



OLIVE RIDLEY PROJECT



NEWS FROM THE FIELD

JULY - SEPTEMBER 2023 VOL3



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OUR MISSION

Sea turtles have existed on Earth for over 120 million years and there are currently 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.

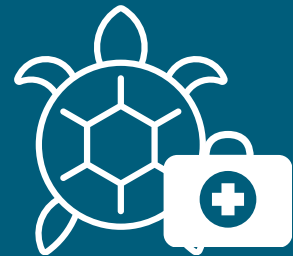
As "keystone" species, sea turtles play a vital role in maintaining the health of the ocean, including protecting fish stocks, keeping coral reefs healthy, and preventing sea grass meadows from overgrowing and dying.

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.

Olive Ridley Project is a registered charity:
1165905 England & Wales
CR/04/2022 Maldives

OUR WORK



Sea Turtle 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 operate a Sea Turtle Rehabilitation Centre. Both are located in the Maldives.



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 on sea turtle populations, distribution, health and threats to improve scientific knowledge and inform sea turtle conservation policy.

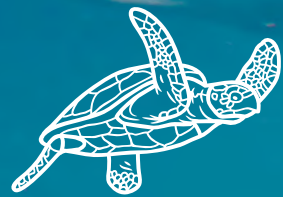


Collaboration & Community Outreach

To create long lasting change, we ensure that our conservation initiatives are practised from ground-up. We therefore collaborate with affected industries, communities, governments, local and International NGOs, in order to apply research to practice.

BY THE NUMBERS

Since each project's inception

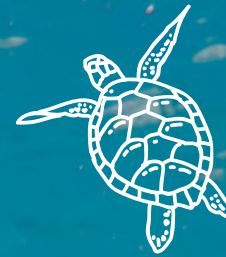


7,186 Sea turtles identified



220

Turtle patients admitted



131

Turtle patients released



85

Turtle patients deceased

702



Sites w/sea turtles sighted

>40.5K

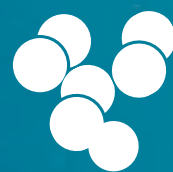


Sea turtle sightings recorded in the Indian Ocean

5



Rehabilitated olive ridley turtles satellite tagged



1110

Nests Recorded

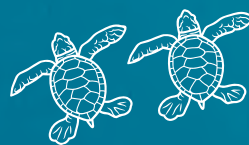


211

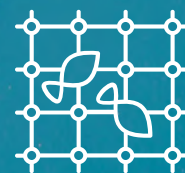
Volunteers hosted at the Rescue Centre



>41K



Hatchlings counted



>13K

Kgs of ghost gear removed



>58K

Square metres of ghost net repurposed



~42K

Individuals educated



18

Sea Turtle Guardian Programme Graduates



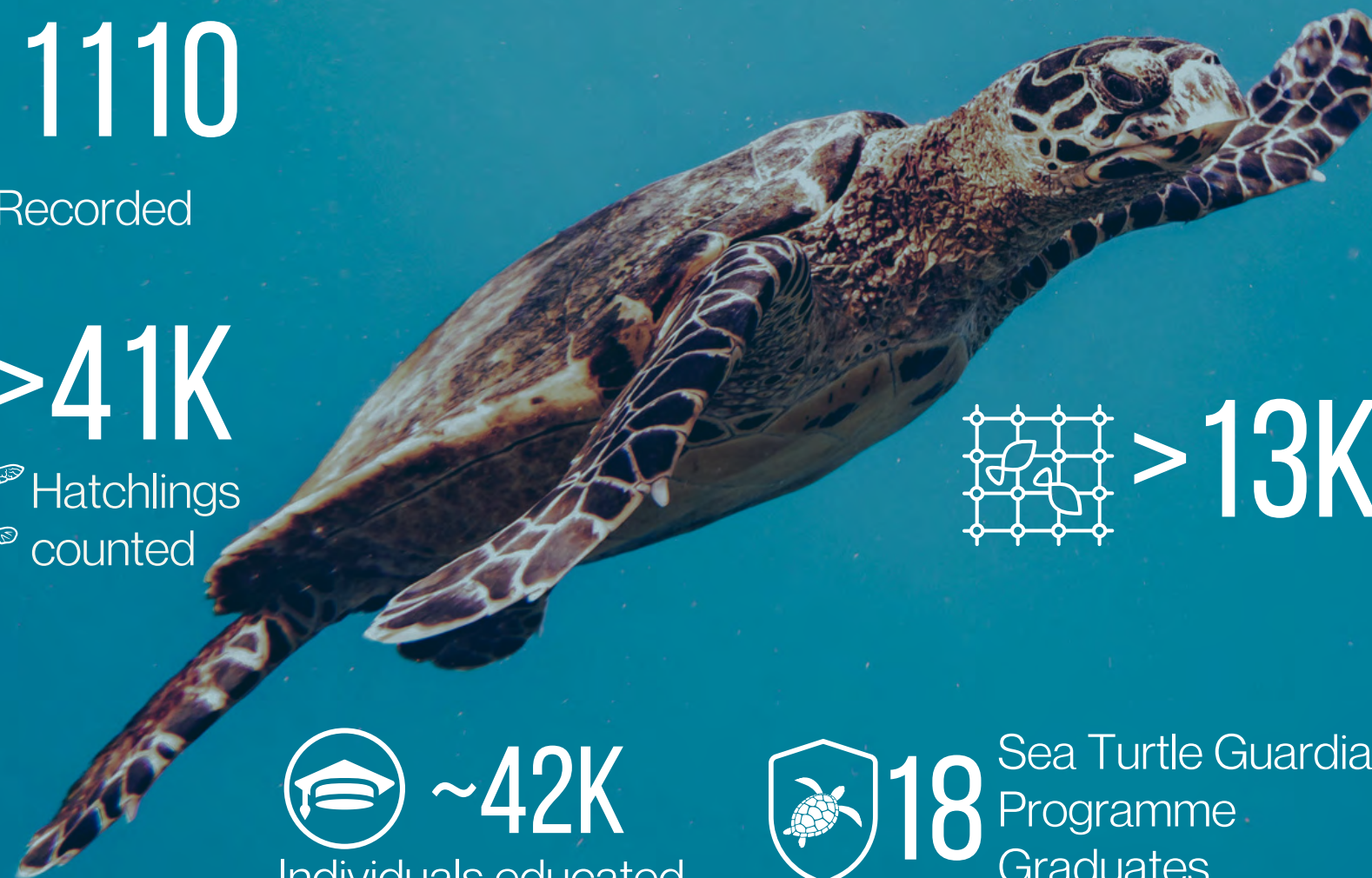
34

Publications



~2.26M

YouTube Views



HIGHLIGHTS FROM THE FIELD

The months of July, August, and September may be considered ‘the quieter season’ due to challenging weather in many places – not so for the ORP team though! We are excited to report yet another quarter full of great research, turtle care, and outreach opportunities.

Our team in the Maldives undertook an innovative sea turtle research expedition in September with the aim of answering important open questions regarding the health, genetic diversity, and organisms associated with the Maldivian sea turtle populations. All samples collected from hand-captured sea turtles will be processed over the coming months. Our veterinary team has kicked off the process with the analysis of blood samples on our brand new machine now available in the laboratory at the Marine Turtle Rescue Centre.

