

ANNUAL REVIEW 2021



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ABOUT THE OLIVE RIDLEY PROJECT



The Olive Ridley Project (ORP) is a charity established in 2013, registered in England & Wales. Our mission is to protect sea turtles and their habitats.

ORP operates in several regions including the Maldives, Kenya, Oman, Seychelles and Pakistan. We focus on rescue, rehabilitation, scientific research, and education and outreach to achieve our mission. We run a Marine Turtle Rescue Centre and a Sea Turtle Rehabilitation Centre in the Maldives. Our team of turtle biologists, veterinarians and conservationists uses its knowledge to safeguard sea turtles and their habitats.

OUR RESEARCH

We have one of the largest sea turtle-ID and ghost net databases in the Indian Ocean.

Our research areas include:

- Biogeography (population dynamics)
 - Reproductive biology
 - Population ecology
 - Threats to sea turtles
 - Sea turtle conservation
 - Sea turtle veterinary science



OUR PARTNERS

We have partnered with resorts, organisations and local NGOs to host our rescue and rehabilitation centres and research teams, and to maximise the effectiveness of our reach in local communities. We would like to extend our gratitude for their backing, help, and support.





























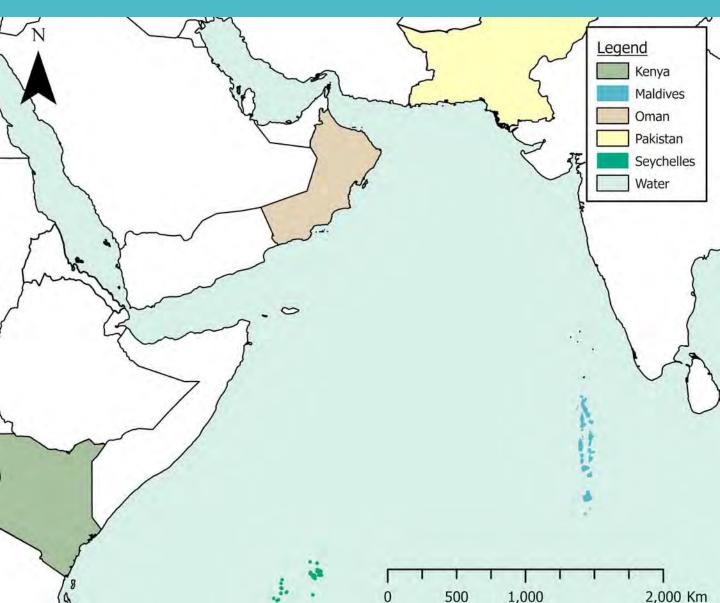








OUR BASES



Kenya

Established: 2018 Base: Diani Beach

Main Activities: Sea turtle population research and habitat

connectivity.

The Maldives

Established: 2013

Bases: Baa, Laamu, Lhaviyani, North Malé, Noonu & Raa

atolls

Main Activities: Sea turtle rescue and rehabilitation, sea turtle ecology research, ghost gear recovery, mitigation and research, educational outreach.

Facilities: Martine Turtle Rescue Centre, Baa Atoll and Sea

Turtle Rehabilitation Centre, North Malé Atoll.

Oman

Established: 2015 Base: Musandam

Main Activities: Sea turtle population research, ghost gear recovery, research and mitigation, educational outreach.

Pakistan

Established: 2015

Base: Abdul Rehman Goth, Karachi

Main Activities: Ghost gear recovery, mitigation and

repurposing and educational outreach.

Seychelles

Fstablished: 2021 Base: Félicité Island

Main Activities: Sea turtle population, habitat connectivity

and threats research



EXECUTIVE SUMMARY

This reporting period runs from January to December 2021 and captures our charitable activities across Maldives, Pakistan and Kenya. Unfortunately, our operations in Oman remained suspended due to COVID-19 restrictions for the whole year. However, we are delighted to announce that our work in Oman will re-commence from January 2022.

As we commit to expanding our operations to protect sea turtles and their habitats, we are excited to announce an expansion into the Seychelles in the last month of this year. This partnership builds on our relationship with Six Senses at their property Zil Pasyon on Félicité island. Our work will focus on local population distribution, abundance and health to minimise common threats in the area. In addition, we are excited to work with local and international partners to assist existing research efforts and hope to provide consistent data streams to these organisations. Reporting from the Seychelles will commence from 2022.

In 2021 we recorded a total of 66 sea turtle strandings in the Maldives, 79% (n = 52) of these were olive ridleys. The number of olive ridley strandings drastically reduced when compared to previous years (2020 = 104, 2019 = 157, 2018 = 103, 2017 = 153, 2016 = 77, 2015 = 114 and 2014 = 78). This is likely due to a lack of reporting associated with the pandemic and unlikely a true

indication of stranding rates in 2021. We managed to transfer 50% (n = 33) of these strandings to our rehabilitation and rescue facilities and released twenty sea turtles back into the wild.

In the same period, we recorded a total of 454 new individual sea turtles in the Maldives (121 green turtles, 325 hawksbill turtles) and 127 new individuals in Kenya (116 green, 11 hawksbill).

