**Vision:** *Populations of devil and manta rays that flourish in resilient ocean ecosystems, harmoniously with human communities, through knowledge, sustainability, and education***.**

**Goal A:** The knowledge required to sustain devil and manta rays is generated and communicated to relevant stakeholders.

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| **Objective 1** |
| **TAXONOMY AND STOCK STRUCTURE** |
| Taxonomy of devil and manta rays is resolved, and management units are defined. |
| The taxonomy of devil and manta rays is still unclear and substantial changes at the species and even genus level are expected. Defining management units will enable more focused and efficient conservation measures for these species, and show where trans-national regulations are necessary. |
| **Actions** |
| 1.1 Produce peer-reviewed publications that resolve the species-level taxonomy of devil and manta rays to be used by the scientific and management community. |
| 1.2 Undertake research to define management units of devil and manta ray populations on regional and global scales. |
| 1.3 Refine a list of priority species and regions based on newly defined management units. |
| 1.3.1 Potential priority species include *M. japanica*, *M. tarapacana, M. mobular.* |
| 1.3.2 Potential priority regions include the Indo-Pacific, Mediterranean Sea, Eastern Pacific, and West Africa. |

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| **Objective 2** |
| **BIOLOGY** |
| Productivity, life history, and demography of devil and manta rays are determined. |
| Information describing biological characteristics, such as annual fecundity and age at maturity are needed to fully understand the vulnerability of these species and enable prioritization of conservation and management actions. |
| **Actions** |
| 2.1 Produce a standardized data collection methodology and a guide to facilitate mobulid biology data comparison among research groups and countries. |
| 2.2 Define accurate biological parameters (age, growth, maximum age, and age at maturity data) for devil and manta ray populations for use in species assessments, scientific reports, and publications. |
| 2.3 Use population data to determine the rate of natural mortality in devil and manta ray populations for integration into species assessments. |

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| **Objective 3** |
| **ECOLOGY** |
| Spatial and temporal ecology of devil and manta rays is understood. |
| Ecological data are needed to inform appropriate management actions that prevent overexploitation of devil and manta rays, preserve connectivity among populations, and protect critical habitats. |
| **Actions** |
| 3.1 Consolidate and synthesize available data to determine historic and core distributions of mobulid species, in order to aid recovery and assess potential reestablishment throughout historic ranges. |
| 3.2 Update Extent of Occurrence and point distribution maps of the geographic distribution of devil and manta rays and disseminate this information. |
| 3.3 Describe and define areas of critical habitat and population connectivity (by size, sex and reproductive status) including areas of core use (hot spots, aggregation sites), seasonality of presence, and migratory corridors to produce high resolution geographic outputs for publication and management actions (e.g. place-based protection). |
| 3.4 Understand the role that diet and feeding ecology have in predicting aggregations, movement, and habitat use of devil and manta rays. |
| 3.5 Estimate the abundance of devil and manta ray species using information collected by fisheries-independent research programs (e.g. line transect surveys, photo identification, tagging). |

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| **Objective 4** |
| **STRATEGIC RESEARCH AND COMMUNICATION** |
| Scientific research on biology, ecology, status, threats, and socio-economic value of devil and manta rays to enhance conservation and management is communicated to stakeholders and to the public. |
| Building an improved understanding of the status and threats that face devil and manta rays among the general public, policy makers, and the conservation and management community is helpful for the implementation of national and international conservation legislation, and will engage the public to support protecting these species. |
| **Actions** |
| 4.1 Update International Union for the Conservation of Nature (IUCN) Red List global re-assessments for mobulid species. |
| 4.1.1 Priority species include *Mobula japanica*, *M. tarapacana*, and *M. thurstoni.* |
| 4.2 Produce a global status summary of devil and manta ray fisheries and catches. |
| 4.3 Translate research for the wider conservation and management community (NGOs, fishers, tourism, divers, aquaria, etc.) through newsletters, social, print, and traditional media outlets, as information becomes available. |
| 4.4 Interpret research for managers and policy-makers to help inform decisions related to the protection and conservation of devil and manta ray populations as opportunities arise at key management decision points (such as CITES, CMS, CBD, RFMO meetings, local management meetings, and national biodiversity initiatives). |

**Goal B: Devil and manta ray populations are maintained at, or recovered to, ecologically relevant levels by managing fisheries, trade, and demand.**