Our satellite tracking programme #ORPTrack picked up speed in the last quarter. We tagged three newly rehabilitated Olive Ridley patients so that we can follow their journeys and diving behaviours post-release. While all three seemed to be going in the same direction at first, over time, differences in travel direction and behaviour emerged - read the whole story on page 11! We continue to be grateful for all supporters of #ORPTrack, who have made this study possible.

A new paper describing our monitoring efforts of fibropapillomatosis, a tumour-forming disease in the sea turtle population in Kenya was published in September. The study reports the prevalence and development of the disease in the Diani-Chale area, utilising Photo-ID data collected by team Kenya since 2018.

To further strengthen our Photo-ID programme in the country, former Intern Diana, joined the team as a sea turtle monitoring assistant in September. She will support our continued monitoring efforts that have proven to be so effective already!

In Seychelles, our in-water sea turtle sightings showed a similar lull in numbers as observed during the same period last year. On the other hand, the hawksbill turtle nesting season kicked off early with the first nesting attempt nearly a month earlier than what was observed in 2022.

Meanwhile, in Oman, all wildlife, just like our sea turtle biologist, had to endure the incredibly high summer temperatures. Since the time also comes with great visibility in the water, we took the opportunity to thoroughly monitor known sea turtle sites and managed to photograph even some of the more shy individuals.

While on a site visit, our COO and senior project scientist discussed future goals to increase our outreach activities and develop better networks with other sea turtle organisations in the country.

Over in Pakistan, our team expanded to include a Sea Turtle Biologist – Kashif. We are excited to finally launch a Photo-ID and nest monitoring programme here and are working on direct collaborations with local governments and other stakeholders. The Karachi region sees significant numbers of nesting turtles, but monitoring capacity has been limited in the past, leaving population trends and developments not well understood.

Our education and outreach activities continued to reach a great audience in the last quarter. Maldives saw another celebration of sea turtles and marine life at the Lhaviyani Turtle Fest hosted by Atoll Marine Centre on the island of Naifaru, which we, of course, participated in. School children had the chance to learn all about sea turtles during this event, and also on other site visits to our Marine Turtle Rescue Centre and the learning hub SHELL in Laamu during the newly introduced ‘Hello Hallu’ programme.

In Kenya, we continued our work with the Beach Management Units in Kwale County with great feedback and enthusiasm from all participants. The team also collaborated with various stakeholders to join a large cleanup effort in Tiwi to mark the International Coastal Cleanup Day.

Read on for more details on all of these stories on the following pages!



A first-of-its-kind sea turtle research expedition in the Maldives

READ MORE ON PAGE 09



New paper: Using Photo-ID to monitor disease in sea turtles in Kenya

READ MORE ON PAGE 10



#ORPTRACK: Satellite tagging programme picks up speed

READ MORE ON PAGE 11

Although our clinical workload typically reduces during the wet season from May to November, we admitted five new patients and released four in the last three months. We also welcomed a steady stream of visitors to the Rescue Centre, including three of our new sea turtle biologists: Philippa Darbyshire-Jenkins (North Malé Atoll), Maria Antonia Izurieta (Lhaviyani Atoll), and Sarah Patman (Noonu Atoll).

We train all new team members in sea turtle rescue, patient handling techniques, diet preparation, water quality control, and life support systems. Both Philippa and Maria participated in sea turtle rescues shortly after returning to their bases, putting their new knowledge to test! Philippa took care of Humashi for a night during her travel to the Rescue Centre, and Maria rescued a washed-up hawksbill hatchling.

This training is particularly important for Philippa and Sarah; Philippa looks after our Sea Turtle Rehabilitation Centre in North Malé Atoll, which has just gone through a bit of a renovation, and Sarah is based at Soneva Jani, where we are in the process of constructing another sea turtle rehabilitation centre. They will soon be looking after turtle patients regularly.

We also welcomed three veterinary surgeons in the last three months; two from the UK and one from Belgium.

Even our Lead Veterinary Surgeon, Dr Max, popped in for a short visit – and he brought gifts! He dropped off a much-coveted device: our new blood biochemistry machine, the 'Idexx Catalyst One'. This is the only device of its kind in the region and will allow us to analyse over 17 blood chemistry parameters in our patients. These parameters will help us establish #ORPHealth - the first comprehensive sea turtle health database in the region. We were able to purchase this machine thanks to a grant from the Sea Turtle Rescue Alliance.

Our expanded clinic is now fully operational and we've been spending our time restructuring our protocols and procedures to reflect our expansion and improve patient care and clinic safety.

ALI NISHAN - RESCUE CENTRE INTERN



We welcomed our new Rescue Centre Intern, Ali Nishan aka 'Nicko', in August. Nicko is a native of Malé, and has always had a deep love for all animals. He is an artist who has worked in many different fields but it has always been his dream to work with animals.

He decided to join the internship due to his love for sea turtles and the ocean. Having grown up in an island nation, he believes that it is very important to be knowledgeable about the ocean and the living organisms within it.

Nicko wishes to embark on a diving course after completing his internship and plans to continue being a part of ocean conservation and the beautiful endangered species within it.



Dr. Mariana demonstrating how to X-ray a sea turtle

On the 19th of August, we hosted our second school visit this year. Twenty-five children from grades 6-10, of Goidhoo School visited Coco Palm Dhuni Kolhu accompanied by five teachers.

They met our sea turtle patients and learned how to prepare their diets, observed patient feeding, and visited our new clinic. Here, they participated in mock-up X-rays, checked blood smears under the microscope, and learned how we measure and weigh our patients. After a couple of sea turtle-themed presentations, the resort treated the visitors to lunch. School Principal, Nizam, told us later that they wished they could have stayed longer!

