



IMPACT REPORT 2022

CONTENTS

Our Three Priority Regions	04
HIGHLIGHTS	06
Mozambique	00
Madagascar	24
Tanzania	28
Indonesia	32
Florida	38
Galapagos	42
Research Outputs	40
Outreach	48
Special Thanks	54

© Marine Megafauna Foundation, 2022

This report, along with other information about MMF, is available online at www.marinemegafauna.org

Marine Megafauna Foundation 7750 Okeechobee Blvd Ste 4-3038 West Palm Beach, FL 33411

Centro de Investigação Científica Megafauna Marinha Associação Megafauna Marinha Praia do Tofo, Inhambane, Mozambique

MMF is a tax-exempt non-profit charitable organization under section 501(c)(3) of the US tax code (Tax ID #46-0645082).

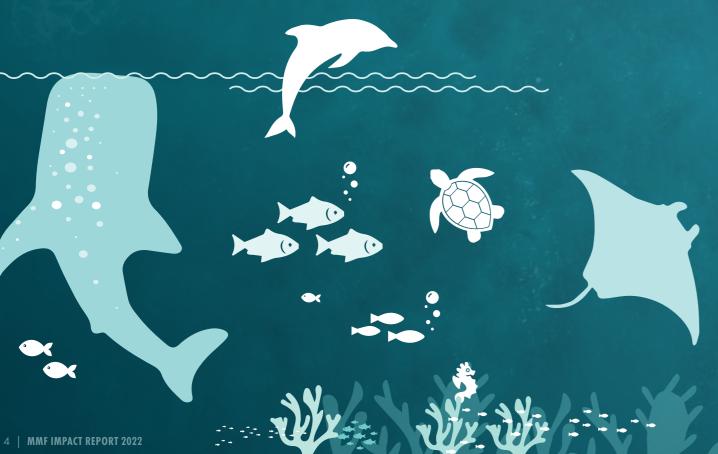
All contributions are tax-deductible in accordance with US tax law.

The Associação Megafauna Marinha is also a registered not-for-profit association in Mozambique.

Graphic Design: Madeleine Pierce

2 | MMF IMPACT REPORT 2022





MMF was founded in 2009 by renowned marine scientists Dr. Andrea Marshall and Dr. Simon Pierce to further their mission to save the world's ocean giants from extinction. Since then, many others have joined the team. The organization has expanded to worldwide research, education, and outreach on marine megafauna conservation.

Our team has conducted pioneering work on sharks and rays, particularly manta rays and whale sharks, which has helped these species move towards global protection. These iconic animals are also excellent flagships for the marine environment. Our work has broad benefits for the other lesser-known endangered species that share their habitats and the creation and management of protected areas to ensure their survival.

Our work focuses on strategic locations with large or otherwise important populations – such as breeding areas – of threatened marine species. We work to develop effective conservation solutions that minimize human threats to marine life, we work with communities to create sustainable livelihoods so they benefit from a healthy marine environment, and we build national science capacity to help ensure long-lasting monitoring and management.





CONSERVATION INITIATIVES EXPANDED



Two new locations added, including the new Dugong and Seagrass Conservation Project in Inhassoro.



OCEANAMBASSADORS

38 new community leaders (now totaling 60) in three new villages have been trained to promote education and awareness of marine conservation solutions.



IMPROVED LIVELIHOODS

129 households with improved livelihoods overall.

NEWPARTNERSHIPS

Six Local Fisheries Councils, including two new LFCs, have been established to facilitate collaboration between fishers, MMF, and government agencies to enhance the protection and management of marine resources.



CONSERVATION MANAGEMENT

107 local leaders and fishers attended four workshops on Locally Managed Marine Areas and sustainability.









MOZAMBIQUE RESEARCH

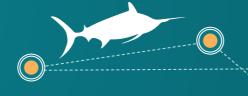


EXPANDINGLOCAL CAPACITY

Five new Mozambican divers trained and qualified for megafauna scientific surveys, including one research technician from the Mozambican Institute of Oceanography.







TRACKING MOVEMENTS

Satellite tags deployed on 11 reef manta rays, two black marlin, and one smalleye stingray, with 25 acoustic tags deployed along the Inhambane and South African coast (see overleaf).



REEF MONITORING

Remote Underwater Video surveys were deployed, and 16 eDNA samples collected.



WE EXPANDED THE MOZAMBIQUE TRACKING NETWORK

NEW ACOUSTIC TAGS IN 2022

1 BULL SHARK

7 SMALLEYE STINGRAYS

4 ZEBRA SHARKS 12 REEF MANTAS

> RHINO RAYS

















TII SCHOOLS

in coastal Mozambique have been taught the wonders of their local marine habitats, and the importance of ocean conservation.

3,478 MINI MARINE CONSERVATIONISTS

graduated MMF's curriculum between 2012–22.

