



# OLIVE RIDLEY PROJECT

## NEWS FROM THE FIELD

JANUARY - MARCH 2023 VOL 1





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# OUR MISSION

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Sea turtles have existed on Earth for over 120 million years and currently, there are seven species left in the world. These incredible animals grace the waters of all the world's oceans except the Arctic.

Oceans play a critical role in sustaining human life by providing essential resources such as food, freshwater, and oxygen. Therefore, preserving and protecting our oceans is crucial for the survival of our species.

As "keystone" species, sea turtles play a vital role in maintaining the health of the ocean, including protecting fish stocks, keeping coral reefs healthy, and preventing seagrass meadows from overgrowing and dying.

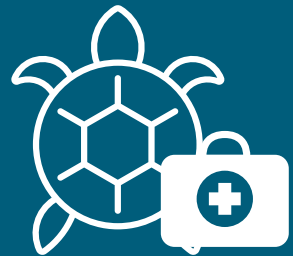
However, sea turtles face many threats to their survival.

**ORP IS ON A MISSION TO PROTECT SEA TURTLES AND THEIR HABITATS THROUGH RESCUE AND REHABILITATION, SCIENTIFIC RESEARCH, AND EDUCATION AND OUTREACH.**



# OUR WORK

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## Rescue & Rehabilitation

We treat injured sea turtles rescued in the Maldives at our Marine Turtle Rescue Centre, which has a fully equipped veterinary clinic and a resident veterinary team. We also have a rehabilitation centre in North Malé Atoll and two more under construction in Raa and Noonu Atolls.



## Environmental Education

Education is a powerful tool to increase awareness, engage people and stimulate action. We educate school children, communities, divers, fishermen, tourists, resort staff, biologists, and the general public, in person and online. We also offer volunteer and internship programs.



## Scientific Research

We conduct research about sea turtle populations, distribution, health, and threats to improve scientific knowledge and inform sea turtle conservation policy.



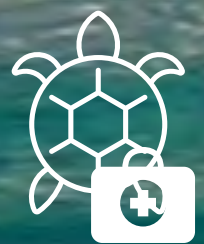
## Community Outreach

To create long-lasting change, we ensure that our conservation initiatives are inclusive of local communities and are practised from the ground up. Therefore, we collaborate with affected industries, communities, governments, and other NGOs to apply research to practice.



## BY THE NUMBERS

Since each project's inception



207

Turtle patients  
admitted



123

Turtle patients  
released



78

Turtle patients  
deceased



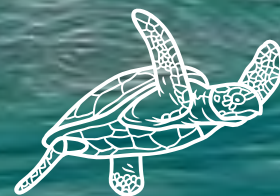
179

Volunteers  
hosted at the  
Rescue Centre

676



Sites w/sea turtles sighted



7,043

Sea turtles identified

>36.3K



Sea turtle sightings recorded

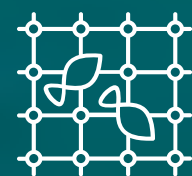
2



Rehabilitated olive  
ridley turtles  
satellite tagged

984

Nests Recorded



>11K

Kgs of  
ghost gear  
removed



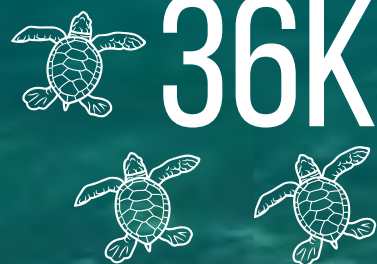
32

Publications

10



Sea Turtle Guardian  
Programme  
Graduates



36K

Hatchlings  
counted



51.1K

Square metres  
of ghost net  
repurposed



~40K

Individuals educated



~2.2M

YouTube Views



# HIGHLIGHTS FROM THE FIELD



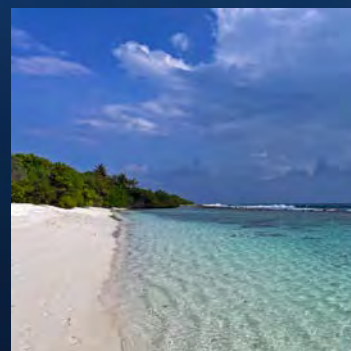
**Gus, a previous patient and a flipper amputee (caused by ghost gear entanglement) has been spotted in the wild.**

**READ MORE ON PAGE 8**



**Our first five years of consistent nest monitoring in the Maldives has been concluded and analysed.**

**READ MORE ON PAGE 9**



**R. Vandhoo's nesting beach: a multi-stakeholder collaboration to protect a Maldives nesting hot spot.**

**READ MORE ON PAGE 11**

We have had a busy but exciting start to 2023 here at ORP, with the initiation of new projects and expansion of our team. We welcomed our first sea turtle ranger in the Maldives, a community education and outreach officer and a sea turtle monitoring assistant in Kenya, and a database administrator, who will support the optimisation of our expanding databases.

Previously in Kenya, we mainly focused on research. However, this year has seen the launch of several new education and outreach initiatives. We have also initiated a new internship programme, with support from one of our partners, Diving The Crab. The programme is aimed at Kenyan university graduates seeking hands-on experience in marine conservation, with a focus on building underwater research skills.

We have also added a new field site for our Photo-ID research, in collaboration with Shimoni Turtle Watch, a local sea turtle conservation project.

Over in the Maldives, we welcomed a new Lead Veterinary Surgeon, Dr Max, and a new Resident Veterinary Surgeon, Dr Mariana, as we marked the sixth anniversary of the Marine Turtle Rescue Centre. Along with Veterinary Programme Officer, Dr Claire and Veterinary Nurse Lauren, the ORP veterinary team has over 25 years of collective sea turtle medicine experience and is the largest and most experienced sea turtle veterinary team in the region. The Rescue Centre has come a long way from its beginnings in 2017 and we are now in the process of expanding our facilities so that we can provide even better care for our patients.

In March, ORP's Spatial Ecologist Researcher, Rushan, visited the Rescue Centre to train the team on satellite tracker deployment. Now we are eagerly awaiting our patients' full recovery, in order to resume our satellite tagging project, #ORPTrack. Through this project, we will be studying tagged olive ridley patients' post-rehabilitation travels and feeding locations. Thanks to our amazing donors and supporters, we have nine satellite tags ready to go!

In Oman, Davide took over from Tom as the in-field Sea Turtle Biologist in January. Davide began his tenure with seasonal algal blooms spoiling underwater visibility and making it challenging to conduct Photo-ID research. However, he still managed to familiarise himself with the local sea turtle population. Unfortunately, some of his sea turtle encounters were not under ideal circumstances, as several green turtles were unintentionally caught as bycatch by local fishers. Luckily, they were all released safely without any issues.

