



**MEMORANDUM OF UNDERSTANDING  
ON THE CONSERVATION OF  
MIGRATORY SHARKS**

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4<sup>th</sup> Meeting of the Signatories (Sharks MOS4)  
Bonn, 28 February – 2 March 2023  
Agenda Item 10

**As revised at MOS4**

**IMPORTANT SHARK AND RAY AREAS (ISRAs)**

*(Prepared by the Advisory Committee and the Secretariat)*

1. This document provides information on an initiative of the International Union for Conservation of Nature Species Survival Commission Sharks Specialist Group (IUCN SSC SSG) to identify “**Important Shark and Ray Areas – ISRAs**”<sup>1</sup>. Since the launch of the initiative in 2021, selection and review criteria have been developed and a process established to identify such critical habitats. Details are provided in Annex 1 of this document.
2. The ISRA concept is modelled on the successful example of identifying Important Marine Mammal Areas (IMMAs) developed by the IUCN Marine Mammal Protected Areas Task Force, supported by CMS Resolution 12.13.
3. The ISRA initiative will contribute significantly to the implementation of several mandates under the Sharks MOU. The Secretariat therefore suggests supporting the initiative as feasible and appropriate through the MOU. To this end, the Secretariat has included draft decisions (Annex 2) and proposed activities that Signatories may wish to include in their new Programme of Work for the triennium 2023-2025 (Annex 3).

**Background**

4. Sharks, rays, and chimaeras (henceforth sharks) are facing a biodiversity crisis, with an estimated 37% of species threatened with extinction under IUCN criteria (Dulvy *et al.* 2021<sup>2</sup>). Population declines are driven by overfishing, but habitat degradation may also impact some of the species listed in Annex 1 of the MOU, such as sawfish. Climate change may also impact the species spatially as warming oceans may shift distributions in sharks due to thermotolerance and/or changes in prey availability and distributions. Spatial planning tools often fail to consider the habitat needs critical for the survival of threatened species. The Important Shark and Ray Area (ISRA) approach is proposed as a response to the unfavorable conservation status of many sharks.
5. Area-based conservation can be an important management tool to safeguard biodiversity.

<sup>1</sup> <https://sharkrayareas.org/isra/>

<sup>2</sup> Dulvy NK, Pacoureau N, Rigby CL, Pollom RA, Jabado RW, Ebert DA, Finucci B. *et al.* (2021) Overfishing drives over one-third of all sharks and rays toward a global extinction crisis. *Curr. Biol.* 31(21): 4773-4787. doi: 10.1016/j.cub.2021.08.062 <https://pubmed.ncbi.nlm.nih.gov/34492229/>

Several approaches have been developed and implemented for identifying networks of globally important areas based on the delineation of sites or seascapes of importance for various elements of biodiversity (e.g., birds, marine mammals).

6. At their 12th Conference of the Parties, CMS Parties adopted [Resolution 12.13](#) “*Important Marine Mammal Areas (IMMAs)*” which amongst other things acknowledges the IMMA criteria and identification process for CMS-listed marine mammals. It also requests Parties and invites Range States, Intergovernmental Organizations and partners to identify specific areas where the identification of IMMAs could be particularly beneficial. This could be, for example, through promoting protected area network design and connectivity or addressing threats to aquatic mammals more comprehensively”. Resolution 12.13 established a precedent whereby the identification of taxon-specific “important areas” can support the attainment of the goal of protecting CMS-listed species and should be encouraged.

### **MOU Mandates**

7. The Sharks MOU includes strong mandates calling for the identification of critical habitats (including known aggregation, feeding and breeding sites, and migratory corridors) and their conservation to enhance the conservation status of species listed in Sharks MOU Annex 1:
  - a) Activity 1.5 of the Conservation Plan ([Sharks MOU Annex 3](#)), which has highest priority, requests Signatories and multilateral fora amongst other things to identify and prioritize (with a view to developing conservation measures) critical shark habitats including critical migration routes.
  - b) Furthermore, one of the five main objectives of the Conservation Plan is to ensure the “*protection of critical habitats and migratory corridors and critical life stages of species*” listed in Annex 1 of the MOU.
  - c) Signatories have agreed in article 13 of the MOU to “*Identify and conduct studies of shark migration, aggregation, critical habitats, ecology, behavior and life stages, and, to the extent practicable, protect these sites*”.