38 ECOTOURISM GRADUATES

from MMF's Coral Reef Club Vocational Program.



1,295 NEW SWIMMERS

trained by MMF's team to swim safely and confidently from 2012–22.



My child joined this program in 2016. In class, the children learn a lot about the marine ecosystem, anatomy of species, and how to protect those animals and our ocean. The swimming lessons are fun; our children learn to swim, and to be more careful when they go to the sea. Now, I feel safe, as a parent, when our children go to the pool, the river, lake, or in the sea, because I know that they will be able to take care of themselves and stay safe – they know how to swim very well.

I want to thank MMF for the existence of the program in our community. I would like this program to continue to exist, and to reach more communities, so that other children benefit.

Alex Joao Gove. Tofo, Mozambique.







MADAGASCAR HIGHLIGHTS



494 NEW SHARKS

identified from 2015 to 2022 near Nosy Be in NW Madagascar.

CODE OF CONDUCT

signed into law to guide responsible interactions within the tourism industry.

2 MASTERS STUDENTS

studying Nosy Be shark tourism.













Nine acoustic receivers deployed and 34 whale sharks tagged off Nosy Be.

TRACKING

MOVEMENTS







NO PLACE LIKE HOME

Two sharks have been seasonally visiting Mafia Island for at least 15 years.



55 TISSUE SAMPLES

collected for genetics and feeding ecology studies



22NEW SHARKS

CROSSING **BORDERS**

Three whale sharks have now been photo-identified in both Tanzania and Mozambique.

identified in 2022 at Mafia Island, which is home to a small, highly-resident 200+ whale shark population.

MMF IMPACT REPORT 2022





211 DIVE SURVEYS

for manta rays and marine turtles.

6 PLASTIC SURVEYS

in manta and turtle feeding areas around Nusa Penida, for the 7th consecutive year of monitoring.





now identified throughout Indonesia.



OUTREACH

Two documentaries filmed, and 500+ people reached through our local school visits and industry workshops.



NEW INDONESIAN RESEARCHERS

Three students are being trained in research techniques from the Bina Nusantara, Diponegoro, and Udayana universities.

NEW MASTERS STUDENTS

Janis Argeswara started her research at Florida International University, and Aulia Zeintrinanda started her degree at the University of Queensland.







30 AERIAL SURVEYS

to look for manta rays along the Florida coastline, and 500+ drone flights to locate mantas and observe behavours.



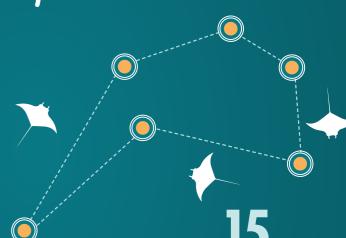
215 PLANKTON SAMPLES

to show us what mantas are consuming when feeding.



OUTREACH

2,000 children reached through our education curriculum.

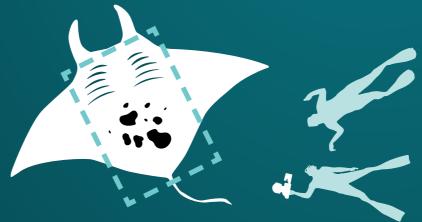


77 BOAT SURVEYS

for manta rays around the Florida coastline.

TAGGED MANTA RAYS

with acoustic and satellite tags, in collaboration with NOAA.

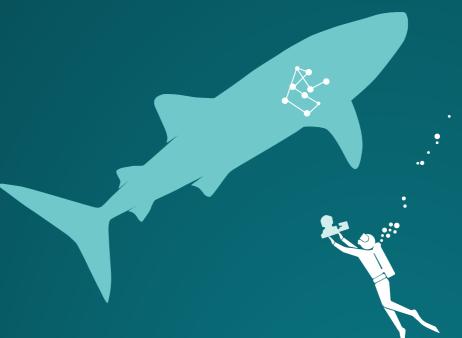


161 MANTA RAYS

now identified by the MMF Florida team.







409WHALE SHARKS

identified from the Galapagos Archipelago, with 15 new individuals identified during our July 2022 trip.

2 BLOOD SAMPLES

obtained from free-swimming whale sharks in 2022.

8 SHARKS TRACKED

with satellite-linked tags in July 2022.

DARWIN & *
WOLF ISLANDS *



GALAPAGOS ISLANDS

SEASONS

of collaborative research with the Galapagos Whale Shark Project team. ECUADOR

11





2022 **SCIENTIFIC PAPERS**

Our scientific work focuses on the world's most endangered ocean species, and how we can protect them and their habitats.

Distribution of the reef manta ray Mobula alfredi and the oceanic manta ray Mobula birostris in the Philippines: A collaborative effort for conservation.

Rambahiniarison J, Agustines A, Alexopoulos K, et al. Journal of Fish Biology.

