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Agenda Item: CEP 10c
Presented by: IUCN, SCAR
Original: English
Submitted: 30/4/2021

Important Marine Mammal Areas (IMMAS) within the Antarctic Treaty area: An international collaboration to inform habitat-related conservation decision- making and conservation planning for marine mammal species

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Information Paper submitted by IUCN and SCAR

Summary

An international group of scientists from 11 countries and the Scientific Committee on Antarctic Research (SCAR), the International Union for Conservation of Nature (IUCN) and the French Biodiversity Agency (OFB), including those holding or having access to long-term marine mammal data and having experience of working with marine mammals in the Extended Southern Ocean region, came together for five days to nominate candidate Important Marine Mammal Areas (cIMMAs), as determined by a set of criteria supported by specific evidence. At the conclusion of the five days, 15 cIMMAs were submitted to an independent review panel and 13 were later approved as IMMAs: Four IMMAs are located wholly or partially within the Antarctic Treaty area. These are now listed and shown on the IMMA e-Atlas with access to shapefile and background information (<https://www.marinemammalhabitat.org/imma-eatlas/>). The outcomes of this work may be useful in the development of spatial conservation measures.

Introduction to the IMMA Initiative of the IUCN SSC/WCPA Marine Mammal Protected Areas Task Force

The Important Marine Mammal Area (IMMA) initiative was developed by IUCN's joint Species Survival Commission (SSC) and World Commission of Protected Areas (WCPA) Marine Mammal Protected Areas Task Force (the "Task Force"¹). The model is based on the successful example of the BirdLife International process for determining Important Bird and Biodiversity Areas (IBAs) (Notarbartolo di Sciara and Hoyt 2020). The criteria are consistent with IBAs, Key Biodiversity Areas (KBAs) and Ecologically or Biologically Significant Areas (EBSAs) of the Convention on Biological Diversity (CBD), but tailored to marine mammals (Hoyt and Notarbartolo di Sciara 2014). IMMAs are defined as discrete portions of habitat, important to marine mammal species, that have the potential to be delineated and managed for conservation (IUCN Marine Mammal Protected Areas Task Force 2018). The IMMAs are identified according to specific criteria that capture critical aspects of marine mammal (seals and cetaceans) biology, ecology and population structure including vulnerability, distribution, abundance, special attributes and key life cycle activities. The intention is that the identification of IMMAs through a consistent expert biocentric process are measured against standardized criteria that will provide valuable input about marine mammals and their habitats. IMMAs are an advisory classification based on available science and knowledge. In some cases, IMMAs may contribute to existing national and international conservation initiatives.

For the period 2016-2023, the Task Force has started undertaking the planning and execution of regional expert workshops covering the following;

- Mediterranean (October 2016),
- 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),
- Black Sea, Turkish Straits System and Caspian Sea (February 2021),
- South East Tropical and Temperate Pacific Ocean (scheduled for late 2021),
- South West Atlantic Ocean (2022).

IMMA Workshop

The Extended Southern Ocean Region, covering the Antarctic and surrounding ice and waters including the subantarctic islands, host the richest marine mammal feeding grounds in the world. It was recognized that there are still substantial data gaps for marine mammals across this vast region — partly due to the challenges of logistics and funding and the comparatively limited seasonal window for study of some species.

From 15-19 October 2018, the Task Force conducted the fourth IMMA workshop in Brest, France, focusing on the Southern Ocean from Antarctica extending to the various subantarctic islands. The Task Force engaged twenty marine mammal scientists and two observers from 11 countries. Together they identified and mapped a total of 15 candidate Important Marine Mammal Areas (cIMMAs), accompanied by concise summaries, proposing boundaries and detailing how each proposal met one or more of the eight IMMA criteria and sub-criteria. In addition, seven areas of interest (AoI) were tentatively retained as potential future cIMMAs pending further research and consideration. A further four AoI were deferred to a future workshop as they extended outside the region's boundaries (IUCN Marine Mammal Protected Areas Task

¹ The IUCN Marine Mammal Protected Areas Task Force is part of two IUCN commissions, the Species Survival Commission (SSC) and the World Commission on Protected Areas (WCPA). The Task Force works closely with the Cetacean, Pinniped, Otter and Sirenian SSC specialist groups and the High Seas and Key Biodiversity Area task forces. The Convention on Migratory Species (CMS) adopted in 2017 a resolution supporting the IMMA work, and the Task Force working arrangements with the International Whaling Commission (IWC), the Convention on Biological Diversity's EBSA programme and the International Maritime Organisation (IMO). The IMMA tool (shapefiles and background information) are made available on the Task Force website, as well as via the World Conservation Monitoring Centre (WCMC) to commercial companies within the Proteus Partnership.

Force 2020, 2021). After independent review, 13 IMMAs were approved, 4 of which are located wholly or partially within the Antarctic Treaty area. One area was kept as a cIMMA, at the request of the peer review panel, as it was felt more information was required for it to fully address the IMMA criteria.