### **ISRA Initiative**

8. As mentioned above, the ISRA concept is modelled on the successful example of identifying Important Marine Mammal Areas (IMMAs) developed by the IUCN Marine Mammal Protected Areas Task Force, supported by CMS Resolution 12.13. Both ISRAs and IMMAs were based on guidance from other approaches for identifying sites or seascapes of biodiversity importance, including Important Bird and Biodiversity Areas (IBAs), Ecologically or Biologically Significant Areas (EBSAs), and Key Biodiversity Areas (KBAs).
9. The project identity and brand, including website ([www.sharkrayareas.org](http://www.sharkrayareas.org)), brochures, implementation strategy, and other materials were developed with the support of the German Federal Ministry of the Environment, Nature Conservation, Nuclear Safety, and Consumer Protection. The ISRA Team has been established and has been working towards the project goals with the support of the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world’s sharks and rays<sup>3</sup>.
10. Thirteen regions have been identified to delineate ISRAs across global waters. It is

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<sup>3</sup> The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

anticipated that one to two regions can be covered per year, with all global waters assessed by 2027.

### Criteria and process for the identification of ISRA

11. Four globally standardized scientific criteria, with seven sub-criteria, were developed, based on input collated during four shark, biodiversity, and policy expert workshops conducted in 2022, organized by the IUCN SSC Shark Specialist Group (IUCN SSC SSG) and the IUCN Ocean Team, with support from the IUCN Marine Mammal Protected Areas Task Force. [Annex 1](#) to this document provides detailed information about these criteria and how those should be applied based on [Hyde et al. \(2022\)](#)<sup>4</sup>.
12. The ISRA Criteria provide a framework to identify discrete, three-dimensional portions of habitat important for one or more shark species, that have the potential to be delineated and managed for conservation. The ISRA Criteria can be applied to all environments where sharks occur (marine, estuarine, and freshwater) and consider the diversity of species, their complex behaviors and ecology, and biological needs. The identification of ISRAs will guide the development, design, and application of area-based conservation initiatives for sharks and contribute to mortality reduction and population recovery.
13. A detailed description of the ISRA Criteria and how they should be applied is provided in [Annex 1](#) to this document.
14. The identification of ISRAs is undertaken on a region-by-region basis with 13 global regions identified. It is expected that it will take up to 8–12 months for each region to be completed. Throughout the identification process, the IUCN SSC SSG will engage with representatives from each region to ensure relevant experts are identified that have the experience and skills needed to propose ISRAs, collate and evaluate available data, and apply the evidence against the ISRA Criteria. Candidate ISRAs (cISRAs) identified by the workshop are subjected to review by an Independent Review Panel before ISRAs are displayed on an ISRA online e-Atlas.
15. By examining region on a rotational basis (possibly two per year, depending on the availability of funding and personnel) for ISRA identification, the process will eventually come full circle, bringing up the eventuality of re-appraising regions for the second time. Ideally, such replication will take place every 10 years. In this time, both environmental changes (e.g., warming, species ranges), IUCN Red List status, and data availability mean that revisions to the regional ISRA configuration would be warranted.

### Progress in Implementation

16. The first Important Shark and Ray Areas (ISRA) regional expert workshop was held in hybrid mode (in person and online) in Bogotá, Colombia from 3–7 October 2022. The goal was to identify and delineate three-dimensional and discrete portions of habitat that are critical to shark populations, and that have the potential to be managed for conservation. This was ISRA Region 12, the Central and South American Pacific (CSAP), from the tip of Baja

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<sup>4</sup> Hyde CA, Notarbartolo di Sciara G, Sorrentino L, Boyd C, Finucci B, Fowler SL, Kyne PM, Leurs G, Simpfendorfer CA, Tetley MJ, Womersley F and Jabado RW (2022) Putting sharks on the map: A global standard for improving shark area-based conservation. *Front. Mar. Sci.* 9:968853. doi: 10.3389/fmars.2022.968853  
<https://www.frontiersin.org/articles/10.3389/fmars.2022.968853/full>

California in Mexico to the south of Chile. Candidate ISRAs proposed at the workshop will go through a peer review process before they are finalized.

