



**KONSERVASI  
INDONESIA**

# IMPACT REPORT FISCAL YEAR 23

FOCAL SPECIES CONSERVATION PROGRAM

## PEOPLE NEED NATURE TO THRIVE



**KONSERVASI  
INDONESIA**

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Konservasi Indonesia, November 2023

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Layout: © Konservasi Indonesia – Iqbal Herwata

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KONSERVASI INDONESIA



## ADVISOR

MARK ERDMANN, PH.D.  
VICE PRESIDENT, MARINE, ASIA-PACIFIC FIELD DIVISION  
CONSERVATION INTERNATIONAL

# FROM OUR LEADER

This fiscal year (July 2022 to June 2023) marked the beginning of Konservasi Indonesia's efforts to support the Indonesian government's initiatives to safeguard the environment and promote sustainable development. As Conservation International's (CI) main partner in Indonesia, we continue the track record and portfolio of projects established in Indonesia over the previous three decades, including the conservation of endangered marine wildlife in Indonesia .

As a science-based organization, Konservasi Indonesia uses scientific approaches to provide innovative, nature-based solutions and promote policies that benefit both nature and people. Our work is built on three pillars: protection, preservation, and sustainable use. We support the governments to protect key species and the habitats that support their life cycles. We carry out conservation interventions such as raising awareness and community empowerment, surveillance, threat mitigation, and restocking wildlife. By working together to safeguard endangered marine wildlife, the community and related parties would earn long-term benefits, both directly through tourism and indirectly through ecosystem services that help to maintain ocean health.

We worked at the national level and implemented field demonstrations in the Sunda Banda and Sahul Papua ecoregions. Numerous national program initiatives this year, in collaboration with the Indonesian government, established national protection status for endemic and threatened species of walking sharks, baseline assessments of management effectiveness of 20 national priority fish species/groups, national guidelines for whale shark tourism, national guidelines and database for priority and protected species, assisting the spatial planning for MPA expansion in Indonesia by incorporating threatened species key habitat on MPA design planning, and the establishment of the Indonesian Youth Elasmobranch Research Program (IYES).

In the Sunda Banda Seascape, 108 individual whale sharks have been identified using photo ID, and 25 individuals are being tracked in Saleh Bay using satellite tags. This year, we also expanded our range by deploying satellite tagging on whale sharks in this ecoregion to fill a knowledge gap on their movement patterns. Two whale sharks in Gorontalo waters satellite tags attached.

As part of whale shark ecotourism development in Saleh Bay, we collaborated with CNN Insight with Desi Anwar to produce an episode educating and promoting public awareness on whale shark tourism, broadcasted virtual tours of whale shark tourism, participated in international events such as MotoGP Mandalika and MXGP Samota, provided tourism service training to local communities, and assessed the carrying capacity of whale shark tourism.

A series of research projects have been done in the Bird's Head Seascape to encourage the management of critical manta ray habitats in Raja Ampat, evaluate the impact of Marine Protected Area management on manta ray populations, and promote citizen science as a long-term monitoring of manta ray populations in this region. In addition, our whale shark program in Kaimana has documented 76 whale shark individuals to date. We are restarting cetacean population monitoring programs in both Raja Ampat and Kaimana.

This year, as part of the StAR Project, we worked closely with partners to successfully import zebra shark eggs, nursing and hatching three of them in Raja Ampat. We performed these research projects in collaboration with global, national, and ecoregional experts to expand our understanding of threatened species and promote increased science-based management efforts.

We would like to thank you the Indonesian government for welcoming us as a partner in the joint management of threatened species in Indonesia. Thank you also to partners, donors and supporters who have financially and morally supported our work.

See you in the Fiscal Year 24 (July 2023 to June 2024) Impact report.

Best wishes

VICTOR NIKIJULUW, PH.D.

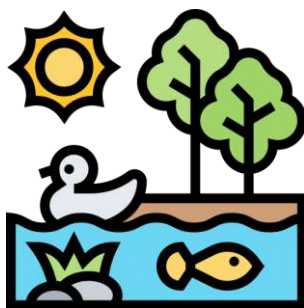
MARK ERDMANN, PH.D.



### Species Protected

**55 species**

*Number of threatened species (near threatened, vulnerable, endangered, and critically endangered) recorded during scientific monitoring and safeguarded within a designated conservation area or for which protection measures are implemented.*



### Protected Area Improved

**2,232,664 ha**

*Enhance the management of conservation areas by conducting research on the population status of endangered species and their critical habitats, evaluating the effectiveness of conservation area management plans in safeguarding these habitats, and offering recommendations for sustainable management and utilization.*

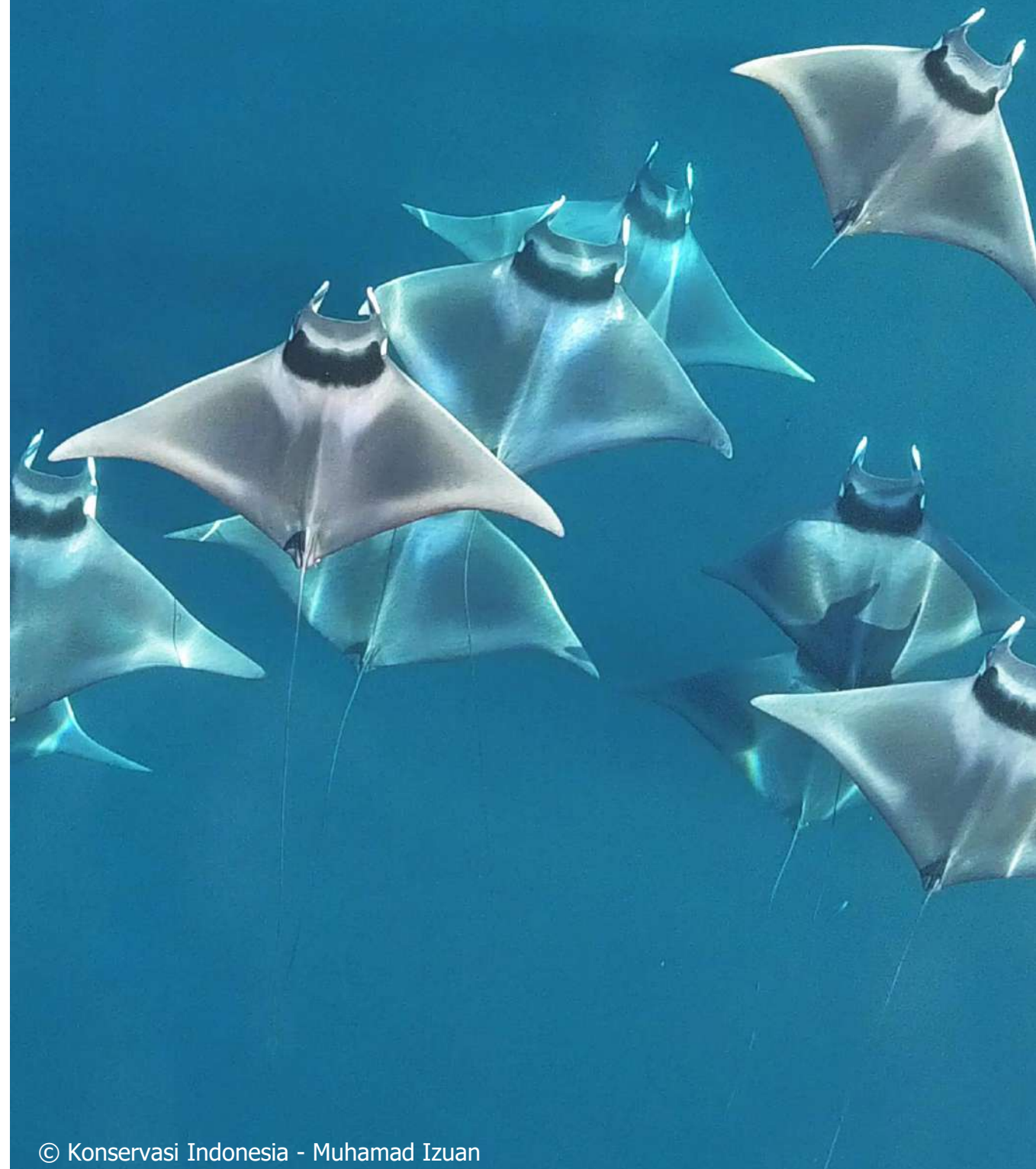


### People transformed

**849 people**

*Number of individuals who have received training and support to enhance their conduct in terms of respecting nature and wildlife*

# ORGANIZATIONAL IMPACT



# OUR FOCAL SPECIES

- Program locations
- Office in Jakarta
- Konservasi Indonesia Office
- Sundaland
- Sunda Banda
- Sahul - Papua
- 📍 Maintained program and priority site
- 📌 Strategic activities (adhoc)
- 🏛️ National initiative

## Manta ray



Site program:  
📍 C

## Zebra shark



Site program:  
📍 C

## Hammerhead shark



Site program:  
📌 D

## Whale shark



Site program:  
📍 A & E

## Walking shark



Site program:  
📍 C & E

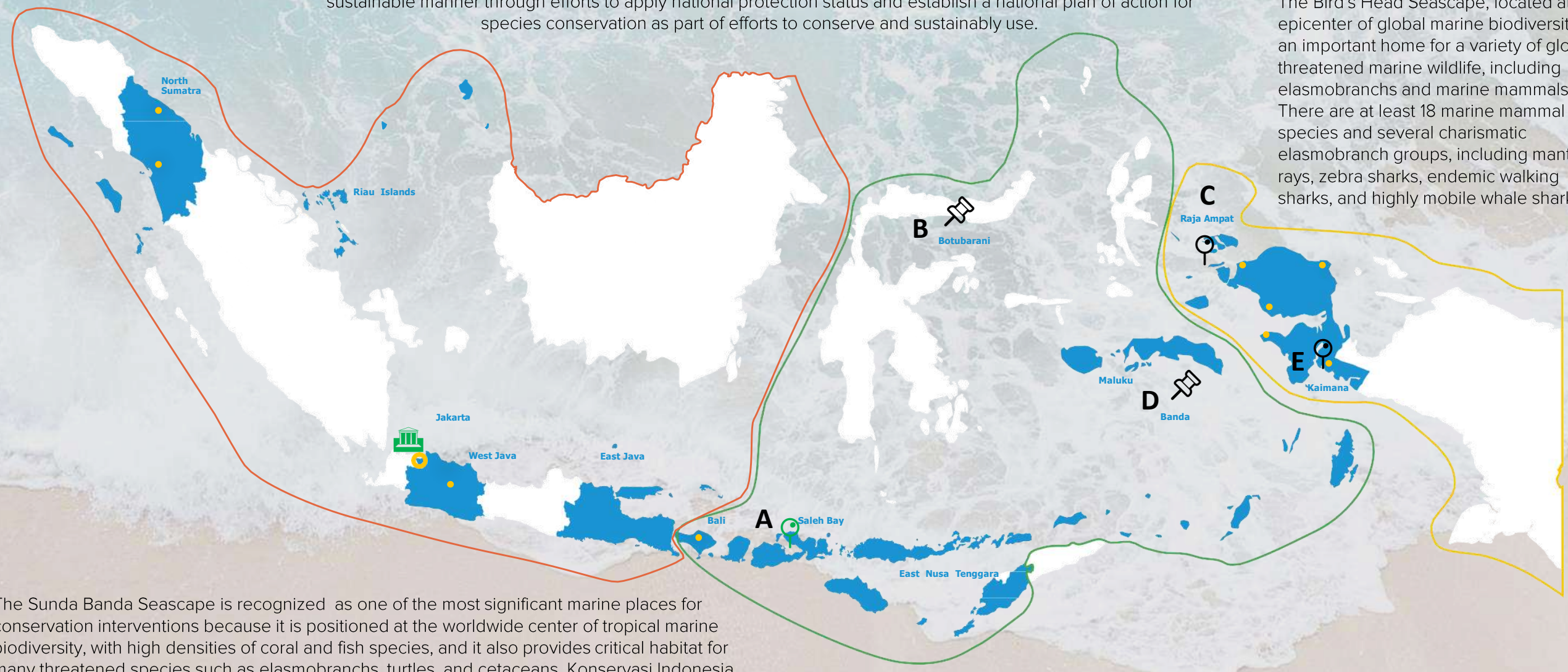
## Cetacean



Site program:  
📍 C & E

Our work at the national level is supporting the central government in efforts to manage threatened species in a sustainable manner through efforts to apply national protection status and establish a national plan of action for species conservation as part of efforts to conserve and sustainably use.

The Bird's Head Seascape, located at the epicenter of global marine biodiversity, is an important home for a variety of globally threatened marine wildlife, including elasmobranchs and marine mammals. There are at least 18 marine mammal species and several charismatic elasmobranch groups, including manta rays, zebra sharks, endemic walking sharks, and highly mobile whale sharks.



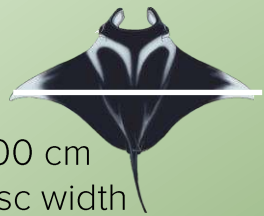
The Sunda Banda Seascape is recognized as one of the most significant marine places for conservation interventions because it is positioned at the worldwide center of tropical marine biodiversity, with high densities of coral and fish species, and it also provides critical habitat for many threatened species such as elasmobranchs, turtles, and cetaceans. Konservasi Indonesia works in three key areas for wildlife conservation interventions in the SBS: whale sharks in Saleh Bay (West Nusa Tenggara) and Botubarani (Gorontalo), and hammerhead sharks in the Banda Sea (Maluku).



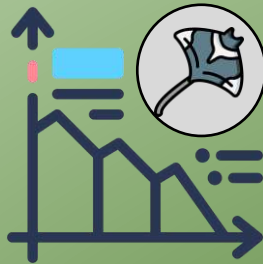
7 | PEOPLE NEED NATURE TO THRIVE



Reef manta ray (*Mobula alfredi*)



The Reef Manta Ray is widely distributed in tropical and sub-tropical waters throughout much of the Indian and Pacific Oceans, from the surface down to depths of 432 m.



Global population unknown. But some local and regional population sizes have been estimated and are mostly smaller than 1,000 individuals, except for the Maldives, where the population estimate is ~10,000.



Oceanic manta ray (*Mobula birostris*)



The Oceanic Manta Ray is circumglobal in tropical and temperate waters from the surface to 1,000 m depth



The global population size is not known, but local and regional abundance has been estimated and is mostly small, numbering less than 500 individuals, except for Ecuador, where abundance is estimated at more than 2,000 individuals.

**Why this they are so important ecologically?**

They are also crucial to the ecosystem. Manta rays control plankton abundance and diversity and regulate nutrient cycling. Their feeding and diving behavior create a valuable ecological connection between the surface ocean and the deep sea.

**THREATS**



Fisheries



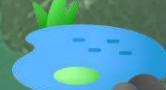
Marine litter



Climate change



Vessel strike



Habitat loss



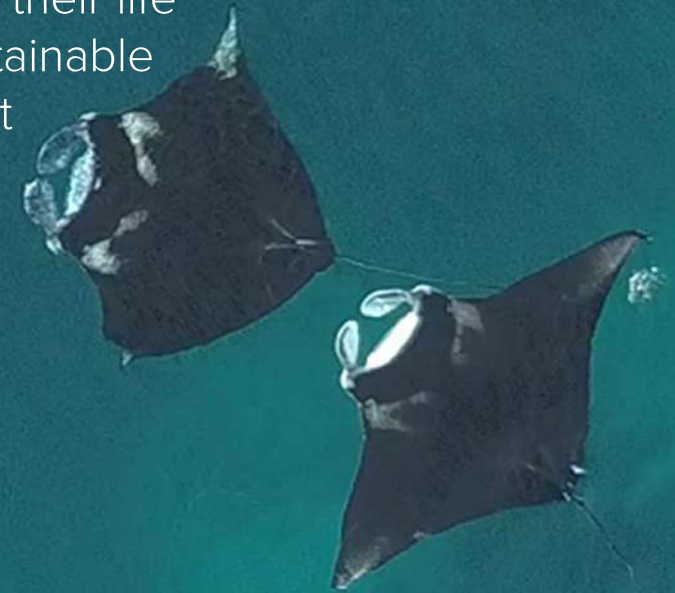
Unsustainable tourism

Fun fact: Manta rays have the biggest brains of any fish. They are capable of learning, remembering, and even recognizing themselves in the mirror.

# MANTA RAY

**OUR GOAL:**

Indonesia's largest population of manta rays in the Bird's Head Seascape continues to thrive as a result of management partnerships that protect critical habitats that support their life cycle, as well as sustainable tourism management



# WHAT WE DO



Objective 1: Strengthening data and information on the population of manta ray in Bird's Head Seascape to effectively support their conservation and tourism

1. Identify and monitor population parameters of manta ray population, such as biology, ecology, distribution, social structure, and threats that will be utilized for conservation strategies and action plans.
2. Develop a manta ray regional database that is publicly accessible to get updated information on the manta ray population in BHS.



Objective 2: Strengthening policies on conservation and sustainable use

1. Support governments and communities to protect critical habitats and manta ray populations by establishing marine protected areas, revising zoning and management plans, and developing strategic conservation action plans.
2. Support the Marine Park Management Authority to establish policies to strengthen sustainable ecotourism practices.



Objective 3: Reducing tourism pressure on the manta ray population

1. Carrying capacity assessment of manta ray tourism.
2. Establish a code of conduct for manta ray tourism.
3. Establish a mechanism for regulating the technical implementation of quota-based manta ray tourism.
4. Monitor and evaluate the implementation of manta ray tourism.



Objective 4: Improving the participation of key stakeholder on manta ray conservation

1. Support regular meetings of the manta ray working group in Raja Ampat to identify emerging issues on manta ray conservation.
2. Build partnerships with the resorts, homestays, dive operators, and liveaboard in Raja Ampat to implement citizen science and education programs for tourists.
3. Support the Marine Park Management Authority to conduct community outreach and capacity building to the local community to be involved in manta ray conservation and ecotourism.





# MANTA RAY CONSERVATION PROJECT HIGHLIGHTS

## 1 Manta ray population studies have been published in high-impact scientific peer-reviewed journal

### Innovation research: Pioneered the use of drones to measure the size of reef manta

We utilize commercially available drones (DJI Mavic 2 Pro drones) to determine morphometric measurements and record key demographic parameters of reef manta rays in Raja Ampat, Indonesia. Accurate size measurements are crucial for tracking conservation successes across species since they can assist identify age, maturity status, and overall population demographics. The results of the study reveal that measurements taken using drones are very accurate, which can help scientists develop models that can predict measurements that are unmeasured or measured inaccurately. This innovative approach can be used to accurately "snap-shot" the size distribution of aggregations of surface-feeding reef manta rays and to identify the sex and maturity of larger individuals, all with minimal to no negative impact on this vulnerable species.



Please read full article for further information:  
[Setyawan, Edy, et al. "How Big Is That Manta Ray? A Novel and Non-Invasive Method for Measuring Reef Manta Rays Using Small Drones." Drones. 6.3 \(2022\): 63.](#)



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### Discover the world's first reef manta nursery area

A long term (2013-2021) on newborn and juvenile reef mantas were conducted in Wayag lagoon to provide conclusive evidence that this area is a critical nursery habitat for this globally vulnerable species. These significant discoveries have been used to support the development of management plans to especially conserve the Wayag lagoon and its function as a manta ray nursery. Safeguarding this nursery could ultimately be crucial for the survival and recovery of reef manta populations in the region.

- The lagoon Wayag has met the following three nursery ground criteria:
1. Newborn and juvenile manta rays are more commonly encountered in this area than in other areas
  2. Newborn and juvenile manta rays tend to stay and/or return to this area for extended period
  3. The nursery area is used repeatedly by newborn and juvenile manta rays across years

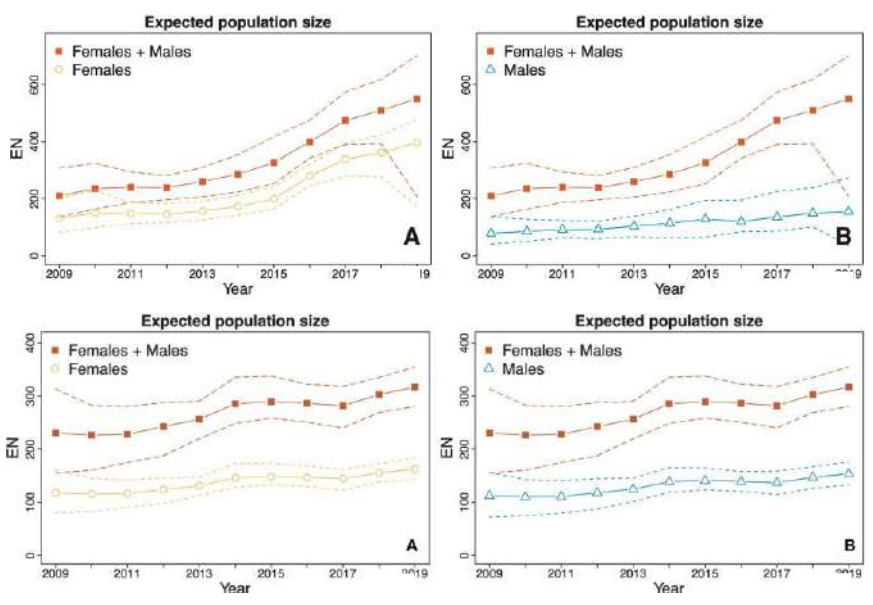
Please read full article for further information:  
[Setyawan, E., et al. "Residency and Use of an Important Nursery Habitat, Raja Ampat's Wayag Lagoon, by Juvenile Reef Manta Rays \(\*Mobula alfredi\*\). Front." Mar. Sci. 9 \(2022\): 815094.](#)



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**BIG WIN ! Raja Ampat's Reef Manta Population is Thriving**

Konservasi Indonesia coauthored an 11-year study on reef manta population monitoring in Raja Ampat. This study suggests that the thriving manta population is a result of a suite of strong conservation measures enacted over the last 15 years, including the implementation of a large-scale and effectively managed network of Marine Protected Areas (MPAs) and the designation of Raja Ampat as SE Asia's first shark and ray sanctuary, as well as national level protection of manta rays and a series of manta ray tourism management regulations put into place in Raja Ampat.



Estimates (solid lines) and CIs (dotted and dashed lines) derived from model averaging procedures for the *M. alfredi* subpopulation in the SE Misool MPA (above) and Dampier Strait MPA (below).