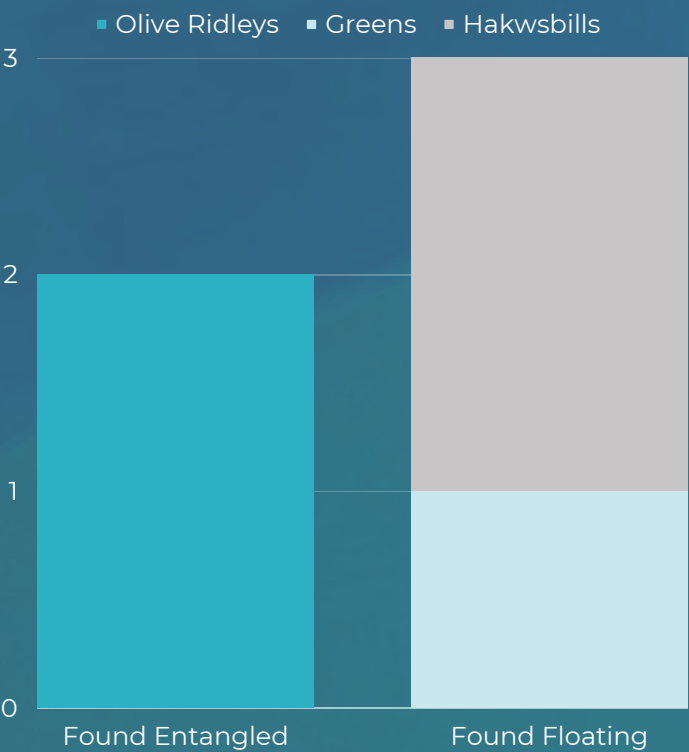
RESCUE & REHABILITATION



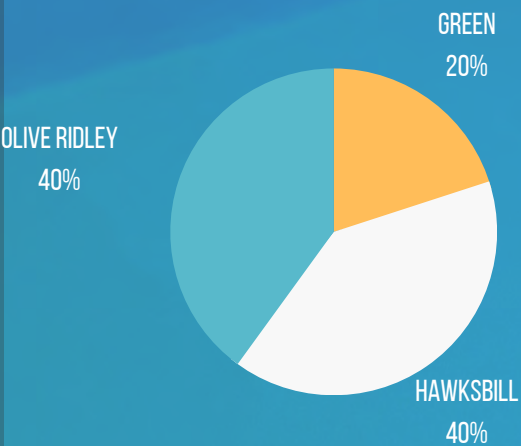
OUR TURTLE PATIENTS

	This Quarter	This Year	Since 2017
NEW PATIENTS ADMITTED	5	24	220
PATIENTS RELEASED	4	12	131
PATIENTS DECEASED	4	13	85
PATIENTS TREATED	18	29	220
PATIENTS STILL IN CARE	4		

REASON FOR ADMITTANCE (NEW)



PATIENTS BY SPECIES (NEW)



NEW PATIENTS ADMITTED

Mariyam, a female juvenile green turtle, was admitted on 31st July after being found weak and floating in a lagoon at Hithadhoo Island, Addu Atoll. Since arrival, she was minimally responsive to her surroundings and passed away on 10th August. Our team suspects that she may have been exposed to an environmental toxin that affected her nervous system and prevented her from responding to treatment.

Humashi, an adult female olive ridley, was admitted on 31st July after having been found entangled in a ghost net at Filladhoo Atoll. She passed away on 16th August from a widespread blood infection.

Ei1-23, a hawksbill hatchling, was admitted on 5th August after being found stuck in some marine debris and oil in Hulhumale North Malé Atoll. After receiving therapy, which included a couple of baths to clear up the oil from its body, the hatchling made a full recovery. Ei1-23 was released back into the ocean on the same day.

Kambili, a juvenile hawksbill, was admitted on 24th August having been found floating and weak at Fulhadoo Island, Baa Atoll. Unfortunately, her injuries were too severe and she passed away on 27th August.

Kurangi, a juvenile olive ridley, was admitted on 29th August having been found entangled in a ghost net by the staff at Fairmont Maldives - Sirru Fen Fushi, Shaviyani Atoll. Kurangi's left flipper was so severely injured from the entanglement, that it had to be amputated. She recovered well from the surgery, but for now, she is staying in our ICU tank.

RELEASED PATIENTS

Shara 1st July
Ei1-23 5th August
Muraka 17th August
Hawwa 14th September

Shara, Muraka, and Haawwa were all satellite-tagged before their release. See more on page 11.

DECEASED PATIENTS

Niyami 11th July
Mariyam 10th August
Humashi 16th August
Kambili 27th August

FIDA, OUR CURRENT LONGEST STAYING PATIENT



Turtle patient Fida undergoing TEWT

Fida was started on Targeted External Weight Therapy to improve her diving skills. She has been responding well, although slowly, so we use all feeding sessions as an add-on to her dive training, using buoys to sink her food in the water column.

PHOTOBIMODULATION THERAPY



Dr. Mariana and nurse Tristan giving a patient laser treatment to enhance wound healing

Photobiomodulation Therapy (PBM), sometimes called cold laser therapy, is an integrative medical technique used widely in human and veterinary medicine, but rarely used in sea turtle medicine.

We acquired a specialised Class IV laser this year in order to expand our practice to include PBM, which we now use on nearly all of our patients regularly. PBM changes the cellular energetics of damaged tissue to allow enhanced healing and has the added benefit of providing pain control. It is a non-invasive tool that requires only a few minutes of therapy and is tolerated very well by our patients.

There are still many things we do not know about sea turtles in the Maldives, including for example; their genetic diversity, their health, and which animals are associated with them.

In a first-of-its-kind research expedition in the Maldives, researchers from ORP and staff from the Environmental Protection Agency of Maldives tried to find answers to some of these questions in August. Embarking on a twelve-day expedition led by ORP's Senior Project Scientist, Dr. Stephanie Köhnk, the team visited prime turtle spots known from our Photo-ID research in North Malé, Lhaviyani, Baa, and North Ari atolls, to hand-capture sea turtles for sample collection.

Small tissue samples from each sea turtle were collected for population genetics investigation to answer questions such as "Which nesting population are the foraging sea turtles found in the Maldives related to?" and "How diverse is the genetic makeup of the foraging population?"

The team also collected epibionts from each sea turtle to characterise diversity of organisms associated with their hosts. We can already say, there sure were a lot of barnacles!



ORP Lead Veterinary Surgeon performing an ultrasonic exam with the assistance of other expedition members

All caught turtles received a full health assessment from our Lead Veterinary Surgeon, Dr. Max Polyak, including physical and neurological examinations, and blood sample collection. Additionally, cloacal and gut samples were collected to characterise the microbiome of wild animals which will be compared to our Rescue Centre patients.



The expedition team consisting of ORP researchers, EPA staff, and an independent scientist from K. Maafushi

Lastly, ultrasonic studies were performed to assess organ health and identify the sex of each individual turtle. In total, samples were collected from 39 sea turtles, including three greens and 36 hawksbills. Collectively, this data forms part of our #ORPHealth database, which will track the health of sea turtles in Maldivian waters.

Interestingly, 36 of the hawksbills and all of the green turtles were females! This is a distinct female bias in the sea turtles we examined. There are multiple potential reasons for this, including a) an actual female bias in the population, which might be related to climate change and an increase in female hatchlings produced due to raised incubation temperatures, or b) a difference in habitat preference between male and female turtles, leading to males not being represented as much in the shallow reefs sampled during this expedition. Further investigations will hopefully help us answer this question in the future.

We also recorded information on the sea floor structure and other animals at turtle hotspots to answer the question of what constitutes a good turtle reef in the Maldives.

Over the coming months, we will be very busy with sample processing and analysis for each of the projects. We are hoping for many new discoveries related to Maldivian sea turtles.

This expedition was made possible by the generous support of donors who wish to remain anonymous.

RESEARCH

SEA TURTLE EXPEDITION



RESEARCH

SEA TURTLE DISEASE MONITORING

Sea turtles can suffer from a variety of diseases, many of which are not visible at first glance on the outside. However, one disease that can be very obvious due to the presence of small to large tumours is fibropapillomatosis, or FP, for short.

Affected animals typically carry fibropapilloma masses on the corner of their eyes, neck, and joint areas, with unknown tumours also growing on the inside of the body.