17. More information is included in “Important Shark and Ray Area (ISRA): Guidance on Criteria Application”, which can be accessed on the ISRA homepage and which is also provided as an information document, [CMS/Sharks/MOS4/Inf.5](#). Its purpose is to assist in an independent, expert-based process to inform the identification and selection of areas that are critical for shark populations. This guidance document is intended as a primary resource to inform the nomination of preliminary Areas of Interest (pAol) and development of candidate Important Shark and Ray Areas (cISRAs) prior to and during regional, expert-driven workshops.

### **Endorsement of and support for ISRA initiative**

18. [Annex 2](#) provides a draft “Decisions of the Meeting”, proposed by the Advisory Committee and the Secretariat related to the ISRA initiative.
19. [Annex 3](#) includes activities suggested by the Advisory Committee and the Secretariat that Signatories may wish to include in the MOU POW 2023-2025 to provide support to the IUCN SSC SSG to successfully implement the ISRA initiative.

### **Action requested:**

20. The Meeting is requested to:
  - a) Take note of the criteria and process to identify ISRAs, presented in [Annex 1](#);
  - b) Review and finalize the draft “Decisions of the Meeting” related to the ISRA Initiative, presented in [Annex 2](#);
  - c) Review and finalize the draft activities to be included in the Programme of Work 2023-2025, to support the ISRA initiative, presented in [Annex 3](#).

## ANNEX 1

## CRITERIA AND PROCESS FOR THE IDENTIFICATION OF IMPORTANT SHARK AND RAY AREAS (ISRA)

*(Extracted from Hyde et al. 2022)*

The International Union for Conservation of Nature Species Survival Commission Shark Specialist Group (IUCN SSC SSG) has developed below criteria and a process for the identification of Important Shark and Ray Areas (ISRAs), which have been published in **Hyde et al. 2022<sup>5</sup>** and as "**IMPORTANT SHARK AND RAY AREA (ISRA): GUIDANCE ON CRITERIA APPLICATION**" ([CMS/Sharks/MOS4/Inf.5](https://www.frontiersin.org/articles/10.3389/fmars.2022.968853/full)) on the website of the initiative.

### 1. Criteria for the identification of ISRA

**Criterion A (Vulnerability):** Criterion A refers to areas important to the persistence and recovery of threatened sharks. Threatened sharks are those listed on the IUCN Red List as Critically Endangered, Endangered, or Vulnerable (International Union for Conservation of Nature [IUCN], 2022). Under this criterion, ‘threatened’ could also refer to sharks at risk of extinction as reflected in other available assessments (e.g., national regulatory and legal frameworks that assess the extinction risk of species such as the United States Endangered Species Act [ESA] or the Australian Environment Protection and Biodiversity Conservation Act [EPBC]).

**Criterion B (Range restricted):** Criterion B refers to areas holding the regular and/or predictable presence of range restricted sharks, that are occupied year-round or seasonally.

**Criterion C (Life-history):** Criterion C refers to areas that are important to sharks for carrying out vital functions across their life-cycle (i.e., reproduction, feeding, resting, movement, or undefined aggregations). This includes five sub-criteria to encompass the wide variety and complexity of life-histories. In this work, species occurrence data are compiled, where available, to include information on age structure, reproductive status, sex, and seasonality ([CMS/Sharks/MOS4/Inf.5](https://www.frontiersin.org/articles/10.3389/fmars.2022.968853/full)).

**Sub-criterion C (Reproductive areas):** Reproductive areas are important for shark mating, birth, egg laying, or providing refuge or other advantages to the young (e.g., predator avoidance or access to food sources), and are therefore critical to reproductive success. These include sites which can be identified as ‘nursery areas’ that are important for newborns, young-of-the-year, or juveniles of viviparous species; or ‘egg nursery areas’ that are important for egg laying and development until hatching and the development of newborns and juveniles of oviparous species.