Fatty acid profiles of more than 470 marine species from the Southern Hemisphere.

Nichols PD, Pethybridge HR, Zhang B, et al. Ecology.

Demographics and dynamics of the world's largest known population of oceanic manta rays Mobula birostris in coastal Ecuador.

Kanina Harty, Michel Guerrero, Anna M. Knochel, Guy M. W. Stevens, Andrea Marshall, Katherine Burgess, Joshua D. Stewart.

Diving into the vertical dimension of elasmobranch movement ecology.

Andrzejaczek S, Lucas TCD, Goodman MC, et al. Science Advances.

Improving sightings-derived residency estimation for whale shark aggregations: A novel metric applied to a global data set.

Araujo G, Agustines A, Bach SS, et al. Frontiers in Marine Science.

Evidence of Závora Bay as a critical site for reef manta rays, Mobula alfredi, in southern Mozambique.

Carpenter M, Cullain N, Venables SK, Tibiriçá Y, Griffiths C, Marshall AD. Journal of Fish Biology.

Citizen science reveals the population structure and seasonal presence of whale sharks in the Gulf of Thailand.

Magson K, Monacella E, Scott C, et al. Journal of Fish Biology.

Vertical habitat use of black and striped marlin in the Western Indian Ocean.

Rohner CA, Bealey R, Fulanda BM, Prebble CEM, Williams SM, Pierce SJ, Marine Ecology Progress Series.

Using drones to assess volitional swimming kinematics of manta ray behaviors in the wild.

Fong V, Hoffmann SL, Pate JH. Drones.

Residency, movement patterns, behavior and demographics of reef manta rays in Komodo National Park.

Germanov ES. Pierce SJ. Marshall AD. et al. PeerJ.

Global collision-risk hotspots of marine traffic and the world's largest fish, the whale shark.

Womersley FC, Humphries NE, Queiroz N, et al. Proceedings of the National Academy of Sciences.

The distribution of manta rays in the western North Atlantic Ocean off the eastern United States.

Farmer NA. Garrison LP. Horn C. et al. Scientific Reports.

First records of the ornate eagle ray Aetomylaeus vespertilio from the Inhambane Province, Mozambique.

Venables SK, Conradie J, Marshall AD. Journal of the Marine Biological Association of the United Kingdom.

Citizen science as a key tool in whale shark conservation.

Araujo G, Kwong KO, Jones IG, Holmberg J, Pierce SJ, Manjaji-Matsumoto BM. Aquatic Conservation: Marine and Freshwater Ecosystems.

The need for long-term population monitoring of the world's largest fish.

Rohner CA, Venables S, Cochran J, et al. Endangered Species Research.

Pieces in a global puzzle: Population genetics at two whale shark aggregations in the western Indian Ocean.

Hardenstine RS. He S. Cochran JEM. et al. Ecology and Evolution.



NETFLIX

We worked with Wildspace Productions to film sequences in Bazaruto for their upcoming Netflix documentary "Our Oceans" set for release in 2024.

OCEAN GIANTS MAGAZINE

Our second year of distributing our quarterly magazine to help showcase marine research, conservation, and education to over 6,000 subscribers.



3,000 + MINI MARINE **CONSERVATIONISTS**

inspired through our global education programs.

VIRTUAL REALITY

We worked with **IMMOTION** to film a virtual reality experience, which will be showcased in aquariums across the world, and via our Mozambique eduction programs.

> 473,300 + **REACHED VIA SOCIAL MEDIA**

GREW OUR SOCIAL MEDIA

29,500+



23,000+

GLOBAL MEDIA FEATURES

NATIONAL GEOGRAPHIC oceanographic

DIVERNET Forbes DIVE



MONGABAY





SPECIAL THANKS TO OUR MAJOR PROJECT FUNDERS

66

Your help and support enables us to protect the world's most endangered ocean wildlife, train the next generation of conservationists, and conserve marine ecosystems. These discoveries and successes would not be possible without you.

Thank you, so much.