While the cause of the disease is still not fully understood, an alphaherpesvirus is currently assumed to be the most likely causative agent of the disease, in combination with various environmental stressors acting as triggers to an outbreak of the disease. Environmental stressors can include chemical as well as noise pollution. However, a connection with certain algae species has also been discussed in the scientific community.

DID YOU KNOW?

FP was first described in turtles of Florida in 1938, but rapidly spread in sea turtle populations around the globe. In some populations, for example in Hawaii, more than half of the resident green turtle population is affected by the tumor-forming disease.

Since the start of our Photo-ID project in Kenya in 2018, we have noticed FP tumors in a significant number of the resident sea turtle population of the Diani-Chale National Marine Park and Reserve.

A summary of our Photo-ID based data that documents the occurrence and prevalence of FP in Kenya (nearly 900 surveys between July 2018 to December 2022) was published in a special issue of *Frontiers in Marine Science* in September 2023.

This study showcases a cost-effective, non-invasive and citizen-science friendly way to monitor an aspect of sea turtle health in a foraging population.



A green turtle with fibropapilloma tumors on the neck, shoulders, and corner of the eyes, sitting on a reef in Kenya

Out of 571 identified individuals, 75 carried visible external tumours, or 13% of the documented population. The disease was found in nearly all of the sites monitored, with a specifically high prevalence of up to 50% in sites dominated by seagrass and algae. We also found that FP affected sea turtles of all size classes, though with a majority of juvenile representation.

Through our Photo-ID data, we have been able to monitor the disease over time in 47 individual turtles. Some individuals were found to lose the tumours over time, some remained stable, and more than half of the affected animals showed increased tumour growth and therefore disease progression.

Our data documents the presence of FP in Diani, in the southern part of Kenya. We found lower incident rates here than previously recorded in stranded turtles in Watamu, further north of our study area.

Other recent studies indicate that most green turtles might be carriers of the associated alphaherpesvirus and that juvenile turtles might be more likely to develop tumours when settling in their coastal habitats for the first time. This matches our observation of higher numbers affected of the juvenile size class than of subadult and adult turtles.

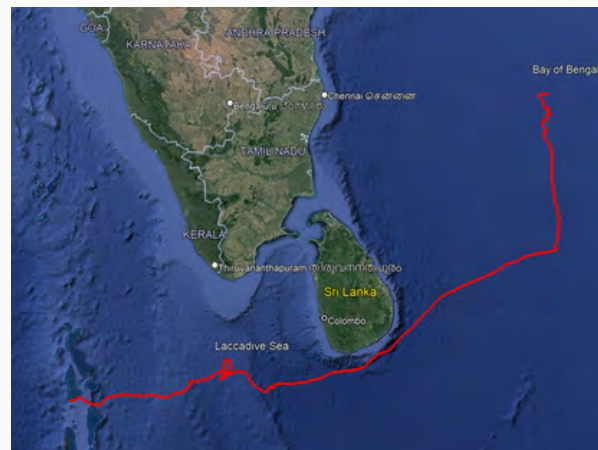
We will continue monitoring for FP to extend the timescale of this dataset and improve our understanding of the survivorship of the disease.

Since 2017, we have released 131 rehabilitated sea turtles from our rescue and rehabilitation centres in the Maldives, most of which were olive ridleys. However, we know very little about where these olive ridleys go once they are released. Since they spend most of their life in the open ocean, they are hard to study!

In order to fill this knowledge gap, and gain an understanding of the migratory patterns and feeding habits of olive ridley sea turtles in the Indian Ocean, we launched #ORPTrack, a sea turtle satellite tagging project, in 2022. The data we collect will help guide conservation action for crucial olive ridley foraging sites, ensuring better protection of this endangered species.

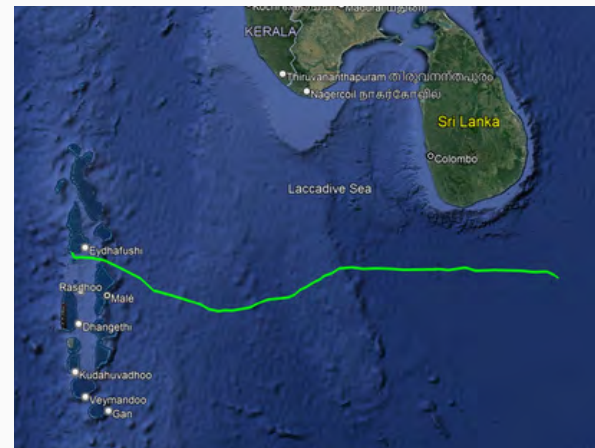
We deployed two satellite tags in 2022. In the last three months, we have tagged and released another three rehabilitated olive ridley sea turtles.

SHARA, TAGGED AND RELEASED ON 1ST JULY 2023



Our first tag of 2023 was fitted on Shara, an adult female olive ridley turtle. Upon her release, Shara swam straight east into the Indian Ocean and wasted no time in leaving the Maldives. She made a brief stop in the Laccadive Sea, circling for a while at a much slower speed, and diving quite a bit. A conservative conclusion could be that she was spending some time foraging in that area. As of 24th September, Shara has covered a total distance of 2,367 km and travelled all the way to the Bay of Bengal, where she seems to have slowed down. In this time period, her deepest dives were recorded at 300m (the maximum depth value our tags can record), so it is possible that she is diving even deeper.

MURAKA, TAGGED AND RELEASED ON 17TH AUGUST 2023



Muraka, a juvenile olive ridley turtle, left Baa Atoll travelling in an east-southeast direction. She exited the Maldivian Archipelago just north of North Malé Atoll and swam towards the middle of the Indian Ocean basin. As per our most recent data set from 24th September, Muraka has covered 1,118 kms and is travelling in waters southeast of Sri Lanka, following a trajectory similar to Shara's. Muraka's deepest dives, like Shara, were recorded at 276-300 metres.

HAWWA, TAGGED AND RELEASED ON 13TH SEPTEMBER 2023



Hawwa, a juvenile olive ridley turtle, began her journey by travelling north through Lhaviyani Atoll. She then swam east, following Shara and Muraka's general direction. She has now left the Maldivian atolls and is heading northeast, beyond Noonu and Shaviyani Atoll. Hawwa has travelled 253 km so far, and her deepest dive has only been recorded at 3 m, suggesting shallow surface travel. We are eager to see if Hawwa stays around the Maldives or continues further east.

RESEARCH #ORPTRACK



EDUCATION & OUTREACH



We continued our education and outreach activities in Maldives and Kenya during the summer months. In the Maldives, in Laamu Atoll we participated in Hello Hallu, an educational initiative by Maldives Underwater Initiative (MUI) at the new Sea Hub of Environmental Learning in Laamu (SHELL), which is located at our partner resort Six Senses Laamu (read more on page 13).



Children visiting the ORP stall at Lhaviyani Turtle Fest

Over in Lhaviyani atoll in August, our sea turtle biologists from Noonu, Baa, and Lhaviyani atolls, along with Intern, Swift, took part in Lhaviyani Turtle Fest - a two-day environmental festival organized by the sea turtle conservation NGO Atoll Marine Center (AMC) at Lh. Naifaru.