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| **Objective 5** |
| **FISHERIES ASSESSMENT AND MANAGEMENT** |
| Devil and manta ray populations, and fisheries in which they are taken, are monitored and managed for long-term sustainability. |
| Unmanaged and mostly unmonitored fisheries pose the greatest threat to devil and manta rays. Standardized data collection is needed to assess population trends and inform conservation measures to prevent overexploitation from targeted and incidental mortality. |
| **Actions** |
| 5.1Non-Governmental Organizations (NGOs) create incentives for government policy makers to take action on devil and manta ray conservation and management through positive international media opportunities. |
| 5.2 NGOs, Nations, and RFMOs to collate historical landings and market data. |
| 5.3 Fisheries specialists and RFMOs work to develop standardized guidelines for fisheries data collection (e.g. species identification and sizing, tissue samples, reproductive status) and monitoring (e.g. landings, discards, fishing effort, gear types). |
| 5.3.1 Observer practices are developed that are specific to devil and manta rays (e.g. tissue samples, reproductive data, size estimation, etc.). |
| 5.3.2 Develop a multilingual identification guide/webpage/app to assist observers/customs officers/scientists/NGOs in identification, data collection, etc. |
| 5.4 National, state, or regional fisheries departments adopt a standardized data collection system and implement at-sea and landing site observer programs that gather information on landings, bycatch, and discards. |
| 5.5 Nations report species-specific landings of devil and manta rays to FAO and/or RFMOs. |
| 5.6 Determine areas of overlap between relevant fisheries and devil and manta ray distributions to identify priority areas of bycatch minimization. |
| 5.7 Estimate the total annual volume of devil and manta ray catch in fisheries bycatch globally, by region, and by gear type. |
| 5.8 Develop gears and fishing practices that minimize bycatch. |
| 5.8.1 Review handling and release procedures using different gears and develop and implement best practice procedures where they don’t exist. |
| 5.8.2 Produce education and outreach materials about safe release and handling. |
| 5.8.3 Reduce purse seine sets in locations, during times of year, and in set types where mobulids have been identified as bycatch. |
| 5.9 Estimate post-release mortality across various sizes, species, and gear types for devil and manta rays. |
| 5.10 Develop stock assessment methods for devil and manta rays and coordinate the appropriate agencies, NGOs, and/or fisheries scientists to undertake assessments. |
| 5.11 RFMOs, regions, and nations identify and prioritize species and stocks that require assessment. |
| 5.12 RFMOs, regions, and nations regularly assess and report the status of devil and manta ray fisheries and estimate sustainable catch levels. |
| 5.13 RFMOs, other regional bodies, and nations implement and enforce protections for devil and manta rays to maintain or recover stocks to ecologically relevant levels. |
| 5.14 Adjacent nations harmonize management arrangements to ensure consistency of shared stocks and coordinate data collection, assessment, and management. |
| 5.15 RFMOs and nations ensure that important devil and manta ray aggregation sites are protected through existing and/or revised spatial and temporal management measures. |

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| **Objective 6** |
| **TRADE REGULATION** |
| Imports and exports of devil and manta ray products are traceable, monitored, and regulated for sustainability. |
| Manta rays were listed under CITES Appendix II in 2013, meaning that CITES Parties are obliged to monitor and regulate international imports and exports of manta parts, including gill plates. Supporting efforts to monitor and regulate trade is critical to identifying sources of demand and supply and preventing unsustainable levels of trade. |
| **Actions** |
| 6.1 International conservation agreements for devil and manta rays (e.g. CITES, CMS, and RFMOs) are enforced and implemented in legislation. |
| 6.2 Identification guides for traded devil and manta ray products are developed and disseminated. |
| 6.3 Customs codes are adopted for (a) CITES-listed species, and (b) gill plate products. |
| 6.4 Development of a CITES Non-Detriment Finding (NDF) guide to support the implementation of CITES listings in key devil and manta ray fishing nations. |
| 6.5 Country-of-origin standardized certificates are produced for all gill plate exporting and importing states. |
| 6.6 Port-state controls (the inspection of foreign vessels by official officers) are implemented by all range states. |
| 6.7 Catch documentation is provided by issuing authorities for individual consignment of gill plates. |
| 6.8 Market surveys are undertaken at regular intervals. |
| 6.9 Trade data reported by exporters and importers are compared with and confirmed by market surveys. |
| 6.10 NGOs and scientists work with the devil and manta ray range states to propose *Mobula* spp. for inclusion on Appendix II of CITES. |