In Pakistan, we continue to focus on ghost gear recovery. Sadly, we frequently encounter sea turtle carcasses during our recovery missions. Since there are currently no facilities available in the country to conduct appropriate post-mortem evaluations, we do not know the cause of death for most of these animals. We are hoping to address this problem in the future.

In Seychelles, we have been busy recording nesting data for the past several months. The country is home to one of the most important hawksbill sea turtle rookeries in the world, and we were thrilled to observe many hatchlings of this critically endangered species here. To further our understanding of sea turtle reproduction, we have partnered with a researcher who is investigating fertilisation rates and factors leading to failure of sea turtle egg development.

In March 2023, four members of the ORP Team participated in the 41st International Sea Turtle Symposium (ISTS41) held in Cartagena, Colombia. The event provided an excellent platform for us to exhibit our organisation's initiatives on sea turtle rescue and treatment, nesting activity, and research in the Maldives, as well as Photo-ID and health monitoring in Kenya.

During the symposium, our team engaged in many discussions with experts from across the world and addressed several enquiries about the technical aspects of Photo-ID and its potential applications. We are excited to follow up with all interested parties in the future to expand our existing Photo-ID network.



The Marine Turtle Rescue Centre celebrated its sixth anniversary on 2nd February 2023! We have come a long way since opening in 2017, thanks to our supporters, volunteers, fantastic veterinary team, and our host Coco Palm Dhuni Kolhu. The clinic is the most advanced sea turtle medical facility in the Maldives, equipped with a full diagnostic and blood laboratory, pharmacy, microscope, Class-4 therapeutic laser, ultrasound, endoscope, X-ray, and full surgical suite.

Our veterinary team in the Maldives has the expertise to evaluate different injuries and maladies in sea turtles and provide expert medical care. The team also steps in as a knowledgeable resource for other rescue centres within the country and the region.

We are excited to introduce new members of our veterinary team:



**DR MAX - LEAD VETERINARY SURGEON**

Dr. Max comes to ORP with more than 15 years of experience in the sea turtle medical and research world. He is taking over from Dr. Claire, who has transitioned to Veterinary Programme Officer while she is working on her Ph.D.

Born and raised in coastal San Diego, California, Dr. Max grew up surrounded by ocean life and cultivated a lifelong passion for marine conservation. He has practised and taught marine animal medicine and conservation in Costa Rica, Belize, Thailand, Ecuador, Maldives, and Mexico. Dr. Max is also certified by the World Aquatic Veterinary Medical Association as an Aquatic Animal Veterinarian.

Dr. Max served as the founding veterinarian of the Sea Turtle Hospital at the University of Florida and as the Director of Rehabilitation at Loggerhead Marinelife Center in Florida, where he guided the expansion of the new sea turtle hospital into the largest of its kind in the world.



**DR MARIANA - RESIDENT VETERINARY SURGEON**

Dr. Mariana grew up in Lisbon, Portugal. She graduated with her Integrated Master's in Veterinary Medicine in January 2019 from Lisbon University. Drawn by all things aquatic, her masters tackled dolphin research and conservation in Patagonia.

Dr. Mariana participated in turtle nesting research in both Cape Verde and Florida; completed a sea turtle rehabilitation internship in Florida; and joined Archelon Rescue Centre as a volunteer veterinarian for several months. After graduating, Mariana joined Comunidad Inti Wara Yassi, an NGO in Bolivia, where she worked closely with big cats - her other passion.

From 2020 to the end of 2022, Mariana practised small animal and exotic medicine at a busy hospital in the UK while also working as a veterinary advisor and communications lead at Sea Turtle Rescue Alliance.



**ASHA - RESCUE CENTRE INTERN**

Asha is a native of Malé and has always been drawn to the ocean and its fascinating and diverse marine life. Asha has finished her Foundation Studies in Science and is planning to begin her degree in Marine Science from Maldives National University later this year. She joined ORP's Internship Programme because of her love for sea turtles and her desire to learn more about their biology and care.

# RESCUE & REHABILITATION

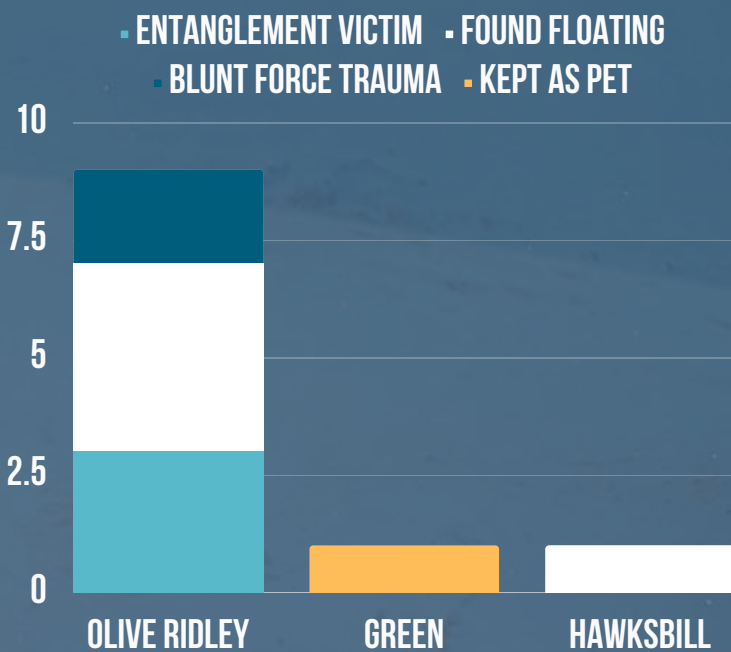




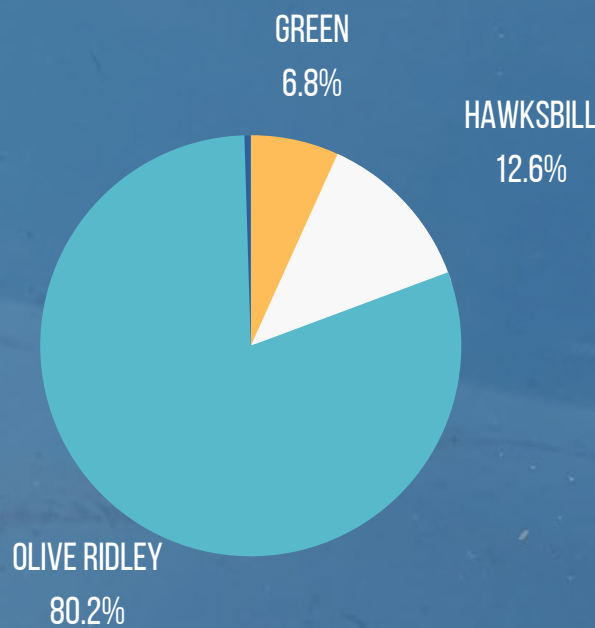
# OUR TURTLE PATIENTS

	This Quarter	This Year	Since 2017
NEW PATIENTS ADMITTED	11	11	207
PATIENTS RELEASED	5	5	123
PATIENTS DECEASED	6	6	78
PATIENTS TREATED	16	16	207
PATIENTS STILL IN CARE	5		

## REASON FOR ADMITTANCE



## PATIENTS BY SPECIES



## NEW PATIENTS ADMITTED

**Zuhura**, a juvenile olive ridley, was admitted on 10th March, having been rescued from ghost net entanglement at Coco Palm Dhuni Kolhu itself.