On the first day, panelists from the conservation space in the Maldives discussed waste management and wildlife conservation issues at the 'Atoll Marine Symposium'. Maria, ORP's Sea Turtle Biologist in Lhaviyani Atoll, joined the panel discussion on wildlife conservation, which focused on important topics such as the challenges and barriers in conservation and their solutions, as well as effective methods to raise awareness.

The second day was a day of celebration! Various marine conservation organisations and resorts, along with schools and community members from the atoll, joined the festivities. Activities included competitions in sand sculpture, photo, mural designing, and dress-making (using only recycled materials). We interacted with lots of school children who loved our turtle trivia quizzes and were particularly happy when they received ghost net bracelets as prizes!

Over in Kenya, we extended our work with the Beach Management Units (BMUs) in Kwale county to encourage active community participation in the protection of sea turtles. The members of five different BMUs - Waa, Tiwi, Mwakamba, Mwapepe, and Gazi, shared insightful suggestions and common concerns, which provided us with a solid foundation to further refine our approach and sea turtle education programmes.

All of the participants expressed a strong interest in our sea turtle conservation workshops. These positive meetings are a testament to the power of collaboration, and underscore the importance of inclusive community-driven conservation efforts.

A Beach Management Unit (BMU) is a community-based organisation or committee that is responsible for the management and governance of coastal areas, including beaches and nearshore marine resources.



The ICC at Coconut Beach in Tiwi had a great turnout

In September, we collaborated with a diverse group of stakeholders to mark International Coastal Cleanup Day (ICC) at Coconut Beach in Tiwi. United by the theme 'Sea the Change', the event brought together prominent participants, including KWS, KMFRI, HERI-Kenya, Base Titanium, CES, Kwale County Government, CORDIO, IFAW, and numerous other local organisations. The coastal cleanup effort along Tiwi's shoreline resulted in an impressive 446.2kg of waste collection, reflecting a sense of collective commitment to environmental preservation.

In September, our team at Laamu Atoll helped kick off the 2023 'Hello Hallu' Programme! "Hello Hallu", which translates to "Hello Solution" in Dhivehi, is a first-of-its-kind educational initiative crafted by MUI (Maldives Underwater Initiative by Six Senses Laamu) in collaboration with local schools within Laamu Atoll.

Students from every school in Laamu are invited to the newly established SHELL (Sea Hub of Environmental Learning in Laamu), to participate in a day of learning around the subject of marine biology and conservation.

The programme's primary objective is to deepen students' understanding of local marine ecosystems, raise awareness of their importance, and ignite interest in marine conservation. The hope is that this newfound knowledge will ultimately translate into meaningful actions.



ORP's Sea Turtle Ranger & Community Officer, Inaan, conducting a session on sea turtle biology

Throughout the month, the MUI team hosted four schools, totalling 76 students and teachers, with students ranging from 12 years to 19 years of age.

The program is split up into three modules:

- 1) Habitats of the Maldives;
- 2) Maldivian Megafauna; and
- 3) Marine Protected Areas and Fisheries Management.

The sessions were coordinated by MUI marine biologists and members of each collaborating NGO, including the Manta Trust, the Blue Marine Foundation, and of course, our ORP team on-site.

Each session involved hands-on activities and interactive discussions to get the students to apply what they've learned and think critically about how they view the marine environment and the issues associated with it.



L. Mundoo school students exploring the activities offered in SHELL's interactive room

In addition to the sessions, students had the opportunity to explore SHELL's recently established facilities and immerse themselves in the underwater world. The team also brought the students into the laboratory, where they were introduced to MUI's coral spawning and restoration project, and were shown samples of sea turtle embryos to demonstrate the different stages of development.

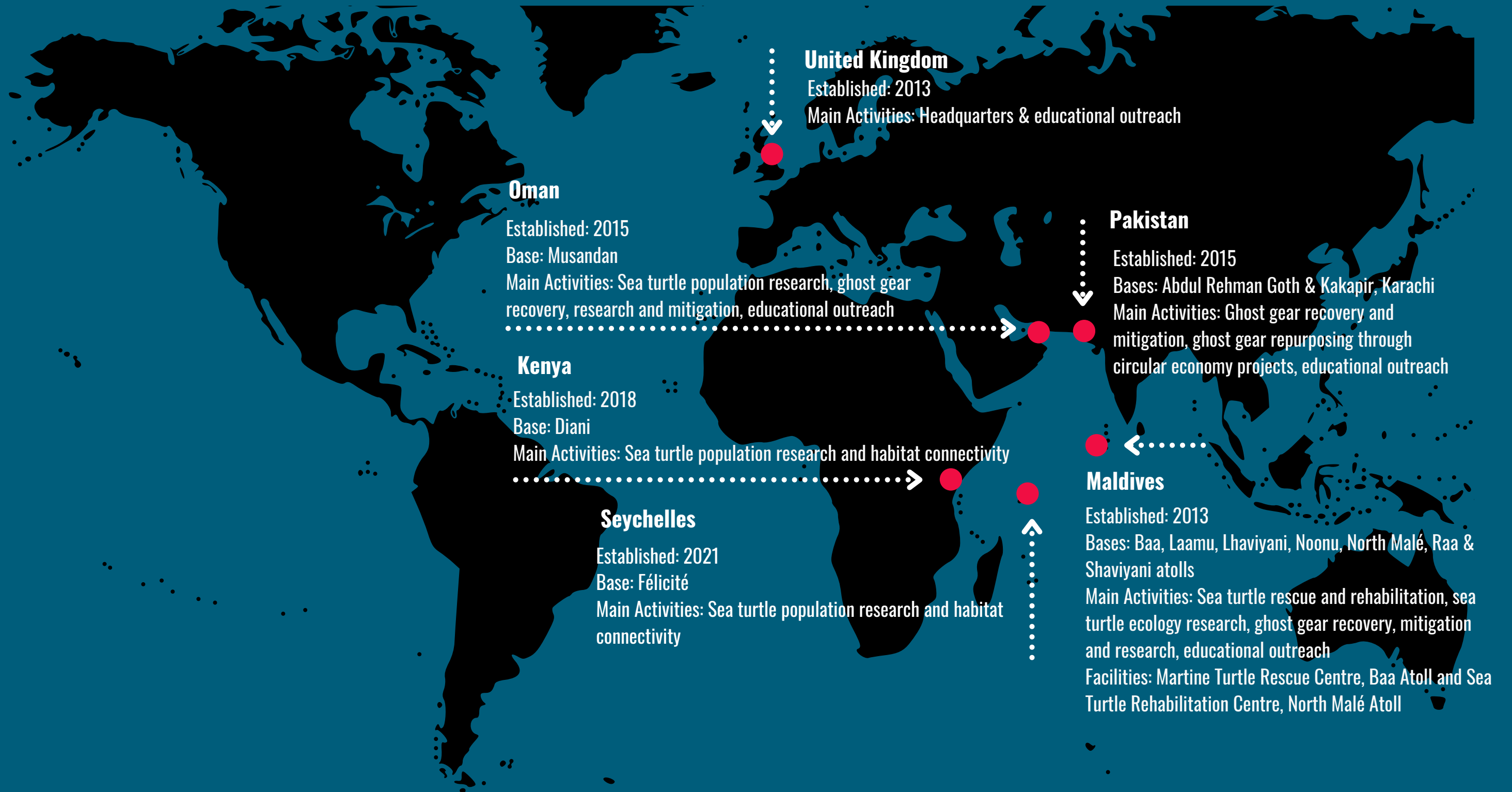
'Hello Hallu' is not only meant to be an educational program; it is created as a transformative experience that empowers Laamu's youth to become passionate stewards of marine life in the Maldives. The team will be running sessions with eight more schools in the following month.