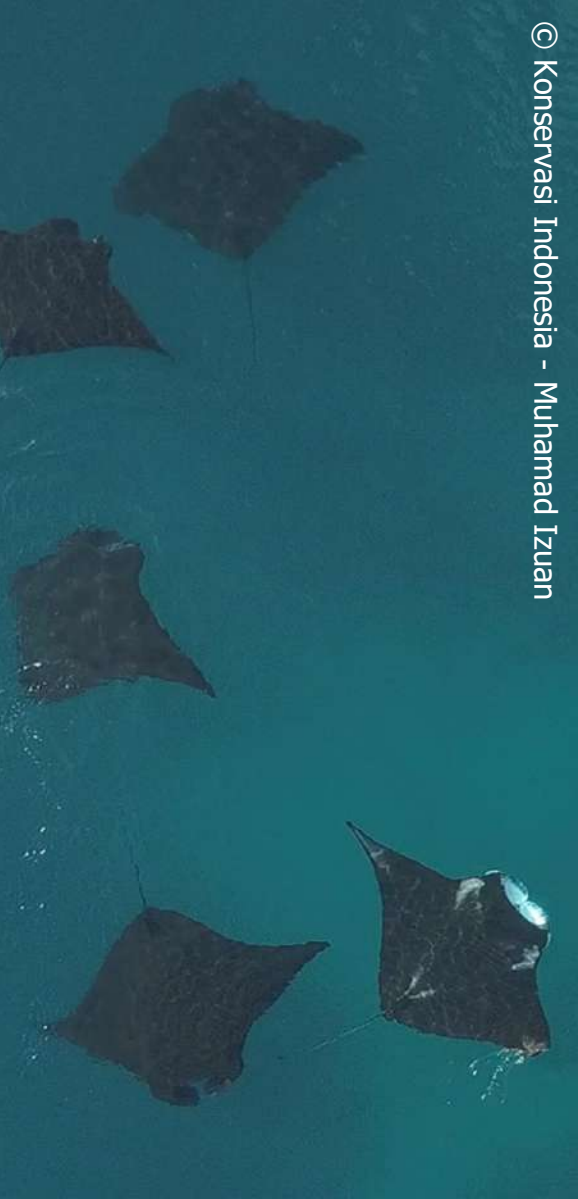
Raja Ampat's reef manta population has been growing annually since 2009 (roughly 3.9-10.7% per year) - the first and only manta population worldwide to report a growing, thriving population, unlike most global populations of which most are in decline or holding steady.

Please read full article for further information: Setyawan, Edy, et al. "Population estimates of photo-identified individuals using a modified POPAN model reveal that Raja Ampat's reef manta rays are thriving." *Front. Mar. Sci.* (2022).

**Timeline of key milestones in conservation and management of manta rays in the Bird's Head Seascape**

<b>2001</b> Marine Rapid Assessment (MRAP) identifies Raja Ampat as global epicenter of marine biodiversity and top conservation priority	<b>1993</b> Ministry of Forestry designates the Raja Ampat Marine Wildlife Sanctuary as the first of Raja Ampat's MPAs
<b>2006</b> Traditional adat communities declare five new MPAs in Raja Ampat.	<b>2003</b> Traditional ( <i>adat</i> ) communities of Raja Ampat issue the Tomolol Declaration expressing their solidarity in halting illegal and destructive fishing in Raja Ampat
<b>2009</b> Raja Ampat MPA zonation regulations forbid all forms of net-fishing and long-lines in MPAs	<b>2007</b> Raja Ampat MPA network (seven MPAs) formally established through governmental regulations*
<b>2012</b> Full protection of all sharks and rays in Raja Ampat waters	<b>2010</b> Restriction on the use of destructive fishing gears and capture of sharks and manta rays in Raja Ampat to support sustainable fisheries and tourism
<b>2014</b> Full protection of both species of manta rays in Indonesian territorial waters	<b>2013</b> CITES COP16 lists both species of manta rays on Appendix II; First Indonesian National Symposium on Conservation of Sharks and Rays
<b>2017</b> Manta Sandy ranger post and manta tourism protocol implemented	<b>2016</b> Development of Raja Ampat Manta Task Force ("POKJA MANTA"); Special tourism rules formulated for Wayag lagoon manta nursery area
<b>2020</b> Bird's Head Seascape MPA Network expands to include 26 MPAs totaling 5,229,782 ha, with over 90% of known manta ray sites included within these MPAs	<b>2019</b> Expansion of MPA network in Raja Ampat to include additional reef systems with known manta ray aggregations and nurseries

\* Governmental regulations issued by Raja Ampat government and the Indonesian Ministry of Marine Affairs and Fisheries: 1. Regional Regulation 66/2007, 2. Regional Law 27/2008, 3. Regional Regulation 5/2009, 4. Ministerial Decree 64/2009, 5. Ministerial Decree 65/2009, 6. Ministerial Decree 36/2014



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**LESSON LEARNED: Success Story on Manta Ray Conservation**

Two decades of manta ray conservation in the Bird Head Seascape (BHS) have been documented and published in the *Journal of Marine Policy*. This article describes how science-based management and strong initiatives and collaboration among local communities, government, non-governmental organizations (NGOs), academia, and the private tourism sector in developing and implementing an extensive network of MPA, fishing gear restrictions, shark and ray sanctuary, and tourism management has allowed the BHS manta ray population to thrive. The initiative and momentum generated by Raja Ampat's efforts to conserve sharks and rays eventually inspired other regency in Indonesia to follow suit in safeguarding manta rays in their waters. Furthermore, the "mantanomics" argument, which promotes manta conservation over fisheries exploitation, as well as the role of celebrities in national manta awareness campaigns, have supported national efforts to protect manta rays.

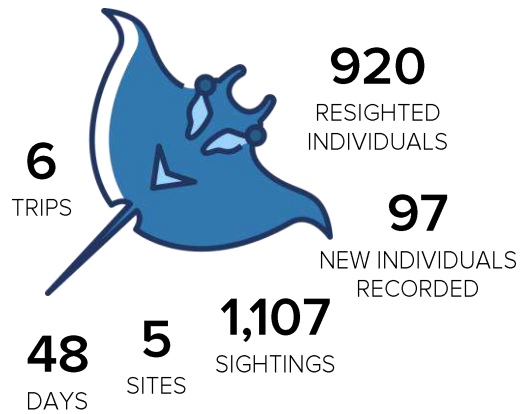
Please read full article for further information: Setyawan, Edy, et al. "A holistic approach to manta ray conservation in the Papuan Bird's Head Seascape: Resounding success, ongoing challenges." *Marine Policy*. 137 (2022): 104953.

\*mantanomic: the study of economic benefits of live mantas as a part of sustainable tourism compared to mantas caught and sold as a target fishery

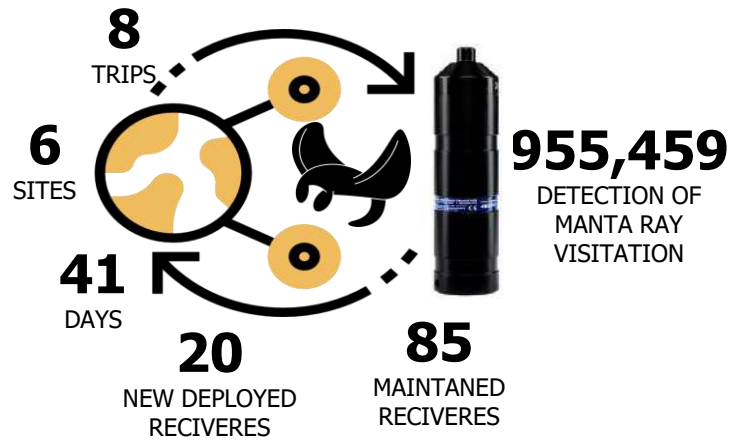
15 | PEOPLE NEED NATURE TO THRIVE

2 Reef manta population monitoring in FY23

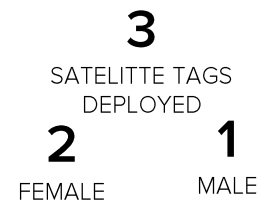
Reef Manta Population Monitoring



Acoustic Receiver Array Maintenance



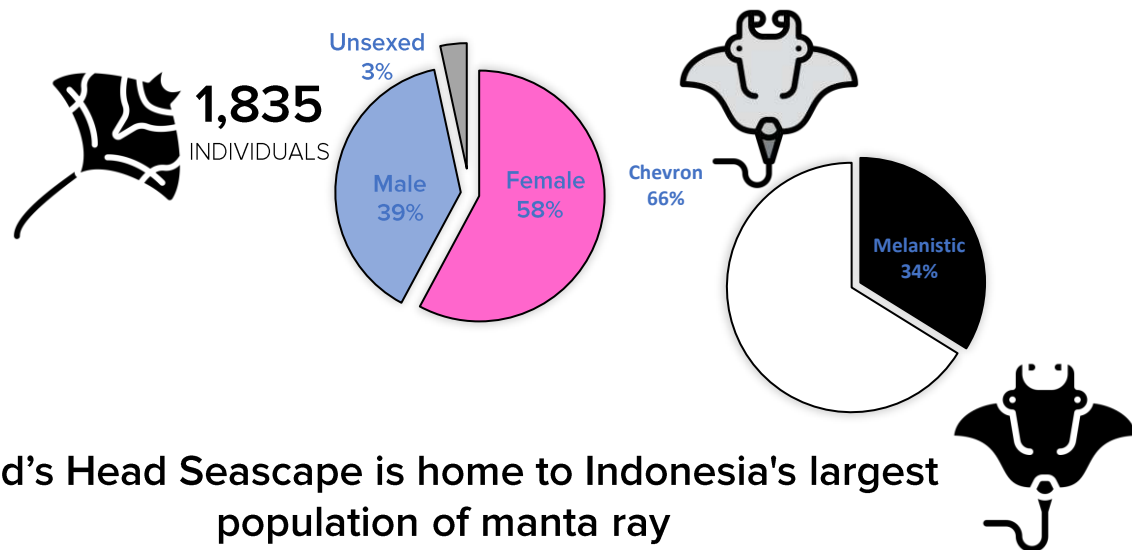
5 Acoustic and Satellite Telemetry



190-240  
RANGE OF ESTIMATED SIZE (CM)

220-380  
RANGE OF ESTIMATED SIZE (CM)

Overall population demographic



Bird's Head Seascape is home to Indonesia's largest population of manta ray



NEW CLEANING STATION DISCOVERED IN WAYAG LAGOON

© Konservasi Indonesia - Muhamad Izuan

The first batch of internship programs received 9 applications, and two were chosen as interns for two months to participate in research on the Raja Ampat's reef manta population.

RAJA AMPAT MANTA RAY RESEARCH INTERNSHIP PROGRAM LAUNCHES FIRST BATCH



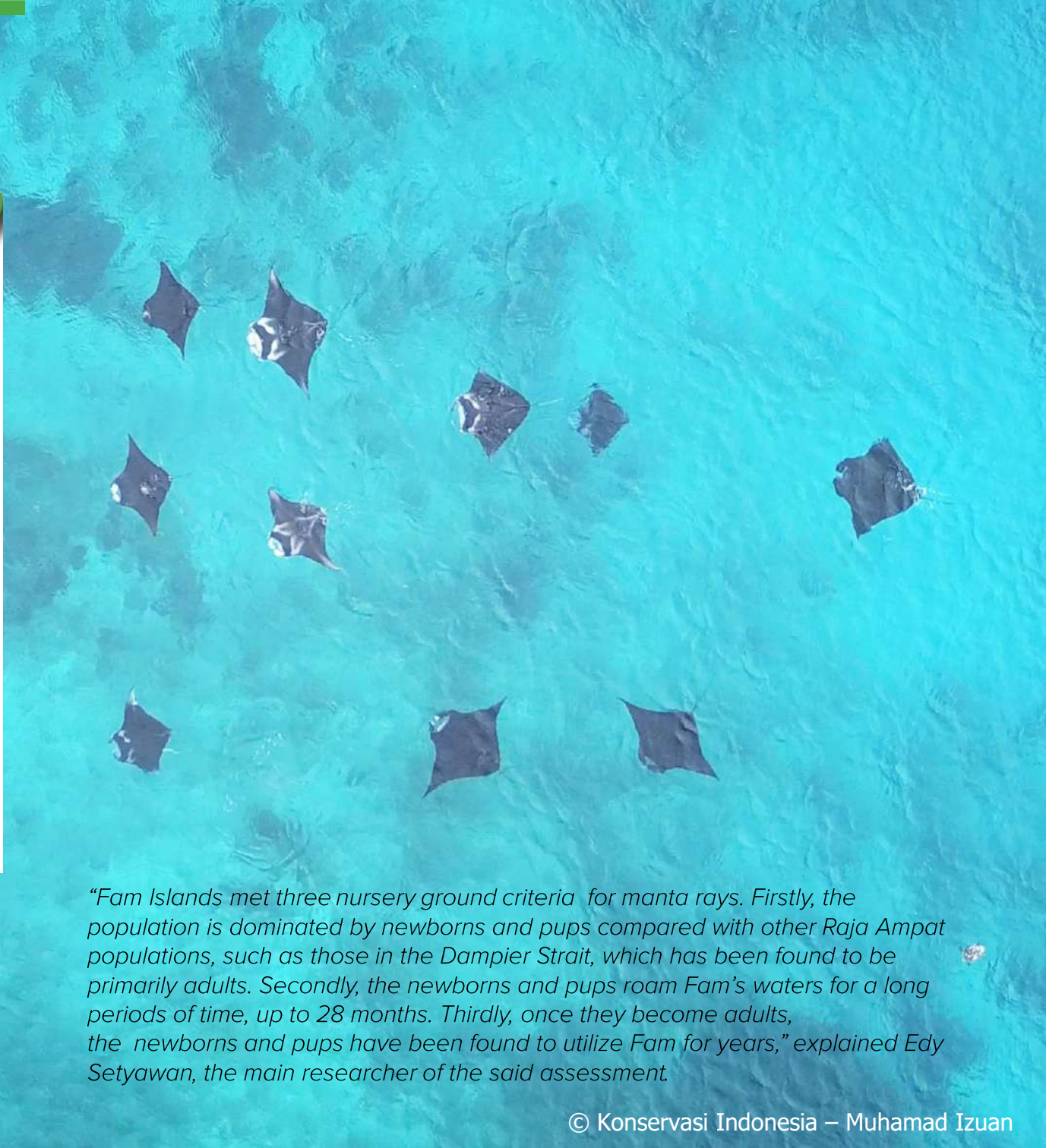
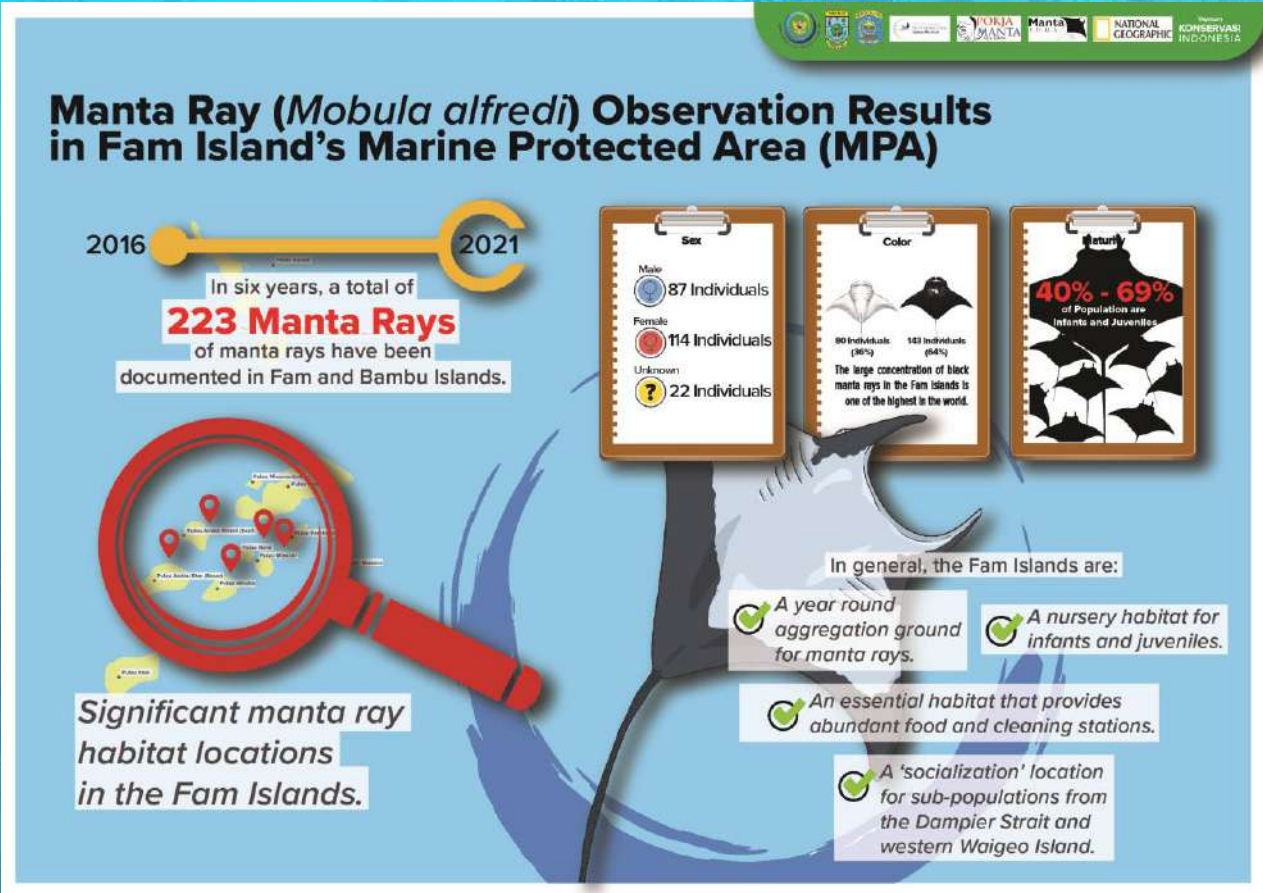
### 3 Establishing partnerships with dive resorts and tourism operators to engage them in citizen science to survey manta rays

Since late 2022, citizen science has contributed to 357 recorded reef manta sightings. At least 44 citizen scientists have submitted their ID to Konservasi Indonesia. Through the program, 233 individuals have been identified, including 38 new IDs. Citizen science plays a valuable role in wildlife conservation efforts.

Current Partner:  
Papua Paradise Eco Resort  
Papua Diving  
Raja Ampat Divers  
Arborek Dive Shop



### 4 Communities and park authorities collaborate to protect manta rays' nursery ground on Fam Islands



“Fam Islands met three nursery ground criteria for manta rays. Firstly, the population is dominated by newborns and pups compared with other Raja Ampat populations, such as those in the Dampier Strait, which has been found to be primarily adults. Secondly, the newborns and pups roam Fam’s waters for a long periods of time, up to 28 months. Thirdly, once they become adults, the newborns and pups have been found to utilize Fam for years,” explained Edy Setyawan, the main researcher of the said assessment.

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Pictured is one of the researchers involved in the assessment, Muhamad Izuan, during a presentation in the dissemination event in Fam Islands on June 4, 2022.

© Konservasi Indonesia - Rens Lewerissa

The dissemination event was attended by 44 participants from three villages: Pam, Saukabu, and Saupapir. Several agreements related to the area’s management, generated from the event are:

- Development of specific sub-zones to protect the nursery habitat and its population of manta ray newborns and juveniles.
- Prioritizing utilization of manta-based tourism for Fam’s local communities.
- Implementation of a code of conduct and standard operating procedures that must be rigidly applied in the context of manta-based tourism in Fam Islands.

**Road to Ocean 20:**  
International Seminar (Hybrid)  
**How Effective Management of a Marine Protected Area Benefits Manta Ray Conservation and Tourism**  
Jakarta, 11th of October 2022  
12.00 - 16.00 (Western Indonesia Time)

**Registration:**  
<https://bit.ly/o20regis>

**Speech:**  
**Meizani Irmadhiany**  
*Executive Chair  
Konservasi Indonesia*

**Speech (TBC):**  
**Mochammad Firman Hidayat, SE., MA.**  
*(act) Deputy Coordinating  
Minister for Maritime Resources  
Coordinating Ministry for Maritime Affairs  
and Investment*

**Opening Remark:**  
**Drs. Victor Gustaaf Manoppo, M.H.**  
*Director General of Marine Spatial Management  
Ministry of Marine Affairs and Fisheries*

**Keynote 1 (TBC):**  
**Drs. Paulus Waterpauw, M.Si.**  
*Acting Governor of West Papua*

**Keynote 2:**  
**M. Firdaus Agung Kurniawan, S.T., M.Sc., Ph.D.**  
*Director Marine Conservation and Biodiversity  
Ministry of Marine Affairs and Fisheries*

**Panel Session 1**  
**Syafri, S.Pi.** (Head of the Raja Ampat Islands Marine Conservation Area Authority). Topic: MPA Management • **Edy Setyawan** (Ph.D. Student, Institute of Marine Science, The University of Auckland) Topic: Manta Ray Conservation in Raja Ampat • **Betty Laglbauer** (Researcher, the Manta Trust) Topic: Global perspective for Manta Ray Conservation and Management

**Panel Session 2:**  
**Dr. Maulita Sari Hani** (Senior Project Specialist, Tourism Market Intelligent and Competitiveness Department – UNWTO Regional Office for the Middle East) Topic: Wildlife Ecotourism and Rural Development • **Drs. Vinsensius Jemadu, MBA.** (Deputy for Destination and Infrastructure Development, The Ministry of Tourism and Creative Economy) • Topic: Sustainable Tourism in Indonesia • **Hafizh Adyas** (Marine Program Specialist, USAID Indonesia) Topic: Sustainable Financing

**Special Guest:** **Hamish Daud** (Indonesian Ocean Pride) • **Panel Moderator:** **Yogi Yanuar, S.T., M.Si.** (Coordinating Ministry for Maritime & Investment Affairs, Indonesia), **Ir. Agustina Murbaningsih, M.Si.** (Ministry of Marine Affairs and Fisheries)



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As part of Road to OCEAN 20, the international seminar titled “How effective management of a marine protected area benefits conservation and tourism” was held in Jakarta on October 11, 2022. The Ocean 20 aims to stimulate systemic collaboration in maximizing the potential of a sustainable marine economy. This seminar discussed how effective the marine protected area model demonstrated in Raja Ampat has an impact on improving the condition of natural resources and the economy of local communities. Innovation in applying the financial management model of the Regional Public Service Agency and trust funds has allowed them to fill the gap in funding the annual cost for MPA management.