**Maamui**, a juvenile olive ridley, was admitted on 14th February after having been found floating and unable to dive at our partner resort Six Senses Laamu in Laamu Atoll.

**Raani**, an adult female olive ridley, was admitted on 31st January, having been found floating in Lhaviyani Atoll with blunt force trauma injuries. She passed away on 6th February.

**Hawwa**, a juvenile olive ridley, was admitted on 30th January after being rescued from a ghost net in North Malé Atoll.

**Handhuvaru**, an adult female olive ridley, was admitted on 29th January after being found floating with a head injury near Ritz-Carlton, Fari Islands, in North Malé Atoll. She passed away on 31st March.

**Muraka**, a juvenile olive ridley, was admitted on 19th January, having been found floating near Fari Islands, North Malé Atoll.

**Shara**, an adult female olive ridley, was admitted on 15th January, having been found floating in South Ari Atoll.

**Redhan**, a juvenile olive ridley, was admitted on 10th January having been found floating in Gaafu Alifu Atoll. He passed away on 13th January.

**Fari**, a juvenile olive ridley was admitted on 7th January. Fari was found entangled in a ghost gear near Fari Islands, North Malé Atoll with the help of a drone! He was released on 21st February.

## RELEASED PATIENTS

**Fari** 21 February  
**Ekanlo** 19 February  
**Kakuni** 22 January  
**Kandu** 10 January  
**Lakia** 2 January

## DECEASED PATIENTS

**Handhuvaru** 31 March  
**Maamui** 27 March  
**Leonardo** 8 February  
**Raani** 6 February  
**Redhan** 13 January  
**Rak** 29 January

## GUS CASE STUDY



Gust in the tank at the Marine Turtle Rescue Centre.

Do you recall Gus, the juvenile green sea turtle who was brought to us in May 2022 after being found entangled in ghost gear in South Ari Atoll? Despite requiring a front left flipper amputation, he recovered well from his injuries and was declared fit to return to the ocean within six months. Gus was released in December 2022 off the beach at Coco Palm Dhuni Kolhu, near a flourishing seagrass meadow.

We are delighted to report that Gus has been sighted in the wild multiple times this year. He appears to be thriving in the seagrass pastures around Coco Palm Dhuni Kolhu and a neighbouring island. Sightings of sea turtle patients after release are very rare, so we are thrilled to have spotted Gus exhibiting normal biological behaviour in his native habitat. We hope to continue seeing him for years to come.



Gus swimming in the wild four months after his release.



For sea turtle conservation, monitoring nesting beaches has been a critical practice for a long time. Sea turtles are easier to observe and count when they are on beaches than in their underwater habitats. Therefore, the practice of nesting beach monitoring has helped scientists all around the world estimate the number of adult individuals in a specific turtle population. By analysing observations over the years, it is possible to infer whether the number of adult turtles is stable, growing, or decreasing.

In Maldives, coordinated nest monitoring is a tricky task as nesting can happen on nearly all of the 1,200 islands and it predominantly happens at night. Despite the logistical challenges, ORP has been collecting sea turtle nesting data from all over the country with the help of citizen scientists for several years. Since the end of 2017, ORP biologists have been collecting continuous data in Lhaviyani, Laamu, and Baa Atolls.



A rare sight: a green turtle nesting during the first hour of daylight in Laamu Atoll, observed by ORP Intern Sarah.

In March 2023, ORP conducted a comprehensive review of sea turtle nesting patterns in the Maldives from 2018 to 2022. The study, led by our Maldives Project Manager, Isha Afeef, provided insights into sea turtle nesting activity over a five-year period. We were delighted to present our results at the 41st International Sea Turtle Symposium held in Cartagena, Colombia.

The study demonstrated an overall 1,110 records of sea turtles coming to shore on 34 islands in ten atolls, out of which 656 incidents resulted in successful egg-laying.

### DID YOU KNOW?

Sea turtles do not lay a nest every time they come to the beach. Sometimes a turtle is disturbed or unhappy with the beach conditions and returns to sea without laying. These cases where the turtle started but did not finish digging the nest are called "false crawls", or "failed nesting attempts".

The study found that a vast majority of nests were laid by green turtles, along with thirteen nests laid by hawksbills. To our surprise, six olive ridley turtle nests were also recorded within five years. Olive ridleys famously come to nest *en masse* on beaches in India, but the species was so far assumed to not be nesting in the Maldives. Our observations might be the first record of a range expansion for one of the more prolific sea turtle species in the Indian Ocean. We are excited to see if this trend persists in the future, and we are optimistic that it will, given that we have already received reports of olive ridley nests in 2023.

Green turtle nests are laid all throughout the year with a peak from June to August in several atolls including Baa, Noonu, and Laamu. Since nesting can occur at any time, typical protection measures such as beach closures during nesting season are not a practical solution in the Maldives.

Overall, green turtle nests can be very successful with an average of over 90% of the eggs per clutch producing healthy hatchlings. Our records also show that flooding is one of the biggest obstacles to successful hatching in the country. When a nest is submerged underwater due to prolonged rain or high spring tides, the embryos will gradually die from lack of oxygen, resulting in drastically lower hatching success rates.

In addition to loss of nesting habitat to coastal development and illegal take of eggs for consumption, sustained increase in flooding and storm events due to climate change poses a great risk for sea turtles nesting in the Maldives.

## RESEARCH: NESTING IN THE MALDIVES



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# EDUCATION & OUTREACH



Education is an integral part of our multifaceted approach to protecting sea turtles and their habitats. We believe that education is a powerful tool for fostering curiosity, increasing awareness, engaging people - particularly young people - and encouraging action at the local, national, and global levels.

Our educational initiatives are tailored to meet the needs of all our audiences, both at our field sites and across our digital platforms. We conduct various in-person educational and interactive workshops, talks, and festivals on a broad range of topics, from sea turtle biology to conservation. Additionally, we host and attend webinars and have a vast repository of sea turtle educational resources on our website - including free courses.



Sea turtle education day at Kuramathi Resort, Maldives.

This year, we initiated our educational outreach efforts with a celebration to mark the International Day of Women and Girls in Science. In the Maldives, we organised a sea turtle education day at Kuramathi Resort for 70 students from AA.Thoddoo and AA.Rasdhoo school. During the session, the students were excited to learn about how sea turtles have unique facial scales that can be used to identify individuals, and many expressed interest in contributing to our Photo-ID citizen science programme. Our goal with these educational activities is to spark children's interest in the natural world and foster a commitment to protecting the environment.