Maldives Underwater Initiative (MUI) is an umbrella organisation comprising of marine biologists, sustainability experts, and community outreach specialists, as well as representatives from three NGOs: The Manta Trust, Blue Marine Foundation, and Olive Ridley Project. MUI, which is funded by our partner resort Six Senses Laamu, aims to expand research and community outreach initiatives to find innovative solutions for Laamu's most pressing issues.

HELLO HALLU - LAAMU



OUR PROJECTS



KENYA

ORP KENYA BY THE NUMBERS*

IDENTIFIED GREENS

593

Since 2018

14

New this quarter

25



Sites w/sea turtles sighted

IDENTIFIED HAWKSBILL

77

Since 2018

0

New this quarter



670

Total sea turtles identified

We consider the months of July, August, and September as the “low season” in Kenya - the sea becomes rough, and diving opportunities are scarce. However, we still managed to find moments of joy beneath the waves, snorkelling in Diani’s seagrass lagoon, looking for and photographing sea turtles.



Diana Kerubo Nyakundi, our new sea turtle monitoring assistant in the Diani-Chale Marine National Reserve

Much of the successful sightings reported in this quarter are due to our Intern Diana Kerubo Nyakundi, who completed her six-month internship with us in August. She spent an impressive total of 2,474 minutes underwater collecting Photo-ID data in the last three months.

Diana recorded a total of 68 sightings, 61 of which were green turtles and seven of which were hawksbills. All in all, 14 new greens were added to the database, which is very encouraging for the low season.

As Diana finished her six month internship, becoming a confident diver and a great help to our sea turtle Photo-ID efforts, we offered her the opportunity to remain with the team as a sea turtle monitoring assistant in Diani from September onwards. The internship programme will resume in October with a new candidate ready to begin.

To gain further assistance for our work in the low season, we formed an official partnership with Kenyatta University and offered a 2.5-month attachment programme to two talented students, Stacy Namarome and Vincent Mungathia. The students joined us in all our sea turtle monitoring, education, and conservation activities, honing their skills. They also conducted an independent analysis on the impacts of plastic pollution on sea turtles.

Since the ocean conditions minimised our in-water activities, we focused all our energies on our community and outreach efforts. We had the opportunity to participate in both local and national initiatives and to conduct our own community, education, and outreach events.



Juma addressing international students from Camps International in one of the marine conservation workshops that took place in August

One of the highlights from our work was a collaboration with the Conservation Education Society and Camps International, where we co-hosted 11 marine workshops for over 200 students from the UAE, USA, and UK. Our Community Education & Outreach Officer, Juma Gwerenya, led the workshops, which focused on plastic pollution, sea turtles, and coastal habitats. The workshops included hands-on activities to increase awareness and encourage sea turtle conservation.



We have been using Photo-ID to collect data on sea turtle occurrence, abundance, and distribution in the Diani-Chale National Marine Reserve since July 2018. We have used this data to identify a 13% prevalence of fibropapillomatosis disease in the local green turtle (*Chelonia mydas*) population. We were also able to monitor the temporal progression of external tumours in 47 affected individuals, finding evidence of tumour progression and regression.

These results have been detailed in a short scientific report published in September’s *Frontiers in Marine Science*. In this publication, we propose Photo-ID as a non-invasive, low-cost, and citizen-science-friendly approach to monitoring sea turtle health in their natural habitats. This is particularly important where documenting disease incidence is challenging and may be under-documented. See page 10 for more on this research.

*These numbers reflect a reassessment of all the data in providing a list of previously identified individuals to candidates

MALDIVES

TOTAL IDENTIFIED SEA TURTLES BY ATOLL

		
Baa	250	879
Laamu	371	616
Lhaviyani	428	349
Noonu	66	111
North Malé	88	952
Raa	5	182
Shaviyani	11	53



ORP MALDIVES BY THE NUMBERS

IDENTIFIED GREENS

1,485

New this quarter

56

626 

SITES W/SEA TURTLES
SIGHTED

IDENTIFIED HAWKSBILL

4,686

New this quarter

136



6,171

NEW NESTS LAID

43

HATCHLINGS COUNTED

1,741



TOTAL SEA TURTLES IDENTIFIED



MALDIVES

July, August, and September have been both very busy and very exciting for our team in the Maldives. In addition to continuing our usual work, we welcomed several new team members, implemented new research methods and projects, tagged three rehabilitated olive ridley turtle patients, and undertook an expedition!

In August, three members of the ORP Maldives team, along with Senior Project Scientist, Dr. Stephanie Köhnk, and Lead Veterinary Surgeon, Dr. Max Polyak, joined forces with the Environmental Protection Agency to conduct the first-ever sea turtle research expedition in the Maldives to investigate sea turtle genetics, ecology and health. To learn more about this exciting endeavour, which was made possible through generous support from anonymous donors, go to page 09.



Sea Turtle Biologist Afrah collecting a valuable epibiont sample from a hawksbill turtle held by Lead Veterinary Surgeon, Dr. Max

In the last three months, 1,066 encounters and a total of 136 new sea turtles were registered through our Photo-ID programme. This brings the total number of identified sea turtles in the Maldives to 6,171. With 421 new turtles identified in the first nine months of 2023, we have almost reached the same number as in the whole of 2021 - with three months left to go in the year! We would like to thank all the enthusiastic citizen scientists and supporters who make this project so successful.

From July to September, we received reports of three entangled olive ridley turtles. One of these was rescued by our sea turtle biologist in Shaviyani Atoll and had to make the long journey from there to our Marine Turtle Rescue Centre in Baa Atoll. Due to severe wounds from her entanglement, the veterinary team had to amputate one of her flippers, but she is recovering well.

#ORPTrack, our satellite tracking programme which follows rehabilitated olive ridley turtles patients upon their release, took a great step forward in the last three months; we released three more satellite-tagged patients. Read more about them and their journeys on page 11 of this report.

Nesting sea turtles have kept our team busy throughout the country - we even had a rare nest on One&Only Reethi Rah in North Malé Atoll for our new sea turtle biologist, Philippa, to keep an eye on! The nest monitoring routine proved to be especially challenging due to heavy rains and spring tides in this last quarter, which led to the inundation of nests laid in normally safe beach areas.

DID YOU KNOW?

The success of a sea turtle nest is highly dependent on the environment during incubation time. Temperature, humidity, and oxygen levels all play an important role during embryo development. Nests can withstand occasional washovers from waves, but more and more eggs will fail the longer the nest is inundated.