Effective MPA management, as demonstrated by the MPA network across Raja Ampat and the Bird’s Head Seascape, has played a significant role in maintaining and improving the quality of the ecosystem and habitat in Raja Ampat to support the life cycle of manta rays, such as allowing them to productively procreate (high fecundity), providing a healthy, safe, and productive environment for life support systems such as nursing, feeding, and cleaning.



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Manta rays are categorized as a vulnerable species negatively impacted by fishing activities. The manta rays also have high economic value as a tourism asset compared to fisheries products. The strong economic argument provides a clear justification for the conservation and tourism of manta rays by ensuring their habitat is protected through effective conservation area management and prohibiting all extractive uses such as fisheries. Tourism is a potential catalyst for development, wildlife protection, and conservation.

In conclusion, this seminar highlighted the importance of scaling up the application of the MPA management model in Raja Ampat by applying the financial management model in the MPA management body using regional technical management units, implementing effective MPA networks for highly mobile species management, encouraging G20 countries to implement joint transboundary conservation programs, developing and applying ocean account scheme for conservation measure, and positioning marine wildlife such as manta rays, whale sharks, and marine mammals as a priority in developing sustainable tourism.

Registration:  
459 people

Attendance:  
192 participant

**LIVE**  
 Streaming  
YouTube:  
778 views

Video of  
event

Seminar  
report



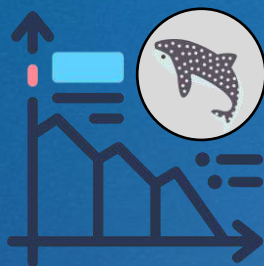
## Whale shark (*Rhincodon typus*)



1800 cm disc width



The Whale Shark has a circumtropical distribution through all tropical and warm temperate seas, apart from the Mediterranean. Whale Sharks are found in both coastal and oceanic habitats



A large global genetic study has demonstrated that the Whale Shark subpopulations in the Atlantic and Indo-Pacific are functionally separate. Modelled global population estimates and habitat availability, it is inferred that approximately 75% of the global Whale Shark population occurs in the Indo-Pacific, and 25% in the Atlantic. However, it is likely that the global Whale Shark population has declined by >50% over the last 75 years. A global database online at Wildbook for Whale Sharks ([www.whaleshark.org](http://www.whaleshark.org)) identified 18,713 individual sharks. Finally, based on latest green assessment demonstrate that within 100 years it would be possible for **The Whale Shark to Fully Recover**; climate shifts, and potential effects on plankton productivity, are not expected to limit Whale Shark habitat availability. **Therefore, the Recovery Potential for The Whale Shark is High, but achieving this will require concerted and sustained effort.**

### Why this they are so important ecologically?

They play important role for transporting nutrients from productive coastal waters and offshore frontal regions to nutrient-poor areas. Whale shark also likely play a role in opposing the downward flux of carbon to the deep ocean, while transferring energy and materials, including key limiting nutrients such as nitrogen from the mesopelagic up to the euphotic zone. Moreover, they are contributing to the resilience of tropical marine systems. Dead Whale Sharks sink to the seafloor, where they provide food and habitat for deep-sea organisms.

### THREATS



Fisheries



Marine litter



Vessel strike



Unsustainable tourism

Funfact: Whale shark are the largest fish in the world that consume large quantities of zooplankton biomass and small fishes that closely associated with tuna in many areas, which may indicate a mutually beneficial relationship with these oceanic top predators.



# WHALE SHARK

## OUR GOAL:

Whale shark populations and critical habitat in Indonesia are protected to contribute to the recovery of a healthy Indo-Pacific whale shark population



# WHAT WE DO



Objective 1: Strengthening data and information on the population of whale shark in Indonesia to effectively support their conservation and tourism

1. Identifying key habitats and aggregation sites for whale sharks to encourage conservation action at the local level.
2. Monitoring whale shark populations and building a photo ID database at key aggregation locations in Indonesia.
3. Mapping core habitat and migration corridors of whale sharks in Indonesia to promote integrated management in the Indo-Pacific region.
4. Identify threats to the whale shark population in Indonesia to promote mitigation efforts.



Objective 2: Strengthening policies on conservation and sustainable use

1. Develop regional, national, and provincial whale shark conservation action plans (e.g., coral triangle).
2. Promote the establishment of whale shark-based MPA in their critical habitat.
3. Support government and community to protect critical habitat and population of whale sharks in the existing MPA through revised zoning and management plan.
4. Assist the government in integrating the migration corridor and core habitat of whale sharks in marine spatial planning.
5. Support the government to establish policies to strengthen sustainable ecotourism practices.



Objective 3: Promote whale shark ecotourism as a model for sustainable use and community empowerment

1. Develop a community-based whale shark ecotourism governance model.
2. Carrying capacity assessment of whale shark tourism.
3. Establish a code of conduct of whale shark tourism.
4. Build the capacity of local communities for the implementation of whale shark ecotourism.
5. Assist communities to create a positive business model in supporting whale shark ecotourism.
6. Establish a mechanism for regulating the technical implementation of quota-based whale shark ecotourism.
7. Monitor and evaluate the implementation of whale shark ecotourism.



Objective 4: Improving the participation of key stakeholder on whale shark conservation

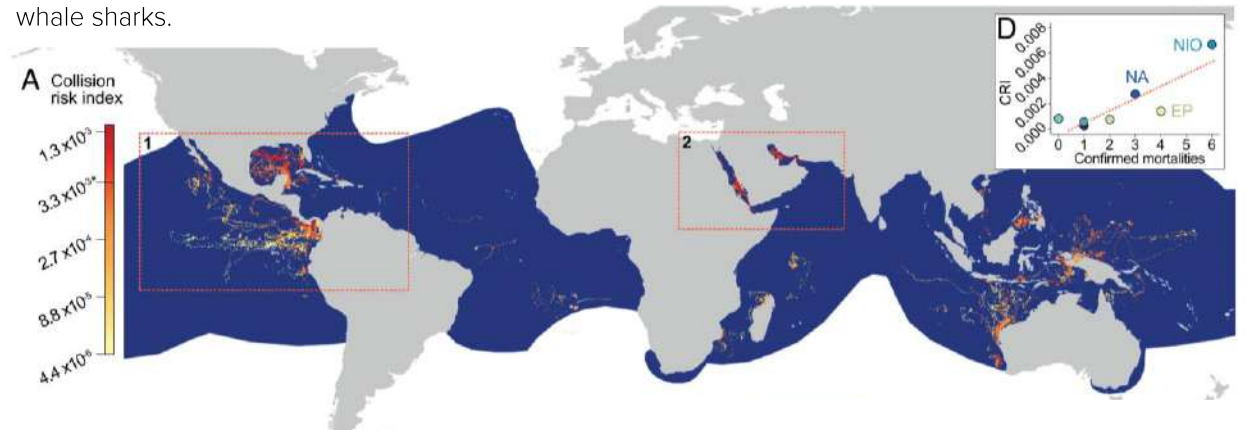
1. Support national annual meetings for monitoring and evaluating the implementation of National Plan of Action for whale shark conservation.
2. Promote whale sharks as a focal species to engage the public and safeguard ecosystems more widely.
3. Build partnerships with resorts, homestays, dive operators, and liveaboard in Saleh Bay and Bird Head Seascape to implement citizen science and education programs for tourists.
4. Support the Marine Park Management Authority to conduct community outreach and capacity building for local communities to be involved in whale shark conservation and ecotourism.



**1 Meta-analysis of whale shark satellite telemetry study have been published in high-impact scientific peer reviewed journal**

**SAVING THE GIANT FISH: Global collision-risk hotspots of marine traffic and whale shark**

Konservasi Indonesia collaborated with 67 scientists from 50 organizations to investigate hotspot overlap from whale shark habitat utilization with global marine traffic. According to the findings of this study, 92% of horizontal movements and nearly 50% of vertical movements overlapped with large vessel traffic (> 300 GT). This is consistent with the discovery of several instances of whale shark deaths caused by vessel collisions in the overlapping area. This analysis suggests that shipping lanes must be regulated to minimize collision risk in areas used as movement corridors (including migration) for endangered species such as whale sharks.



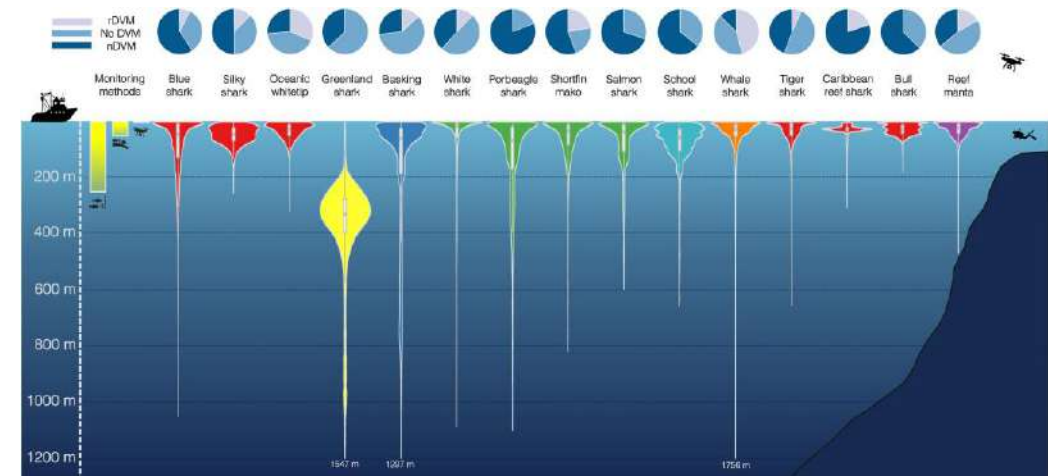
Map showing distribution of the mean monthly overlap and collision risk index that whale sharks were exposed to in overlapping areas within each 0.25° x 0.25° resolution cell

Please read full article for further information:

Womersley, Freya C., Nicolas E. Humphries, Nuno Queiroz, Marisa Vedor, Ivo da Costa, Miguel Furtado, John P. Tyminski et al. "Global collision-risk hotspots of marine traffic and the world's largest fish, the whale shark." *Proceedings of the National Acad*

**The vertical dimension of elasmobranch movement ecology**

We co-authored global studies on the vertical movements of elasmobranchs, which are critical for understanding their ecological roles and exposure to anthropogenic pressures. This is the first global synthesis of vertical habitat utilization by elasmobranchs based on data collected from the deployment of 989 biotelemetry tags on 38 elasmobranch species. This study emphasized the importance of incorporating knowledge of threatened species' vertical habitat usage that was consistent across global oceans into strategies and the potential for standardized management approaches to reduce bycatch and enact effective conservation measures.



Please read full article for further information:

Andrzejczek, Samantha, et al. "Diving into the vertical dimension of elasmobranch movement ecology." *Science Advances*. 8.33 (2022): eabo1754.

Vertical distributions and diel behaviour of 15 elasmobranch species

**WHALE SHARK  
CONSERVATION PROJECT  
HIGHLIGHTS**

## 2 Strengthening policy aspects and practices on whale shark-based ecotourism

### Ministry Marine Affairs and Fisheries issued National Guidance for Whale Shark Tourism

Konservasi Indonesia supports the Government of Indonesia's commitments, one of which is to manage whale sharks through the development of a national guideline for implementing whale shark tourism. Considering that whale sharks have been protected since 2013 and have been strengthened by a national action plan (NPOA) since 2021, it is essential to create national standards for practices for the sustainable use of whale sharks through tourism. Primarily applicable to whale shark NPOA priority sites that have developed whale shark tourism, such as Gorontalo, Saleh Bay, Cenderawasih Bay, Kaimana, Probolinggo, and Berau. This national guideline governs whale shark tourism practices such as:

- Standards of safety, security, and convenience for tourists, tour operators, and tour guides
- Standards of infrastructure and information service for tourism management
- Whale shark tourism protocols, including the national standard code of conduct for whale shark tourism
- Monitoring and evaluation for whale shark tourism
- Reference for whale shark carrying capacity method

\*Director General Decree of Marine Spatial Management, Ministry of Marine Affairs and Fisheries, Republic of Indonesia, Number 41, Year 2022 on Technical Guidance for the Implementation of Whale Shark Tourism. ([Download](#))

### Carrying capacity of whale shark ecotourism in Saleh Bay, West Nusa Tenggara

Responding to an increasing demand for whale shark tours in Saleh Bay, Konservasi Indonesia completed a physical carrying capacity assessment for whale shark tours in Bagan in December 2022. The goal of this analysis is to assess the level of area capacity to accommodate tourist and their threshold of comfort during whale shark tours while minimizing any potential negative impact to whale sharks. Later, the findings of this study will be included into a regulation that aims to improve the management of whale shark tourism in Saleh Bay.



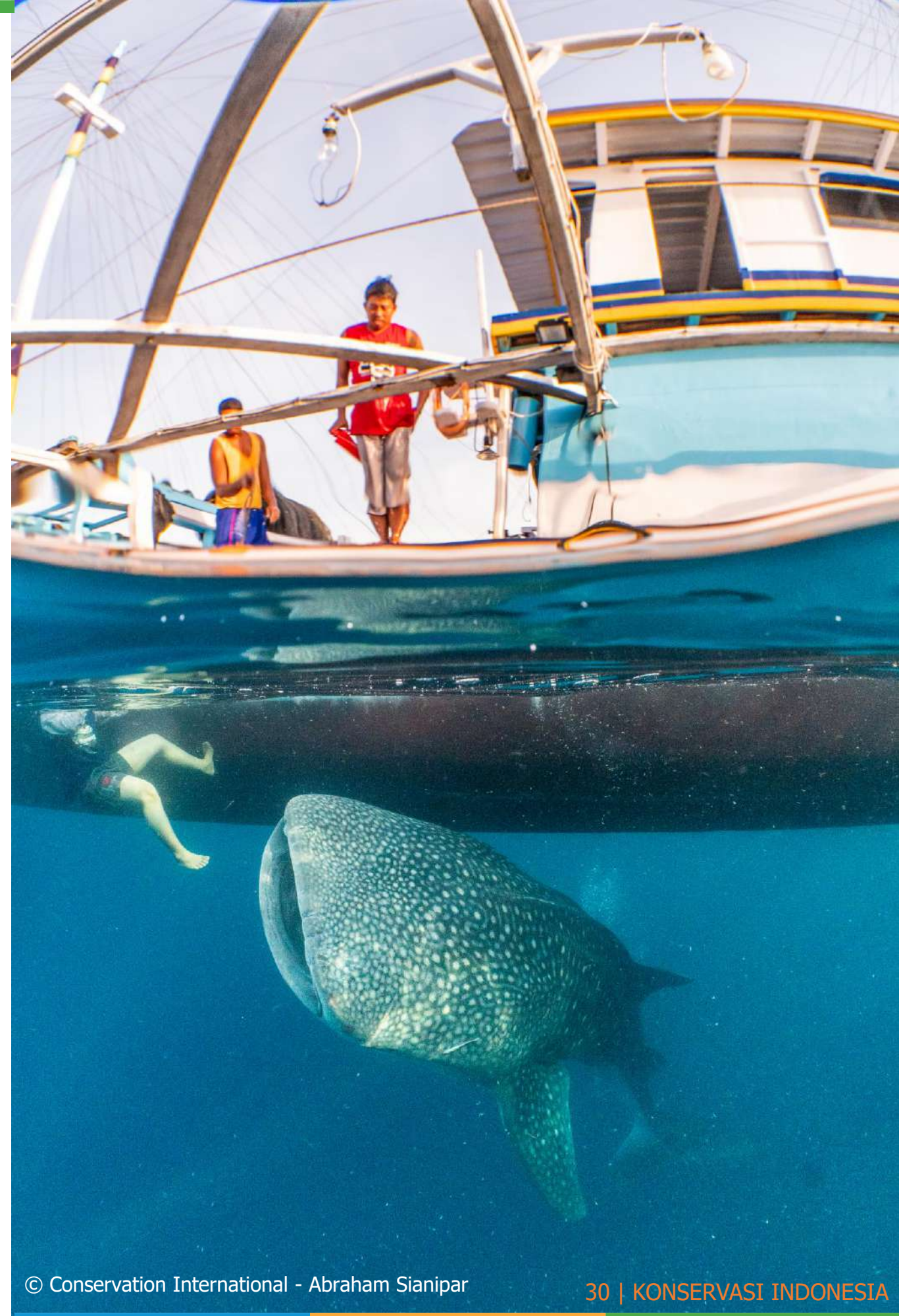
© Conservation International - Abraham Sianipar

#### Code of conduct

**5 times** Rotation per day

**60 minutes** duration for each rotation

**7 diver or snorkeler** max capacity for each rotation



© Conservation International - Abraham Sianipar

3 MoU signing between Sumbawa Government and Konservasi Indonesia to strengthen management of whale shark ecotourism



- Scope of collaboration**
- Public awareness on endangered, threatened, and protected species including whale shark
  - Capacity building on ecotourism management
  - Develop blueprint of conservation and ecotourism of whale shark
  - Strengthen the model of whale shark ecotourism as blue economy for Sumbawa
  - Documentation, publication, and dissemination

4 Whale shark population monitoring FY23

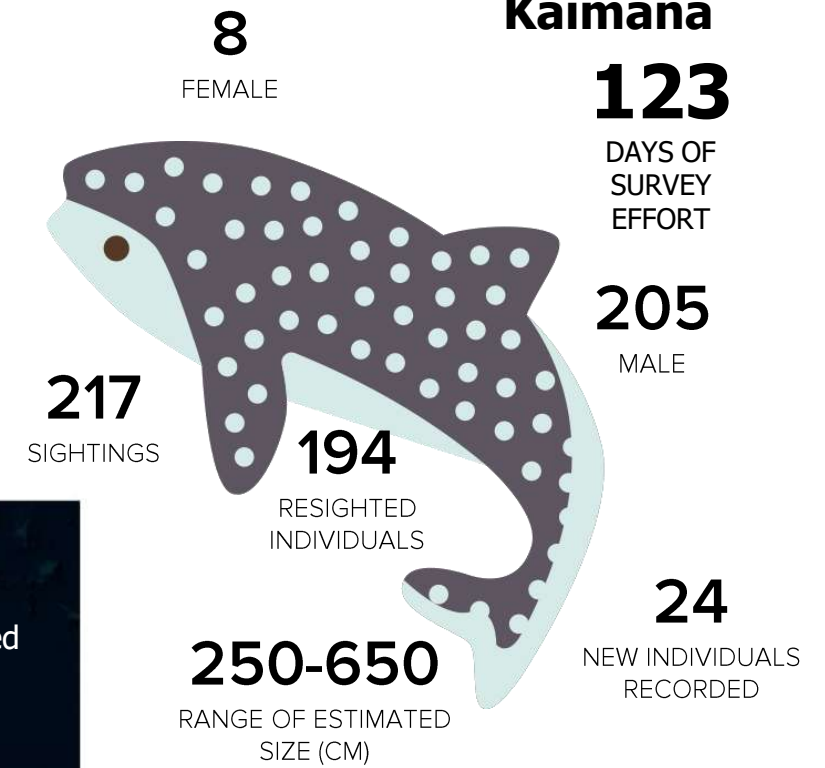
Satellite tagging program

Our team successfully recovered five finmount satellite tags and deployed seven new finmount satellite tags in Saleh Bay. Furthermore, this year we are expanding our whale shark tagging program to Gorontalo. We deploy two finmount satellite tags.

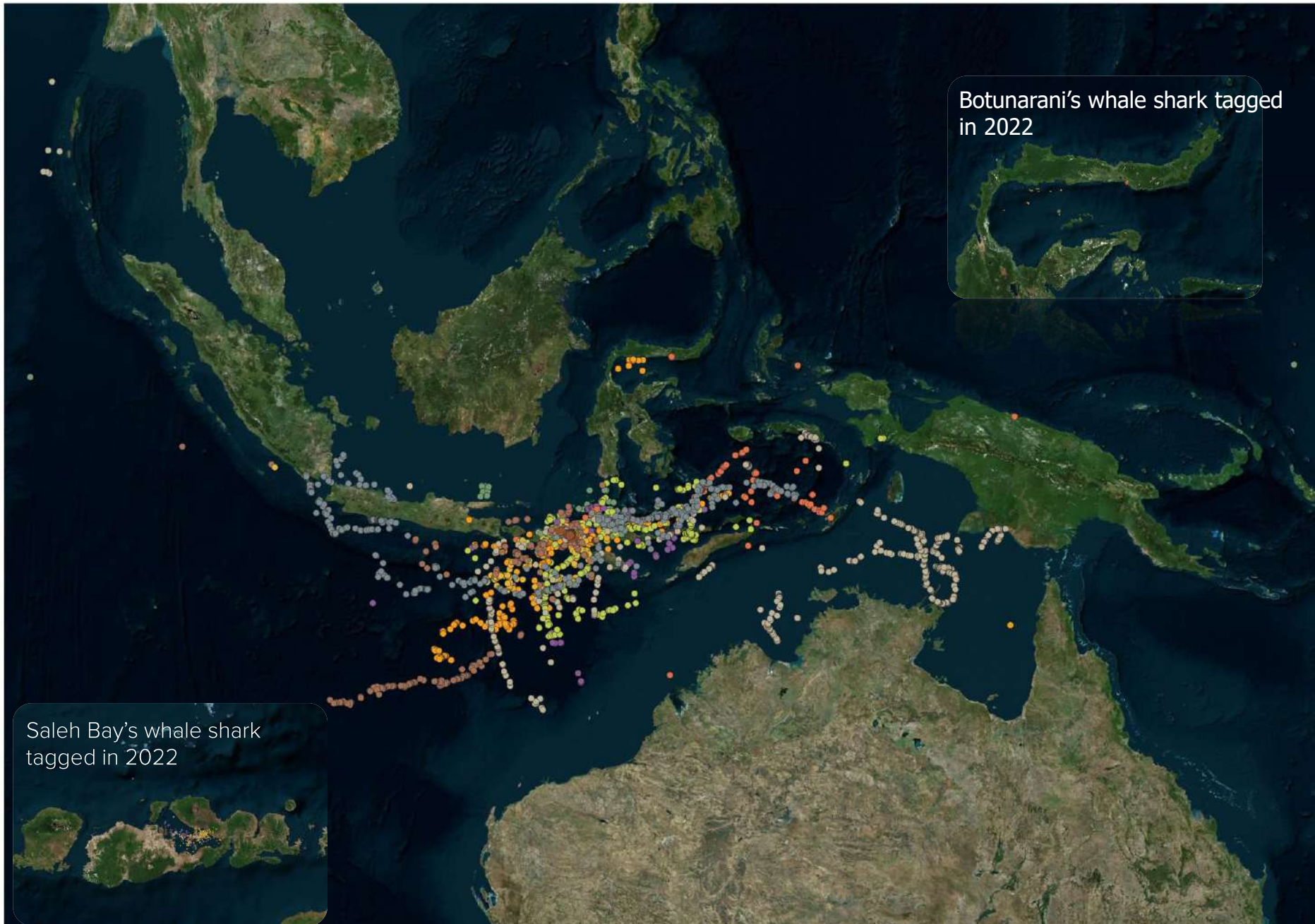
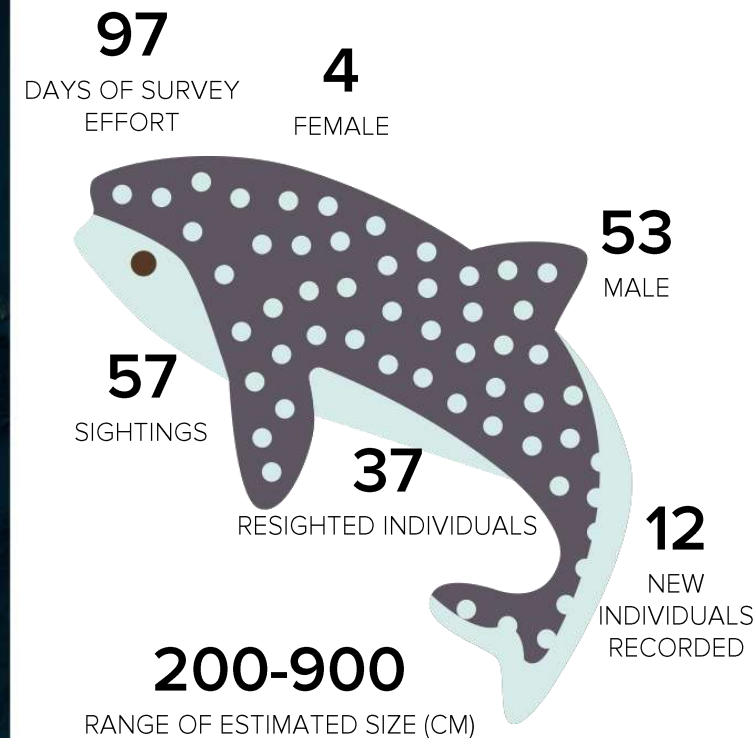
Overall population demographic of whale shark in Indonesia

No	Constellation site	Encounters	Individuals	Trend
1	Cenderawasih Bay	538	153	Neutral
2	Saleh Bay	466	110	Neutral
3	Kaimana	551	97	Increasing
4	Talisayan	178	75	Neutral
5	Gorontalo	891	33	Slightly decreasing
6	Derawan	44	23	Neutral

Photo ID program



Saleh Bay



**3,050** views  
[Steaming link](#)

**5 Outreach and Communication**

**Media featured in CNN Indonesia Insight with Desi Anwar: Conservation and tourism of whale shark in Sumbawa**

This special dialogue program was hosted by senior anchor Desi Anwar. Desi Anwar interviewed the Executive Chair of Indonesian Conservation, Meizani Irmadhiany, in an episode titled "Whale Shark Conservation Tourism in Sumbawa". This episode lasted around an hour and was divided into five segments that discussed global whale shark conservation, knowledge of whale shark migrations in Indonesia, reported cases of whale shark strandings, the potential for whale shark tourism, and whale shark conservation and ecotourism initiatives being developed in Sumbawa.