In March, we targeted a slightly older audience by organising a talk called 'Satellites and Surgeons' at the Maldives National University. ORP's Spatial Ecology Researcher, Rushan, provided insights

into the challenges and benefits of satellite tagging sea turtles, and also provided updates on the journey of ORP's first two satellite-tagged sea turtles - Autumn and Pickle. Although satellite tagging has been carried out in the Maldives before, it is still a fairly new concept, so the talk sparked a lot of curiosity and we received some great questions.

Meanwhile, Dr. Max, ORP's Lead Veterinary Surgeon, provided fascinating updates from the world of sea turtle medicine, including breakthroughs that could possibly be used in sea turtle rehabilitation in the Maldives. The event had an amazing turnout with over 70 participants keen to learn about opportunities for sea turtle research and medicine in the country.

We have been offering internships in the Maldives since 2018 and we are thrilled to be able to now offer the same in Kenya in collaboration with Diving the Crab. Our first intern in Kenya, Diana Kerubo Nyakundi, is a graduate of the Technical University of Mombasa, with a BSc degree in Marine Resource Management.



Diana Kerubo Nyakundi, intern, ORP Kenya.

“During my ORP internship, I am learning to dive and interact with the two species of sea turtle living on the reefs, whilst recording their sizes and behaviours, for data collection and research. I also take part in various community education and outreach activities, and I'm glad to have a good team that is always ready to guide me. Thank you for making my dream come true!”

Diana Kerubo Nyakundi



The island of Vandhoo in Raa Atoll is significant for two reasons:

- The nesting beaches of R. Vandhoo are one of the 14 sea turtle nesting hotspots in the Maldives as identified by the country's government in 2006.
- It is home to the first regional waste facility being developed in the country.

In recognition of the significance of Vandhoo as critical nesting habitat for sea turtles, an MoU to help monitor and protect the nesting beaches of R. Vandhoo was signed this year, between the Ministry of Environment, Climate Change and Technology, the Waste Management Corporation Ltd. (WAMCO) and Olive Ridley Project.

The initiative to protect Vandhoo's beaches goes back to 2014 when the MoECCT initiated the implementation of a localised sea turtle management plan. In 2021, a three-month community-led monitoring program was piloted on the island, in coordination with the Environmental Protection Agency (EPA), Maldives, which trained the students from the neighbouring island of R. Innamaadhoo to conduct regular weekly surveys. ORP provided technical assistance and training support for this pilot programme.



Isha Afeef, ORP's Project Manager in Maldives (left), and Ajwad Musthafa, Permanent Secretary of Environment, Climate Change & Technology, Maldives (right) signing the MoU for Sea Turtle Nest Monitoring in R. Vandhoo.

Following the signing of the MoU on March 20th, 2023, for a period of one year, WAMCO will employ an Assistant Environmental Safeguard Officer (AESO) to be stationed in R. Vandhoo.

Their responsibilities will include monitoring and protecting the island's beaches for nesting sea turtles.

ORP will provide training and co-supervision to the AESO for all nesting data collection on R. Vandhoo. The AESO's role also includes conducting training and awareness sessions on sea turtles for WAMCO staff, along with recording and reporting any incidents of poaching.

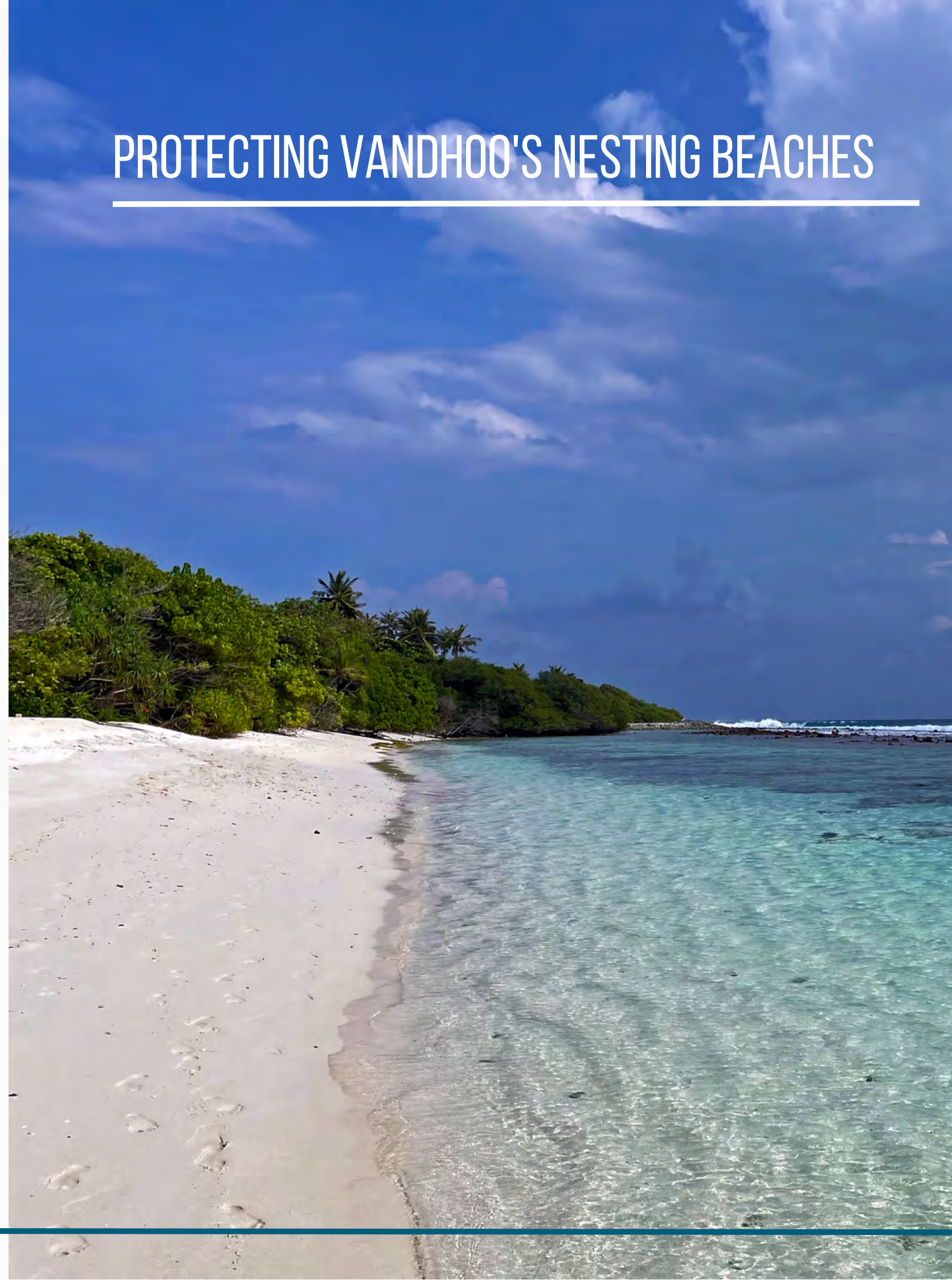
The MoECCT, together with ORP, will be assisting WAMCO in the legal and regulatory aspects of the project. MoECCT will also provide certain logistical and equipment-related support, and present a platform to publish the results. Overall, the project aims to improve sea turtle monitoring efforts and collect robust nesting data on R. Vandhoo to compare it with historical records and understand the current situation on the island.