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| **Objective 7** |
| **SOCIO-ECONOMICS AND MARKETS** |
| Demand for devil and manta ray products is reduced, and an understanding of socio-economic drivers is informing management. |
| Demand for devil and manta ray gill plates (*Peng Yu Sai*) has been cited as the leading driver of increased directed fisheries since the late 1990s. Reducing demand for devil and manta ray gill plates and other products including meat, cartilage, and skin will remove a strong economic incentive that is driving overexploitation of these species. |
| **Actions** |
| 7.1 Understand the socio-economic value and landscape of consumptive uses of devil and manta rays. |
| 7.2 Understand the socio-economic value and landscape of non-consumptive uses of devil and manta rays. |
| 7.3 Assess the current demand for *Peng Yu Sai* and the level of consumer awareness to the threats posed by the gill plate market. |
| 7.4 Produce a profile of the typical consumer of *Peng Yu Sai* in order to most effectively and efficiently target the demand reduction campaign. |
| 7.5 Determine what the current marketing channels and methods for promoting use of *Peng Yu Sai* are. |
| 7.5.1 Determine the extent of TCM practitioner involvement in recommending or marketing *Peng Yu Sai* and the opinions and attitudes of TCM practitioners regarding *Peng Yu Sai* use and efficacy. |
| 7.6 Update 2011 assessment of *Peng Yu Sai* markets in Guangzhou, China, by collecting samples, conducting and analysing toxicology tests, and producing a report summarizing assessment results. |
| 7.7. Produce material, media, and social media and recruit spokespeople and media partners to join a campaign that draws attention to threats posed by the gill plate market. |
| 7.8 Conduct a follow-up assessment both directly and by third parties to measure effectiveness of the campaign using qualitative (changes in attitudes, level of awareness) and quantitative measures (evidence of reduced consumption, reduction in gill plate sales), measured against a baseline assessment. |
| 7.8.1 Ongoing monitoring of the distribution of Public Service Announcements, short films, and earned media across a variety of media delivery platforms, measured in economic value and target audiences reached. |
| 7.8.2 Communication with media sources for feedback regarding changes in *Peng Yu Sai* demand and trade. |
| 7.8.3 Communication with partners and collaborators engaged in monitoring key devil and manta ray landing sites in Indonesia and Sri Lanka for feedback regarding changes in mobulid landings, and reported changes in demand or prices from gill plate traders. |

**Goal C: Educated and engaged communities are supporting and benefiting from devil and manta ray conservation and management through improved livelihoods.**

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| **OBJECTIVE 8** |
| **TOURISM** |
| A standardized best practice approach to tourism interactions with devil and manta rays that minimizes harm is adopted and enforced by tourism operators globally. |
| Non-consumptive use of devil and manta rays through responsibly managed tourism can provide long-term sustainable economic benefits to coastal communities as one alternative to unsustainable fisheries. A standardized best practice guidelines for tourism operators will prevent injury and stress to the animals and environments, while making the businesses that rely on healthy devil and manta ray populations more environmentally sustainable, and ultimately, more successful. |
| **Actions** |
| 8.1 Collate and standardize the existing best practices of devil and manta ray tourism interactions (e.g. diving, snorkelling, and watching). |
| 8.2 Develop best practice guidelines for tourism interactions with devil and manta rays. |
| 8.3 Secure adoption of best practice guidelines for tourism interactions with devil and manta rays by the wider tourism community. |
| 8.5 Educate snorkelers as well as recreational and professional SCUBA divers about the conservation and management of devil and manta rays through development and dissemination of offline and online educational tools including specialty training. |

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| **OBJECTIVE 9** |
| **COMMUNITY ENGAGEMENT** |
| Knowledgeable communities are contributing to devil and manta ray conservation and management at the local level. |
| Communicating the benefits of devil and manta ray conservation and including community stakeholders in the process is essential to adoption, implementation, and enforcement of conservation and management measures. |
| **Actions** |
| 9.1Produce and distribute engaging and compelling media to inspire the general public in key fishing countries and globally to support devil and manta ray conservation measures. |
| 9.2 Engage indigenous and local fishing communities in sharing of traditional ecological knowledge and cultural value (e.g. animal totems) of historical species composition, species distribution and temporal occurrence. |
| 9.3 Create and deliver road shows, stage shows, or film events to highlight the conservation status of devil and manta rays in coastal fishing communities that are adjacent to devil and manta ray populations in priority countries (e.g. Philippines, Indonesia, Sri Lanka, and Peru). |
| 9.4 Create interpretive material to communicate the value of devil and manta rays tourism through social media, websites, magazines, print, and television to the government, local communities, and global supporters of NGOs. |
| 9.5 Engage tourism operators and the public to report sightings by submitting ventral photographs to an online identification database. |
| 9.6 Translate a global identification guide for devil and manta rays into the local languages of the priority fishing nations (e.g. Peru, Philippines Indonesia, India, Mexico, and Sri Lanka). |