In August, our sea turtle biologists from Lhaviyani, Baa, and Noonu atolls joined the Lhaviyani Turtle Fest at Naifaru organised by Atoll Marine Centre and Naifaru Juvenile. The festival provided a platform for knowledge exchange and was a celebration of sea turtles and marine life in general. It was a great opportunity to connect with the community of Naifaru again.

Our partner resort, Six Senses Laamu, opened a new educational and research facility – SHELL – which was immediately put to good use with the launch of “Hello Hallu”, an educational programme aimed at schools in Laamu Atoll. You can read more on page 13.

This quarter also saw a change of guard in Raa Atoll. We said goodbye to our Sea Turtle Biologist, Olivia, (for now), and welcomed former Rescue Centre Intern, Shah, back to the team. We also welcomed new sea turtle biologists in Lhaviyani and North Malé atolls in the last few months, as well as two new interns – one in Laamu and one at our Rescue Centre in Baa Atoll. We also would like to wish all interns that have supported our work over the last months all the best for their future endeavours. We thank them for all their hard work during their time with us!

Zighy Bay is like a hidden gem tucked away in the Musandam Fjords. It's a special place because the sea here is full of nutrients, making it a hotspot for marine life. Sometimes, the water even looks green! Lots of plankton can make the water a bit murky, but that's actually great for the diverse marine life, including corals, fish, sharks, stingrays, and, of course, sea turtles!

Summers in the Gulf countries, including Oman, can be challenging. Surface water temperatures can soar to 34 degrees Celsius, while outside temperatures can climb to a scorching 50 degrees Celsius. However, this season brings improved underwater visibility, offering greater opportunities for spotting turtles. During this period, we recorded a total of 76 green sea turtles, and identified 5 new individuals, all of them juveniles. GM066 was the most frequently sighted turtle, recorded seven times.



GM043, a friendly and curious green turtle at Zighy Bay

While most encounters occurred in Zighy Bay, we also explored Stingray Bay, Sanat Bay, Wonderwall, and Lima Rock, uncovering a substantial turtle presence in Wonderwall. A particular corner within Wonderwall experiences strong currents, attracting numerous turtles seeking nourishment and respite.

Sea turtles encountered outside of Zighy Bay tend to be rather reclusive, likely due to their limited exposure to human activity. Most of the turtles in Zighy Bay, however, tend to be very curious and friendly.

Meanwhile, our partnership with local fishermen remains stable. We regularly inspect the nets whenever they are pulled onto the beach. In the hot summer months, fewer hauls occur due to the extreme heat. In September, three nets were hauled with no bycatch reported. The fishermen continue to collaborate readily with us in our sea turtle conservation efforts. If there is a turtle entangled in the net, we collect measurements and photographs for documentation and then free the turtle back into the sea.

Regrettably, we also found two deceased turtles washed ashore. One was in such an advanced state of decomposition that identification was impossible. Without a proper autopsy, determining the cause of death remains challenging. We ruled out boat strikes due to the absence of carapace injuries, but other plausible theories can involve plastic ingestion leading to suffocation or entanglement in fishing nets. Given the prevalence of fishing activities in this region, the latter is not uncommon, resulting in tragic drownings when turtles are unable to surface for air.



Dr. Stephanie Köhnk, Senior Project Scientist; Davide Panarese, Sea Turtle Biologist; and Jannicke C Hallum, COO, on the beach in Zighy Bay

In September, our Chief Operating Officer, Jannicke C Hallum, and Senior Project Scientist, Dr. Stephanie Köhnk, met with our partner resort, Six Senses Zighy Bay, to discuss project progress and future initiatives. We are excited to soon launch staff training programmes and broaden educational outreach to the local fishing community in Zighy Bay and schools in Dibba. Additionally, we are seeking to partner with an organisation working at Ras Al Jinz, located in Muscat, which is a big rookery for turtle nesting.

OMAN

ORP OMAN BY THE NUMBERS

IDENTIFIED GREENS

Since 2019

140

New this quarter

5

SITES W/SEA TURTLES SIGHTED

12

IDENTIFIED HAWKSBILL

Since 2019

9

New this quarter

0



149 TOTAL SEA TURTLES IDENTIFIED



PAKISTAN

ORP PAKISTAN BY THE NUMBERS



GHOST GEAR RECOVERED

>6.1K KG

Since 2018

GHOST GEAR REPURPOSED

>54.3K SQM

Since 2018

364 KG

New this quarter

0 SQM

New this quarter

PET LEASHES MADE

712

PET LEASHES SOLD

570

EXTRA INCOME GENERATED

RS 741,800



The last few months have been very exciting as we not only welcomed our first Sea Turtle Biologist, Kashif Ayoub, but also kicked off our new full-scale Photo-ID project in Pakistan. Kashif has considerable experience in marine science and conservation, having previously worked with WWF Pakistan, and on collaborative projects with Pakistan's Marine Fisheries Department and the National Institute of Oceanography.



ORP's first Sea Turtle Biologist in Pakistan, Kashif Ayoub

Kashif's role at ORP includes monitoring sea turtle populations, carrying out Photo-ID research, and furthering our educational and outreach activities.

Spurred by Kashif's addition to the team, our Photo-ID project began in September, with three field trips to Hawke's Bay and Sanspit nesting beaches. We recorded a total of 21 nests and six nesting female green turtles. Their tracks were observed, Photo-ID images taken and their carapace sizes measured. We are improving our measurement and recording procedures with every visit. Field coordinators, Asif and Hanif, will have training sessions on data collection procedures at the beginning of October so that they too can assist with the Photo-ID project.

We are also gearing up to expand data collection to new sea turtle nesting sites in Pakistan. There are mudflats and sandbars on the eastern part of Karachi along with mangroves, where the islets could serve as potential turtle nesting sites. West Karachi also has tourist spots where turtle nests are often reported. Along with that, we have picked out areas on the Balochistan coast, such as Mubarak Goth, Kund Malir, Ormara, Gadani, Somiani, Tak, and Damb, where we will conduct exploratory surveys.

Meanwhile, for the well-known nesting sites of Hawke's Bay and Sandspit, we have developed a new strategy for conducting transect surveys. Our approach involves setting up 1 km transect zones to pinpoint nesting hotspots and utilising GPS grids to mark these locations on the beach.

Sandspit and Hawke's Bay have close to 400 occupied huts, each uniquely numbered. These huts will serve as distinctive landmarks, which can then be associated with specific nesting areas. This streamlined method will greatly facilitate the reporting of nesting and hatching events by individuals.

Since July and August are monsoon months in Karachi, our usual activities for ghost gear collection were reduced due to the weather conditions. Monsoon winds cause seawater to rise higher on the beaches than usual and the waves are much stronger. It is ill-advised to venture out into the sea, and fishing is prohibited in these months.



Trash with a ghost net washed ashore on a beach

However, towards the last week of September, we observed a change in current patterns resulting in the deposition of trash and carcasses of marine creatures on the beaches. A similar phenomenon was seen last year in mid-October 2022. Along with the trash, ghost nets had washed ashore. Ghost nets and other pollutants on the beach can serve as obstacles for nesting female turtles and hatchlings, even entangling them and causing injury. This is why it's important to keep nesting beaches free from such pollution. One such ghost net was removed from Sandspit beach by Asif and Hanif during a routine beach survey.