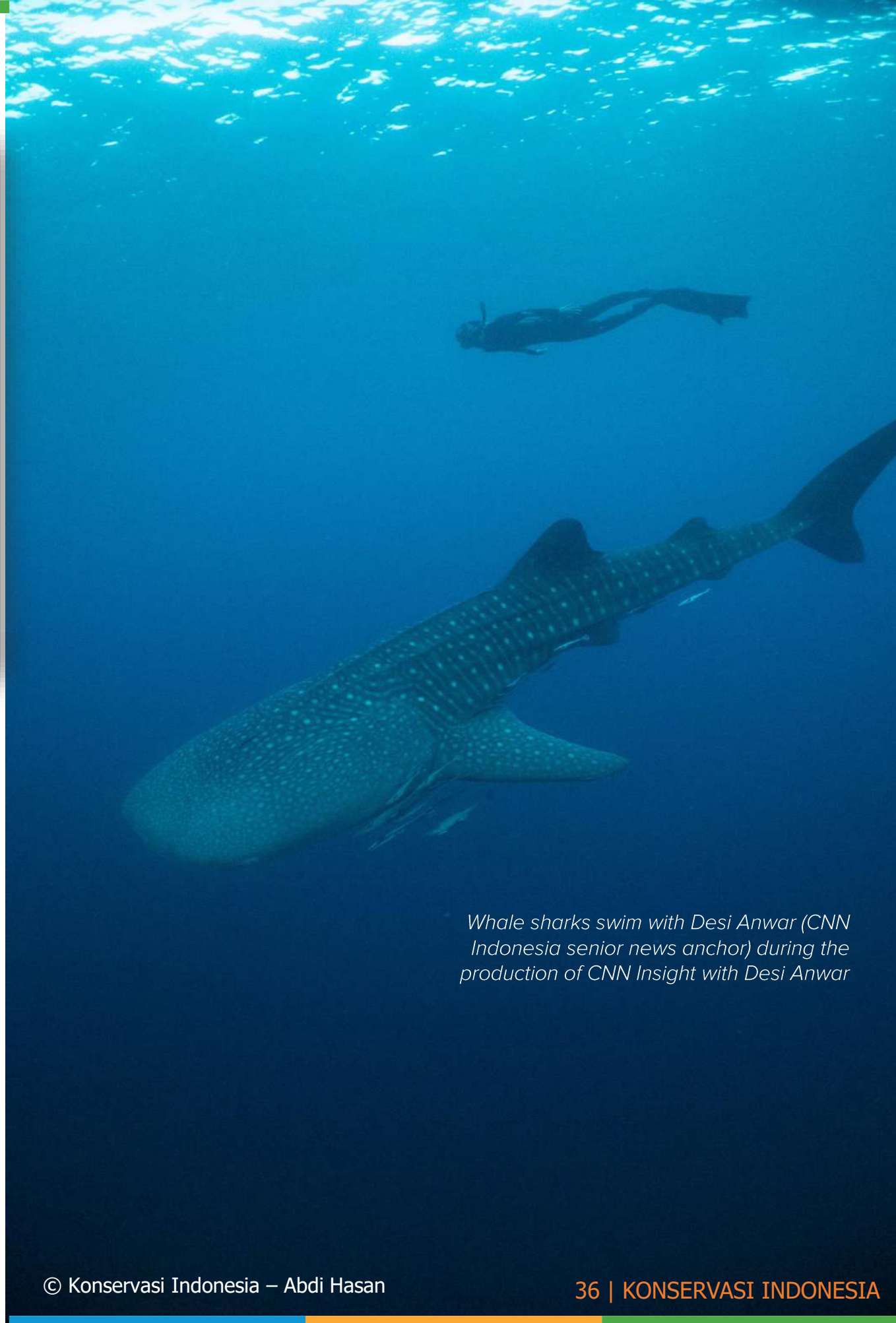


**Virtual Tour: Whale Shark as Sumbawa's icon for conservation and tourism**

This event was organized virtually on in collaboration with Mowilex and the NTB Provincial Government. This Virtual Tour can be used for a variety of future events in order to reach a bigger and more diverse audience and promote awareness on the importance of whale shark conservation in Indonesia.

- The virtual tour was divided into three different segments, including:
- Segment 1: The spirit of Sumbawa, explores Sumbawa's natural beauty, people, history, and culture
  - Segment 2: When two worlds interact, telling the story of a collision of two worlds: fishermen and whale sharks
  - Segment 3: Harmony of the sea, explained the coexistence of people and whale sharks

**238** participant on zoom  
**475** views on YouTube streaming  
[Link streaming](#)



*Whale sharks swim with Desi Anwar (CNN Indonesia senior news anchor) during the production of CNN Insight with Desi Anwar*

### 6 Whale shark tourism and hospitality training



There were 11 courses delivered in this training including housekeeping, hospitality, CHSE, F&B Service, basic administration, management of tourist villages, institutional strengthening, potential mapping, preparation of tour packages, conservation and monitoring of whale shark populations. This training was conducted in two different villages in Saleh Bay with 47 male and 67 female participants. The participant involved in this training were from 4 major stakeholder groups including homestay owners, culinary stall owners, tourism village owners, and bagan owners

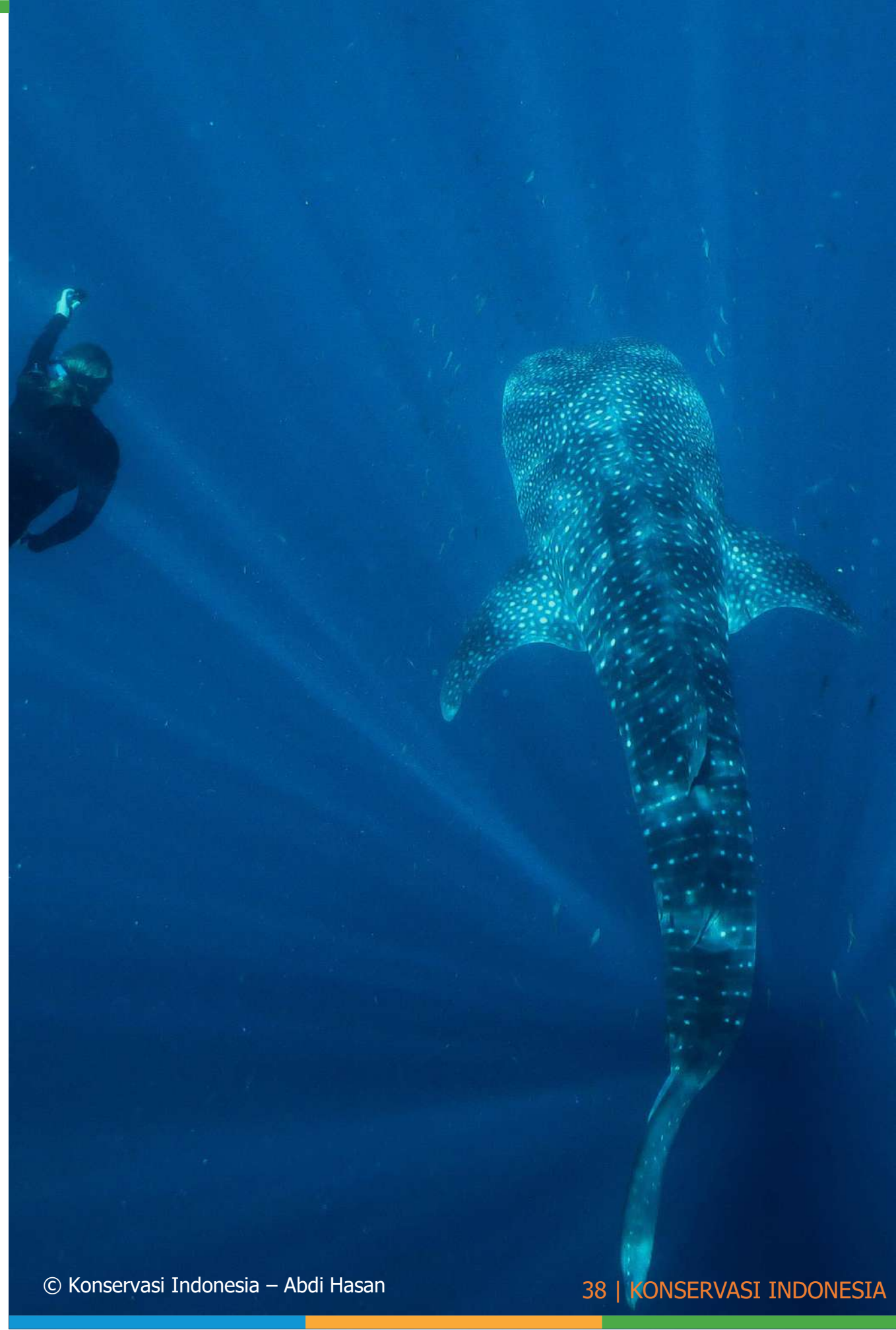
### 7 Promotion of whale shark tourism in MotoGP and MxGP events

We were invited by the local government to jointly fill an exhibition in the MotoGP and MXGP event area to showcase and promote whale shark tourism in Saleh Bay, this is the first time in decades that Indonesia is hosting this event in the newly created Mandalika circuit Lombok and SAMOTA circuit Sumbawa.



701  
visitors

Streaming link of documentation:  
[MotoGP](#) and  
[MXGP](#)







Zebra shark (*Stegostoma tigrinum*)

250 cm disc width



The Zebra Shark is a broadly distributed continental and insular shelf species of the Indo-West Pacific. They are inhabiting in shallow inshore and offshore waters, often found on and around coral and rocky reefs and on sandy plateaus near coral, at depths down to at least 62 m. They are often observed resting on the bottom as well as swimming near the surface as both juveniles and adults.

The Zebra Shark comprises two distinct subpopulations based on the population genetic analysis, namely subpopulation Indian Ocean-Southeast Asian and Eastern Indonesian-Oceania. It is suspected that the Indian Ocean-Southeast Asian subpopulation has declined by at least 50% over the last three generations and considered Endangered. Based on the ongoing fishing and habitat threats posed by these trawl fisheries in the Arafura Sea and the potential impacts on Zebra Sharks migrating from adjacent regions, reductions of at least 20% of its population size within three generations are suspected and the Eastern Indonesian-Oceania subpopulation is assessed as Near Threatened. By combining the subpopulation assessments, this species is assessed globally as Endangered.

#### Why this they are so important ecologically?

Zebra shark is coral reef predators that are an important component of ecosystems – they regulate downstream food webs as well as transfer nutrients amongst habitats. They are also protecting and enhance blue carbon (carbon stored in coastal and marine ecosystems) by limiting grazing on coral reef, seagrass meadows and kelp forests. These ecosystems are precious not only to the plethora of species they support but also in the role they play in the absorption of carbon due to photosynthesis.

#### THREATS



Fisheries

Coastal  
development

Climate change

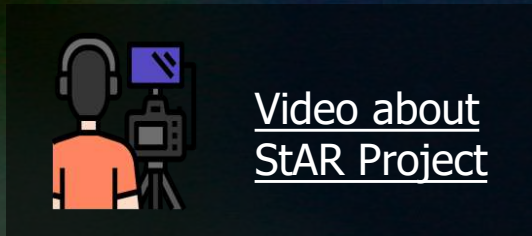
# ZEBRA SHARK

## OUR GOAL:

The Indo-Pacific zebra shark population in Raja Ampat is recovering healthily and genetically varied through translocation and restocking techniques that can serve as a model for the recovery of other endangered shark and ray species throughout the world

*Fun fact: The leopard shark is sometimes known as the zebra shark - though either is correct, as these amazing animals are born with black and white stripes then change their stripes for spots as they mature. Beautiful and gentle, leopard sharks have been overfished and are now endangered everywhere in the world, except Australia. The only places with robust populations of the species are large public aquariums and, in the wild, in the waters of northern Australia from Queensland to Western Australia.*

# WHAT WE DO



The StAR project is part of Re-Shark, a global partnership of 75 conservation organizations from 15 different countries, that represented by aquariums, and government agencies dedicated to recovering endangered sharks and rays. Through the world's first translocation and restocking, the StAR Project (*Stegostoma tigrinum* Augmentation and Recovery) aims to rebuild healthy and genetically varied Indo-Pacific zebra shark (*Stegostoma tigrinum*) populations in Raja Ampat. **Even though Marine Protected Area in Raja Ampat have been proven to increase populations of reef sharks and manta rays, zebra sharks show no evidence of recovery.** Zebra shark was effectively eliminated before protections were put in place, and the deep water surrounding the archipelago prevents in-migration by any remaining adults in adjacent reef systems. The extremely low number of remaining adult broodstock in Raja Ampat means that without management intervention, the zebra shark population there is unlikely to recover in the coming decades.

This project is expected to be a model for the recovery of other endangered shark and ray species around the world. The StAR Project in Indonesia is coordinated by the West Papua provincial government through the Regional Research and Innovation Agency and Konservasi Indonesia as key implementing partner. The StAR Project's innovative efforts to recover zebra sharks showcase Indonesia's strong commitment to recovering endangered species.



## Objective 1: Build partnership and governance of StAR Project implementation in Indonesia

1. Establish a working group for StAR Project implementation in Indonesia
2. Secure permit for the import process of zebra shark egg to Indonesia
3. Launching the StAR Project implementation in Raja Ampat
4. Mainstream the StAR Project approach into national's conservation strategic action plan



## Objective 2: Develop a robust protocol and research program for zebra sharks augmentation program

1. Assess the population viability analysis of zebra shark in Raja Ampat to achieve scientific-based species augmentation program
2. Develop protocol of husbandry, translocation, restocking, and post-release monitoring program
3. Develop a road map and list of research priority to advance the StAR Project implementation



## Objective 3: Develop infrastructure and local capacity for StAR Project implementation in the field

1. Build two hatchery facilities in Raja Ampat
2. Establishment of a cadre of Indonesian shark husbandry professionals trained and available to engage in future programs
3. Recruit local student and researcher to participate in StAR Project's research program.



## Objective 4: Receiving and hatching eggs, growing out juveniles, tagging and releasing juveniles and monitoring post-release survivorship

1. Receive first trial shipment of zebra shark eggs
2. Receive next batch of zebra shark eggs shipment (50-100 eggs annually after the first-year implementation)
3. Conduct post-release monitoring program to assess the survival rate, behaviour, and movement of zebra shark in the release site.



## Objective 5: Improve awareness and producing lesson learn for scaling up the project initiative

1. Produce communication and outreach material
2. Develop comprehensive lesson learned document for scaling up the initiative for other species and location
3. Organize strategic event to promote ReShark and StAR Project initiative for species recover action plan

More info: [reshark.org](http://reshark.org)



ReShark **STAR**  
project

# ZEBRA SHARK CONSERVATION PROJECT HIGHLIGHTS



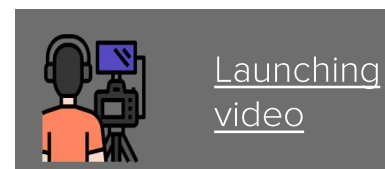
## 1 Partnership and governance of StAR Project in Indonesia



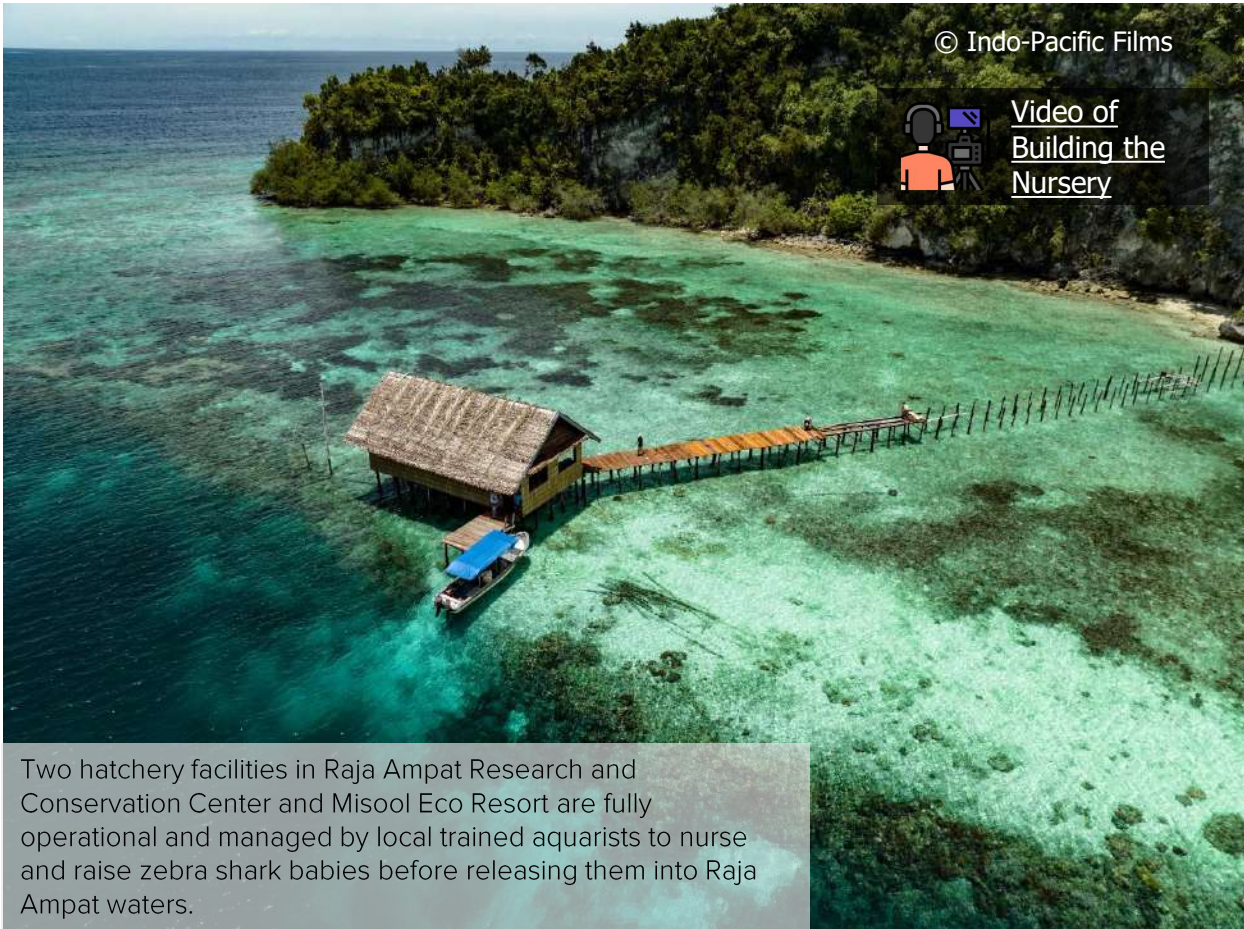
- Establishment of Indonesia's Working Group for StAR Project Implementation (Governor Decree of West Papua No 523/105/4/2022)
- Scientific recommendations from the National Research and Innovation Agency to StAR Project Implementation in Raja Ampat
- Import recommendations from the Directorate General of Aquaculture to import zebra shark egg to Indonesia for the StAR Project implementation
- Launch the StAR Project implementation in Raja Ampat



On November 30, 2022, the StAR (*Stegostoma tigrinum* Augmentation and Recovery) project, a world-first rewilding project to reestablish healthy and resilient populations of zebra sharks within their known historic ranges, was launched in Raja Ampat. The launch event was followed by a site visit to the Raja Ampat Research and Conservation Centre (RARCC) where the first hatchery was built by the local community. The event's attendees also had the opportunity to witness first-hand the three juvenile sharks that were hatched at RARCC in mid-September and due for release in early 2023.