Species richness wildly differs between the Maldives and Kenya. Kenya continues to be dominated by green turtles across all five monitoring sites. However, the Maldives is dominated by hawksbill turtles across 17 of the 19 atolls monitored. Interestingly, despite a higher proportion of recorded hawksbill turtles, very few nests are reported in the Maldives.

This year we were able to record sea turtle nesting activity in the Maldives from Noonu Atoll (n = 31), Baa Atoll (n = 2), Lhaviyani Atoll (n = 29), North Malé (n = 4) and Laamu Atoll (n = 30). Average incubation period was 58 days, reflecting findings from our report in 2020 (n = 58). However nesting success this year (71%) decreased when compared to our last reporting period (82%). We were able to record more nests this year and therefore suspect these figures represent a true representation of the success rate seen in the Maldives.

EXECUTIVE SUMMARY

Operations in Pakistan were halted for much of 2020. However, in 2021 we were able to continue operations for much of the year. The team recovered 393 kg of ghost gear, predominantly in the form of monofilament gill nets. The community managed to raise 105,000 PKR (\$600) in alternative income from this waste. Our dog leash sales were a little slow in 2021, however we are planning a marketing campaign in 2022 to target both international and Pakistani communities.

Although the Covid-19 pandemic is far from over we are seeing parts of the word return to some level of normality. At the end of 2021 our volunteering and internship programs were in full swing as travel became less restricted. We continued to push the boundaries in science and conservation, published three novel research papers and presented at international conferences. We also assisted governments with data collection and report writing. We pride ourselves in our collaborative approach to conservation and aim continue building alliances towards the common goal of protecting sea turtles and their habitats.

Careful planning goes into all our operations and this year we updated our 5-year business plan for 2022 - 2026. This strategic plan has been developed to help guide the charity, organise our teams and ensure we stay focused on our objectives and operate sustainably for years to come. It also forms the backbone of our operations and provides a reference and metric at the end of each year to measure our achievements.

The strategy for 2022-2026 includes: expansion plans both for the team and locations where we work; new research areas such as satellite tagging, genetics and epibionts; additional capacity building; and furthering our educational outreach programmes. We have also paid particular attention to ensuring the financial security and long-term sustainability of the charity - the importance of which has only been made more evident in the last two years.

This year we have re-evaluated our charitable objectives and made the necessary changes that move away from a ghost gear and sea turtle entanglement focus. Our new objective is to protect sea turtles and their habitats through rescue and rehabilitation, education and outreach and scientific research. This change takes a more holistic approach to sea turtle conservation and was submitted to the charity commission at the end of 2021.

Despite the challenges of the pandemic, ORP has been able to quickly adapt to an ever changing world and continue its work thanks to the exceptional support from our corporate sponsors and individual givers, an agile and dedicated team, and stringent cost saving efforts. At the end of last year we were extremely fortunate to receive a very generous donation, making 2021 a record breaking year in donations for the charity.

This donation has both provided us with financial security for the next couple of years and allowed us to make giant leaps forward and launch programmes and initiatives planned for 2023-2026 from next year already.

We are fully committed to being transparent about, and accountable for, how we spend all donations we receive. More details of how we plan to make the most of this large donation to further our charitable objectives and secure the long-term success and financial sustainability of the charity can be found in the financial section of this report.

We wish to express our sincere gratitude to our donor, who has requested anonymity, for this life-changing gift.

- Dr. Martin Stelfox, CEO and Founder



ADVOCACY

Advocacy is an important component to ORP's charitable objectives. Building on research and experiences in the field helps guide policy to protect sea turtles and their habitats.

In 2021 the Ministry of Environment, Climate Change and Technology invited ORP to become members of the Marine Reptile Working Group (MRWG) in the Maldives. The MRWG is tasked with developing the Maldives National Red List for sea turtles. ORP's Senior Project Scientists Dr. Stephanie Köhnk, leads the assessment for hawksbill and green sea turtles and ORP's CEO, Dr. Martin Stelfox leads the assessment for olive ridleys, results of all assessment will be published in 2022.

ORP provided technical expertise into the development of marine protected areas in the Maldives - six MPAs were designated in December 2021 in Laamu Atoll, including marine habitats that are significant sighting grounds for greens and hawksbills, as well as Gaadhoo's nesting beach. ORP will continue to work closely with the government, local stakeholders and partner NGOs to create effective management plans for Gaadhoo's nesting beach in the Maldives.

This year ORP made the executive decision to step down from the Global Ghost Gear Initiative (GGGI) due to misalignment on key areas of the ghost gear/fishing issue. A number of critical components within the Best Practice Framework (BPF) for the Management of Fishing Gear undermine and show the opposite of what our previous and current research and infield observations suggests. Our involvement with the GGGI all the best in the future.

ORP continues to provide expert guidance to the NGO Tuna Forum, specifically with providing details on the issue of ghost gear and sea turtle entanglement. This year, the inclusion of ghost gear and ghost fishing in the 2021 Aligned Guidance for Well-Managed FAD Fisheries was a great achievement despite pitfalls resulting in ORP not endorsing the document. However, the Aligned Guidance for At Sea Transshipment that focuses on Tuna Fisheries Management, Monitoring, Data Reporting & Worker Rights & Safety Practices was endorsed by ORP in 2021. ORP will continue to provide guidance to the forum in 2022.