DR. SIMON PIERCE

DR. ANDREA MARSHALL

Alan Parker

Angel Protocol

Art Blocks

Aqua-Firma

Blue Action Fund

Blue Corner Dive

Big Fish Diving

Boris Worm

David & Carol Myers
Foundation

Disney Conservation Fund

DSZ - International Giving Foundation For Mozambique

Alina Riensema

Eco Field Trips

Elnora Cameron

ExxonMobil Mozambique

Fondation Ensemble

Fortuna Foundation

Foundation Bertarelli

Foundation Segre

Georgia Aquarium

Help For Mozambique

Jim Artindale & Ann Rooney

John Marshall

Kansas City Zoo

Mantahari Oceancare

Margo Marshall

Mark & Caroline Hackney

Mario Klingemann

Milkywire

MMF Canada

Mohamed Bin Zayed
Species Conservation Fund

NACORA

Ocean Mata

Ocean Tracking Network

Ocean Wildlife Project

Our Children's Earth
Foundation

Padma

Paul T. Jones, II and Sonia M. Jones

Peri-Peri Divers

Pure Ocean Fund

Prince Albert II of Monaco Foundation

ScubaPro

Shark Conservation Fund

Shark Foundation

Stichting Kalverboer
Silsby Foundation

Sundive Byron Bay

Sustainable Ocean Alliance

Stanford University

Swiss Friends Of Galapagos

The Barlow Family

The Rufford Foundation

The Wondrous Trust

Turing Foundation

Ultralight Control Systems

US Ambassador's Special Self-Help Fund

Waterlust

Windrush Trust

WWF Tanzania

Zoomarine

52 | MMF IMPACT REPORT 2022





BECOME AN MMF MEMBER

When you join our community, you'll be making a transformational contribution to our organization's conservation efforts. Your steady, incremental donations provide a reliable stream of funding. This creates a strong financial foundation for us to build out our capacity for conservation, plan for the long term, and ensure that we have the resources we need to achieve our goals.

JOIN TODAY

If you want to help our oceans, now is the time. Join us in saving Earth's most iconic marine wildlife.

DR. ANDREA MARSHALL

Co-founder, MMF

MMF FOUNDING MEMBERS

Suzanne Pierce Mark Hackney Josh Axford Peter Rohner Sandra Venables Laura Weiand Pam Flam Mo Flam Claudia Haas Vesssela Brakalova Stanislav Germanov Tom & Mary Longfellow **Ivy Yin** Gabriela Beutler Max Jones **Ann Rooney** Tim Noack Thierry Dettwylter

Steve Rusznyak Ralph Pannell Ken Kollwitz Douglas Keim Margo Marshall John Marshall Tiffany Schauer Gonzalo Arauio Joao Neves Lily Ada Fisher Matthew Deeble-Rogers Alex Hearn Alexander Godknecht Jason Holmberg **Emily Tewes Andrea Ross** Natasha Thompson David Robinson

Debbie Arriaga Jonathan Green Sofia Green Jenny Waack Peter & Polly Webb Thanda Ko Gyi Steve Boot Wilhelmina Nyman Alina Riensema Marc Momberg David Baldwin Joe Ryan Karen Zwissler **Christopher Bartlett** Jose Serrano Martina Wing Philippa Nigg Elnora Cameron

Stefan Vogel Christian Carloni Charlotte Murphy Montana Hotchkiss Laurie Phillips Suzy Kennedy **Peder Broms** Sam Drury Joao Felizardo Sondra Eger Leonard Schokker Frederick Smith Reese Hanifin Noelle Cazalis Iselle McCalman Merrell Hora Tom Boyd Jennifer Folstad

Dean Travers Morgan Reid Christina Klemme Giles Winstanley Gavin & Liz Chamberlain Gary Steadman Wolfgang Schacke Tamara Warner Minton Celia Cackowski **Chantel Trudelle** Juerg Brunnschweiler Alena Smith Andrew Goeppner Anna Guthrie Cherilyn Chin Nicola Short **Fabian Schorp** Gayle Pate

Erin Broadus Andrew Prebble Dana Miller Sonia Bennett-Selbert Marietta Rosinski Annie Beaman Ricki Mudd Selen Yavuzdogan Catherine Hoelzer **Annie Paylor** Sarah Bishop Alene D Rice & Bruce Balan **Amelia Hampton** Marc Girard Firmeda Din Lukas Meier Christian Carloni Nadia McNeilly

Aart Van Dijk Philippe Deloze Lukas Phan-huy Ally Landes Jenna Beyer Nadine Kern Caterina Cavallaro Peter Kyne Katie Norman Elias Sinderson Veena Giridhar Gopal **Ingrid Steffers** Malgorzata Jazel **Odette Rodrigues** Andrea Esty Amy Dodd Barbara Dykema Abraham Van Rooyen

Christine Skippen Franziska Roeder Cristobal Salvatierra Lori J Lauscher Anna Bohach Sharon Creelman Alex Radu Andrea Shum Diane Davidson Milena Scott Michael Ernestus Godknows Hwata Christopher Bie Elizabeth Stanko Elizabeth Blackford Julia Cano Julie Corbin Jesse Robbins

54 MMF IMPACT REPORT 2022





EXPLORE MMF's PIONEERING MARINE CONSERVATION WORK

Get our FREE Quarterly Magazine delivered straight to your inbox.

LEARN MORE



IMPACT REPORT 2022

marinemegafauna.org
info@marinemegafauna.org

Marine Megafauna Foundation 7750 Okeechobee Blvd Ste 4-3038 West Palm Beach, FL 33411