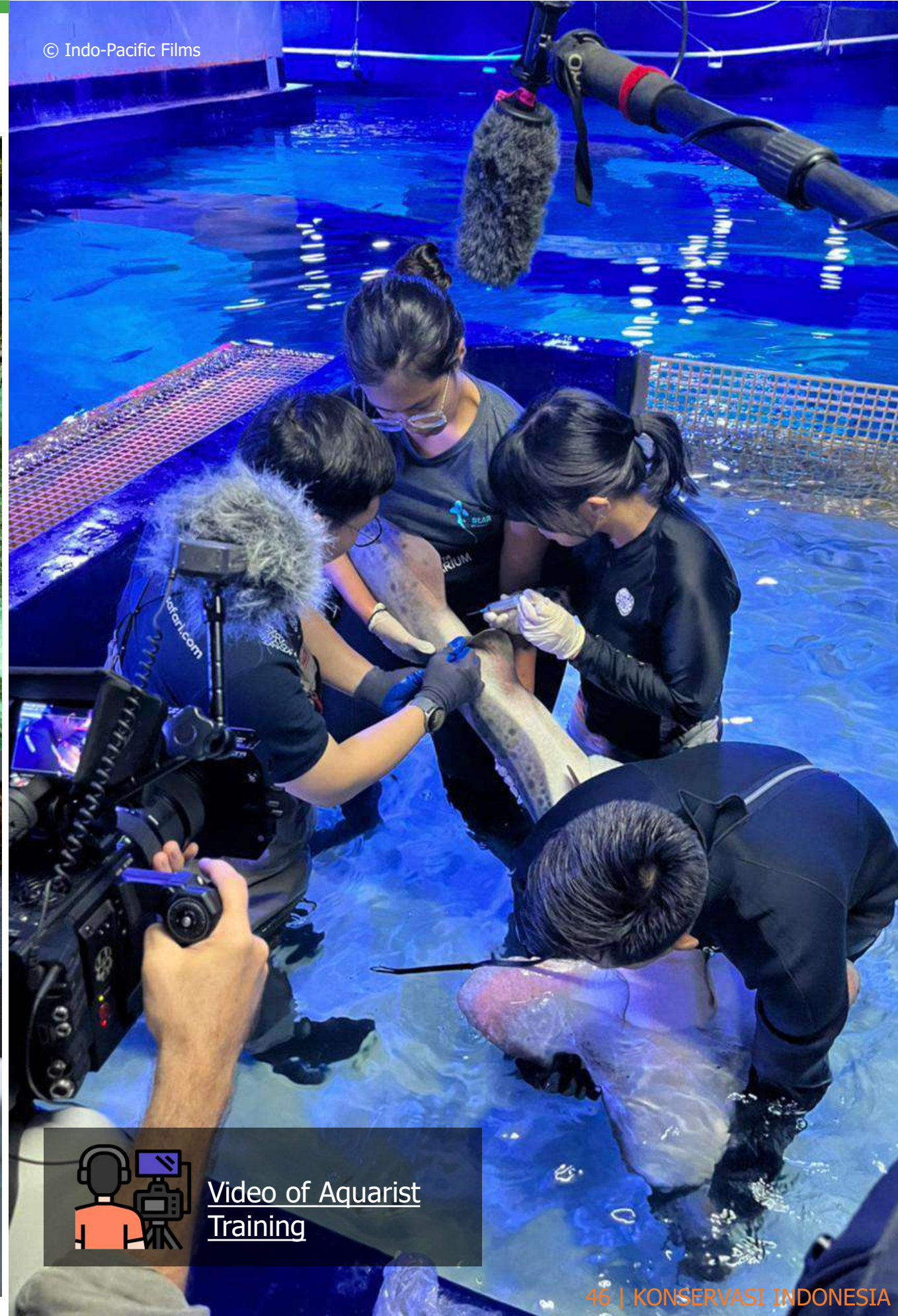
2 Two hatchery facilities and and shark nannies in Raja Ampat is well-established



Two hatchery facilities in Raja Ampat Research and Conservation Center and Misool Eco Resort are fully operational and managed by local trained aquarists to nurse and raise zebra shark babies before releasing them into Raja Ampat waters.



Local aquarists in Raja Ampat are employed as shark nannies as part of the StAR Project. They had a month of intensive training at the Jakarta Aquarium. Throughout this training, they learnt how to care for baby sharks, clean cages, maintain water quality, and observe baby shark development. These shark nannies are crucial to the success of this project as they' help ensure that baby sharks raised in the hatchery have a high chance of survival.





**3 Receiving first trial shipment of zebra shark eggs**  
 On August 5, 2022, proof of concept was realized with the successful shipping of eggs of endangered zebra sharks from Sea Life Sydney Aquarium, Australia to custom built hatcheries in Raja Ampat, Eastern Indonesia for release in the wild. Fourteen eggs, previously laid in zoological care, have traveled thousands of miles across the ocean to Indonesia, in coordination with multiple stakeholders at the national and provincial level.



Video of First Egg Shipment to Raja Ampat



© Erin Mayer – Seattle Aquarium





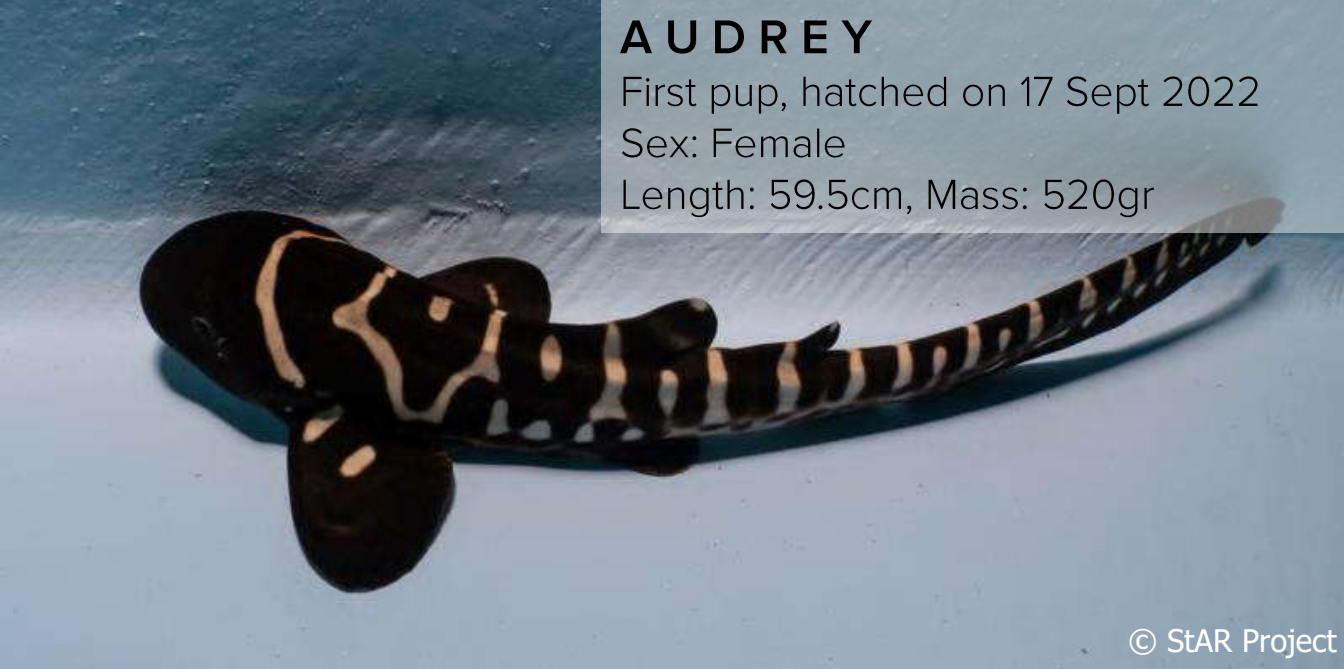
© StAR Project



© StAR Project

**4 Hatching eggs and growing out juveniles**

Three zebra shark eggs imported in the first batch have been successfully hatched these young zebra sharks. Young zebra sharks develop 2.5 times faster and more consistently in captivity at Raja Ampat than in the aquarium. This is most likely owing to higher temperatures, the availability of live food, and the circulation of the open ocean water system, all of which have a substantial impact on their growth.



**AUDREY**  
 First pup, hatched on 17 Sept 2022  
 Sex: Female  
 Length: 59.5cm, Mass: 520gr

© StAR Project



**KATHLYN**  
 Second pup, hatched on 17 Sept 2022  
 Sex: Female  
 Length: 63cm, Mass: 505gr

© StAR Project



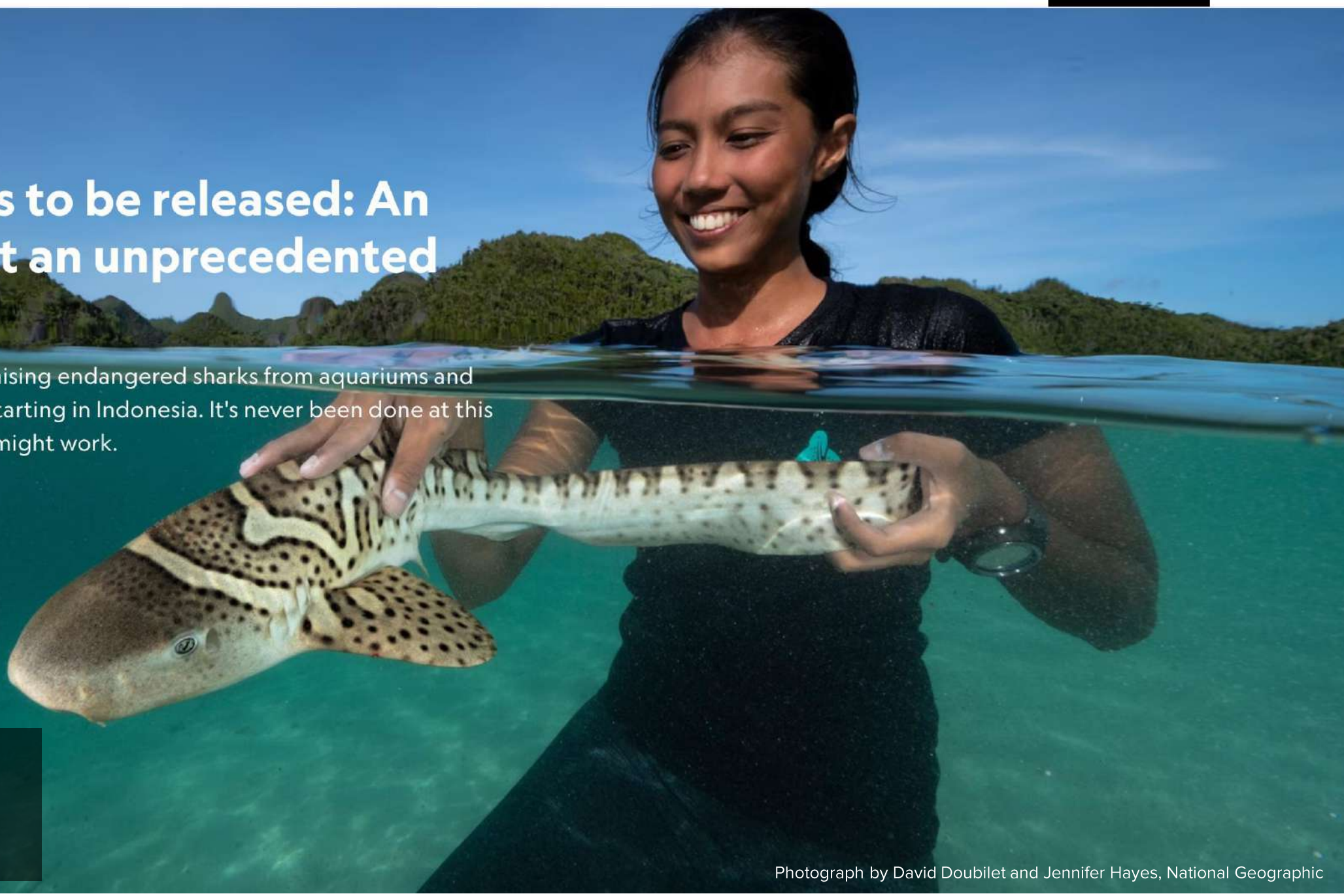
**CHARLIE**  
 Third pup, hatched on 25 Sept 2022  
 Sex: Male  
 Length: 54.5cm, Mass: 410gr

© StAR Project


ENVIRONMENT

# 500 baby sharks to be released: An exclusive look at an unprecedented mission

A team spanning 15 countries is raising endangered sharks from aquariums and reintroducing them to the wild, starting in Indonesia. It's never been done at this scale, but experts think the plan might work.



Photograph by David Doubilet and Jennifer Hayes, National Geographic



[Video of First Ever Shark Pup Release](#)

## 5 First zebra shark pup release in Wayag lagoon

The release of these three zebra sharks marks an important milestone forward in the implementation of the StAR (*Stegostoma tigrinum* Augmentation and Recovery) project, which has been in the works for the past three years. On August 5, 2022, three zebra shark pups were flown from the SEA LIFE Sydney Aquarium in Australia while still eggs. At Raja Ampat Research and Conservation Center (RARCC), the zebra shark eggs were raised alongside other eggs.

The three zebra sharks were released separately. On January 13, 2023, two sharks named Charlie and Kathlyn were released in Wayag Lagoon, Raja Ampat Regency, Southwest Papua Province. A traditional Kawe ceremony performed by locals before the release. The ceremony is being held to show respect for the Wayag Lagoon, which will be the new home for the baby sharks. The ceremony also serves as a symbol of the local community's strong support. Then, on 13 February 2023, a baby shark named Audrey was released in Wayag Lagoon.



6 Produce communication and outreach material



Media Coverage and Press Release



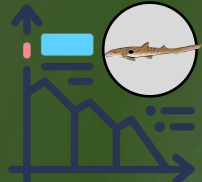
Walking shark (*Hemiscyllium* spp.)



100 cm disc width



Walking sharks are an endemic species. In total, there are nine different species of walking sharks that may be found in Papua New Guinea, Australia, and Indonesia. In terms of range and habitat, each species is distinct and does not overlap with another. Currently, six of the nine *Hemiscyllium* genera are known to exist in Indonesia, including *Hemiscyllium halmahera* (only found in Halmahera), *Hemiscyllium freycineti* (Raja Ampat), *Hemiscyllium galei* (Cenderawasih Bay), *Hemiscyllium henryi* (Fakfak and Kaimana), *Hemiscyllium strahani* (Jayapura), and *Hemiscyllium trispeculare* (Aru)



Walking sharks are nocturnal species that actively seek for prey such as crustaceans, mollusks, and small fish in waters between 0 and 20 meters deep, while they are frequently recorded at depths of 0.5 to 2 meters. Walking sharks can be found in areas with coral reefs, rocky sand, and seagrass meadows

\*This is likely an overestimate based on total potential habitat for this species.

Species	Area of Occurrence (sq km)	Population estimate (sq km)	Population estimate in wild based on habitat suitability*	Population trend
<i>Hemiscyllium halmahera</i>	~3,792	110	407,000	Decreasing
<i>Hemiscyllium freycineti</i>	~3,372	200	660,000	Decreasing
<i>Hemiscyllium galei</i>	~1,500	36	54,000	Decreasing
<i>Hemiscyllium henryi</i>	~1,148	40	46,000	Decreasing
<i>Hemiscyllium strahani</i>	~720	180	130,000	Unknown
<i>Hemiscyllium trispeculare</i>	Unknown	Unknown	Unknown	Unknown

**Why this they are so important ecologically?**  
 Walking sharks' ecological role is unknown because very little study has been conducted. However, its position in the food chain is as a second/third level consumer, a mesopredator that preys on invertebrates. Walking sharks act as top predators in the intertidal habitat, balancing the food chain below them.

**THREATS**



Fisheries



Coastal development



Climate change

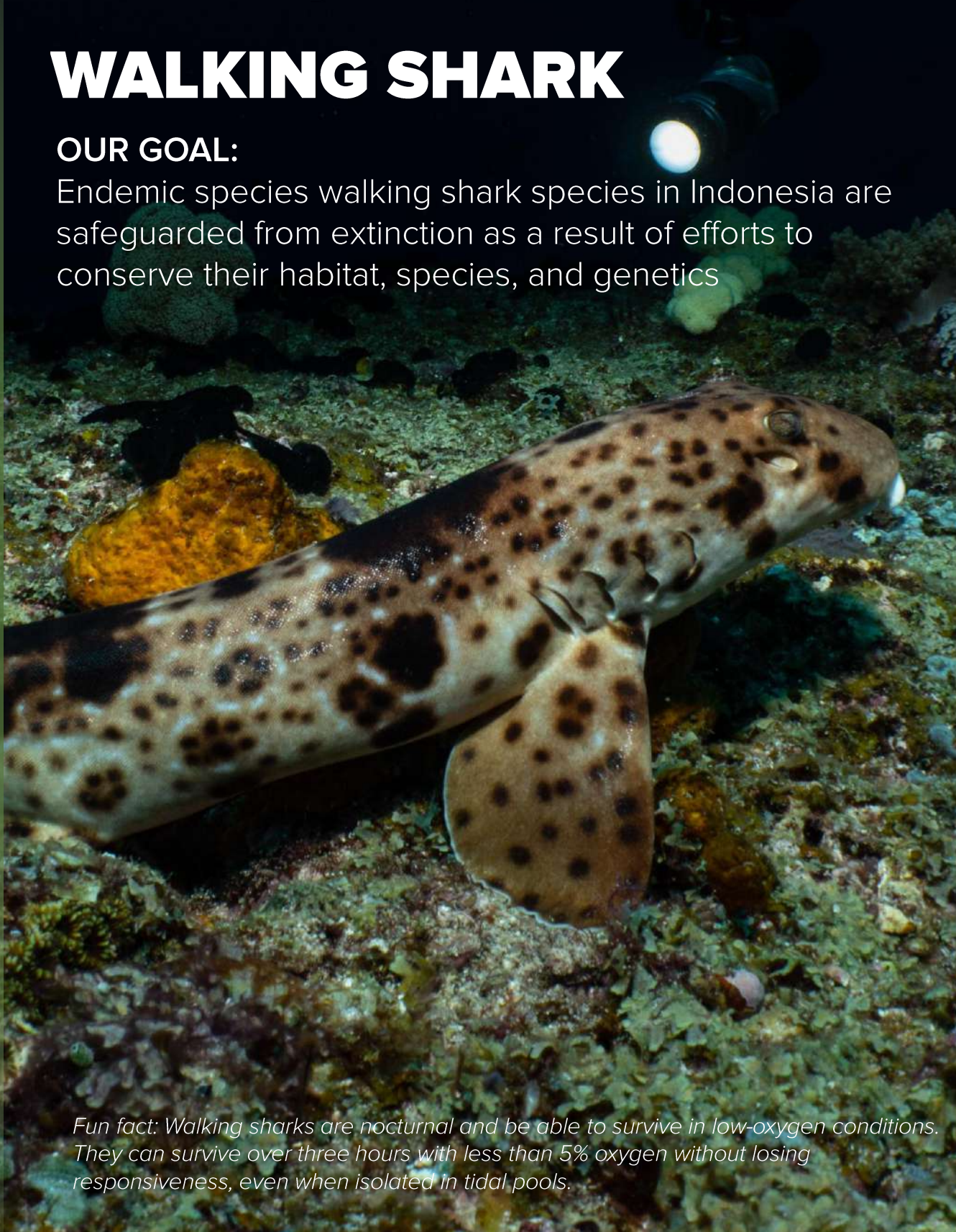


Small range size of habitat and distribution

# WALKING SHARK

**OUR GOAL:**

Endemic species walking shark species in Indonesia are safeguarded from extinction as a result of efforts to conserve their habitat, species, and genetics



*Fun fact: Walking sharks are nocturnal and be able to survive in low-oxygen conditions. They can survive over three hours with less than 5% oxygen without losing responsiveness, even when isolated in tidal pools.*

# WHAT WE DO



## Objective 1: Strengthening the management framework of walking sharks in Indonesia

1. Organized a workshop of experts for an Indonesian initiative to protect walking sharks.
2. Prepare a scientific rationale report for an established walking shark protection initiative in Indonesia
3. Hold public consultation with stakeholders to reach an agreement on the status of walking sharks' protection.
4. Request recommendations from scientific authorities (National Research and Innovation Agency) for the designation of the walking shark's protection status.
5. Assist the government in formulating, monitoring, and evaluating a national action plan for walking shark conservation in Indonesia
6. Identification of habitat and recommendation of habitat protection through MPA/OECM



## Objective 2: Strengthening data and information on the population of walking shark in Indonesia to effectively support their conservation and sustainable use

1. Collecting data and estimating the population of the six walking sharks in each priority location
2. Conducting studies on the distribution of important habitats for walking sharks
3. Conduct a study on the vulnerability of walking shark populations to climate change and anthropogenic
4. Conduct potential studies and feasibility tests for ex-situ and in-situ (captive breeding) walking sharks
5. Conduct tourism potential studies and feasibility tests
6. Integrate data and information from walking shark data collection, studies and research into a data and information system





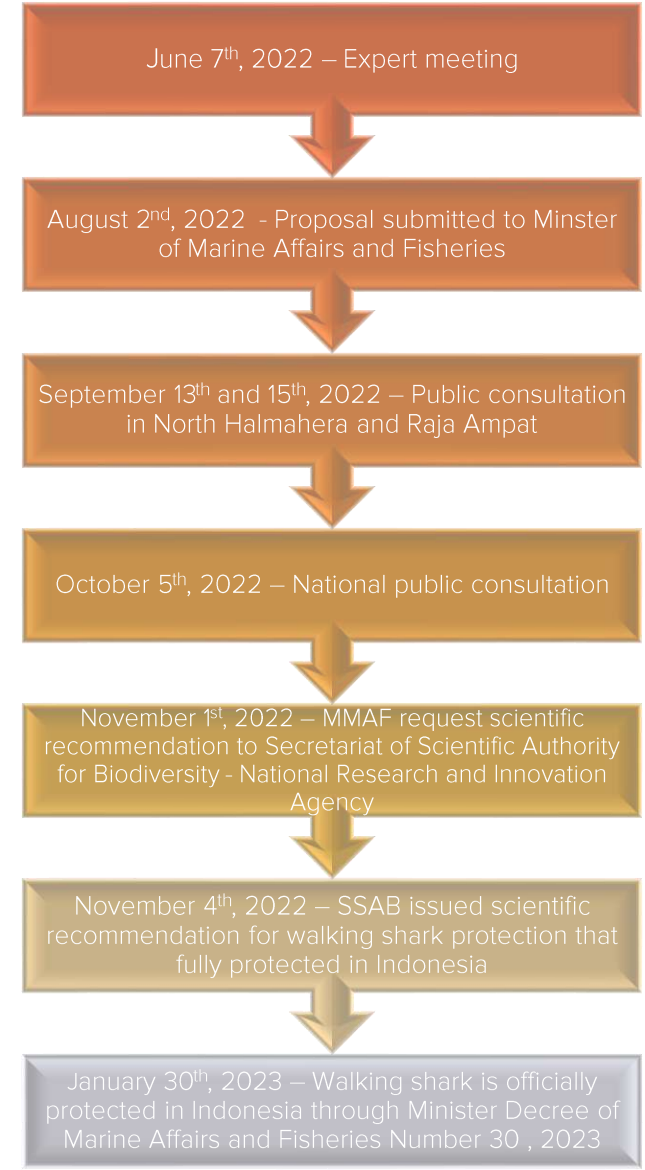
Video of Walking Shark Protection

**URGENCY FOR PROTECTION:** Although walking sharks are in a very different situation than other threatened sharks, such as having relatively small bodies, fast and smooth reproduction, and little exploitation pressure in fisheries; however, the range size is very small, resulting in a small and vulnerable population. Furthermore, the potential for dispersal is relatively limited, so it cannot "run" away from threats. Additionally, they are an endemic species.