FIGURE 1: Hatchling with polycephaly after it was removed from the egg. (a) Ventral view, prominent yolk sac present. Arrow indicating the fused eyelid. (b) Anterior-dorsal view. Point of fusion on the head indicated by black arrow, dorso-cervical opening indicated by the white arrow.

SCIENTIFIC RESEARCH

ORP continued to push the boundaries and pioneer research techniques to analyse sea turtle populations, distribution, health and threats in the Indian Ocean throughout 2021. Though the global pandemic continued to have an impact on our possibilities to carry out infield research for much of the year, we focused on analysis of data already collected, and on planning new research projects for the future.

Our satellite tagging project, led by ORP researcher Rushan Bin Abdul Rahman was still paused in 2021, but we have secured a continued research permit and all necessary equipment has been transported to the Rescue Centre and Dr Minnie Liddell and Sea Turtle Biologist Joe Rigby are prepared to get started! We are eagerly awaiting our first patient ready for release.

Towards the middle of the year a total of three publications lead by the ORP team were accepted for publication. The first paper was led by Dr. Martin Stelfox and Dr. M Martin-Cereceda, and explored a successful example on how to engage researchers and society. It is available as an open access publication here.

The second paper led by ORP senior scientist Dr. Stephanie Köhnk, documenting the presence of sangivorous ectoparasites found on entangled sea turtles in the Maldives was accepted in June and published in December. Stephanie has renewed a respective research permit in the Maldives and is working with <u>Dr. Joana Hancock</u> towards extending this research into Kenya for the next year.

Lastly, a publication summarizing the results of sea turtle nesting activity on an island in Baa Atoll and describing the finding of a polycephalic embryo for the first time in the Maldives was published here. The study combined the veterinary knowledge of Dr. Minnie with the nest monitoring and analysis skills of Biologist & Communications Officer Rosie Brown and Dr Stephanie Köhnk.

Additionally, we contributed towards a global study on hawksbill sea turtle genomics and initiated planning a targeted sampling expedition together with the EPA in the first half of 2022. Finally, we assisted the Maldivian government in the preparation of the first ever national Red List Assessment for Marine Reptiles and hope to see these chapters published in early 2022.

We will continue our research and pursue our goal of filling knowledge gaps, as well as explore new research opportunities in 2022. We have a number of new projects in the pipeline and we are excited to get started.

-Dr. Martin Stelfox, CEO & Founder



SEA TURTLE POPULATION RESEARCH

Photographic identification (Photo ID) is a non-invasive technique used to identify individual animals in a population and track them over time from natural marks on the body. For sea turtles, it relies on capturing photographs of the unique patterns of scales on the animal's face.

Photo ID can be used as a non-invasive alternative to tagging and data may be analysed through Capture-Mark-Recapture (CMR) methods. This technique allows researchers to conduct longitudinal studies of individuals, yielding information about home range, survival rate, migration patterns, and life cycle and includes groups that are less studied, such as juveniles and males.

We collect sightings data for both nesting and foraging green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) sea turtles in Kenya, Maldives, Oman and Seychelles. Olive ridley (*Lepidochelys olivacea*), loggerhead (*Caretta caretta*), and leatherback (*Dermochelys coriacea*) sea turtles are present in these countries as well, but less regularly sighted.

ORP began collecting new and historical photographs of foraging and nesting turtles from the Maldives in 2014. We have an eight-year data set for some atolls. We started collecting Photo ID data from Kenya in 2018 and Oman in 2019. Unfortunately, the project in Oman has been on hold since 2020 due to the COVID-19 pandemic, but we are looking at reinitiating it in 2022. Additionally, ORP has started a new chapter in the Seychelles in 2021. Our in field biologist arrived on Felicite at the end of the year!

The project aims to help fill the gaps in scientific knowledge by providing detailed information on abundance, distribution, population growth rate, apparent survival, and nesting frequency of hawksbill and green sea turtles.

We continue to use the Internet of Turtles (IoT) platform to analyse all turtle sightings from Maldives, Kenya, Oman, and now Seychelles as well. The IoT platform combines data analytics with individual animal tracking. It uses computer vision to compare new IDs to the existing database and Wildbook to store metadata.

