are exploring ways that this could be achieved through collaboration between range states, the CMS and the International Whaling Commission, which coordinates several other CMPs for endangered whale populations around the world.

Arabian Sea humpback whale timeline

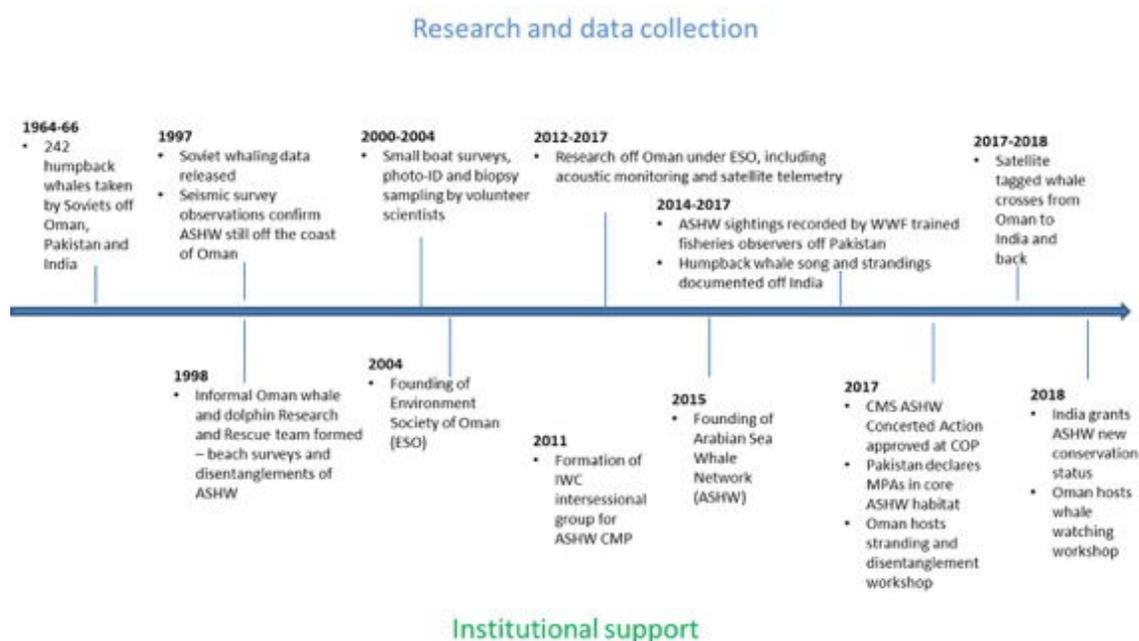


Fig. 4. Arabian Sea Humpback Whale timeline

IMMA Workshop Day 2, 5 March 2019

At the opening of day 2, Tetley explained the arrangement of the breakout groups. The IMMA Secretariat had agreed to divide the workshop into five groups based on seven subregions, which later became six groups when group 4 was divided into two subgroups because of the number of AoI they were having to consider (Fig. 2, 3, Table 1). In all, 108 AoI were now on the list to go through. Facilitators from the IMMA Secretariat were assigned to each breakout group and asked to lead the group through consideration of the AoI one by one, determining whether there were overlaps that could be merged, and if the species in each AoI could qualify as a cIMMA based on the criteria.

The groups worked hard through the day, going through every AoI for their subregion and filling out the spreadsheet with a checklist of things to consider. The goal was to come up with what could be a tentative cIMMA list. The questions, focused by the facilitators were as follows:

1. Is the Aol important for the species/area when compared to the IMMA selection criteria?
2. Is there information or data to be able to create a boundary around the species/area for a cIMMA?
3. Could the Aol species/area be combined with other Aol for different species to create a multi-species cIMMA?
4. If the Aol is not suitable for meeting the IMMA Selection Criteria, could the species/area be used to meet the IMMA selection Criterion Dii on Diversity when combined with other overlapping Aol for different species?
5. If the Aol for the species/area is not suitable as a cIMMA, and cannot be used to support another cIMMA for a different species/area, should the Aol for the species be either Option I – kept as an Aol to inform a future process or Option II – not considered as an Aol on the IMMA e-Atlas?

Tetley gave a brief summary of progress at the close of the day and focussed participants for starting to fill out the cIMMA forms on Day 3.

IMMA Workshop Day 3, 6 March 2019

At the opening of day 3, in Plenary, Tetley presented the summaries from the groups, with draft names for the proposed cIMMAs. Having started with 108 Aol, the groups had come up with a total of 58 cIMMAs to be considered, and one more, the Chagos Islands, which would be shared by several groups, making 59 cIMMAs. Some of these would no doubt lost in the process of filling out the submission forms, after determining the evidence available. Others might be combined or split.

59 cIMMAs was the most any region had ever produced. One by one, Tetley went through the list of the 59 areas with species and criteria listed for each, drawing upon the forms that the participants had filled out the day before. With the help of the participants, the taxonomy of various problematic species was clarified, drawing upon the official marine mammal species list on the Society for Marine Mammalogy website (<https://www.marinemammalscience.org/species-information/list-marine-mammal-species-subspecies/>).

For example, the IMMA Secretariat advised that Bryde's whales should be considered *Balaenoptera edeni* for the smaller coastal form and *B. brydei* for the global species. Brownell suggested to leave it as *B. edeni* if that's how it was listed and, case by case, to give the morphological or other evidence. For common dolphins, Brownell said the long-beaked common dolphin is no longer considered a separate species so they should all be assigned to *Delphinus delphis*, the common dolphin, formerly called the short-beaked common dolphin. He suggested that instead of using *Delphinus capensis*, just to say "long-beaked" or "long-snouted" form, if they are described that way, and to use *D. delphis* alone unless there is evidence that it's a form or subspecies. For *Sousa*, all humpback dolphins in the Western Indian Ocean should be *Sousa plumbea*, not *S. chinensis*. Finally, for the two bottlenose dolphin species and the coastal and offshore forms, Brownell advised rather than saying "*Tursiops* spp.", that it was better to indicate *Tursiops* coastal or offshore if unsure about the species.