Our sea turtle biologist from Raa Atoll and the Maldives Project Manager will work closely with the AESO. We are elated about this collaboration and look forward to starting data collection by early May.



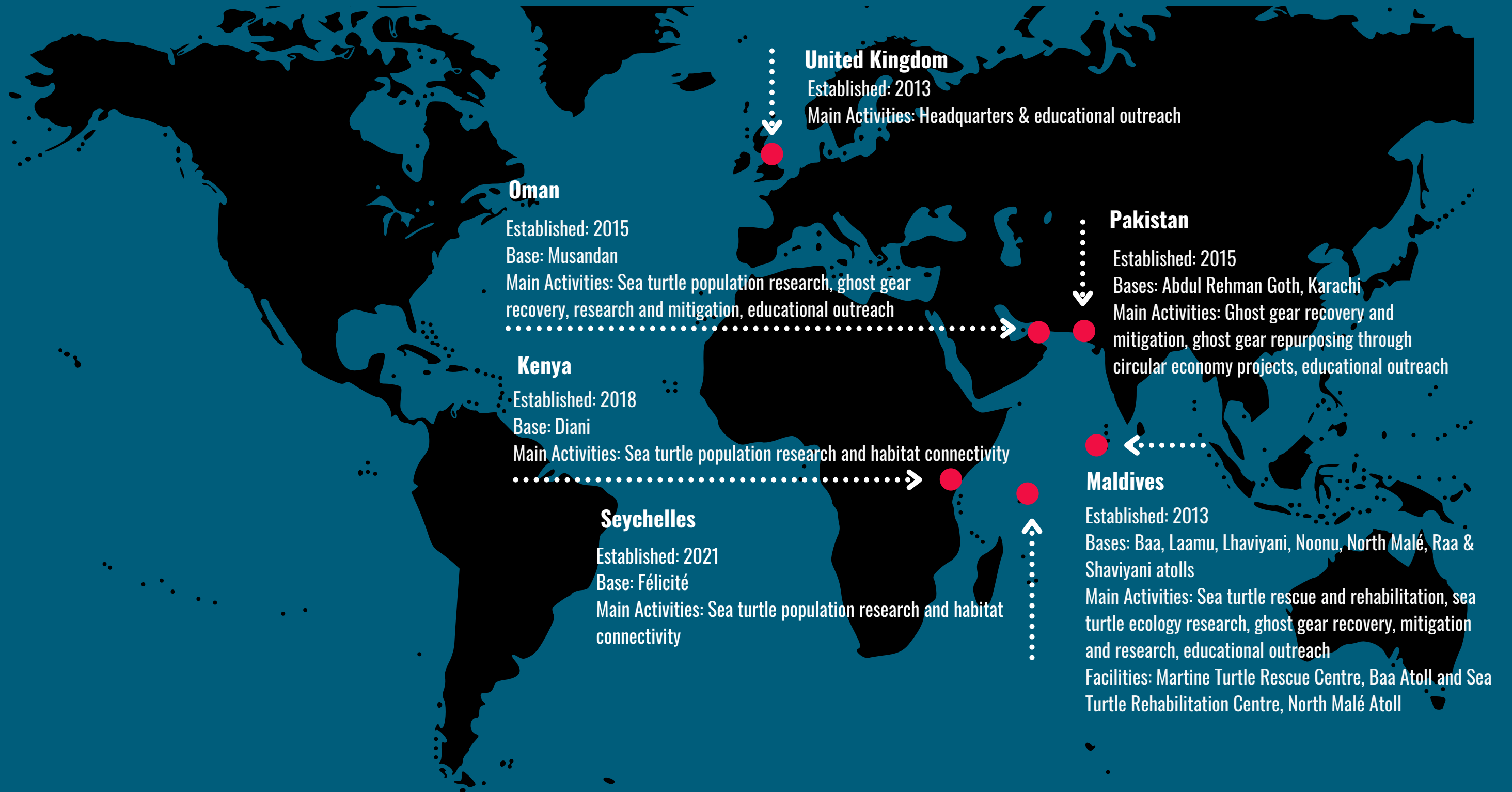
R. Vandhoo nesting beach.

# PROTECTING VANDHOO'S NESTING BEACHES





# OUR PROJECTS





# KENYA

## ORP KENYA BY THE NUMBERS

### IDENTIFIED GREENS

Since 2018

619

New this quarter

30

20



Sites w/sea turtles sighted

### IDENTIFIED HAWKSILLS

Since 2018

81

New this quarter

2



760 Total sea turtles identified

We launched our Kenya project in 2018 in Diani Beach on the south coast of the country, an area known for its coastal biodiversity. This important landscape is divided into two primary protected areas: Diani-Chale Marine Reserve (DCMR), and Kisite-Mpunguti Marine Reserve. Despite the establishment of DCMR in 1995, it has yet to fulfill its intended purpose due to challenges in gaining community support for the initiative.

Until the end of 2022, ORP's work in Kenya primarily focused on sea turtle monitoring and research in the DCMR. This research is aimed at enhancing scientific knowledge of sea turtle distribution in marine ecosystems and identifying the major threats they face in the region. We have found that sea turtle bycatch is a critical problem here that needs to be addressed in collaboration with the local communities.



Two hawksbills in Diani, Kenya.

To this end, Juma Gwerenya, our former volunteer, conducted research on community perceptions towards sea turtles and their conservation at the end of last year. Based on the findings, our team developed an educational outreach programme, aiming to train community members as ambassadors for a safe and pristine ocean, with the ultimate goal of reducing threats to sea turtles.

The programme was officially rolled out and implemented this year by Project Coordinator Leah Mainye, and Juma Gwerenya, who has now taken on the role of Community Education and Outreach Officer. This initiative, is one of our undertakings in our larger goal of involving community stakeholders and building local and national capacity for sea turtle conservation.

Additionally, we also partnered with local community-based organisation Shimoni Turtle Watch (STW) and the Kenya Wildlife Service (KWS), to expand our research area further south to Kisite-Mpunguti National Marine Park and Reserve. Our aim here is to conduct robust research into sea turtle distribution, which will inform conservation, and management priorities for the marine protected area.