**WALKING SHARK  
CONSERVATION PROJECT  
HIGHLIGHTS**

The history of walking shark protection initiative in Indonesia



KEPUTUSAN MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA  
NOMOR 30 TAHUN 2023  
TENTANG  
PERLINDUNGAN PENUH IKAN HIU BERJALAN (*Hemiscyllium spp.*)  
DENGAN RAHMAT TUHAN YANG MAHA ESA  
MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA,



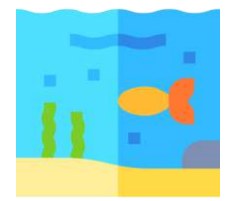
**29**  
EXPERT INVOLVED



**105**  
PARTISIPANTS INCLUDED IN PUBLIC CONSULTATIONS



**HABITAT**  
PROTECTED



**CONSERVATION TARGET**

**6**

SPECIES AGREED TO BE FULLY PROTECTED



Scalloped Hammerhead (*Sphyrna lewini*)



420 cm disc width



The Scalloped Hammerhead is found worldwide in coastal warm-temperate and tropical seas. It inhabits continental and insular shelves, as well as adjacent deep water. It is typically found from the intertidal zone and surface down to depths of 275 meters but has been observed as deep as 1,043 meters. There is a distinct population structure in the global distribution of Scalloped Hammerhead sharks based on gender. Males have a wider range, crossing ocean basins, while females tend to stay within specific regions.

# SCALLOPED HAMMERHEAD

## OUR GOAL:

Critically endangered hammerhead shark species in the Banda Sea can be mapped and threats identified to aid in the population recovery and sustainability of tourism established by local communities



The Scalloped Hammerhead is caught worldwide in both targeted and incidental fishing operations, including pelagic commercial and small-scale methods like longline, purse seine, and gillnet fisheries. It is primarily sought after for its meat and fins. Unfortunately, this species has experienced significant population declines across all oceans. However, there are indications of stabilization and potential recovery in response to management efforts, primarily observed in the Northwest Atlantic and Gulf of Mexico. The overall global population trend suggests a median reduction of 76.9% to 97.3%, with a high likelihood of an over 80% reduction over three generation lengths (equivalent to 72.3 years). Due to these factors, the Scalloped Hammerhead is classified as Critically Endangered.

### Why this they are so important ecologically?

The Scalloped Hammerhead serves as an apex predator, regulating prey populations and influencing trophic cascades. It contributes to nutrient cycling, habitat structuring, and potentially aids in disease control, playing a vital ecological role in marine ecosystems.

## THREATS



Fisheries

*Fun fact: The leopard shark is sometimes known as the zebra shark - though either is correct, as these amazing animals are born with black and white stripes then change their stripes for spots as they mature. Beautiful and gentle, leopard sharks have been overfished and are now endangered everywhere in the world, except Australia. The only places with robust populations of the species are large public aquariums and, in the wild, in the waters of northern Australia from Queensland to Western Australia.*

## WHAT WE DO



Objective 1: Strengthening data and information on hammerhead population in Banda Sea to effectively support their conservation and sustainable use

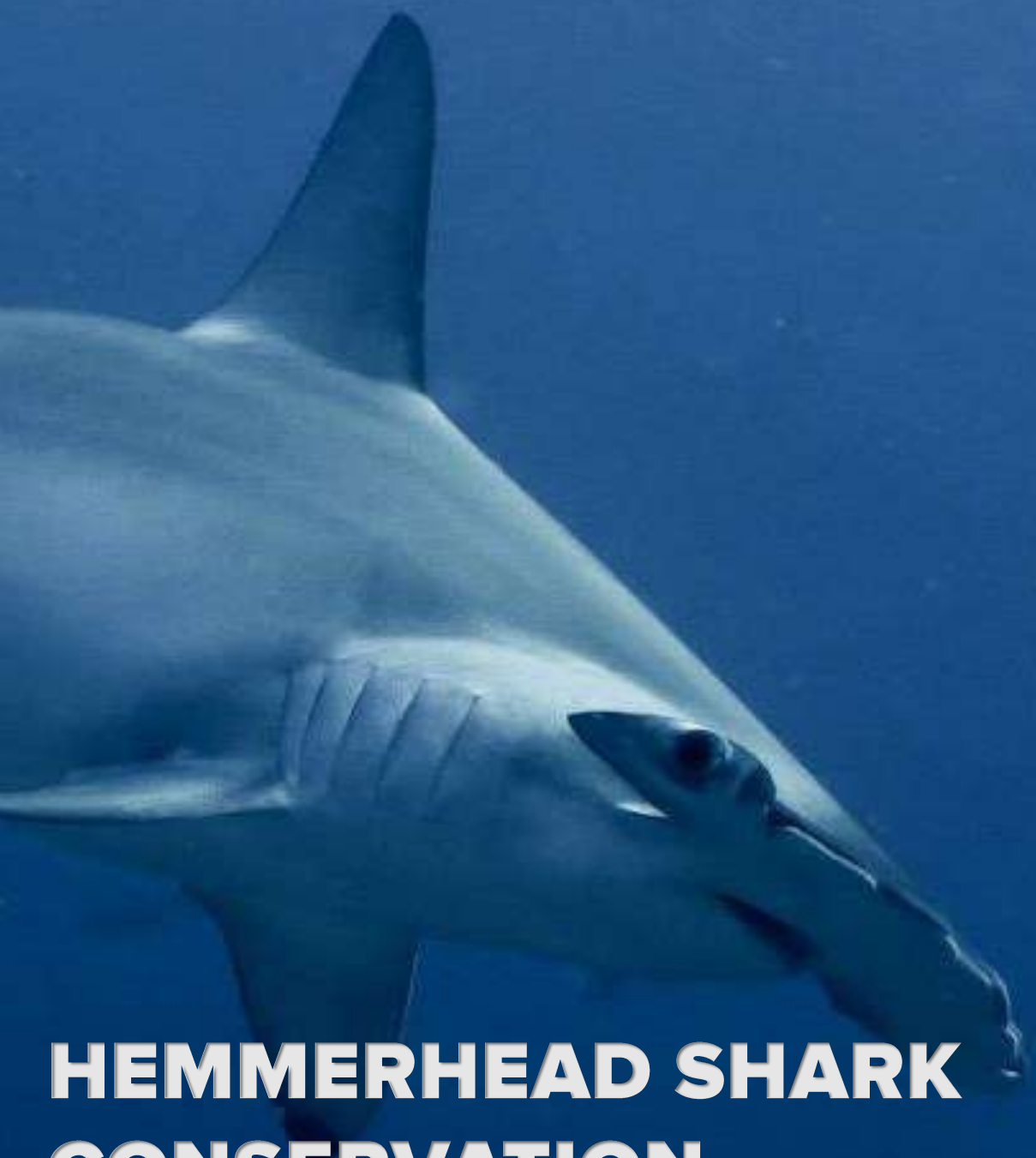
1. Mapping the population movement of hammerhead shark in Banda Sea
2. Identify critical habitats and threats pertaining to hammerhead sharks in the Banda Sea
3. Establish a citizen science program to collect abundance and distribution of hammerhead shark in the Banda Sea



Objective 2: Strengthening the management framework of hammerhead sharks in Banda Sea

1. Identify and designate MPAs in key habitats where Hammerheads are known to frequent and ensure the conservation of critical life stages.
2. Improve local community involvement in conservation-related activities in Banda





# HEMMERHEAD SHARK CONSERVATION PROJECT HIGHLIGHTS

*Pierre Léo Paul*

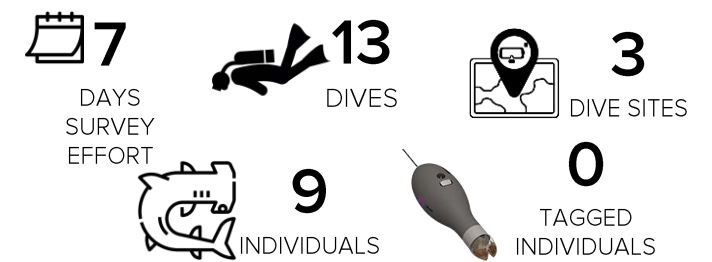
## 1 Ecological survey of hammerhead shark in Hatta Island, Banda Sea

Hatta Island, situated within the Banda Islands, has been recognized as a significant location for the aggregation of Hammerhead Sharks. Historical data reveals that prior to the arrival of tourists and awareness initiatives led by the local dive center, the inhabitants of Hatta Island utilized Hammerhead Sharks as part of their catch. However, in recent years, there has been a shift, with many individuals ceasing the capture of Hammerhead Sharks and instead capitalizing on their presence to attract tourists, particularly divers. Regrettably, there is a lack of comprehensive studies pertaining to the population and utilization of Hammerhead Sharks in this area, leaving numerous knowledge gaps that necessitate addressing through multiple approaches.



*Our scientists hold MiniPAT tags and are searching for hammerhead sharks to deploy the tags on to in to study their movements and behaviour*

### ECOLOGICAL SURVEY



## 2 Outreach and capacity building to local community



To involve the local community of Hatta Island directly in conservation efforts and promote sustainable, non-extractive practices regarding hammerhead sharks, outreach initiatives were implemented. These initiatives aimed to raise awareness among the local population, emphasizing their active participation in conservation activities. The approach included conducting sessions on Hammerhead Shark Conservation 101, sharing knowledge and experiences from hammerhead shark ecotourism in other locations, and encouraging Citizen Science engagement. Through Citizen Science, individuals can contribute to the hammerhead shark conservation program in Hatta Island and potentially extend these efforts across the entire Banda Islands region.

### OUTREACH & TRAINING



## Kaimana, West Papua Important Marine Mammal Area

Kaimana is situated in southwestern West Papua, Indonesia. It is within the Bird's Head Seascape MPA network, located at the heart of the Coral Triangle. This area is known for its remarkable coral reef and marine biodiversity, making it a top conservation priority.



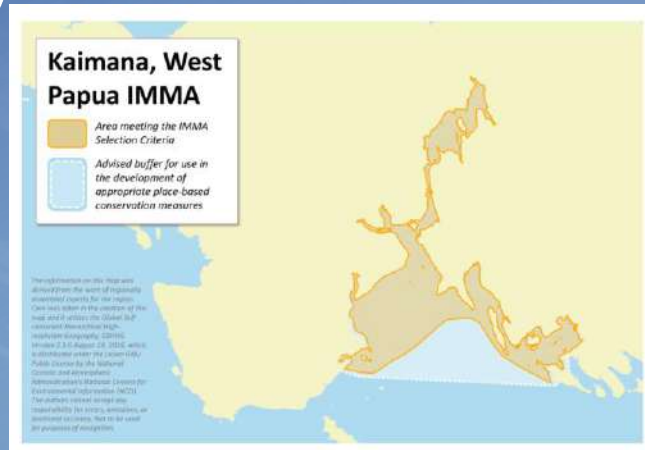
### Criterion A - Species or Population Vulnerability



2750 cm disc width



4000 cm disc width



### Criterion C2 - Feeding Areas

The Kaimana Region is vital for marine mammals due to its diverse habitats, including mangroves, coral islands, and deep passages. These habitats provide a rich food source, supporting various marine mammal species. Humpback dolphins and Indo-Pacific bottlenose dolphins, which prefer shallow coastal areas, find ideal habitat in Arguni Bay within the Kaimana Region. It serves as a productive environment with concentrated prey aggregations, crucial for the nutritional needs of these inshore dolphins.

### Criterion B2 - Aggregations

Population estimates for Australian humpback dolphins in the Kaimana Region are unknown, but they are likely small, and resident based on neighbouring populations. Kaimana is an important area for the species, as one of three regions in West Papua where they have been sighted.

### Why Kaimana IMMA so important ecologically?

The Kaimana Region is one of three known locations in West Papua where Australian humpback dolphins have been documented. They are not found in any other part of the Northeast Indian Ocean and Southeast Asian Seas region. The region is home to at least four other confirmed marine mammal species, and additional species like the Australian snubfin dolphin are expected to be discovered through future surveys.

# CETACEAN

## OUR GOAL:

Cetacean species and populations are safeguarded as a biodiversity asset in the IUCN's Important Marine Mammals Area in Indonesia

*Funfact: The Australian humpback dolphin (Sousa sahalensis) is the fourth recognized species of humpback dolphin. It was described in July 2014 and is found in the Sahul Shelf area, between northern Australia and southern New Guinea. While there is no exact population estimate, available sighting data suggests there are likely a few thousand individuals. The Kaimana Region, including Arguni Bay, features crucial mangrove, estuarine, and coastal habitats that are vital for the survival of Australian humpback dolphins and dugongs in the area.*

## THREATS



Fisheries



Coastal development



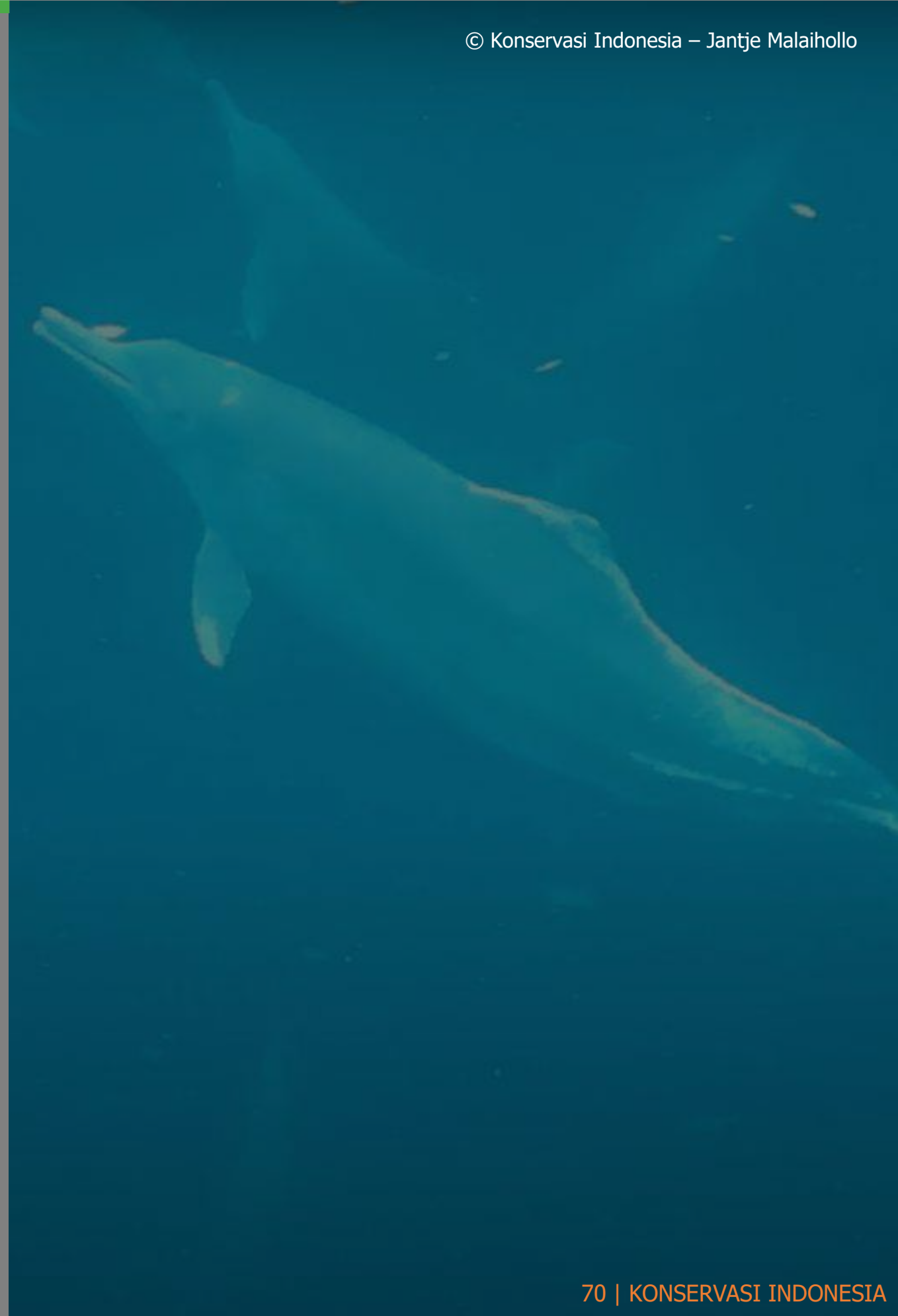
Water pollution

# WHAT WE DO



Objective: Enhance the understanding of the Australian humpback dolphin population in the region of Kaimana by studying its size, distribution, habitat preferences, behaviour, and conservation status.

1. Population Surveys: Conduct population size and density survey of Australian humpback dolphins in Kaimana.
2. Habitat Mapping: Map and characterize the coastal habitats in Kaimana that are important for Australian humpback dolphins, including mangroves, shallow bays, estuaries, inshore reefs, and coastal archipelagos.
3. Behaviour and Social Structure: Observe and document the behaviour, social structure, and group dynamics of Australian humpback dolphins in Kaimana. This can include studying their feeding habits, mating behaviour, communication, and interactions with other dolphin species.
4. Movement and Home Range: Use satellite or acoustic telemetry to track the movement patterns and home range of Australian humpback dolphins in Kaimana. This will help identify important foraging areas, migration routes, and potential threats to their habitat.
5. Prey Assessment: Investigate the diet and prey preferences of Australian humpback dolphins in Kaimana through stomach content analysis and stable isotope analysis. This will provide insights into their trophic interactions and reliance on specific prey species.
6. Conservation Status and Threat Assessment: Assess the conservation status of Australian humpback dolphins in Kaimana by evaluating the potential threats they face, such as habitat degradation, fishing activities, pollution, and boat traffic. Identify conservation measures and management strategies to protect their habitat and mitigate threats.



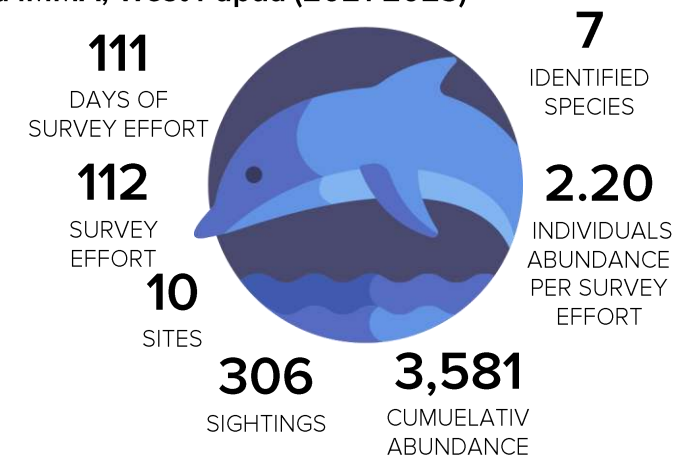


# CETACEAN CONSERVATION PROJECT HIGHLIGHTS

## Ecological survey of cetacean in Kaimana IMMA, West Papua (2021-2023)

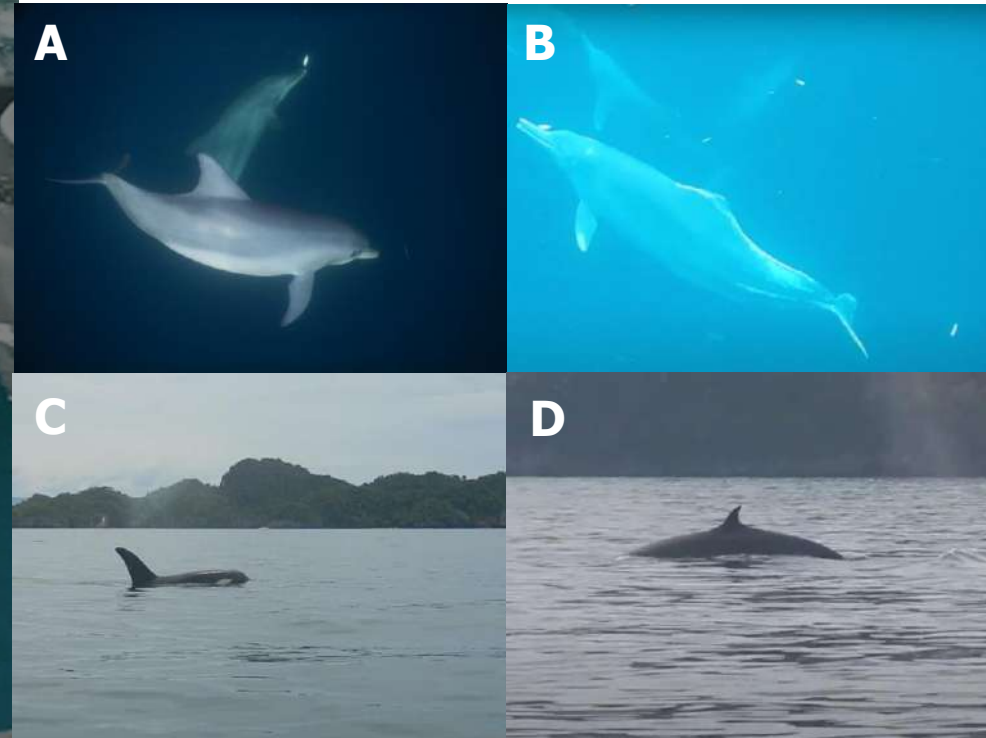
### 1 Survey summary

Between 2021 and 2023, surveys were conducted with varying efforts. The highest survey effort was recorded in 2022 with 86 times, while the lowest survey effort was recorded in 2023 with 16 times. These efforts reflect the fluctuations in data collection and observation frequency during the specified period.