When Tetley had finished scrolling through all the areas, he announced that this still had the workshop needing to fill out forms for 59 cIMMAs while the AoI to go forward now totalled 13.

Tetley then presented the cIMMA template form and worked through it, point by point. He reminded participants that the workshop itself would be the authors of the work, not individual people, but that the IMMA Secretariat needed points of contact related to the review for follow-ups.

For the diversity criterion (Dii), the habitat was needed to support that diversity, so vagrants or single sightings or strandings, depending on effort, were unlikely to count toward the diversity. Brownell said, however, to put all these other species in the secondary list if they are species not used in the diversity criterion or for other criteria. The list of species to qualify for the diversity criterion should stay on the primary list. Of course, diversity refers to diversity of marine mammals, not including non-marine mammal species.

Tetley said that the criteria elements would not need to be filled in if they're not being used for the cIMMA proposal but there should be a detailed description of how the species meet the criterion or criteria that support them. Supporting documents can be links to websites, videos, figures, map layers, as well as traditional references. Unpublished data can also be used. The data and other materials would only be used for the review, and would not be published. In any case, every point of contact would be

informed and involved before an IMMA goes on the e-Atlas to make sure they are happy with the final entry description.

Tetley then gave an example from the e-Atlas of what we are ultimately producing. Finally, to give an overview, he walked the group through the additional materials available with the various maps and descriptions from the region. All of the supporting materials were made available on Dropbox and also on memory sticks.

Through the day, as participants worked in their groups, Tetley and Lanfredi went around table by table to help prepare maps of the various proposals. By the end of Wednesday, most of the rough maps were done. There were some titles of areas that had changed and there were now 56 candidate IMMAs as follows:

Group 1 – 14 cIMMAs

Group 2 – 11 cIMMAs

Group 3 – 11 cIMMAs

Group 4a + Group 4b – 14 cIMMAs

Group 5 – 4 cIMMAs

There were 14 areas of interest:

Group 1 – 2 Aol

Group 2 – 1 Aol

Group 3 – 2 Aol

Group 4a + Group 4b – 3 Aol

Group 5 – 6 Aol

These 14 Aol were deferred for later consideration.

IMMA Workshop Day 4, 7 March 2019

Day 4 began with a short plenary to review the cIMMA drafting process. Tetley updated the participants on the numbers of candidate IMMAs and polled the room to see how many had yet to finish their submissions. Tetley and Lanfredi had collected most of the maps, and refined some of them. The mosaic of cIMMAs and Aol in the region was beginning to take shape.

The rest of the day was taken up by drafting sessions, but later in the afternoon, in a short plenary, Notarbartolo di Sciara advanced the idea of forming a regional Task Force group for the Western Indian Ocean and Arabian Seas region. Everyone at the workshop was invited to become a member and the membership could then be expanded to others who have expertise related to the identification and implementation of IMMAs. He also introduced the role of the regional coordinator(s) for this group, and said that before the end of the meeting the Task Force co-chairs were hoping to get 1-3 volunteers to handle the coordinator role for the Western Indian Ocean and Arabian Seas. It could be one person or several who would share the responsibility and provide regional representation. He displayed the Terms of Reference (available on marinemammalhabitat.org) and went over the various tasks. Besides coordinating the group to further the interests of existing IMMAs, making adjustments to those IMMAs and nominating future Aol, the regional coordinators would in future be responsible for obtaining the PDF Fact Sheets for each successful IMMA. The regional coordinators are asked to help keep the regional members updated on IMMAs in the region and worldwide, as well as to push ahead with encouraging NGOs, civil society and government implementation activities at the local, national and regional level. But it should also be part of the role of the regional group, sparked by the coordinators, to keep note of the species, ecosystems and issues in the region over time and in the lead-up to the next IMMA workshop for that region. Regional IMMA workshops might happen only every 10 years.

Hoyt said that the Terms of Reference were probably going to be changed or expanded at the upcoming ICMMPA 5 conference in Greece, where the Task Force would hold its own meeting as well as a separate meeting of the ICMMPA. Notarbartolo di Sciara said that in future there could be small salaries for the regional coordinators. He asked for nominations or offers of people to be the coordinators.

Natoli asked what is involved in being a member of the Task Force. Hoyt responded that it is a wide group of people—marine mammal researchers, marine protected area people, even lawyers, and government, all contributing their expertise. It grew out of

the International Committee on Marine Mammal Protected Areas (ICMMPA), who were in fact the original members. The Task Force has a general remit to build a constituency for marine mammal MPA practitioners, but that it was decided that we really needed to do something fundamental, to identify the habitats that needed protecting to inform practice, design, management and monitoring. This came after Hoyt's book *Marine Protected Areas for Whales, Dolphins and Porpoises*, when it became obvious that MPAs were only covering a thin ribbon along the coasts of the continents and islands and that most MPAs were set up with political or socioeconomic boundaries. For the next few years, the IMMA Secretariat will be fully occupied with the identification of IMMAs; this is the primary focus, although the Task Force co-chairs, who are part of the IMMA Secretariat, are planning to engage other members of the Task Force in other activities in future. Notarbartolo di Sciara stressed that the IMMA Secretariat devoted to the delivery of the IMMA workshop series was responsible for the scientific part, but that it could not engage in the implementation of IMMAs on the ground. This is the envisioned role of civil society, but the Task Force regional groups led by the coordinators could play a major role in this.

With regard to the Task Force coordinators, Cerchio asked whether we could divide the region based on subregions to make coordination easier, similar to the way we divided the workshop IMMA identification process.