This expansion of our field site was accompanied by an increase in team size. Ali Mkasha from STW joined us as our new Sea Turtle Monitoring Assistant in Kisite-Mpunguti. Ali, along with our local partners, received in-depth training in sea turtle Photo-ID research and data management. We are also lucky to have the logistical support of Pilli Pipa Dhow Safari tours as well as other local boat operators who allow Ali to join their trips.

In further pursuit of our capacity building goal, we launched an internship programme in partnership with Diving the Crab dive centre in March. The programme is designed for Kenyan university graduates seeking hands-on experience in marine conservation, with a focus on building underwater research skills.



Our first intern, Diana Kerubo Nyakundi, is a graduate from the Technical University of Mombasa, with a BSc degree in Marine Resource Management. As of now, Diana has completed all lessons of e-Turtle school, our sea turtle guardian program, achieved her Open Water and Advanced Open Water dive certifications, and received comprehensive training in all aspects of fieldwork.

Lastly, the first phase of our collaboration with Arribada Initiative was successfully completed with the deployment of the final two SnapperGPS tags (out of five) on juvenile sea turtles in Diani by our Project Manager, Dr. Joana Hancock. Each tag is capable of collecting up to one month of movement data, and this data will prove to be crucial in our understanding of sea turtle migration and movement across Kenyan waters. The tagged sea turtles were hand-captured in Galu and Kisima Mungu reefs in early March. Some of these turtles have been spotted after tagging and our team will attempt to recapture them in the coming months to remove the tags and retrieve the data.



# MALDIVES

## TOTAL IDENTIFIED SEA TURTLES BY ATOLL

		
Baa	236	850
Laamu	324	525
Lhaviyani	409	343
Noonu	47	102
North Malé	87	945
Raa	3	173
Shaviyani	9	46

## ORP MALDIVES BY THE NUMBERS

### IDENTIFIED GREENS

1,378

New this quarter

36

NEW NESTS LAID  
THIS QUARTER

90

### IDENTIFIED HAWKSBILL

4,510

New this quarter

58

HATCHLINGS COUNTED  
THIS QUARTER

809



5,888

TOTAL SEA TURTLES IDENTIFIED

592



SITES W/SEA TURTLES  
SIGHTED



# MALDIVES



The Maldives is an island nation in the Indian Ocean consisting of nearly 1,200 separate islands in an atoll chain that stretches over 870 km from north to south. Five species of sea turtles have been recorded in Maldivian waters, but only two, the hawksbill and the green turtle, are known to be resident in the reefs and shallow lagoons of the country.

The in-field ORP team in Maldives consists of sea turtle biologists, a veterinarian, a veterinary nurse, and three interns based across seven different atolls. Since our Photo-ID project began, our team has registered over 35,000 sightings of 5,888 identified green and hawksbill turtles in the country with the help of many citizen scientists and community data contributors. We would like to extend our gratitude to all of them for their invaluable data submissions.



*Olive ridley turtle hatchling spotted on Coco Palm Dhuni Kolhu in March 2023.*

Sea turtle nesting occurs throughout the country and while most nests observed were laid by green turtles, there were a few surprises at the beginning of this year – including an olive ridley turtle nest that hatched in March on Coco Palm Dhuni Kolhu for our lucky rescue centre team to see. You can read more about sea turtle nesting research in the Maldives on page 9.

In previous years, the months from December to April have often been characterised by a high number of sea turtle entanglements in ghost gear which resulted in many injured sea turtles being brought to the Marine Turtle Rescue Centre. This year, however, was quieter than previous years - and particularly last year, which was the busiest entanglement season we have ever recorded with 18 patients being admitted. We are unsure why this year's "entanglement season" has been quiet so far.

Despite the lower number of 32 entangled turtles reported to ORP so far this year, the veterinary team was still busy treating eleven new patients.



*Satellite tagging training, island style.*

We hope that some of our current patients can be fitted with satellite tags as part of our #ORPTrack project once they recover and are ready for release back into the wild. In March, our Spatial Ecologist Researcher, Rushan visited the Marine Turtle Rescue Centre with nine new satellite tags ready for deployment. He gave tag deployment training to the rescue centre team, using an unsuspecting coconut as a turtle patient dummy, as pictured above.

## DID YOU KNOW?

Ghost nets are fishing nets which have been lost, discarded or abandoned at sea. These nets can accumulate in large conglomerates and continue to trap wildlife. The entangled animals more often than not face serious injuries, and even death, as they cannot escape from the net. ORP is documenting the presence and characteristics of these nets and is working on developing a repurposing initiative for recovered ghost nets in the Maldives.

We are also happy to report that we took a great step forward in the protection of a designated sea turtle nesting hotspots on Vandhoo Island in Raa Atoll, together with The Ministry of Environment, Climate Change and Technology and the island's user Waste Management Corporation Ltd. Check out the full story on page 11.



# OMAN

## ORP OMAN BY THE NUMBERS

### IDENTIFIED GREENS

Since 2019

117

New this quarter

10

### SITES W/SEA TURTLES SIGHTED

11

### IDENTIFIED HAWKSILLS

Since 2019

10

New this quarter

0



127 TOTAL SEA TURTLES IDENTIFIED

Oman is a significant nesting ground for sea turtles, with five of the seven known species found in its waters. Our team operates in Zighy Bay, located in the Musandam Peninsula of northern Oman. This region is known for its rugged coastline, towering mountains, and crystal-clear waters.

Zighy Bay, apart from being a popular tourist destination, is also home to a fishing village. While we do not observe nesting in this area, the reefs here are vital resting and foraging grounds for both hawksbills and greens. Collaborating with the Six Senses Zighy Bay resort has allowed us to establish our operations, conduct sea turtle research, and better understand their distribution. Our Photo-ID research has shown a greater presence of juvenile sea turtles with carapace lengths of 35-50cm.

In January, we welcomed Davide Panarese, successor to Tom Osborne, as our on-site Sea Turtle Biologist and Guest Educator. Underwater surveys at the start of the year saw nine sightings, with one newly identified turtle, and these numbers increased in the following months. February saw twelve turtle sightings and six new individuals, but our underwater activities were thwarted by an algal bloom that caused the waters to take on a murky green quality, causing visibility issues.



*Algal blooms turning the sea green at Zighy Bay.*

Algal blooms happen at least once per year due to seasonal and water temperature changes causing the water column to mix. This gives rise to an upwelling of nutrients like phosphates and nitrates, which serve as food for many algal organisms (like dinoflagellates) that thrive. This phenomenon can last 4-5 days and can repeat itself for weeks. The bloom in February persisted throughout the month, lending the waters a murky green quality. In March,

as the bloom subsided, we recorded 20 sea turtle sightings and four new individuals.