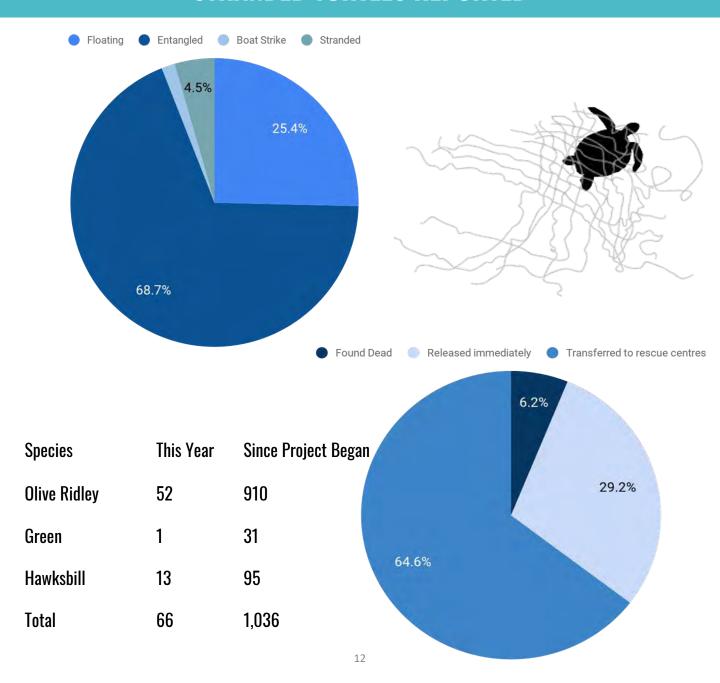
The total number of turtle encounters reported in the Maldives is 29,318 as of the end of 2021, including 454 newly identified turtles. We further worked on cleaning up old encounters and eradicating double identifications. No research expeditions to the North of the country were completed during the reporting period due to ongoing travel restrictions related to the Covid-19 pandemic. We still received turtle ID data from citizen scientist and marine biologists in the area, which we are very grateful for. Additionally, three new biologists joined the team, extending our research in Raa, northern North Malé and Noonu atolls towards the very end of 2021 and beginning of 2022.

With four year data sets of certain sites in Kenya, totalling over 3,000 sightings of 664 identified turtles (127 new individuals in 2021), we are looking to analyse this data using CMR, replicating our Maldivian population studies and gaining first insight into population stability and growth in Kenya.





STRANDED TURTLES REPORTED





TURTLE RESCUE & REHABILITATION

After a tough 2020, this year saw some return to normalcy here in the Maldives. A more stable stream of tourists meant consistent boat traffic, therefore allowing for detection of entangled turtles that was a little more in line with our previous records. This year we took in 33 new patients, with a further 5 to care for carried over from 2020. We were able to successfully rehabilitate and release 20 patients, including our longest term resident Azura, who was with us for a total of 2 years, 8 months and 11 days. Serendipitously, we were able to release her with a returning volunteer, who had been with us the day Azura arrived in April 2019, so it was a very rewarding moment. It is a testament to the hard work and dedication of many people over the years, including ORP veterinarians, biologists, interns and volunteers who cared for her.

Our Rehabilitation Centre at One & Only Reethi Rah in North Malé Atoll has been invaluable in the triage and rehabilitation of our turtle patients, with myself and Joe, our sea turtle biologist, working closely together to coordinate the collection and transfer of injured turtles from across North Malé Atoll. We are excited to have more rehabilitation tanks across Maldives to further increase our capacity to care for turtle patients.

We continued to provide high quality veterinary care to turtles rescued across the Maldives, majority of which were found entangled in ghost gear and need surgical intervention. This year we finally acquired an endoscope, which will allows us to go the extra mile for some of our more challenging patients.

-Dr. Minnie Liddell, Resident Veterinary Surgeon

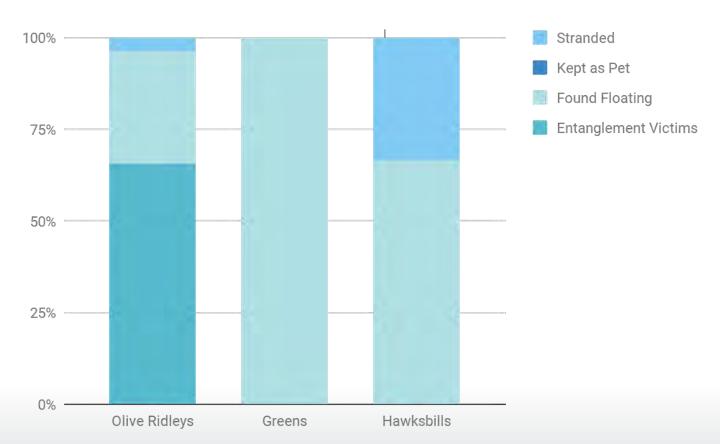
TURTLE PATIENTS

	This Year	Since Opening
New Patients Admitted	33	164
Patients Treated	38	164
Turtles Released	20	96
Turtles Deceased	11	55
Patients Still in Care (ORP & Others)	7	

13



TURTLE PATIENT REASON FOR ADMITTANCE



Reason for admittance by species

Olive ridleys made up 88% of new patients admitted this year

Patients requiring flipper amputations this year: 6

Average length of stay (of patients released this year): 107 days

VISITING VETERINARIAN PROGRAM

The ORP Visiting Veterinarian Program provides a unique opportunity for qualified veterinarians specialising in sea turtle or exotic medicine to obtain hands on experience at our clinic. The initiative is also beneficial for our resident veterinarians to continue their professional development and enhance their skills, ultimately improving the quality of care we can provide.

In 2021, the visiting vet program resumed and we hosted Dr Paul Ramos, an experienced wildlife veterinarian. While his time with us was a fascinating addition to his professional skills, Dr. Paul's large social media following helped raise awareness of our charity and the work we do. His rescue footage was shared by the Dodo and on TikTok, thus helping our work reach millions of people on Social Media.





The visiting veterinarian programme is a wonderful opportunity that enables sharing of skills and knowledge across the profession and the world.