Both Hoyt and Notarbartolo di Sciara felt that five coordinators were too many, that three was really the maximum; in fact, if all the IMMA workshop attendees become the regional group, there is still that representation. Of course, substantial expertise can be obtained outside the room and should continue to be as wide a network as possible. This is part of the thinking behind the expert directories that we try to put together for each region.

IMMA Workshop Day 5, 8 March 2019

The morning began with more drafting but before lunch, Tetley gave an update on the 50-plus areas that were going to be nominated as candidate IMMAs. He showed how the map had been filled up gradually in recent days and now it was nearly there. The group had reached draft agreement on the final list of cIMMA and Aol to go forward for review and only a few of the maps remained to be completed.

After lunch, Hoyt, Notarbartolo di Sciara and Tetley led a discussion on the use of IMMAs in the Western Indian Ocean and Arabian Seas Region to inform efforts for marine mammal place-based conservation. Hoyt actively solicited suggestions for examples from the group's experience that could show the way for implementing IMMAs. He noted that Findlay had asked before whether an IMMA for seasonal southern right whales, for example, would still be an IMMA when the whales weren't there. The answer is that it is a spatial delineation related to habitats and it applies all the time. Eventual management of an IMMA in a spatial protection measure might be seasonal, although consideration must be given to activities degrading the habitat which could occur at any time of year. Findlay remarked that the IMMA status thus provides a hook on which to hang concerns especially during an EIA process; an IMMA in a southern right whale area could be used to trigger oil and gas EIAs.

Of course, managers and stakeholders can decide how to use IMMAs in their planning and decision making. The Task Force co-chairs had noticed that the IMMAs had lent gravitas to MPA proposals in Vietnam and other countries. Natoli offered that IMMAs will help with seismic surveys and in pushing harder for marine mammal observers (MMOs) to be included even when there is no legal requirement. Hoyt added that marine spatial planning (MSP) is at an early stage but is at various stages of being adopted as a policy by more than 100 countries worldwide to allocate activities in their national waters. If marine mammal layers are not available when the planning occurs, then marine mammals will not be considered in the arrangements for shipping, industry, fishing, marine protected zones.

Natoli remarked that we can flag an area as a group of scientists, but how do we get political buy-in – especially in countries where that is typically lacking? She said that maybe it would be useful to produce guidelines or expectations about what an IMMA is and what we expect so that the regional teams could use them to approach governments and other stakeholders.

Notarbartolo di Sciara, however, stepped back from that. The Task Force regional groups are responsible for advocating and ensuring implementation, he said; it's not the responsibility of the IMMA Secretariat. Tetley agreed that it is not the IMMA Secretariat's duty to turn these areas into MPAs; that could compromise the scientific effort. But the IMMA Secretariat and the wider Task Force can provide advice about how to do this. Panigada mentioned that there are examples of two areas in Palau and the Andamans. Hoyt gave a summary of the Palau experience, trying to implement an

IMMA that had been identified in the Pacific Islands workshop in 2017. A core team from the Secretariat plus two Task Force members, along with local people from the Ministry of Tourism and an NGO, met with officials from the Vice President and Justice Minister to Fisheries and Tourism, as well as one of the two main indigenous chiefs and the matriarch, various researchers, marine planners, and NGOs, and came up with an action plan mostly about limiting the impact of tourism which was the primary threat.

The second implementation mission was to the Andaman Islands, working with researcher Dipani Sutaria and her young colleagues and students who were very engaged and passionate and who talked to the government staff within the islands. This was a more successful effort to come up with an action plan, and we feel like it will be implemented, that it's part of a process now.

If IMMAs are to be implemented, for the most part it will happen on the ground with local stakeholders in the countries where they were designated; it must happen from the ground up in a country through engagement. It will take a lot of people working on the ground.

Minton noted that WWF will be signing an agreement with the Task Force to agree to promote the IMMAs through their network. The Natural Resources Defense Council (NRDC) has also agreed to make IMMAs part of their work plan over the next 5 years. Whale and Dolphin Conservation (WDC) and Tethys Research Institute are already deeply involved. In this way WWF, NRDC and other NGOs and regional groups could help to amplify and disseminate the tools created by the IMMA process. And the French Biodiversity Agency, part of the French government, is also working hard to put IMMAs in front of policymakers as well as the public. In the Indian Ocean region, IndoCet, the Indian Ocean Network for Cetacean Research, could also help to raise funds and help implement measures related to the identified IMMAs.

Notarbartolo di Sciara reminded participants that the Task Force will be investigating a place to visit to help with implementation of an IMMA in the Western Indian Ocean and Arabian Seas region. It would be good for the regional team and coordinators to be thinking about a suitable location and partners.

Next Hoyt asked the group if there were specific things related to conservation concerns in the region. Natoli noted that looking at the cIMMAs identified at this workshop, some are found in cities and highly developed areas with big shipping ports. She asked how this has worked with IMMAs in the past.

Johnson, who had participated in the CBD process to establish EBSAs around India, said that they drew up EBSAs in highly populated areas and this did attract some positive attention for cetaceans in the region when they were more or less ignored before.

Plön noted that the health issues related to dolphins are important in terms of pollutants. Kiszka cited issues of expanding tuna fisheries and said that this is a big threat in the region; the Indian Ocean is one of the only remaining ocean basins where driftnets and gillnets are still used on a large scale for tuna.

Notarbartolo di Sciara summed up by saying that the Task Force regional groups are needed to take forward the work initiated during the workshop because the Task Force, as it stands, can only instigate the implementation process. Of course, the IMMAs are useless if they are not taken forward to improve the conservation status for marine mammals. This can't be achieved by outside intervention; it must be done at the regional, national and local level. Regional coordinators are tasked with reaching out to national leadership and other stakeholders and creating a community with advocates and activists covering many different aspects and activities.