Despite the unfavourable water conditions, we continued our work with fishermen on monitoring bycatch.

There are around 25 fishermen in Zighy Bay. The primary fishing method used in this area is beach seine, where nets are set 100/200 meters from the shore and then dragged towards the beach by boats. The nets used are large with small holes, and the fish targets are usually herrings, snappers, and trevallies. However, this method can also result in significant bycatch of non-target species such as sea turtles and stingrays.

In the last three months, seven green sea turtles were accidentally caught by fishermen, of which we were able to identify three turtles from our Photo-ID database. Thankfully, none of the turtles had sustained injuries and after data collection, we were able to release them into the wild unharmed.



*A resident green turtle in Zighy Bay.*

Although Oman hosts the world's largest nesting area for loggerhead turtles and some of the most significant nesting grounds for green turtles in the Indian Ocean, there is a lack of veterinary facilities dedicated to sea turtles. This is particularly concerning given the country's significant ghost gear and bycatch problem.

We are therefore pleased to be currently collaborating with the Ministry of Environment and other stakeholders to establish a sea turtle rescue facility in Oman. Although progress has been slow, we remain optimistic that we will eventually succeed in completing this crucial project.



Our work in Pakistan began in 2015, in the fishing village of Abdul Rehman Goth (ARG). The village is located in Hawke's Bay, close to Hawke's Bay Beach, a crucial nesting site for green sea turtles. The fishing village of ARG has a notable ghost gear problem, with abandoned, lost or discarded fishing gear drifting into the waters and being littered on the beach. Since there are no return schemes for discarded nets in ARG, and the village lacks waste management facilities, the problem of ghost gear pollution continues to be a threat to the community and the sea turtles of the region.

To mitigate this issue and protect sea turtle habitats from marine debris, ORP initiated a circular economy project in ARG. The aim of the project is to repurpose recovered ghost gear into hand-made products such as pet leashes and bracelets. The sale of these products provides additional income to the fisher community, whilst at the same time reducing the threat of ghost gear entanglement and ingestion by sea turtles in the area.



Ghost gear on the beach near Karachi.

Over time, support for our circular economy project has grown, with more local fisher households choosing to take part in the programme. Meanwhile, at the consumer end, our ghost gear pet leashes are in popular demand and have been stocked at six pet stores across Karachi. This year, ORP was invited to two carnivals where we were provided a stall space at no cost by the organisers. Not only did we manage to conduct sales of our ghost gear products, but we were also able to educate visitors about sea turtle conservation and the threat of ghost gear.

Our Pakistan team was also busy with ghost gear recovery, and so far for 2023, a whopping total weight of 268kg of ghost nets have been removed; 212 from the beach and 56 from the ocean. The nets removed in the ocean were at a popular dive site off Gadani Beach.



A dead olive ridley turtle near Manjhar Beach.

Unfortunately, the phenomenon of deceased sea turtles washing ashore persists in Pakistan. A dead olive ridley was spotted floating a short distance from the shore at Manjhar Beach, and two dead green sea turtles were recorded from Manora Beach, one of which was found entangled in ghost gear. We do not know the cause of death for the rest of the individuals, as there is currently no provision available to conduct a post-mortem.

We continue to work on our sea turtle nest monitoring initiative, which was launched in September 2022. Although Pakistan's coastline serves as nesting habitat for green turtles, no data currently exists through which population numbers can be estimated. To fill this crucial gap, our team members use Photo-ID to record nesting females along Hawke's Bay Beach.

Hanif, ORP's Field Coordinator, recorded nesting activity on two separate occasions in January 2023. He also collected data on a hatching event in January, where 76 green turtle hatchlings made their way to the sea.

# PAKISTAN

## ORP PAKISTAN BY THE NUMBERS

GHOST GEAR RECOVERED

>6K KG

Since 2018

268 KG

New this quarter

GHOST GEAR REPURPOSED

>54.3K SQM

Since 2018

>3.2K SQM

New this quarter



PET LEASHES MADE

667

PET LEASHES SOLD

555

EXTRA INCOME GENERATED

RS 670,000





The Seychelles Archipelago is located in the western Indian Ocean. The Archipelago encompasses 115 Islands, which can be divided into the granitic inner islands and the coralline outer islands. We work on Félicité, in the inner Islands of Seychelles, near Ile Coco Marine Park, which is renowned for its abundant population of critically endangered hawksbill turtles.

Seychelles is home to five species of sea turtles but only the hawksbill and green nest here. Five regional populations of hawksbills with more than 10,000 females nest annually and the unique thing here is that they tend to nest during daylight.

The months of January to March correspond to the second half of the very distinct hawksbill nesting season, which runs roughly from October to March. This means that we start the year with an abundance of hatchlings. We recorded a total of 34 nests hatching on Félicité between January and March, with a total of 4,185 hatchlings.



*Hawksbill hatchlings taking a nap on the beach on their way to the sea*

On 3rd February we even had a unique hatching event. The hatchlings, which were peacefully napping on the surface of the nest, decided to emerge in the middle of the afternoon. Some hatchlings made it to the water while the majority of them fell asleep halfway to the water and some even remained in the nest. The heat of the sand possibly caused their brains to shut off, leading to a sudden nap in the middle of the beach.

These sleeping hatchlings were placed back into the nest by our sea turtle biologist and the nest was shaded from the sun to prevent dehydration. In the evening, when the temperatures dropped, they all made it safely to the water.

During the last three months, we had some interesting finds during nest excavations. Nest excavations are an important part of our research efforts that help determine hatching success and record any abnormalities. Ultimately, this helps us understand the reproductive health of local sea turtle populations. We excavate 48 hours after a hatching event.



*A hawksbill twin embryo discovered during nest excavation in the Seychelles*

During one such nest excavation, we found a hawksbill twin embryo - our first recorded twin embryo in the Seychelles. Twinning in reptiles such as sea turtles is a well-documented yet rare phenomenon. One of the twin embryos was slightly smaller in size as a result of sharing egg yolk and space in the egg. To date, little is known about the possibility of survival in sea turtle twin embryos.

Another important aspect in evaluating the reproductive health of sea turtles is fertilisation success. To investigate this, we have partnered with Alessia Lavigne, a Researcher from the University of Sheffield. For this purpose, we collect samples of undeveloped sea turtle eggs during nest excavations. It is impossible to distinguish between an egg that has not been fertilised and one that has been fertilised but failed to develop by visual inspection. With the help of microscopy examination, Alessia can evaluate whether or not the eggs have been fertilised. Unfertilised eggs are a sign of a true fertility problem i.e. sperm production. The eggs that were fertilised but failed to develop demonstrate issues with early embryonic survival such as adverse incubation conditions. Currently, there is a lack of information on sea turtle fertility. This research will be the first step in understanding the underlying issues of development failure in sea turtle eggs in Seychelles. Further research on unfavourable incubation conditions and what causes them will help us inform conservation efforts.