(Left) We also had Dr Alex McGhee visit the rescue centre to set up our new patient management software in collaboration with the Sea Turtle Rescue Alliance and Provet Cloud, who are generously providing the software for free.

For 2022, we are expanding our program to include veterinarians from all around the world, who are in need of further clinical training in order to be able work with sea turtles

-Dr. Claire Petros, ORP Lead Veterinarian

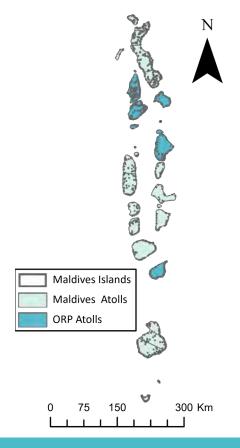
RESCUE CENTRE VOLUNTEER PROGRAM

The Rescue Centre also has a <u>volunteer program</u> open to anyone who is interested in sea turtle conservation and husbandry. The volunteers help in providing care for the turtle patients, including feeding and cleaning, and are involved in the daily running of the Rescue Centre. They also assist in maintaining the facilities and give guided tours and presentations to guests.

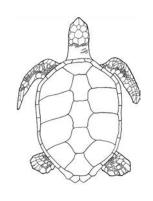
The volunteer program was safely reinstated for the duration of the reporting period, increasing from 2 to 3 volunteers towards the end of the year. Many of our volunteers had re-booked from 2020 and were incredibly excited to finally be able to help us at the rescue centre. They continue to be an integral part of the running of the centre and we truly appreciate their efforts.



-Dr. Minnie Liddell, Resident 15 Veterinarian

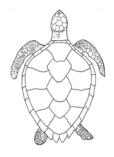


TURTLE SIGHTINGS & NEW INDIVIDUALS MALDIVES



GREENS

Total Sightings: 9,158 Total Individuals: 1,171



HAWKSBILLS

Total Sightings: 20,160 Total Individuals: 4,080

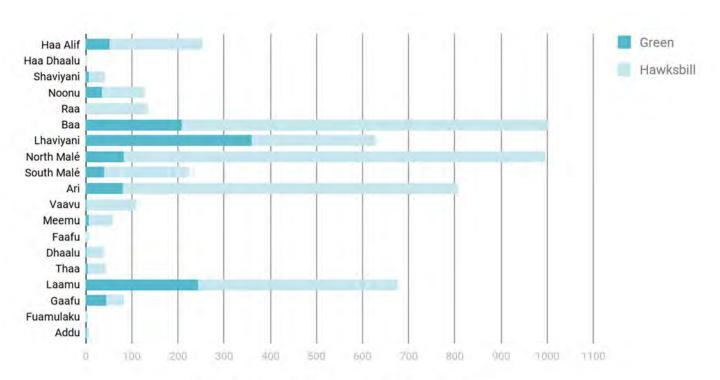
	This Year	Total Since Records Began
Total Number of Turtle Sightings	3,196	29,318
Total Number of New Individuals	454	5,251



TURTLES IN MALDIVES

This year, Baa Atoll has passed the total number of 1000 identified individual turtles and is now at 1003! Of these, 209 are green turtles and 794 hawksbills. A close second is North Malé Atoll, with 996 individual turtles, 914 of which are hawksbills and 82 greens. The largest number of green turtles can still be found in Lhaviyani (359) and Laamu Atoll (243). Both atolls also have a resident hawksbill population with 271 and 434 individuals respectively.

The large number of resorts in the central atolls, as well as a consistent effort by our team members in certain atolls has resulted in better data coverage. The northern and southern atolls still have few turtles photographed and we greatly appreciate all submissions from citizen scientists.



Number of individuals identified since records began

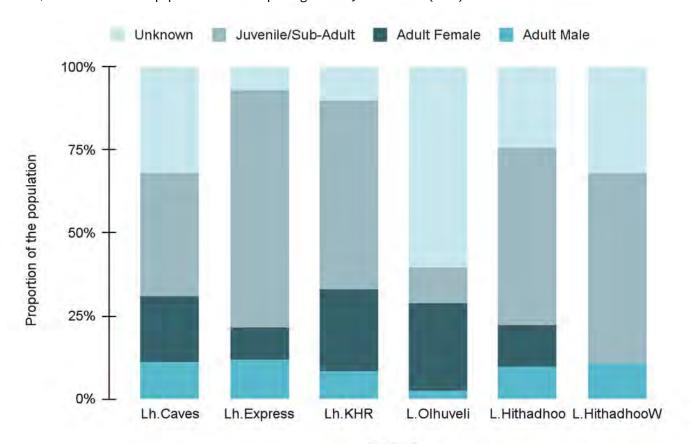


GREEN TURTLE RESULTS

An age breakdown of all currently identified green turtles on six selected reefs in Laamu and Lhaviyani atolls is presented (the letter in front of the reef name designates the atoll).

Juveniles, subadults or turtles of unknown age make up majority of the population at all sites, with only 11% to 33% of turtles being identified as adults. This is significantly less than what was recorded at the end of last year, which indicates a high number of newly identified turtles being not mature individuals.