As the conversation ended and our three distinguished Omani colleagues from the Ministry of Environment and Ministry of Fisheries needed to leave, we thanked them for their dedication and support for the IMMA process. Mr. Badar Al-Bulushi, as spokesperson for the group, commented that they had enjoyed the process a great deal, learned a lot, and that they would "implement and take the idea forward at the higher levels within Oman."

The Task Force chairs, along with Tetley, then asked for suggestions for improvements to the IMMA identification process and procedures for future IMMA workshop(s).

The following suggestions were made by Willson and others:

- that some examples should be included in the initial send-out showing exemplary and/or critiqued Aol forms to help with completion of these forms before the workshop,
- that a taxonomy list be sent in advance,
- that a re-evaluation of the data appraisal form (DAF) be made as the evaluation of poor to good was difficult. Could it be done in an easier and more productive way?

Tetley noted that the IMMA process has constantly evolved to streamline and improve all aspects of the identification procedure. One improvement that Tetley noted was that reviews will now include a standardized feedback sheet, so that workshop participants who submit candidate IMMAs can see what happened to the review.

Next Johnson spoke to thank the organizers for inviting him to be an observer at the workshop. He noted that the IMMA workshops are less formal than the usual meetings he attends and that the group consisted of a gathering of kindred spirits, displaying a positive way of working. Part of Johnson's role is to report back to the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, the so-called BMU, and he was pleased to say that the IMMA component of the GOBI-IKI project had evolved a constructive and expert-driven process with measurable results. Thanks to everyone, it has all turned out to be smooth and productive. He was pleased that the workshop had been able to use certain EBSAs in the region as Aol and equally that IMMA would be able to inform and refine future EBSAs.

Notarbartolo di Sciara then gave a brief round-up and thanks to the participants, to Panigada and Zanardelli for the smooth and faultless arrangements, to Lanfredi for helping with the mapping, as part of the IMMA Secretariat, to Tetley for leading the considerable work to prepare the documents before the meeting and to run the core of the workshop leading to the identification of the cIMMAs. It was suggested that the Task Force and Workshop chairs, Notarbartolo di Sciara and Hoyt, also be thanked. (The rapporteurs Braulik and Minton were thanked following the workshop.)

Then, rather dramatically, Tetley projected the final results of the workshop on the screen with the rough map showing locations (Fig. 5). There were 55 candidate IMMAs identified throughout the region, that had again changed through the course of the final days, with 13 areas being retained as Aol, later increased to 15. This is the highest submission total in the five IMMA regional workshops conducted to date. These cIMMAs would be going for review in the coming months, so boundaries would change and some areas might be combined or split; other cIMMAs, perhaps as many as 30% of them, judging from previous reviews, might not have enough evidence and would revert to Aol.

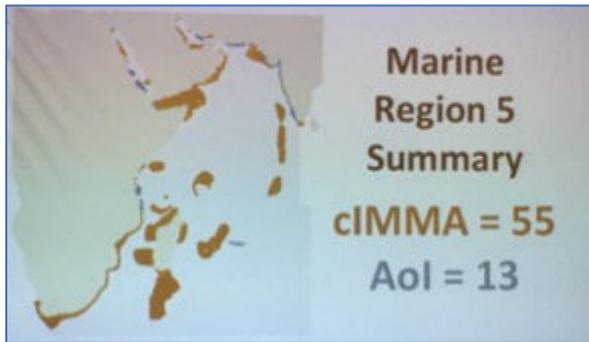


Fig. 5. This summary slide revealed the results of the workshop with a rough map showing the cIMMA and Aoi (Note: number of cIMMAs, Aoi and boundaries on the maps were all tentative, subject to review, and in fact many did change.)

As participants cheered at the thought of having identified the record number of 55 candidate IMMAs, the plans for a celebratory dinner and drinks at a nearby farm were outlined. The final afternoon coffee break was announced. Initially many stayed in the room working, but the commotion in the adjoining coffee area soon attracted everyone as the hotel had brought in and displayed a special cake to commemorate our efforts (Fig. 6, 7). This was a surprise to all including the organizers.

After photos, cake and refreshments, the participants returned to their work to put the final touches on the cIMMA proposals. Just after the close of the workshop three Regional Coordinators were announced for the region, namely Minton, Braulik and Dulau.

At the final dinner, many participants expressed their appreciation of the well-organized process and some indicated surprise at how it had been both challenging and rewarding. The workshop had afforded the chance for the Arabian Sea Humpback Whale meeting, attended by most participants (summarised on pp. 25-26). In addition, there were several planning meetings for research conducted over lunches, dinners and in the evening; various participants mentioned that it was rare that people from the Arabian Seas part of the region were able to get together with those working in the South West Indian Ocean around Madagascar, eastern South Africa, and Mozambique.

The region also included highly diverse island groups in the central Indian Ocean. From north to south, they are the Lakshadweep Islands (India), the Maldives, and the Chagos

Islands (UK). The Maldives are one of the most diverse areas of the Indian Ocean and have healthy populations of many cetacean species.



Fig. 6. The surprise commemorative IMMA cake marked the success of the workshop.