June to September is well-known as the summer vacation period in Europe. In Seychelles, it seems that along with tourists, the sea turtles on Félicité Island were also taking a vacation of their own!



Sea Turtle Biologist Lara on an underwater survey

During the last three months, sea turtle sightings were notably scarce, with only 23 encounters and six newly identified individuals added to the database. This aligns with the low number of sightings we observed during the same period last year of just six turtles! A possible explanation for these lower sightings lies in the weather patterns. This time frame corresponds with the southeast monsoon season in Seychelles, resulting in turbulent seas and reduced underwater visibility. Consequently, the chances of spotting sea turtles in the water and successfully capturing identification photographs, or Photo-ID, are diminished.

Despite the limited in-water sea turtle activity during this quarter, we were excited to record our first hawksbill turtle nesting activities of the year! The first false nesting attempt of the season was on the 15th of September - a surprisingly early occurrence, well before the typical nesting season that starts in October. We are keeping our fingers crossed that the first true nest will happen soon.

Our Sea Turtle Biologist, Lara, has been diligently making preparations in anticipation of the upcoming nesting season. We have created new signs to mark a "sea turtle protection zone", an area designated for relocating turtle nests that are at risk of being washed away from beach erosion. Many nests on the island require relocation, which our trained biologist conducts with a permit from the Seychelles Bureau of Standards.

Lara has also been doing a but of gardening by planting new Scaevola bushes on the primary nesting beach on Félicité Island. Unfortunately, removal of a creeper plant overgrowing the Scaevola resulted in the loss of a significant portion of the beach shrubs. These shrubs are vital nesting habitats for hawksbill turtles in the area. We are hoping that the newly planted bushes will re-establish themselves before the first sea turtles arrive to nest.



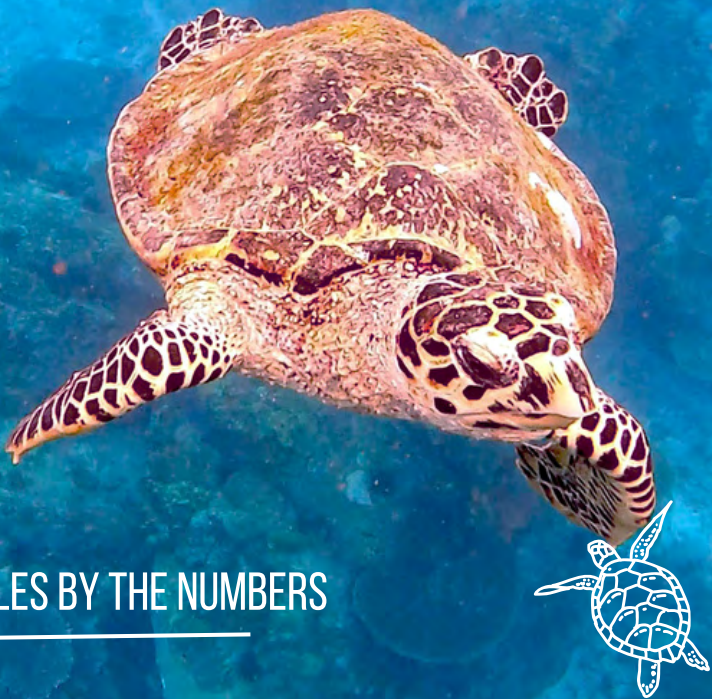
A hawksbill sea turtle nesting in Scaevola bushes

WHY DO HAWKSBILLS NEST IN SHRUBS?

Hawksbill turtles in Seychelles exhibit the unique behaviour of nesting during daylight hours. This is one of the possible reasons why many of them lay their eggs high up in the beach shrubs as they are less exposed to sunlight and disturbance. This behaviour can also help safeguard the eggs from erosion or saltwater inundation. Ultimately, the nest site choice depends on the ability of the female turtle to dig an egg chamber and the conditions of the beach.

The training of staff at our partner resort, Six Senses Zil Payson, continues as new resort personnel join on a monthly basis. We trained a total of 19 staff members in the last three months. The training involves basic coral reef ecology, sea turtle biology, and, most importantly, ORP's Code Of Conduct for sea turtle encounters including in-water, nesting, and hatching turtles. This is especially important for the upcoming nesting season to avoid any disturbance of the sea turtles. We are profoundly grateful for everyone's support in our mission to safeguard sea turtles and their habitats.

SEYCHELLES



ORP SEYCHELLES BY THE NUMBERS

IDENTIFIED GREENS

Since 2021

9

New this quarter

0

41



SITES W/SEA TURTLES SIGHTED

IDENTIFIED HAWKSBILLS

Since 2021

187

New this quarter

6



196 TOTAL SEA TURTLES IDENTIFIED

NEW NESTS LAID

0

HATCHLINGS COUNTED

0

THE TEAM



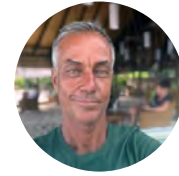
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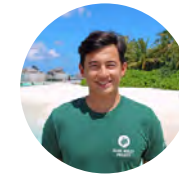
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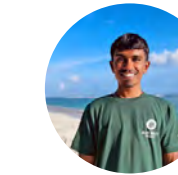
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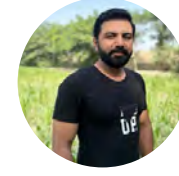
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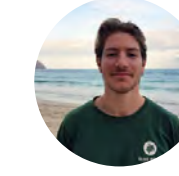
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THANK YOU

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 20 volunteers and three visiting veterinarians who helped us take care of our sea turtle patients at the Marine Turtle Rescue Centre over the past three months. As always, 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!

Last, but not the least, we would like to extend our heartfelt thanks to the donors who made our sea turtle expedition in the Maldives possible but wish to remain anonymous, and to the Sea Turtle Rescue Alliance, who awarded us a grant that allowed us to purchase our new blood analysis machine. We are very grateful for your support and look forward to sharing our findings in due course.

VOLUNTEERS



“Volunteering with ORP was a great experience. I learned a lot and was able to make contributions to support the rescue center, from basic activities like tank maintenance and feeding the patients, to interacting with resort guests and raising awareness about sea turtles and ORP's work. I was also quite lucky to witness a hawksbill sea turtle laying a nest. The Rescue Centre staff were patient and knowledgeable, and helped us understand the stages of recovery for each patient. Overall it was very informative and an experience I'll never forget; I'd recommend it to anyone interested in learning more about sea turtles while contributing to their recovery and conservation.”

”
Kory Funk

VISITING VETERINARIANS



“Participating in the visiting vet programme of the Olive Ridley project was an amazing experience for me and gave me new insight of sea turtle medicine with state-of-the-art equipment and gold standard medical techniques. The team there works extremely hard to ensure good husbandry and welfare levels for the turtles and is really keen on sharing their knowledge with other vets. Sharing our knowledge as vets will improve the medical care for species in decline such as sea turtles, so I can't recommend this program enough.”

”
Dr Noémie Hofman

PARTNERS & COLLABORATORS





**OLIVE RIDLEY
PROJECT**

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