# SEYCHELLES



## ORP SEYCHELLES BY THE NUMBERS

### IDENTIFIED GREENS

Since 2021

9

New this quarter

0

### NEW NESTS LAID THIS QUARTER

18

### HATCHLINGS COUNTED THIS QUARTER

4,043

### IDENTIFIED HAWKSBILLS

Since 2021

159

New this quarter

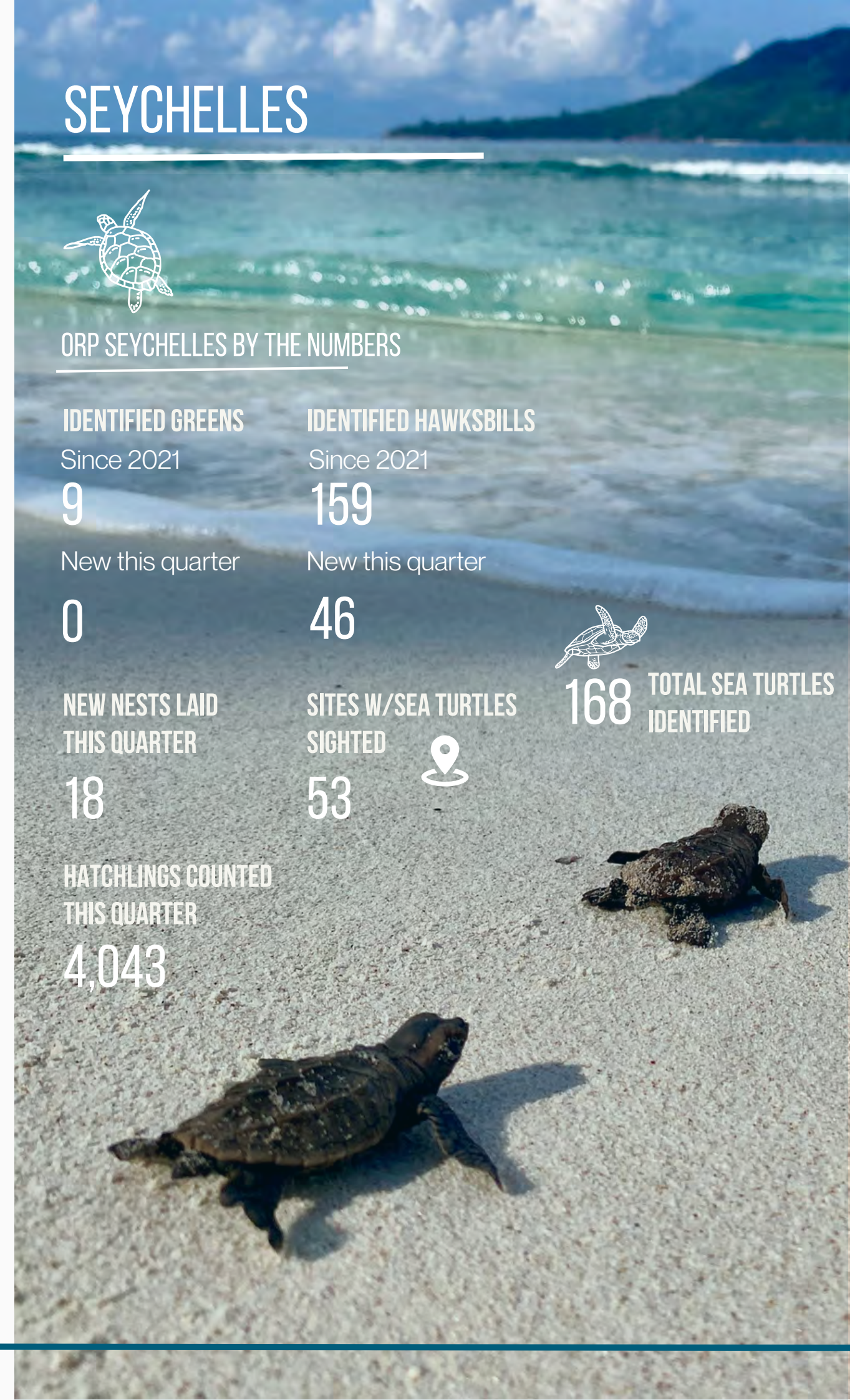
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### SITES W/SEA TURTLES SIGHTED

53



168 TOTAL SEA TURTLES IDENTIFIED

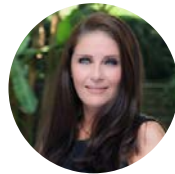




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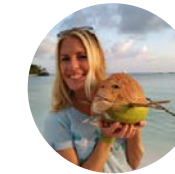
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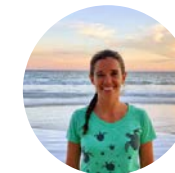
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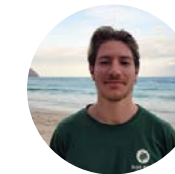
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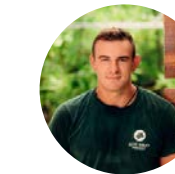
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# THANK YOU

We would like to express our gratitude to all our donors, supporters, collaborators and partners who make our work possible by providing financial and logistical support. We would also like to thank the 18 volunteers who helped us take care of our sea turtle patients at the Marine Turtle Rescue Centre over the first three months of the year. Last but not the least, here's a special shout-out to our citizen scientists for their vital Photo-ID data contributions - keep those photos coming! Thank you all - you are turtley awesome!

## FUNDRAISERS



### 200 MILES IN 20 DAYS FOR ORP

We would like to thank Elly and Oscar who cycled 200 miles (322 km) in 20 days in March to raise funds for their favourite creatures - sea turtles! They raised a total of £200!



### YOGA TAGE 2023

Over three days in March, Claudia Shankari Zimmermann and her guest experts hosted an online yoga conference that was not only good for the body and soul, but for sea turtles too! Together, they fundraised for ORP and adopted 78 sea turtles! Danke schön!

## VOLUNTEERS



“If you are passionate about marine wildlife and sea turtles in general and you would like to take part in protecting and helping these amazing and unfortunately endangered species, ORP is definitely the right choice for you! Contribute to this inspiring programme by investing your time and hard work. To join this project was definitely one of the best decisions I have ever made in my life!”  
Petra Kacirkova



“Volunteering with ORP is the best decision I've ever made. I got to experience living on a tropical island with some great people, all the while working with and handling sea turtles every day, learning about conservation, wildlife and medicine. And also with all sorts of the amazing experiences on my off time. Getting to see the turtles making progress every day and be involved in releasing a turtle back into the wild was simply the greatest and most fulfilling experience.”  
Karen Winkel Wittus

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**OLIVE RIDLEY  
PROJECT**

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