Fig. 7. Most of the group, on the last day, posed with the IMMA Commemorative Cake

Annexes

Annex I – List of participants

Gill Braulik
Research Fellow
University of St. Andrews
St. Andrews, Scotland
and Zanzibar, Tanzania

Ibrahim Bugla
Environment Agency
Abu Dhabi, United Arab Emirates

Salvatore Cerchio
New England Aquarium
Woods Hole Oceanographic Institution
Boston and Woods Hole, Massachusetts
USA and Madagascar

Vic Cockcroft
Director, Centre for Dolphin Studies
Plettenberg Bay, South Africa

Tim Collins
Wildlife Conservation Society – Ocean Giants Program
Africa Coordinator IUCN SSC Cetacean Specialist Group
Kenya

Himansu Sekhar Das
Unit Head, Marine Threatened Species and Habitats
Environment Agency
Abu Dhabi, United Arab Emirates

Bruno Diaz Lopez
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O Grove, Spain

Violaine Drouot Dulau
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Saint Paul, Ile de La Réunion (France)

Ken Findlay
CPUT Research Chair: Oceans Economy
Centre for Sustainable Oceans
Cape Peninsula University of Technology

Cape Town, South Africa

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Natural Resources Defense Council
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WWF-Pakistan
Karachi, Pakistan

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Co-coordinator Arabian Sea Whale Network
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Kish Island, Iran

Hamed Moshiri
CEO, Plan for the Land Society of Iran
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Researcher, Earth Stewardship Science Research Institute

Nelson Mandela University
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Dipani Sutaria
Ecologist, IUCN Cetacean Specialist Group
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Senior Research Fellow – Adjunct, James Cook University, Australia
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Andrew Willson
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Muscat, Sultanate of Oman

Observers

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Ministry of Environment & Climate Affairs
Sultanate of Oman

Bader Al-Bulushi
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Marine Environment Conservation Dept.
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Muscat, Sultanate of Oman

Hussain Mohamed Redha Al-Muscati
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Ministry of Agriculture and Fisheries
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Hamood Khamis Al-Nairi
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Ministry of Environment & Climate Affairs
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Michael J. Tetley
IUCN Marine Mammal Protected Areas Task Force
Isle of Mull, United Kingdom

Margherita Zanardelli
Tethys Research Institute
Milano, Italy

Annex II – Workshop agenda

Day 0: 3 March 2019

19:30 – 22:00 Icebreaker reception and welcome dinner

Day 1: 4 March 2019

09:00 – 10:30 Introduction to the IMMA Western Indian Ocean and Arabian Seas Region Workshop

- Welcoming addresses
 - *Presentation by IUCN Joint SSC/WCPA Marine Mammal Protected Areas*
 - *Presentation by Oman Ministry of Environment and Climate Affairs*
 - *Presentation by Convention on Migratory Species - United Nations Environment Programme*
 - *Presentation by Global Ocean Biodiversity Initiative (GOBI)*

Participant introductions

10:30 – 11:00 Coffee Break

11:00 – 12:30 Michael J. Tetley: Introduction to Important Marine Mammal Areas

Adoption of Agenda and Workshop Chair(s): Erich Hoyt and Giuseppe Notarbartolo di Sciara

- IMMA Selection Criteria, Identification Process, and Inventory of Knowledge (IoK) for the Western Indian Ocean and Arabian Seas Region
 - *Presentation by IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force*
- Question and Answer Session

12:30 – 14:00 Lunch

14:00 – 15:30 Areas of Interest (AoI) and Assignment of Working Groups

- Collated AoI for the Western Indian Ocean and Arabian Seas Region
 - *Presentation by IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force*
- PLENARY Discussion on candidate IMMA (cIMMA) options and agreement of AoI list for cIMMA investigation (??)

15:30 – 16:00 Coffee Break

16:00 – 19:30 Personal Reading Session

19:30 – 22:00 Informal dinner

Day 2: 5 March 2019

08:30 – 9:00 Breakout group Facilitators Pre-Meeting

09:00 – 10:30 Collation of final AoI and cIMMA Group Assignments

10:30 – 11:00 Coffee Break

11:00 – 12:30 BREAKOUT GROUPS SESSION 1

12:30 – 14:00 Lunch

14:00 – 15:30 BREAKOUT GROUPS SESSION 2

15:30 – 16:00 Coffee Break

16:00 – 17:30 Assessment of cIMMA list (Subregion Summary)

- Group Facilitator Reports
- PLENARY Discussion
- Agreement on preliminary cIMMA list
- Revised AoI list

19:30 – 22:00 Informal dinner

Day 3: 6 March 2019

09:00 – 10:30 BREAKOUT GROUPS SESSION 3

10:30 – 11:00 Coffee Break

11:00 – 12:30 Assessment of cIMMA list (Subregion Summary)

- Group Facilitator Reports
- PLENARY Discussion
- Agreement on final cIMMA list
- Revised AoI list

12:30 – 14:00 Lunch

14:00 – 16:30 DRAFTING SESSION 1 – cIMMA standard submission forms (including coffee break at 15:30)

16:30 – 17:30 Review of cIMMA drafting progress

- PLENARY Discussion

19:30 – 22:00 Informal dinner

Day 4: 7 March 2019

- 09:00 – 12:30 DRAFTING SESSION 2 – cIMMA standard submission forms (including coffee break at 10:30)
- 12:30 – 14:00 Lunch
- 14:00 – 16:30 DRAFTING SESSION 3 – cIMMA standard submission forms (including coffee break at 15:30)
- 16:30 – 17:30 Review of cIMMA drafting progress
- PLENARY Discussion
- 19:30 – 22:00 Informal dinner

Day 5: 8 March 2019

- 09:00 – 11:00 DRAFTING SESSION 4 – cIMMA standard submission forms (including coffee break at 10:30)
- 11:00 – 12:30 Agreed cIMMA list and next steps for review
- PLENARY Discussion
 - Draft Agreement on final cIMMA for review
 - Agreement on final revised AoI list
 - Formal submission of cIMMA standard forms (extendable on to workshop close)
- 12:30 – 14:00 Lunch
- 14:00 – 17:00 Discussion on the use of IMMAs in the Western Indian Ocean and Arabian Seas Region to inform efforts for marine mammal place-based conservation (including coffee break at 15:30)
- IMMAs and regional conventions and agreements
 - Conservation concerns in the Western Indian Ocean and Arabian Seas Region
 - Summary of recommendations by the workshop participants
 - Final round-up by workshop organizers and Task Force Co-Chair(s)
 - Workshop Closes
- 20:00 – 23:00 Celebratory dinner and drinks

Annex III – List of subregions and group facilitators

Facilitators from the IMMA Secretariat were assigned to each Breakout Group and asked to lead the group through consideration of the more than 100 AoI, one by one, determining whether there were overlaps that could be merged, and if the species in each AoI could qualify as a cIMMA based on the criteria. The subregions for each breakout group and the facilitator are listed below (see Fig. 2 and Fig. 3 for original and redefined regional maps).