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| **OBJECTIVE 10** |
| **ALTERNATIVE LIVELIHOODS** |
| People in coastal communities are engaging in occupations and subsistence activities that are not based on exploitation of devil and manta rays. |
| Empowering coastal communities to transition away from dependence on unsustainable fishing practices and into alternative livelihoods (e.g. sustainable fisheries, aquaculture, and tourism) is essential to the success of devil and manta ray conservation and management measures and the economic future of the communities. |
| **Actions** |
| 10.1 Consult and work with social scientists, climate adaptation, and development agencies to identify opportunities for the development of alternative livelihoods for coastal fishing communities and work to ensure that the conservation of devil and manta rays is included in their objectives. |
| 10.2 Identify potential markets for developing ecotourism-based alternative livelihoods in local government (e.g. tourism board and development assistance), and in sustainable tourism businesses (e.g. hotels). |
| 10.3 Develop alternative livelihoods and income opportunities for at least five local communities in at least five of the main devil and manta ray fishing nations (e.g. Peru, Philippines Indonesia, India, Mexico, and Sri Lanka) to diversify away from fishing for devil and manta rays. |
| 10.4 Build capacity in local communities and among artisanal fishermen through training (business, tourism management, and sustainable fishing and aquaculture practices) and assistance with raising capital for the expenses associated with implementation. |

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| **Objective 11** |
| **DEVIL AND MANTA RAY NETWORK** |
| Devil and manta ray experts support government and private sector bodies by encouraging, prioritizing, facilitating, integrating, and fulfilling commitments to conservation plans and regulations. |
| The devil and manta ray network provides an important forum for sharing and propagating conservation knowledge, generating coordinating actions, and monitoring progress. |
| **Actions** |
| 11.1 Conduct at least one workshop for representatives of government, policy makers, and trade officials in each priority fisheries country (e.g. Peru, Philippines, Indonesia, India, Mexico, Sri Lanka, and the Gaza Strip) on the conservation status and state of devil and manta ray international trade and provide training in the identification of gill plates and species. |
| 11.2 NGOs (including fishing groups) engage with interested scientists to develop, fund, and implement collaborative projects aimed at gaining government buy-in and building government champions. Specific activities could include: |
| 11.2.1 Formation of a coalition of contributors with different areas of expertise (e.g. science, policy, media, community outreach) from different regions united toward devil and manta ray conservation. |
| 11.2.2 Identify and develop opportunities for collaborative, resource-effective, research and conservation programs (e.g. IUCN Specialist Groups, Non-Governmental Organisations with other aquatic vertebrates that share habitat and threats with Devil and Manta rays (e.g. cetaceans, whale sharks and other elasmobranchs). |
| 11.2.4 Coordination of comments, speaking opportunities, and advocacy around key government decision meetings. |
| 11.3 NGOs and scientists commit to ongoing participation in government processes to articulate and repeatedly promote devil and manta ray conservation plan goals. Specific activities could include: |
| 11.3.1 Regular contact and discussion with key government officials. |
| 11.3.2 Attendance at national or RFMO science, bycatch, and/or ecosystem committee meetings. |
| 11.3.3 Preparation of written comments to national fisheries and/or environment government leads and/or RFMO chairs. |
| 11.3.4 Service on government delegations to key decision meetings including CITES and CMS conferences of Parties and RFMO annual meetings. |
| 11.3.5 Targeted side events at key meetings to bring together various interests toward a common goal. |
| 11.4 IUCN SSG and partners review progress and revise actions under the Global Devil and Manta Ray Conservation Strategy every three years. |
| 11.5 Ensure a continued stream of financial resources to ensure timely implementation of the Actions included in this Global Devil and Manta Ray Conservation Strategy. |