### 2 Species diversity

During the survey conducted in the Kaimana Region, a total of seven cetacean species were identified, including Bryde's whale (*Balaenoptera edeni*), killer whale (*Orcinus orca*), Australian humpback dolphin (*Sousa sahalensis*), Pantropical spotted dolphin (*Stenella attenuata*), Spinner dolphin (*Stenella longirostris*), Indo-Pacific bottlenose dolphin (*Tursiops aduncus*), and common bottlenose dolphin (*Tursiops truncatus*).



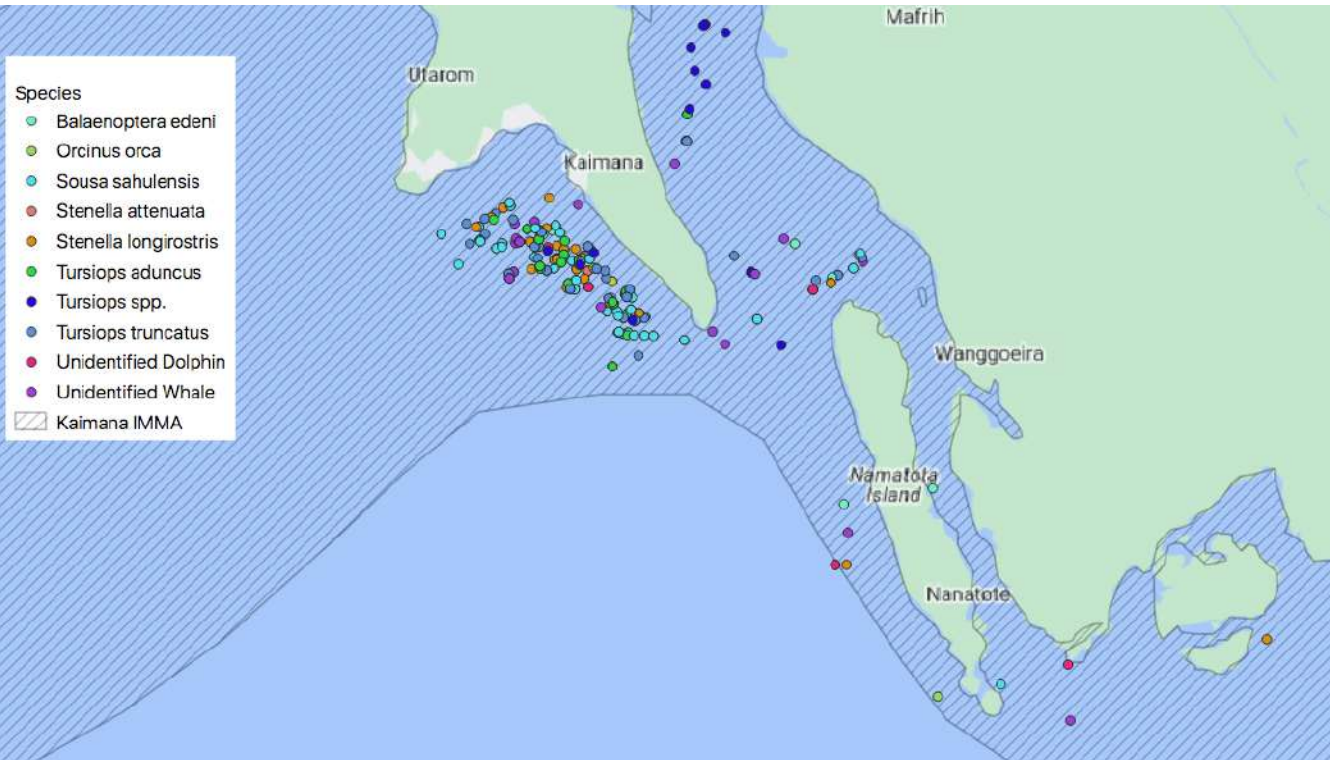
A) Indo-Pacific bottlenose dolphin, B) Australian humpback dolphin, C) Killer whale, D) Bryde's whale.  
© Konservasi Indonesia – Jantje Malaihollo

### 3 Sighting and abundance

Cetacean sightings in the Kaimana Region are dominated by the common bottlenose dolphin (*Tursiops truncatus*) with 97 recorded sightings (0.17 sighting per hour), followed by Australian humpback dolphin (*Sousa sahalensis*) with 67 recorded sightings (0.12 sighting per hour). The common bottlenose dolphin exhibits the highest abundance with 0.17 individuals per hour.

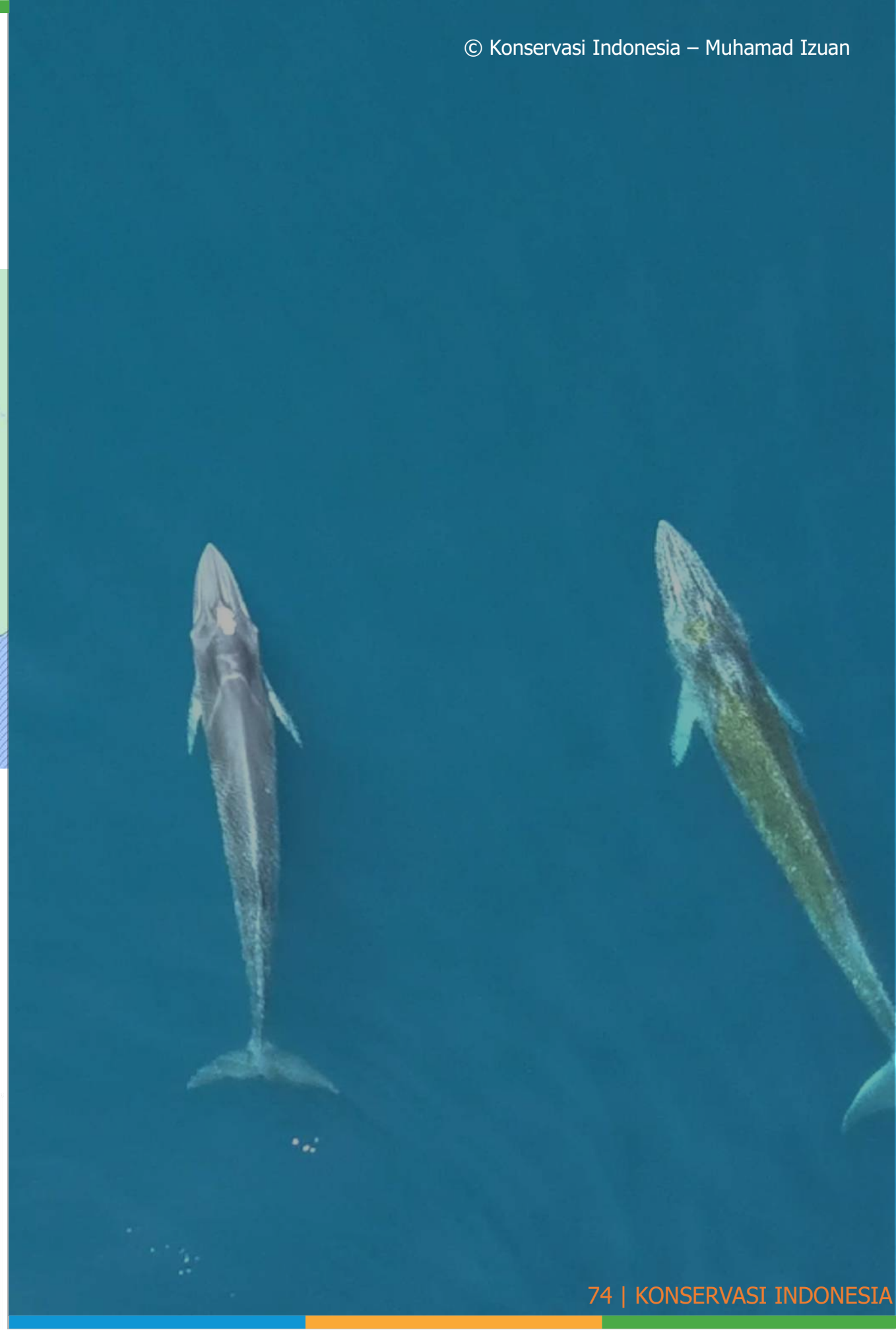
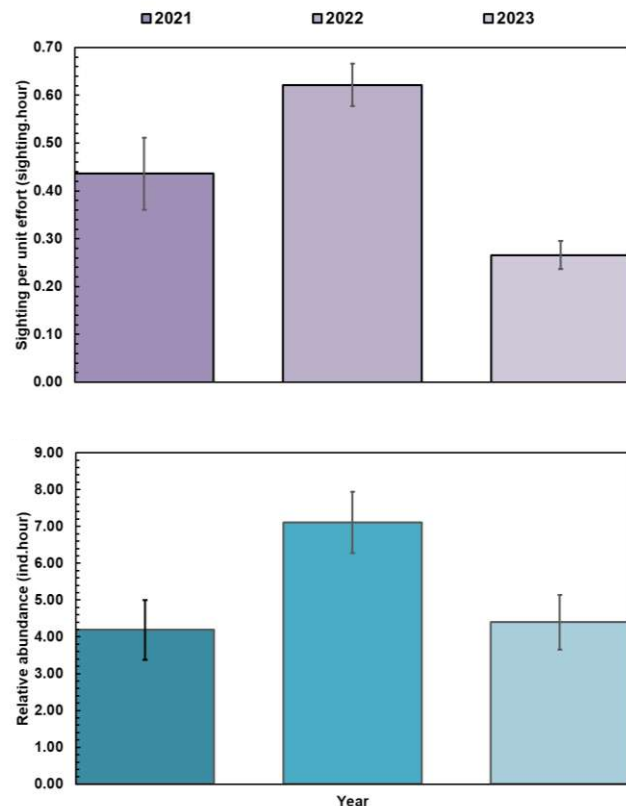
4 Distribution

During the survey, most of the recorded cetacean species were concentrated in the waters in front of Kaimana city. This included sightings of species such as *Sousa sahalensis* (Australian humpback dolphin), *Stenella longirostris* (spinner dolphin), *Stenella attenuata* (pantropical spotted dolphin), *Tursiops aduncus* (Indo-Pacific bottlenose dolphin), *Tursiops truncatus* (common bottlenose dolphin), and *Balaenoptera edeni* (Bryde's whale). However, *Orcinus orca* (killer whale) was specifically documented in Namatota. Additionally, Bicari Bay was another area where cetaceans were frequently recorded, particularly *Sousa sahalensis* and both *Tursiops* spp.



5 Temporal pattern

An analysis of the interannual trends in cetacean SPUE, a measure of sightings per hour, revealed statistically significant differences. Sighting per hour in 2021 and 2022, 2022 and 2023 are significantly different. The highest average SPUE for cetaceans was in 2022, followed by 2021 and 2023. Similar with the interannual trends for SPUE, the interannual trends in the relative abundance of cetaceans revealed statistically significant differences. Relative abundance in 2021 and 2022 is significantly different. Relative abundance for cetaceans was slightly higher in 2022 compared to other year.





# NATIONAL INITIATIVE



# NATIONAL INITIATIVE HIGHLIGHTS

# 3

## POLICY

walking shark national protection, national guidance for whale shark tourism, and national geospatial database for priority and protected species.



# 10

## ORGANIZATIONS

Agreed to participate and launching the Indonesian Youth Elasmobranch Research Scholarship



# 6

## YOUTH

Awarded research funding and mentored to implement elasmobranch research and conservation project



# 20

## BASELINE ASSESSMENTS

National's priority species effectiveness management



# 73%

## PROGRESS

Year 2 of whale shark conservation National Plan of Action implementation



# **DIRECTOR GENERAL DECREE\***

## **National Guidance For Managing Geospatial Data Of Marine Threatened Species**

\*Director General Decree of Marine Spatial Management, Ministry of Marine Affairs and Fisheries, Republic of Indonesia, Number 68, Year 2022 on Technical Guidance For Managing Geospatial Data Of Marine Threatened Species. ([Download](#))

Understanding distribution patterns, key habitats, threats, and stranding events spatially and temporally is critical for defining effective management strategy for endangered species. Konservasi Indonesia is supporting the Ministry of Marine Affairs and Fisheries to develop a national technical guidebook and database for thematic geospatial data of endangered and national priority species that is structured, standardized, and verified.

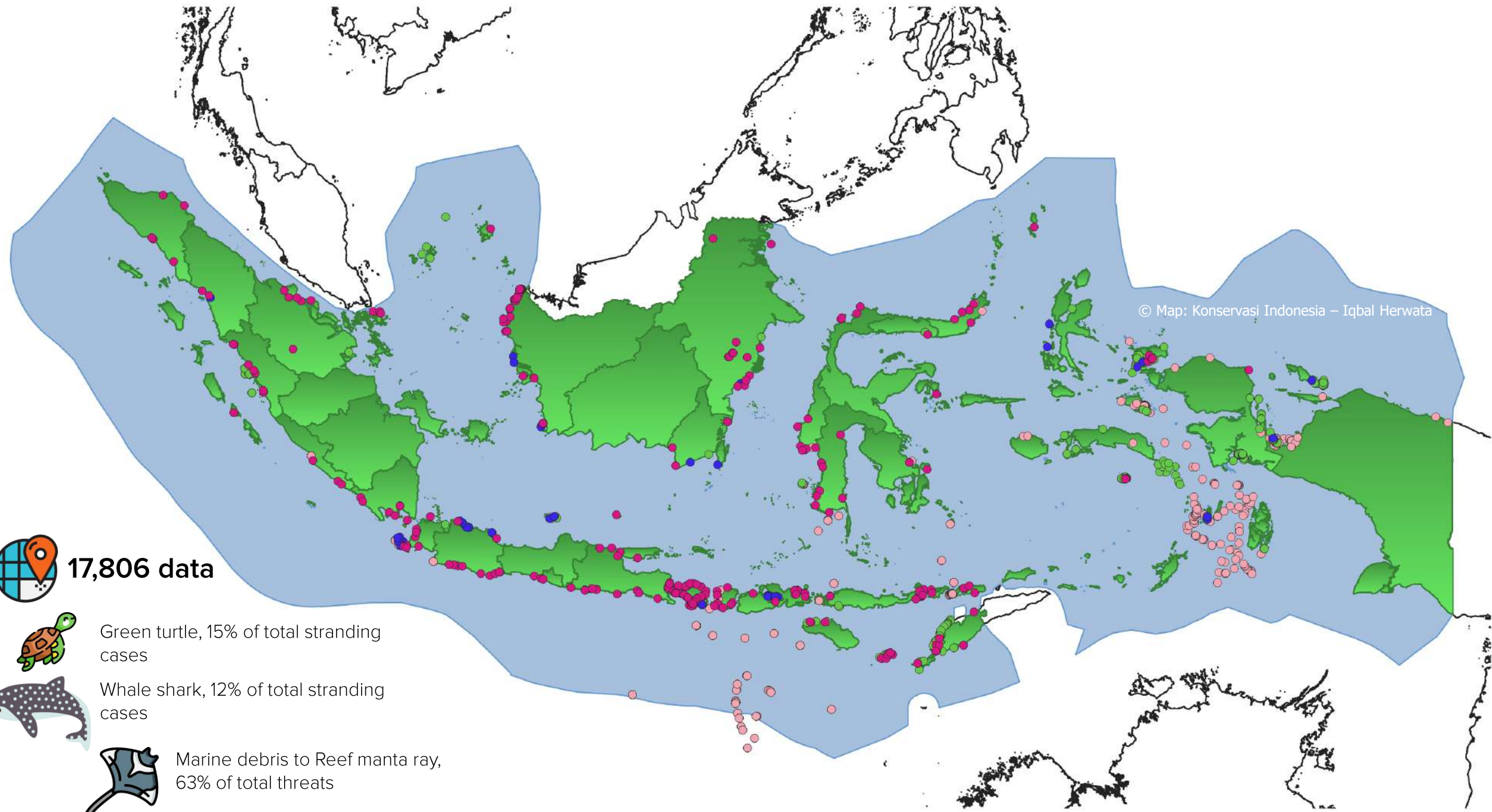


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# PUT THEM ON THE MAP !


## National Data Center for Geospatial Database of National's Protected Marine Species


- Indonesia
- Indonesian Exclusive Economic Zone (EEZ)
- Strandings
- Threats
- Sightings
- Critical habitats





© Map: Konservasi Indonesia – Iqbal Herwata


 17,806 data

 Green turtle, 15% of total stranding cases

 Whale shark, 12% of total stranding cases

 Marine debris to Reef manta ray, 63% of total threats

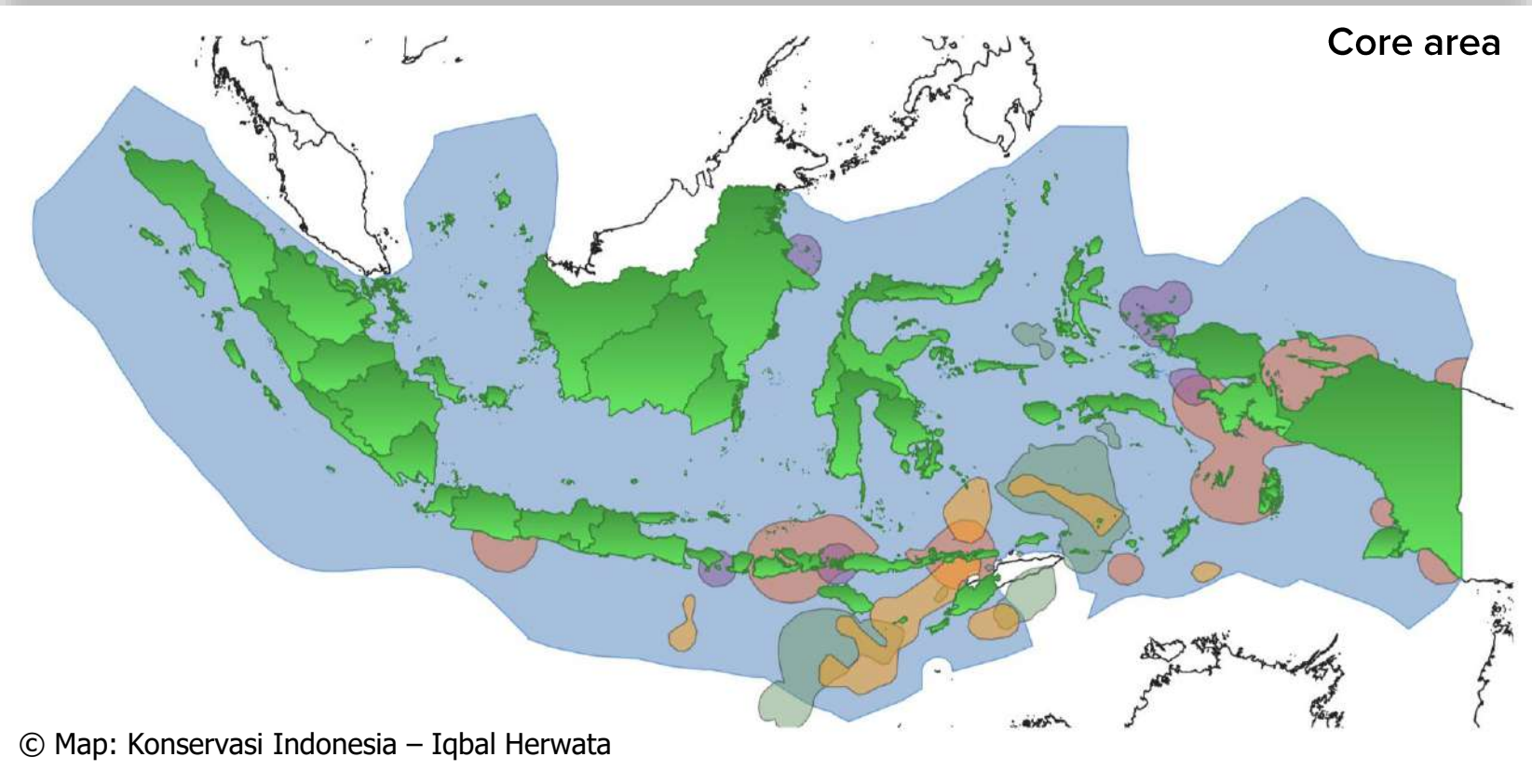
 Green turtle, 87% of total sightings

 Nesting sites for Green turtle, 80% of total critical habitat

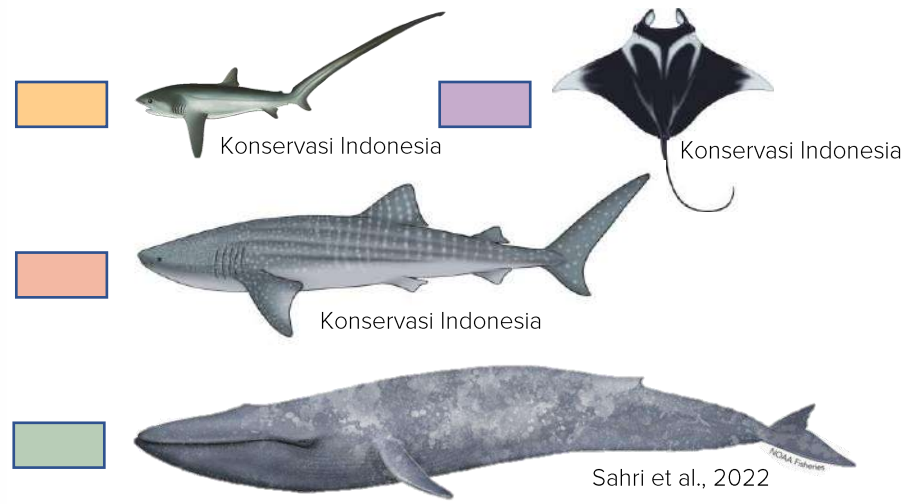
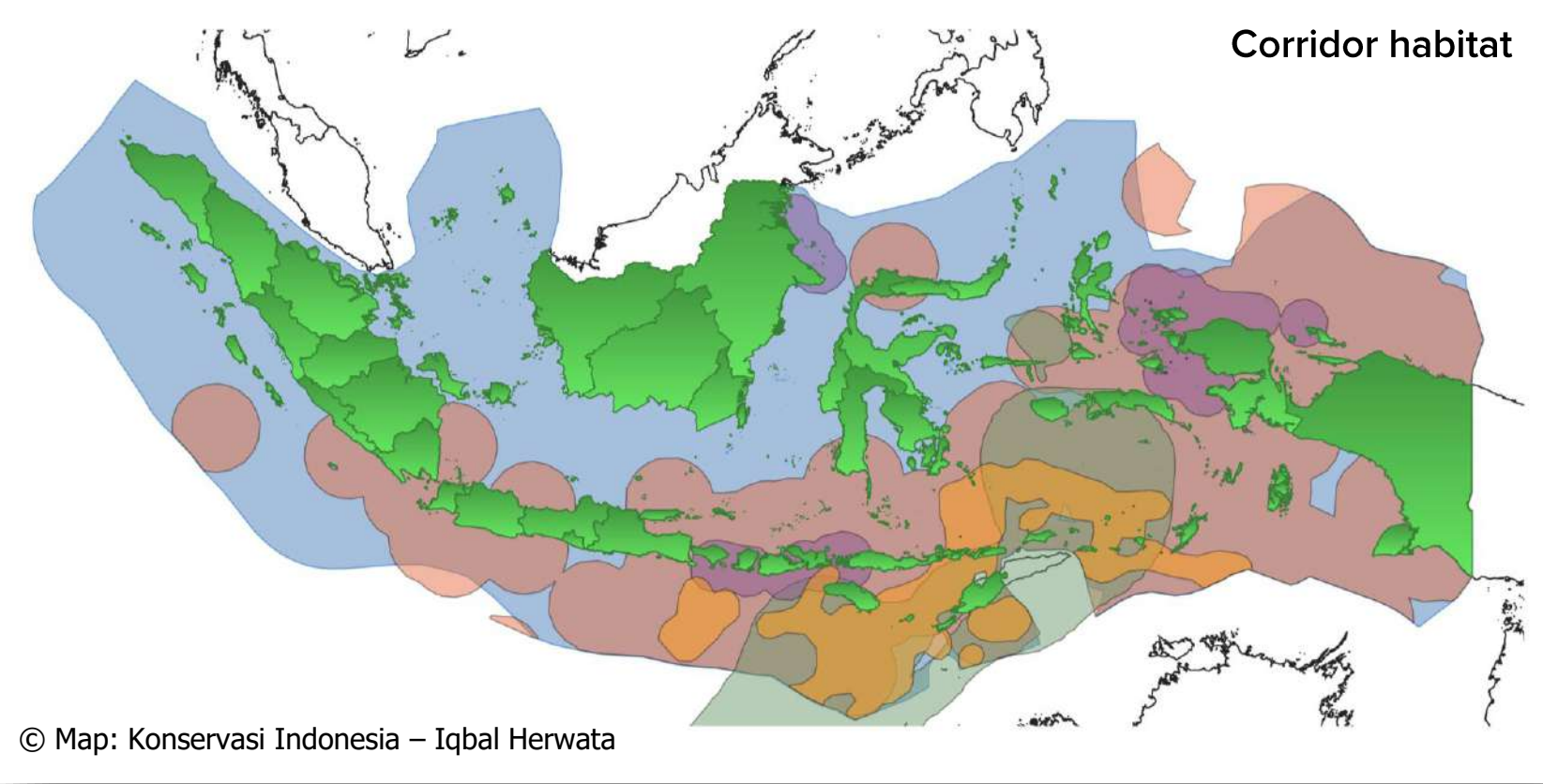
 2013-2022