Breakout groups, subregions and group facilitators

Breakout Group (Table) Number	Original subregion	Group facilitator
G-1	i, iv	Caterina Lanfredi
G-2	i, ii, iii	Simone Panigada
G-3	ii, iii, iv, vii	Erich Hoyt
G-4a	iv	Margherita Zanardelli
G-4b	vi	Margherita Zanardelli
G-5	v	Giuseppe Notarbartolo di Sciara

Code:

[i] East Africa and Mozambique Channel (EAMC)

[ii] Southwestern Indian Ocean (SWIO)

[iii] Northwest Indian Ocean and Monsoon Gyre (NIMG)

[iv] East Africa and Arabian Sea (EAAS)

[v] Red Sea (RESE)

[vi] The Arabian / Persian Gulf (GULF)

[vii] Arabian Sea and Central Indian Ocean Islands (ASOI)

Annex IV – List of approved IMMAs and cIMMAs

A total of 54 candidate Important Marine Mammal Areas (cIMMAs) were identified by the experts attending the IMMA Regional Workshop for the Western Indian Ocean and Arabian Seas. These were used to compile standard submissions for IMMA status for inspection by the IMMA Review Panel. Following review and subsequent revisions in some cases, 37 areas were accepted as IMMAs, and three areas stayed as cIMMAs, subject to additional data or clarifications needed to pass review in future. The other cIMMAs reverted to AoI status with the recognition that these areas will be monitored and with additional research could become a cIMMA at a future IMMA expert workshop. The total number of AoI going forward was 23. For IMMAs and cIMMAs, a summary of the supporting rationale is now available on the Task Force website (marinemammalhabitat.org). The titles of the approved IMMAs and cIMMAs are listed below:

IMMA

1. Aldabra Atoll IMMA
2. Bazaruto Archipelago to Inhambane Bay IMMA
3. Cape Coastal Waters IMMA (Coastal Right Whale Area cIMMA)
4. Comoros Island Chain and Adjacent Reef Banks IMMA
5. Dhofar IMMA
6. Farasan Archipelago IMMA
7. Greater Pemba Channel IMMA
8. Gulf of Kutch IMMA
9. Gulf of Masirah and Offshore Waters IMMA
10. Gulf of Salwa IMMA (excluding the Northwest Gulf cIMMA)
11. Indus Estuary and Creeks IMMA (originally Indus Estuary and Creeks Extending to Mandvi Harbour cIMMA)
12. Kisite-Shimoni IMMA

13. Lakshadweep Archipelago IMMA
14. Lamu Offshore IMMA
15. Madagascar Central East Coast IMMA (originally Antongil Bay to Tamatave cIMMA)
16. Maldives Archipelago and Adjacent Oceanic Waters IMMA
17. Mascarene Islands and Associated Oceanic Features IMMA
18. Menai Bay IMMA
19. Miani Hor IMMA
20. Mozambique Coastal Breeding Grounds IMMA
21. Muscat Coastal Waters and Offshore Canyons IMMA
22. Nakhiloo Coastal Waters IMMA
23. North East Arabian Sea IMMA (merged from Ormara Sapat Area cIMMA and Northeast Arabian Sea Humpback Whale Area cIMMA, Murray Ridge cIMMA, and Indus Canyon cIMMA)
24. Northern Gulf and Confluence of Tigris, Euphrates and Kuran IMMA
25. Northern Red Sea Islands IMMA
26. Northwest Madagascar and Northeast Mozambique Channel IMMA
27. Oman Arabian Sea IMMA (originally Oman Humpback Whale Highway cIMMA)
28. Seychelles Plateau and Adjacent Oceanic Waters IMMA
29. Shelf Waters of Southern Madagascar IMMA (originally Madagascar Deep South cIMMA)
30. Sindhudurg-Karwar IMMA
31. South East African Coastal Migration Corridor IMMA
32. South West Madagascar and Mozambique Channel IMMA (originally Southern Mozambique Channel cIMMA)
33. Southern Coastal Shelf Waters of South Africa IMMA (merged from South African East Coast Seasonal Sardine Run Migration cIMMA, South African Inshore Bryde's Whale cIMMA, South African Coastal Sousa Habitat cIMMA)

34. Southern Egyptian Red Sea Bays, Offshore Reefs and Islands IMMA (merged from Marsa Alam bays cIMMA and Marsa Alam to Hala'ib Offshore Reefs cIMMA)
35. Southern Gulf and Coastal Waters IMMA (merged from Dubai Coastal cIMMA and Abu Dhabi Coastal Waters cIMMA)
36. Toliara, St. Augustine Canyon and Anakao IMMA
37. Watamu-Malindi and Watamu Banks IMMA

cIMMAs

1. Central Mozambique Channel cIMMA (remains a cIMMA)
2. Madagascar Ridge cIMMA (remains a cIMMA)
3. Gulf of Salwa and Northwestern Gulf cIMMA (originally Gulf of Salwa and Northern Saudi Arabia cIMMA)

Annex V – List of Aol for future consideration

After consideration of 108 Areas of Interest (Aol) summarized in the Aol report and added during the workshop, a number of them were merged or deferred and more than half went into cIMMA submissions. Following review and the approval of 37 sites as IMMA and 3 as cIMMA, it was decided that 23 sites would have to stay or revert to Aol after the review due to the lack of evidence suitable for IMMA approval. These 23 sites consisted of (1) Aol originally submitted to the Task Force prior to the workshop, (2) those Aol additionally identified by experts over the course of the workshop in light of new information and knowledge presented, and (3) cIMMAs that failed to become IMMAs or to be kept as cIMMAs. The Aol status is valuable in terms of facilitating and focusing future monitoring and research activities on marine mammals in the region. This enhanced activity could provide additional evidence for such Aol to be reconsidered as IMMA candidates during future iterations of the IMMA identification process and the Regional Expert Workshops. The Aol listed below, and any supporting rationale, will be highlighted in future on the Task Force website (marinemammalhabitat.org) and in other Task Force publications.