The highest percentage of male turtles can be found at Lh. Kuredu Express (12%), Lh. Kuredu Caves (11%) and L.Hithadhoo West (11%). The largest percentage of females is found on Olhuveli Reef in Laamu (26%). Overall, Lhaviyani is home to 29% adults, whereas the Laamu population is made up of significantly more adults (37%).



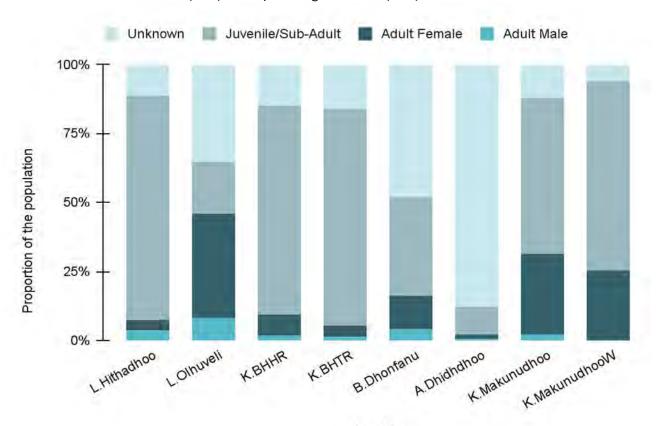


HAWKSBILL TURTLE RESULTS

The graph below shows sex and age breakdown for all idenitified hawksbill turtles at eight reefs in four atolls (the letter in front of the reef name designates the atoll). Juveniles, sub-adults or turtles of unknown age make up the majority of the population at all sites, with only Olhuvelhi Reef in Laamu coming close to half of the population being mature individuals (46%). It is simultaneously the reef with the highest percentage of adult males at 8%.

Hithadhoo, Bodu Hithi House Reef (BHHR) and Bodu Hithi Turtle Reef (BHTR) are home to over 75% juveniles or sub-adults. Makunudhoo Reef in North Malé Atoll had the highest population of adult turtles in the last year (38%), but a recent influx of newly identified juveniles has reduced that quota (29%).

Compared to the identified population of green turtles, the hawksbill population is slightly more dominated by juveniles, sub-adults and unidentified turtles (81%) as compared to green turtles (73%).





TURTLE MOVEMENT BETWEEN REEFS

The vast majority of over 5,200 identified turtles are very faithful to a specific reef and have only been recorded on one site. Only 128 turtles have been seen on more than one reef (2.4 %). Of these, only 17 have visited three, and only one individual visited four sites in total. On average, green turtles move between sites less than 3 km apart and hawkshills less than 10 km.

Most green turtle movement has been recorded in Lhaviyani atoll (15 cases), with a lot of movement around Kuredu island (see right). The longest green turtle movement was recorded in South Ari Atoll, along the outreef from Dhidhdhoo to Dhigurah for a total of 8.5 kms.

Records of hawksbill turtles on multiple sites indicate that they are moving along reef structures, such as long outreefs or hopping between close reef structures on the inside of atolls. Most hawksbill turtle movement has been recorded in Ari Atoll (53 cases), with most turtles moving along the outreef from Dhidhdhoo to Dhigurah at the southern end of the atoll.

The longest distance between sites was covered by hawksbill turtles from Shaviyani to Noonu Atoll (up to 76.8 km) and by a single turtle sighted in South Ari as well as Rasdhoo Atoll (89.7 km, see right).

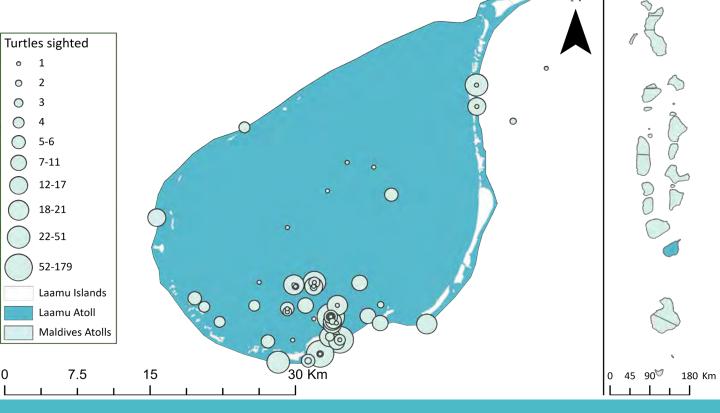
We suspect intra and inter-atoll movement might be more common and aim to discover migration routes and patterns in the future with further extending our photo ID database.



Map showing the three sites around Kuredu island between which green turtle movement is common.



Map showing the two sites nearly 90 km apart on which one individual hawksbill turtle was sighted.



LAAMU ATOLL, MALDIVES

In Laamu Atoll, our turtle database grew by 19.5% in 2021 with 132 new individuals (36 greens and 96 hawksbills) added. By the end of 2021, the Laamu database comprised of 677 individuals.

There was no true nesting season in Six Senses Laamu in 2021, with nesting occurring from end of January till end of December, with the exception of June. A total of 26 new nests were laid at the resort, out of which 23 hatched during the calendar year. 1650 hatchlings started their journey to sea, of which 27 were found alive during routine nest excavations and released. The average hatching success in 2021 was 77.3%.