**Sub-criterion C2 (Feeding areas):** Feeding areas are important for shark nutrition at one or more life-cycle stages. Sub-criterion C2 relates to areas where sharks are known to derive nutrition, and that are supported by the regular and predictable occurrence of prey.

**Sub-criterion C3 (Resting areas):** Resting areas are important for sharks to conserve

<sup>5</sup> Hyde CA, Notarbartolo di Sciara G, Sorrentino L, Boyd C, Finucci B, Fowler SL, Kyne PM, Leurs G, Simpfendorfer CA, Tetley MJ, Womersley F and Jabado RW (2022) Putting sharks on the map: A global standard for improving shark area-based conservation. *Front. Mar. Sci.* 9 :968853. Doi : 10.3389/fmars.2022.968853  
<https://www.frontiersin.org/articles/10.3389/fmars.2022.968853/full>

energy and are often related to environmental conditions or temporal factors. These are areas where an aggregation or assemblage of sharks spends time during daily activity cycles and which can be influenced by environmental conditions (e.g., tidal cycle) or temporal factors (e.g., time of day).

**Sub-criterion C4 (Movement):** This sub-criterion identifies areas used by sharks regularly or predictably during their movements, such as migrations, which contribute to the connectivity of important areas. Sub-criterion C4 addresses the predictable movement of sharks, aggregations, or assemblages from one place to another, often related to a seasonal or vital function such as reproduction or feeding.

**Sub-criterion C5 (Undefined aggregations):** This sub-criterion identifies areas where an aggregation or assemblage of sharks regularly and/or predictably occurs, year-round or seasonally, but the function of the aggregation is currently unknown. Sub-criterion C5 refers to aggregations or assemblages of sharks in an area which engage in, or display a behavior that is known to occur, but is not (yet) attributed to a known vital function (e.g., reproduction, feeding, resting, or movement) or predator avoidance (e.g., schooling).

**Criterion D (Special attributes):** Criterion D refers to areas important for sharks considered for distinct biological, behavioral, or ecological attributes (unique or associated with a unique habitat type) or which support an important diversity of species. It consists of two sub-criteria related to distinctiveness and diversity.

**Sub-criterion D1 (Distinctiveness):** Sub-criterion D1 identifies areas where sharks display distinct biological, behavioral, or ecological characteristics. The variety of sharks, their unique features, and their adaptations could result in distinctive characteristics.

**Sub-criterion D2 (Diversity):** Sub-criterion D2 identifies areas that sustain an important diversity of sharks. These are areas that may host a high diversity of sharks (i.e., the diversity of the assemblage of shark species occurring is high or exceptional for that region) and are critical for the persistence of shark diversity.

## 2. ISRA identification process

ISRAs are identified through regional expert workshops. These are organized by the IUCN SSC Shark Specialist Group after consultation with its Regional Vice-Chairs. Workshop invitations are extended to regional members and non-members who have knowledge and expertise useful for the identification of ISRAs. Sources of information for consideration and assessment during each workshop are actively sought during an engagement period prior to each regional workshop and become part of the ISRA Inventory of Knowledge. Based on expert input, preliminary Areas of Interest (pAol) are examined for the regular or predictable presence of species to which the criteria can be applied. Qualifying or Supporting Species assessed against each of the ISRA Criteria within a pAol allow for a candidate Important Shark and Ray Area (cISRA) to be justified. Finally, after the workshop, each cISRA is subject to peer-review through an Independent Review Panel. This panel is composed of recognized shark experts who have not been involved in the regional workshops, but who have an in-depth understanding of the species, habitats, and ISRA Criteria (Notarbartolo di Sciara, 2021<sup>6</sup>).

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<sup>6</sup> Notarbartolo di Sciara, G. (2021) Towards an Important Shark and Ray Area (ISRA) process: implementation strategy (Report to IUCN Species Survival Commission Shark Specialist Group). Available at: <https://sharkrayareas.org/resources/meeting-workshop-reports/>.