Aol

1. Chagos Archipelago Aol
2. Churna-Kaio Island Complex Aol
3. Dahlak and Adjacent Southern Waters Aol
4. Dungonbab Bay - Mukawar Island Aol
5. Golfe du Tadjoura Aol
6. Gulf of Aden and Socotra Archipelago Aol
7. Hormoz Northern Coastal Area Aol
8. Kanyakumari Aol
9. Lamu to Kiuanga Archipelago Aol
10. Makran to Daran-Jiwani Aol

11. Maputo Bay Aol
12. Moheli Marine Park Aol
13. Musandam Peninsula Aol
14. Offshore Waters of the Emirate of Fujirah Aol
15. Pemba Bay to Mtwara Aol
16. Rufiji to Mafia-Kilwa Aol
17. Sanganeb Atoll and Shaab Rumi Aol
18. Seven Brothers Islands and Godorya Aol
19. Southwestern Coast and Waters of India Aol
20. Strait of Tiran Aol
21. Suakin Archipelago and Sudanese Southern Red Sea Aol
22. Thane to Ratnagri Aol
23. West Hormozgan Islands Aol

Annex VI – Template for Area of Interest (Aoi) submission form

Preparatory to the Oman workshop, the expert participants, members of the public, and the marine mammal and ocean ecosystem communities were asked to fill out an Aoi submission form for any areas that they would potentially like to nominate for consideration as candidate IMMAs. This form was then used at the workshop to draft the cIMMA submissions (see Annex VIII).

THE AREA OF INTEREST (Aoi) SUBMISSION FORM

Aoi Title:

[Brief name that describes the area within the Aoi]

Point(s) of Contacts

[Name, Affiliation/Organization, Contact Email]

[Name, Affiliation/Organization, Contact Email]

[Name, Affiliation/Organization, Contact Email]

Abstract

[Brief summary of the Aoi description and qualifying selection criteria 250 words maximum]

Summary Table of Aoi species

ID	Scientific Name	Common Name	Population/Sub-population Name	IUCN Status	IMMA Selection Criteria Met (x)							
					A	Bi	Bii	Ci	Cii	Ciii	Di	Dii

Aoi Map

[Simple boundary map of the Aoi location]

Description of Aoi

[Description and references to supporting information about the Aoi location, i.e. country, geographic locality]

[Description and references to supporting information about the marine mammal species occurring within the Aoi]

[Description and references to supporting information about why the area meets the IMMA selection criteria and should be considered as a Aol]

References and Other Supporting Information

[Use this space to add any references used in the submission including those citations, books, reports, or links to websites or databases used to support to submission]

Annex VII – Template for cIMMA submission form

At the Oman workshop, the simplified cIMMA submission form was used for the first time (see immediately below). Following this form is a more detailed list of points that have been used to assist participants of regional workshops to draft their cIMMA submissions.

THE cIMMA SUBMISSION FORM

cIMMA Title:

[Brief name that describes the area within the cIMMA]

Point(s) of Contacts

[Name, Affiliation/Organization, Contact Email]

[Name, Affiliation/Organization, Contact Email]

[Name, Affiliation/Organization, Contact Email]

Abstract

[Brief summary of the cIMMA description and qualifying selection criteria 250 words maximum]

Summary Table of cIMMA species

ID	Scientific Name	Common Name	Population/Sub-population Name	IUCN Status	IMMA Selection Criteria Met (x)								
					A	Bi	Bii	Ci	Cii	Ciii	Di	Dii	

cIMMA Map

[Simple boundary map of the cIMMA location]

Description of cIMMA

[Description and references to supporting information about the cIMMA location, i.e. country, geographic locality]

[Description and references to supporting information about the marine mammal species occurring within the cIMMA]

[Description and references to supporting information about why the area meets the IMMA selection criteria and should be considered as a cIMMA]

Criterion A – Species or Population Vulnerability

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Bi - Small and Resident Populations

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Bii – Aggregations

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Ci – Reproductive Areas

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Cii – Feeding Areas

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Ciii – Migration Routes

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Di – Distinctiveness

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

Criterion Dii – Diversity

[Detailed description for meeting the above criterion – only required if the area meets the above criterion]

References and Other Supporting Literature

[Use this space to add any references used in the submission including those citations, books, reports, or links to websites or databases used to support to submission]

Annex A. Supporting Figures or Maps

[Use this space to add any figures including those maps, sightings, charts, data tables, or images which support the submission of the cIMMA – please ensure each figure is accompanied by a figure legend / appropriate description of the figure]

Annex B. List of Primary and Secondary Species

Primary Species – rationale for cIMMA proposal

LIST OF POINTS USEFUL FOR THE PREPARATION OF cIMMA SUBMISSIONS

Part 1: cIMMA Description

- Title/Name of the area
- Points of contact for submission (names, affiliations, title, contact details)
- Abstract (100-word summary of the submission)
- Introduction (feature type(s) present, geographic description, depth range, oceanography, general information data reported, availability of models)
- Location (Indicate the geographic location of the area/feature and the underlying rationale for boundary selection. This should include reference to a location map shown on page 11 of this form in the space provided, and the total size of the area in km². It should state if the area is within or outside national jurisdiction or straddling both.)
- Description of the species and features which qualify as IMMA (information about the characteristics of the feature to be proposed, e.g. in terms of species, population and underlying physical description (water column feature, benthic feature, or both) and then refer to the data/information that is available to support the proposal and whether models are available in the absence of data. This needs to be supported where possible with maps, models, reference to analysis, or the level of research in the area)