 15 partner organizations

# PROTECT THEIR CRITICAL HABITAT !



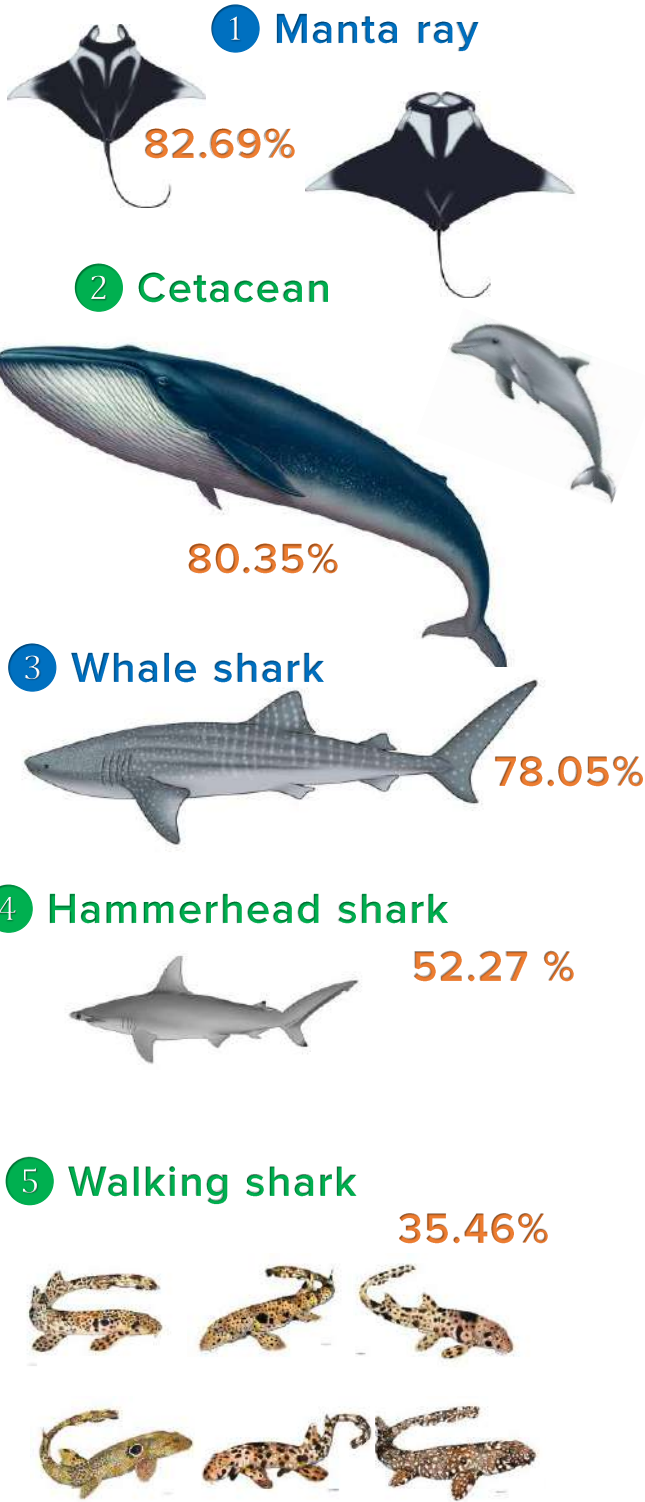
Over the last decade, we have assisted the Indonesian government in mapping the corridor and core use area of threatened species through our satellite tagging program initiative. This information has been incorporated into numerous spatial plan documents, including the NTB and Maluku Provinces' Zoning Plan for Coastal Areas and Small Islands (*RZWP3K*), as well as at the national level for inter-regional regional planning (*RZKAW*) Arafura Sea (I), Savu Sea (II), Halmahera Sea (III), and Cenderawasih Bay (IV). This information will be used to recognize the critical habitat of threatened species to mitigate overlapping with human activities that may pose a threat to its population. Through this data, we also play a role in designing the expansion of MPAs, ensuring that the new MPA spatial plan incorporates critical habitats for species to achieve the 30% target by 2045, as part of our commitment to implement the Kunming-Montreal Global Biodiversity Framework.



# FIRST ASSESSMENT ON NATIONAL PRIORITY SPECIES MANAGEMENT EFFECTIVENESS

\* Not all our priority species are listed on 20-list of national's priority species for 2020-2024. For instance, zebra shark. Thus, the management effectiveness status for zebra shark not assessed.

## Our priority species\*



<45 % : Minimally managed  
 45-70 % : Optimally Managed  
 >70 % : Sustainably managed

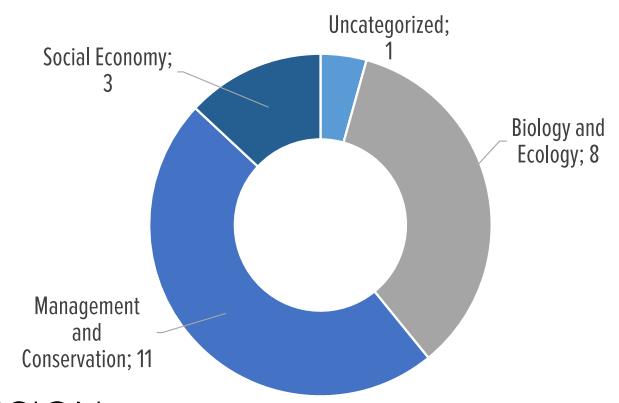
■ Our programs that are well-established  
■ Our programs that are under development



INSTITUTION



23



PROPOSAL SUBMISSION

“ Indonesian Youth Elasmobranch Research Scholarship Program was established in 2022 to fund innovative elasmobranch research that can solve the needs and gaps in Indonesia's strong management of sharks and rays. Furthermore, this strategy is a regeneration process for generating a succession of future leaders who will establish and continue shark and ray conservation program initiatives in Indonesia.

”



Most freshwater stingrays in Indonesia are **endangered** and are **fully protected** by the Minister of Marine Affairs and Fisheries Decree No. 1 of 2021. In Indonesia, there is a critical lack of knowledge about freshwater stingrays, and their existence is increasingly threatened by local community fishing activities.



Amila Fitri Salsabil  
Joshua Ruben Bungaran Simanjuntak  
Sinta Navyanda Putri

- Project: the bio-ecology and biodiversity of freshwater stingrays in South Sumatra's waters using morphometric and genetic approaches
- Lead: Amila Fitri Salsabil
- Institution: Aquatic Resources Management of IPB University
- Award: IDR 75,000,000
- Project duration: 15 January – 30 September 2023

Nabila Nur Septiani  
Sahaya Aulia Azzahra  
Lailatun Nikmah1



- Project: Governance Economic Analysis, Supply Chain, and Livelihood of Freshwater Stingray Fishers in the Musi River, South Sumatra
- Lead: Nabila Nur Septiani
- Institution: Economy and Management of IPB University
- Award: IDR 73,546,000
- Project duration: 2 January – 30 June 2023



9

CLASS

- Policy of freshwater stingray
- Brand journalism
- Current state of freshwater sting ray research
- Design conservation project
- Public campaign
- Freshwater sting ray species identification
- Shark and ray traceability
- Citizen science
- Alternative raw material for shark fin soup
- DNA Barcoding
- Best practice of shark and ray bycatch release
- Socio economic aspect of shark and ray fisheries



11

MENTORS

- Ministry Marine Affairs and Fisheries
- Elasmobranch Project Indonesia Econusa
- Thresher Shark Indonesia
- The Indonesian Biodiversity Foundation
- National Research and Innovation Agency
- World Wide Fund for Nature Indonesia
- Biodiversity Indonesia Foundation
- Fisheries Resource Center of Indonesia

# SAVING THE LARGEST ANIMAL ON THE PLANET

## Investigating the ecology and threats in the Indo-Australia Pygmy Blue Whale Migration Corridor



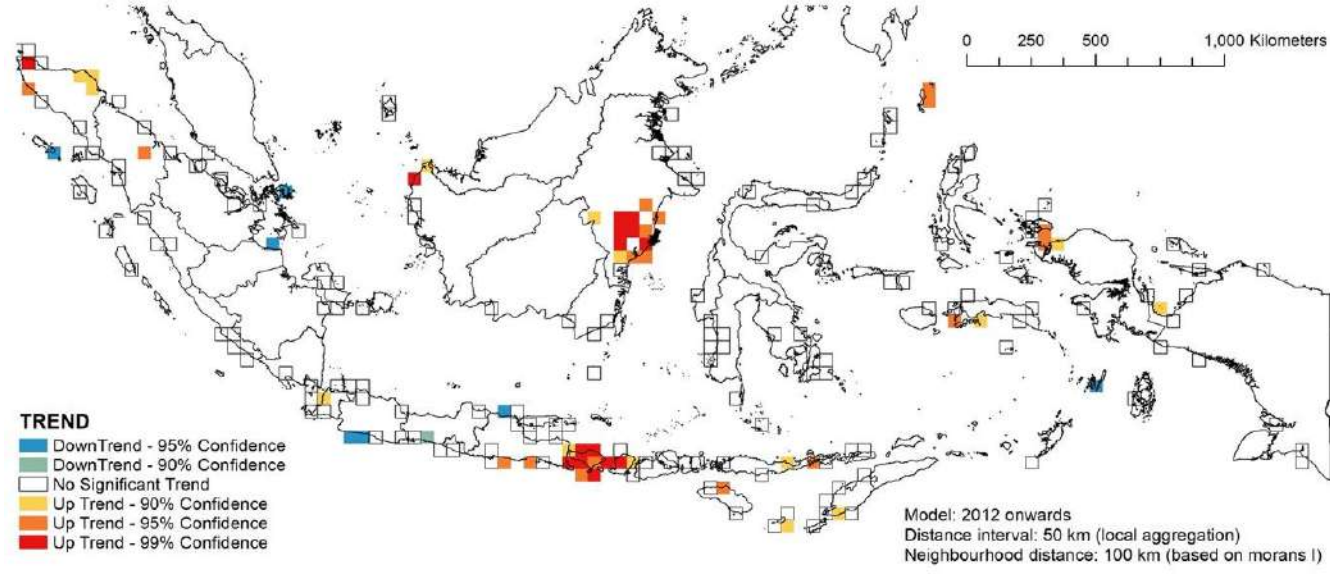
Konservasi Indonesia co-authored study with the Australian Marine Mammal Centre, Wageningen University and Research, and National Research and Innovation Agency (Indonesia) to examine the pygmy blue whale migration corridor, assess the risks, and make recommendations to optimize migratory species protection on national and transboundary marine spatial management. The study revealed a significant level of their movement connectivity between Western Australia and the Banda and Moluccas. However, the research found that the critical migration corridor was not protected, notably along international waters and within the Banda and Molucca Seas.

Sahri, Achmad, et al. "Telemetry-based home range and habitat modelling reveals that the majority of areas important for pygmy blue whales are currently unprotected." *Biological Conservation* 272 (2022): 109594.



# IMPROVE THE COUNTRY'S STRANDING RESPONSE

© Konservasi Indonesia - Menas

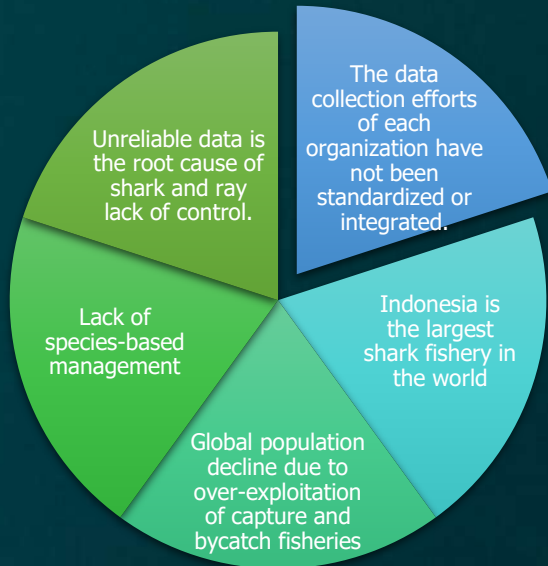


The temporal hotspot patterns of the 2012–2021 stranding events

Konservasi Indonesia co-authored a long-term study that examined the spatial and temporal patterns of stranding events in Indonesia over a 26-year period (1995-2021) in order to improve the country's response. According to this study, most stranding events in Indonesia (92.4% - 525 events) were single stranding, with the remaining as mass stranding. The existence of active NGOs, individuals, or government agencies in some places may have inflated the number of reported cases when compared to areas with less active organizations and/or individuals. We provide a good understanding of the progression of Indonesia's stranding responses as well as good guidance on resource allocation for the stranding network through this study.

Mustika, Putu Liza Kusuma, et al. "When and Where Did They Strand? The Spatio-Temporal Hotspot Patterns of Cetacean Stranding Events in Indonesia." *Oceans*. Vol. 3. No. 4. MDPI, 2022.

# Why is it important?

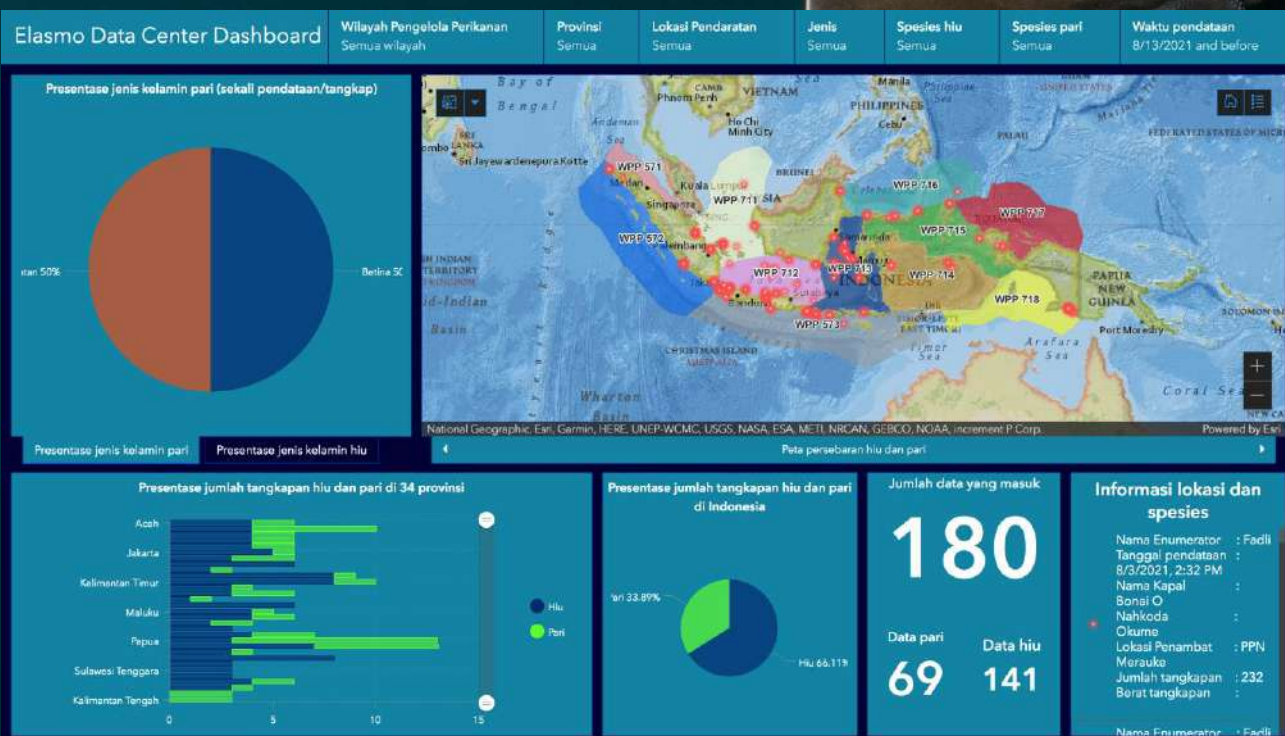


Partner entities: ESRI  
Tech: Survey123, ArcGIS Dashboard

Konservasi Indonesia supports the Indonesian government in developing a nationwide integrated survey and database of shark and ray fisheries to promote data-driven management



# DEVELOPMENT OF NATIONAL INTEGRATED SURVEY AND DATABASE SHARK AND RAY FISHERIES



# OUR TEAM



**Iqbal Herwata**  
Focal Species Conservation Senior Manager

- Expertise:
- Marine Megafauna Ecology and Conservation
  - Spatial Ecological Modelling



**Abdi Hasan**  
Bird Head Seascape Shark Science and Management Coordinator

- Expertise:
- Shark Ecology and Conservation
  - Data Management



**Muhamad Izuan**  
Bird Head Seascape Manta Ray Science and Management Coordinator

- Expertise:
- Conservation and Population Ecology of Manta Ray
  - Coral Planting and Restoration



**Hanggar Prasetyo**  
Ridge to Reef and GIS Coordinator

- Expertise:
- Spatial modelling and Data management
  - Mangrove Ecologists



**Ronald Mambrasar**  
BHS Elasmobranch Monitoring Sr. Officer

- Expertise:
- Marine Biodiversity Monitoring
  - Community Engagement



**Ismail Syakurachman**  
Elasmobranch and Charismatic Species Program Senior Officer

- Expertise:
- Elasmobranch Biological Science
  - Science-based Community Development



**Nugraha Maulana**  
Raja Ampat Monitoring & GIS Officer

- Expertise:
- Marine biologist and ecology
  - GIS analyst



**Jantje Jacobus Malaihollo** Consultant for Kaimana Whale Shark Monitoring

- Expertise:
- Whale Shark Conservation and Tourism
  - Community Engagement



**Muhammad Fadliyansah**  
Consultant for Elasmobranch Database

- Expertise:
- Elasmobranch Priority Species Identification
  - Community and Database Management



**Haidar Asyraffauzan**  
Consultant for Monitoring, Evaluation, Learning

- Expertise:
- Biological Oceanography
  - Data Analysis



# SPECIAL THANKS TO OUR PARTNERS AND FUNDERS

## Partners

Coordinating Ministry of Maritime Affairs and Investments  
Ministry of Marine and Fisheries Affairs  
National Research and Innovation Agency  
West Nusa Tenggara Government  
Maluku Government  
West Papua Government  
Sumbawa Government  
Raja Ampat Government  
Fakfak Government  
Kaimana Government

ReShark Consortium  
Papua Paradise Eco Resort  
Papua Diving  
Raja Ampat Divers  
Arborek Dive Shop  
Misool Foundation  
Dr. Edy Setyawan  
Abraham Sianipar  
Dr. Maulita Sari Hani  
Pierre Léo Paul

## Funders

MAC3 Impact Philanthropies  
The David and Lucile Packard Foundation  
Asia Coating Enterprises – Mowilex Indonesia  
The Sunbridge Foundation  
The Macarthur Foundation  
The Wolcott Henry Foundation  
Audrey and Shannon Wong  
Save the Blue Foundation  
The Walton Family Foundation  
Dawn Arnall  
Marie-Elizabeth Mali  
The Alchemy of Change Fund  
Ray and Barbara Dalio

Alex and Sybilla Balkanski  
Katrine Bosley  
Seth Neiman  
Michael Light  
Stellar Blue Fund  
Daniel Roozen  
The O'Connor family  
The Charles Engelhard Foundation  
The Paine Family Trust  
Save Our Seas Foundation  
Sea Sanctuary Trust