## ANNEX 2

## DRAFT DECISIONS OF THE MEETING

## Signatories

1. Welcomed the initiative and progress made by the International Union for the Conservation of Nature Species Survival Commission Shark Specialist Group (IUCN SSC SSG) in developing robust selection and review criteria for identifying “Important Shark and Ray Areas (ISRAs)” that complement and contribute to the Convention on Biological Diversity (CBD) Ecologically or Biologically Significant Areas (EBSAs) and the IUCN Key Biodiversity Areas (KBAs).
2. Acknowledged the Important Shark and Ray Areas (ISRA) criteria and identification process described in *Hyde et al. 2022* and *Notarbartolo di Sciara 2022* and the ISRA Guidance Document posted on the ISRA website ([sharkrayareas.org](http://sharkrayareas.org)) for Sharks MOU Annex 1-listed species and provide as [CMS/Sharks/MOS4/Inf.5](#);
3. Acknowledged that **Important Shark and Ray Areas (ISRAs)** are an advisory, expert-based classification applied to the world’s oceans, and relevant inland water bodies, consisting of discrete portions of habitat, important to shark, ray, and chimaera species, that have the potential to be delineated and managed for conservation.
4. Agreed to:
  - a) support of the IUCN SSC SSG to advance these approaches and recommend that such work to identify specific areas engages the authorities of Signatories and Range States in the spirit of transparency at an early stage;
  - b) support with the identification of specific areas where the delineation of ISRAs could be particularly beneficial, for example through stimulating protected area network design and connectivity, or addressing threats to sharks and rays more comprehensively;
5. Requested the Secretariat to continue to liaise with the IUCN SSC SSG and to report back to MOS5 on progress.

## DRAFT ACTIVITIES FOR INCLUSION IN THE PROGRAMME OF WORK 2023-2025

No.	Activity	Mandate <sup>7</sup>	Priority ranking <sup>8</sup>	Time frame <sup>9</sup>	Responsible entity <sup>10</sup>	Funding needs for implementation	Secretariat staff required for implementation (working days)
<b>Species Conservation/Habitat Conservation</b>							
<b>X. Development of a Conservation Strategy and Action Plans for Pelagic Sharks and Rays</b>							
x.1	Promote the ISRA initiative in relevant fora, including, but not limited to CMS, CBD, FAO, RFMOs, RSCs and APs.	MOS4 decisions (CP 1.5)	tbd	tbd	SEC, SIG, Coop		P staff: 3 (e.g., developing policy documents)
x.2	Liaise with the IUCN SSC SSG on the implementation of the ISRA initiative.	MOS4 decisions (CP 1.5)	tbd	tbd	SEC		P staff: 2
x.3	Provide support to the IUCN SSC SSG as appropriate and as feasible with the identification of ISRAs including sharing relevant information and expertise.	MOS4 decisions (CP 1.5)	tbd	tbd	SIG, AC, CWG	€ 21,000 for AC and CWG travel to workshops and meetings (ca. 7 missions)	P staff: 2 G staff: 2 (raising funds, managing donor agreements, managing travel)
x.4	Provide financial resources to the IUCN SSC SSG for the implementation of expert workshops and follow up missions.	MOS4 decisions (CP 1.5)	tbd	tbd	SIG, (SEC if funds were provided through the Secretariat)	€ 45,000 for travel to workshops and meetings (ca. 15 missions)	P staff: 4 G staff: 2 (raising funds, managing donor agreements, managing travel)
x.5	Consider ISRAs as areas of high priority for the implementation of management measures to conserve sharks and rays, listed in Annex 1 of the MOU, in your areas of national jurisdictions.	MOS4 decisions (CP 1.5)	tbd	tbd	SIG		

7 Conservation Plan (CP), Terms of Reference of the Advisory Committee (AC TOR), Terms of Reference of the Secretariat (SEC TOR)

8 Core Secretariat activities and suggested priorities (High, Medium)

9 Year(s) during which activity should be implemented

10 Signatories (SIG), Advisory Committee (AC), Secretariat (SEC), Conservation Working Group (CWS), Consultants, Cooperating Partners (CoopP)