One hawksbill turtle was found entangled without injuries in January, and released immediately. Three ghost-nets were collected from Laamu in 2021.

were collected from Laam

GREENS

Total Sightings: 2,882 Total Individuals: 243 ORP continued ad-hoc surveys of L. Gaadhoo's nesting beach, and following the designation of the island as an agricultural site, worked alongside stakeholders to designate Gaadhoo's nesting beach as a protected area. At the end of the year, alongside Gaadhoo's enclosed mangrove, reefs, seagrass, its nesting beach was declared protected as a 'Habitat/Species Management Area'. ORP hopes to establish a continuous presence on the island through rangers in an effort to deter poaching.

Community outreach efforts were expanded in 2021, with virtual webinars hosted by ORP on World Sea Turtle Day, World Turtle Day and as part of the 'Eku Eky Laamu' campaign which celebrated the designation of 6 marine protected areas in Laamu.

-Isha Afeef, Sea Turtle Biologist, Laamu Atoll

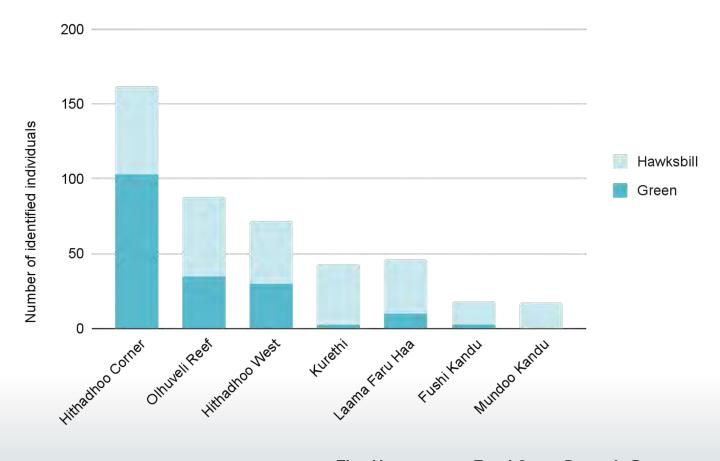


HAWKSBILLS

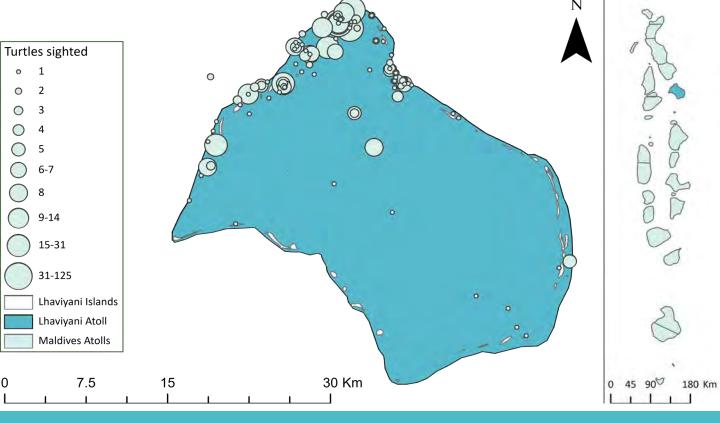
Total Sightings: 2,170 Total Individuals: 434



SIGHTINGS & NEW INDIVIDUALS LAAMU



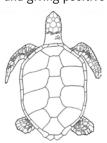
	This Year	Total Since Records Began
Total Number of Turtle Sightings	969	5052
Total Number of New Individuals	134	677



LHAVIYANI ATOLL, MALDIVES

2021 saw a large increase in nesting activity on Kuredu island, our base in Lhaviyani atoll. We recorded 16 successfully laid nests, and 18 successful hatching events, more than in any year since our records began in 2017. The neighbour island Kanuhura recorded 13 turtle nests, one of which was a hawkshill nest.

Our ability to monitor, protect and witness the hatching of turtle nests on Kuredu was greatly aided by the generous donation of solar powered night vision outdoor cameras from Reolink. A NestWatch group of guests was created for each due nest, where the guests received a briefing on how to check the nest, and the code of conduct for how to behave around hatchling turtles. They then volunteered their time checking on the nest daily and ensuring the turtles were not disturbed by the presence of people, lights and noise at the time of hatching. This new initiative worked really well, with many guests witnessing hatching events and giving positive feedback of their experience.



GREENS

Total Sightings: 4,690 Total Individuals: 356

This year 10 sea turtles were rescued across Lhaviyani atoll and 12 ghost nets were retrieved, documented and disposed off, three of which were drifting Fish Aggregating Devices (dFADs).

Contact with other marine biologists and dive centers across Lhaviyani was with increased communication on turtle rescue, nesting events and in water turtle encounters. Together with contributions from guest and staff divers and snorkelers we documented 1,474 turtle sightings and had 99 wild turtle adoptions.

The collaboration with Kuredu Island Resort has been strengthened with ongoing training workshops for resort staff. The workshops cover the importance of sea turtles to tourism, the threats to them and the code of conduct on how to behave around nesting females and hatchlings.