Part 2: Criterion A – Species or Population Vulnerability

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Criterion A

Part 3: Criterion B - Sub-criterion Bi – Small and Resident Populations

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Bii

Part 4: Criterion B - Sub-criterion Bii – Aggregations

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Bii

Part 5: Criterion C - Sub-criterion Ci – Reproductive Areas

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Ci

Part 6: Criterion C - Sub-criterion Cii – Feeding Areas

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Cii

Part 7: Criterion C - Sub-criterion Ciii – Migration Routes

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Ciii

Part 8: Criterion D - Sub-criterion Di – Distinctiveness

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)

- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Di

Part 9: Criterion D - Sub-criterion Di – Diversity

- Explanation for cIMMA assessment (including rationale for feature selection and description of feature and condition)
- Declaration of confidence in evidence available (including information on data gathered, gaps in knowledge, reliability, age of information and any known biases)
- Additional notes on the cIMMA submission on Sub-criterion Dii

Part 10: Numerical Threshold Benchmarks

- Complete threshold benchmarks table where appropriate (including estimates of population abundance or percentage of population size)

Part 11: Species Description

- Complete the species list table where appropriate (including IUCN or other source for threatened or declining status information)
- Species condition and future outlook of the proposed area (description of the current condition of the area and species present– are they static, declining, improving, what are the particular vulnerabilities? Any planned research/programmes/investigations?)

Part 12: Maps and Figures

- Maps and supporting figures (showing the boundary or area of the candidate IMMA and any relevant supplementary contextual information supporting IMMA classification)

Part 13: References

- References (relevant documents and publications, including URL where available; relevant data sets, including where these are located; information pertaining to relevant audio/visual material, video, models, etc.)

Annex VIII – Historical data, traditional knowledge and IMMAs

As has been discussed in the past, historical whaling data can be useful for establishing Aol as well as contributing to cIMMA proposals. In the Indian Ocean, as well as in the Pacific Islands region, whaling data provided input for the EBSA determinations, and therefore also had a role in identifying Aol which contributed to the cIMMAs in those regions.

In recent years, the Scientific Committee of the International Whaling Commission (IWC) and associated researchers have helped to organize whaling data and make it accessible in scientific papers and on the IWC database. The two main data sources are a massive compilation of 19th Century whaling records, which plots sightings and catches, as well as the more formal record keeping from the 20th Century whaling industry. In future, it could be useful to explore in greater depth the value of historical data to IMMAs. Whaling, or other historical data, may help confirm the long-term viability of an area where marine mammals continue to be found, rather than as guidance for identifying present-day areas.

On 8 December 2019, a Task Force workshop will be held at the World Marine Mammal Conference in Barcelona, Spain, to explore data and Aol triggers for the IMMA identification process. This will include discussions with IWC regarding historic catch records.

Traditional knowledge can also be used to assist in the identification of IMMAs, both in terms of informing the selection process and validating other data. In areas where marine mammals have been traditionally hunted, it may be possible to compute abundance and population trends. IMMAs are independent of political and socioeconomic factors during the identification stage.

Acronyms

Aoi	Area(s) of Interest
ASHW	Arabian Sea humpback whales
ASWN	Arabian Sea Whale Network
BIA	biologically important area (US and Australia)
BMU	Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety
CBD	Convention on Biological Diversity
cIMMA	Candidate Important Marine Mammal Area
CMP	Conservation Management Plan
CMS	Convention on Migratory Species
CR	Critically Endangered (IUCN RedList)
DAF	Data appraisal form (for the IMMA process)
DD	Data Deficient (IUCN RedList)
EBSA	Ecologically or Biologically Significant Area
EN	Endangered (IUCN RedList)
GOBI-IKI	Global Ocean Biodiversity Initiative's project supported by the International Climate Initiative
IBA	important bird and biodiversity area
IBAT	International Biodiversity Assessment Tool
ICMMPA	International Conference on Marine Mammal Protected Areas
ICMMPA 1-5	International Conference on Marine Mammal Protected Areas series of conferences with ICMMPA 1 being Maui, Hawaii (2009), ICMMPA 2 (Martinique, 2011), ICMMPA 3 (Adelaide, Australia, 2013), ICMMPA 4 (Puerto Vallarta, Mexico, 2016), ICMMPA 5 (Messinia, Greece, 2019)
ICoMMPA	International Committee on Marine Mammal Protected Areas
IMMA	Important Marine Mammal Area
IMO	International Maritime Organisation
IMPAC3	Third International Marine Protected Area Congress (Marseille, 2013)
IndoCet	Indian Ocean Network for Cetacean Research
IoK	Inventory of knowledge (for the IMMA process)
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
KBA	Key Biodiversity Area
LC	Least Concern (IUCN RedList)
MECA	Ministry of Environment and Climate Affairs (Oman)
MiCO	Migratory Connectivity in the Ocean
MM	marine mammal
MMO	marine mammal observer
MMPA	marine mammal protected area
MMPATF	Marine Mammal Protected Area Task Force

MPA	marine protected area
MSP	marine spatial planning
NRDC	Natural Resources Defense Council
NT	Near Threatened (IUCN RedList)
PSSA	Particularly Sensitive Sea Area
SAC	Special Area of Conservation (EU Habitats & Species Directive)
SSC	Species Survival Commission (of the IUCN)
VU	Vulnerable (IUCN RedList)
WCMC	World Conservation Monitoring Centre (within UNEP)
WCPA	World Commission for Protected Areas (of the IUCN)
WDC	Whale and Dolphin Conservation
WWF	World Wildlife Fund / Worldwide Fund for Nature