Sites include habitats and foraging areas for crabeater seal (*Lobodon carcinophaga*), leopard seal (*Hydrurga leptonyx*), Weddell seal (*Leptonychotes weddellii*), Ross seal (*Ommatophoca rossi*), Antarctic fur seal (*Arctocephalus gazella*) and southern elephant seals (*Mirounga leonina*) that haul-out on the ice or come ashore to molt or reproduce.

The approved IMMAs within the Antarctic Treaty area

After the review, 13 IMMAs were approved, one cIMMA was kept and seven areas gained AoI status in the whole Extended Southern Ocean region considered by the workshop. Four of the 13 approved IMMAs are located wholly or partially within the area covered by the Antarctic Treaty. Complete information on identified sites with site maps can be found at <https://www.marinemammalhabitat.org/immas/immas-searchable-database/>.

Important Marine Mammal Areas (IMMAs)

N.B: Underlined names are IMMAs that are located wholly or partially within the area covered by the Antarctic Treaty. The IMMA criteria used to identify the four areas covered by the Antarctic Treaty are shown in Table 1.

1. South Georgia,
2. Scotia Arc,
3. Western Antarctic Peninsula and Islands,
4. Gough Island and Surrounding Waters,
5. Bouvetøya and Surrounding Waters,
6. Ross Sea Ecosystem,
7. Scott Islands and Iselin Bank Complex,
8. Prince Edward Islands and Western Oceanic Waters,
9. Crozet Islands,
10. Heard Islands Kerguelen and Surrounding Waters,
11. Amsterdam Island, Saint Paul Complex and Associated Waters,
12. Macquarie Island Ridge, and
13. New Zealand Subantarctic Islands.

<i>IMMAs located in the Antarctic Treaty area</i>	<i>IMMA criteria used to identify the area</i>							
Scotia Arc	A				C2			D2
Western Antarctic Peninsula and Islands	A	B1	B2	C1	C2		D1	D2
Ross Sea Ecosystem		B1	B2	C1	C2	C3	D1	
Scott Islands and Iselin Bank Complex	A				C2			D2

Table 1: The IMMA criteria used to identify the four areas covered by the Antarctic Treaty are shown in the table. The criteria require evidence supported by data that the proposed habitat is important for A: Species or Population Vulnerability; B1: Small and Resident Populations; B2: Aggregations; C1: Reproductive Areas; C2: Feeding Areas; C3: Migration Routes; D1: Distinctiveness; and/or D2: Diversity.

Candidate IMMA (cIMMA)




1. Circumpolar Southern Ocean Seasonal Ice Edge Extent cIMMA

Areas of Interest (AoI)

1. South of South Georgia AoI
2. East of South Sandwich Islands AoI
3. Drake Passage AoI
4. Filchner Trough AoI
5. Antipodes Islands AoI
6. Balleny Islands AoI
7. Ice Edge Extent South of the South Pacific AoI



The Important Marine Mammal Area (IMMA) network in the Extended Southern Ocean

- 60° South Latitude
-  Important Marine Mammal Area (IMMA)
-  candidate IMMA (cIMMA)
-  Area of Interest (AoI)

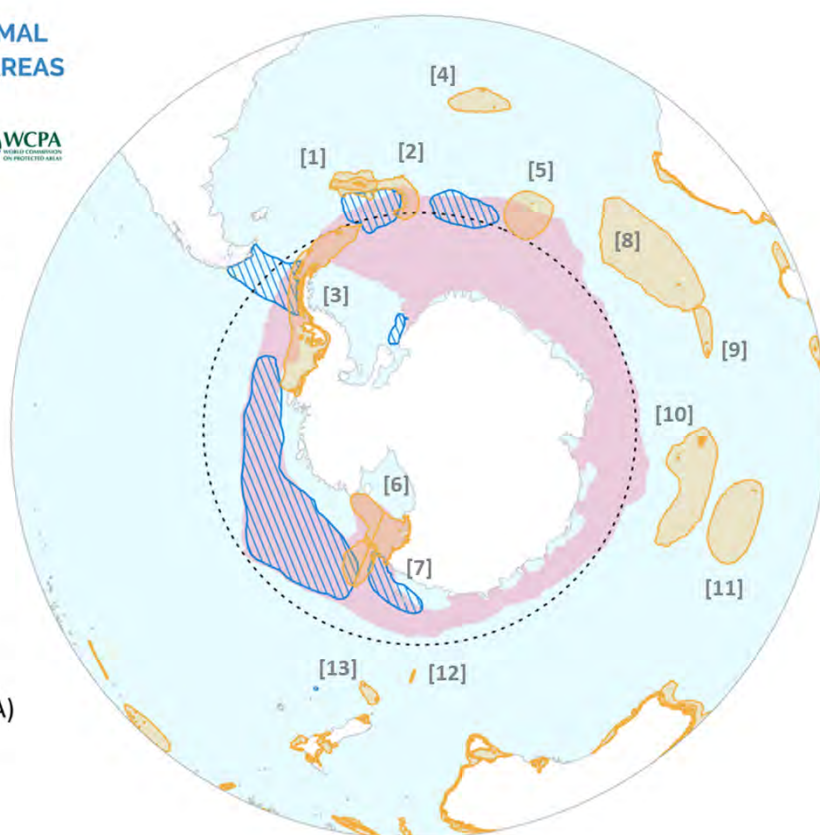


Fig. 1. The Extended Southern Ocean IMMA network consists of [1] South Georgia, [2] Scotia Arc, [3] Western Antarctic Peninsula and Islands, [4] Gough Island and Surrounding Waters, [5] Bouvetøya and Surrounding Waters, [6] Ross Sea Ecosystem, [7] Scott Islands and Iselin Bank Complex, [8] Prince Edward Islands and Western Oceanic Waters, [9] Crozet Islands, [10] Heard Islands Kerguelen and Surrounding Waters, [11] Amsterdam Island, Saint Paul Complex and Associated Waters, [12] Macquarie Island Ridge, and [13] New Zealand Subantarctic Islands.

IMMAs within the area covered by the Antarctic Treaty: [3] Western Antarctic Peninsula and Islands, [6] Ross Sea Ecosystem, [7] Scott Islands and Iselin Bank Complex, [2] section of the Scotia Arc IMMA south of 60°S

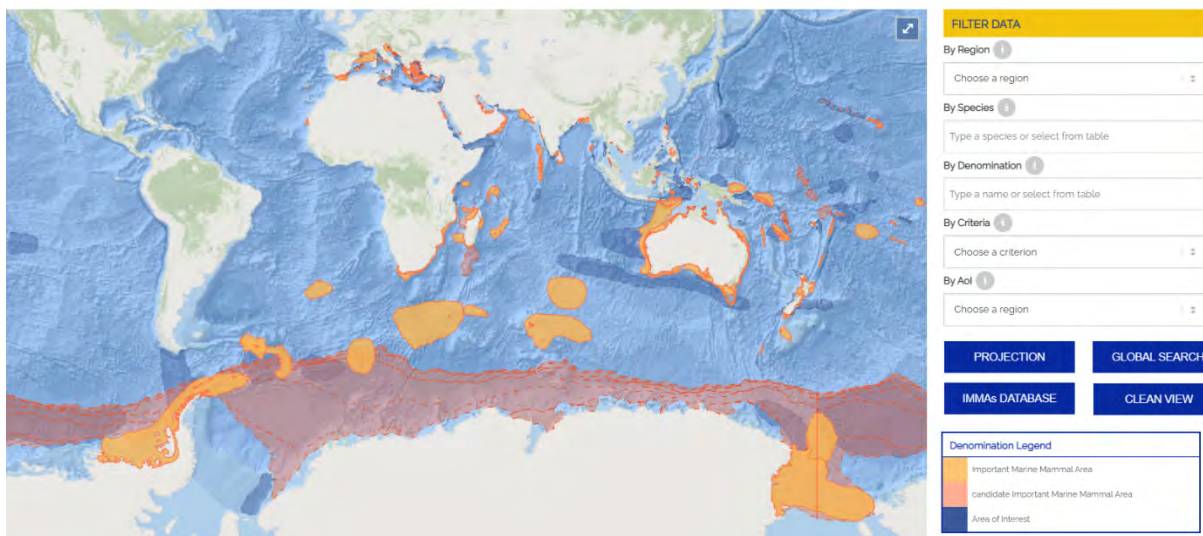


Fig. 2. Latest version of the IMMA e-Atlas, including the Extended Southern Ocean (April 2021, see <https://www.marinemammalhabitat.org/immas/imma-eatlas/>).

Conclusion

Globally, IMMAs are already being used as a spatial data layer in the implementation of area-based management tools (ABMTs) and spatial conservation measures; For instance for the evaluation of marine protected areas (MPAs) in Vietnam, Bangladesh and potentially Mozambique; marine spatial planning (MSP); and in consideration for future EBSAs and KBAs (Notarbartolo di Sciara et al. 2016). The International Whaling Commission (IWC) is using IMMAs plus shipping data to identify and address shipstrike issues. The Convention on Migratory Species has adopted a [resolution](#) calling on its country members to promote and use IMMAs. It is important to stress that IMMAs are designed to be a data layer that can be helpful to support decision-making processes.

Acknowledgments

The Extended Southern Ocean IMMA workshop, including the extensive preparation and review phases, was supported mainly by the French Biodiversity Agency (OFB) through the IUCN Global Marine and Polar Programme. Additional funding support for the final stages of reporting of the workshop and e-Atlas came from Fondation Prince Albert II de Monaco, OceanCare, Animal Welfare Institute (AWI) and the Natural Resources Defense Council (NRDC). Administration for the project was through the Tethys Research Institute in Italy, and Whale and Dolphin Conservation in the UK. The other workshops to date were funded by the German International Climate Initiative (IKI) through the Global Ocean Biodiversity Initiative (GOBI) and the MAVA Foundation.

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