- Emily Mundy, Sea Turtle Biologist, Lhaviyani Atoll

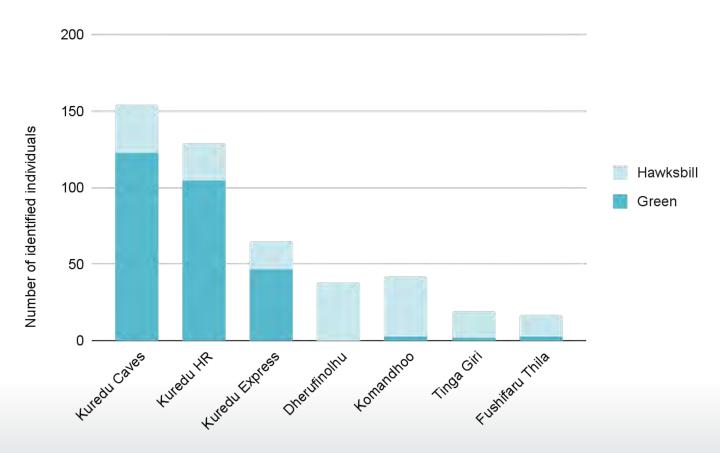


HAWKSBILLS

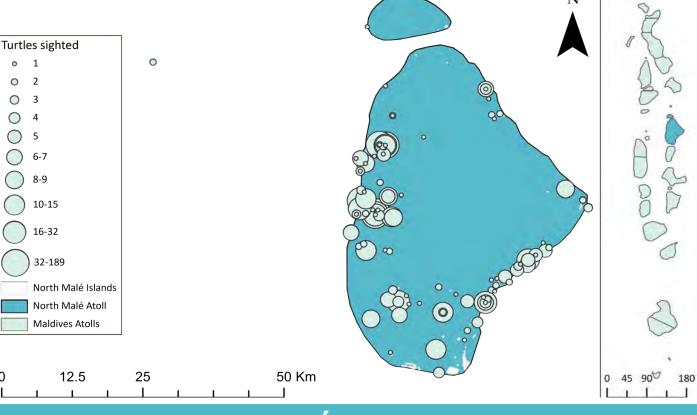
Total Sightings: 932 Total Individuals: 270



TURTLE SIGHTINGS & NEW INDIVIDUALS LHAVIYANI



	This Year	Total Since Records Began
Total Number of Turtle Sightings	1,474	5,628
Total Number of New Individuals	105	626

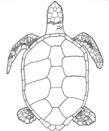


NORTH MALÉ ATOLL, MALDIVES

We are happy to report that we resumed our work in North Malé Atoll in January, 2021 after a five-month hiatus due to Covid-19. The Sea Turtle Rehabilitation Centre reopened with the admittance of Buil on January 13th and we continued our data collection and research activities as normal.

This year we recorded 899 sea turtle sightings in North Malé Atoll with the vast majority being hawksbills. We identified 89 new sea turtles - all hawksbills- mostly at Makunudhoo reef, one of the most popular snorkeling sites in the area.

In May and June we saw the first nesting activity on One&Only Reethi Rah since 2017! Four nests were laid on the island with 415 eggs collectively. Out of these eggs, 395 hatched with healthy babies making it to the sea. Unfortunately, we did not observe the actual nestings but we suspect that it was the same turtle mama that laid all four nests. We hope she will be back in 2-3 years to lay more!



GREENS

Total Sightings: 87
Total Individuals: 82

We admitted a total of 13 patients to the Rehabilitation Centre throughout 2021, including long term patients such as Xena, who is now back at the Rescue Centre for veterinary treatment and Tibby, who still resides at One&Only Reethi Rah. Five patients were successfully released and we hope they are thriving back in their natural environment. Sadly we couldn't save them all and we lost two patients due to severe injuries.

In addition to research and rehabilitation, we have actively recovered over 500 kg of ghost gear in North Malé Atoll with the help of a team from One&Only Reethi Rah throughout the year.

At the end of the year ORP partnered with Patina Maldives, Fari Islands Resort in the north of North Malé Atoll, with Moosa Mohamed joining the team as a second Sea Turtle Biologist for the atoll.

-Joe Rigby, Sea Turtle Biologist, North Malé Atoll

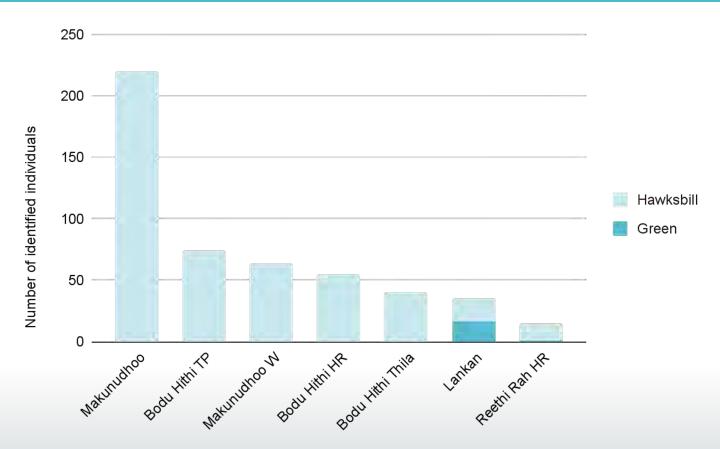


HAWKSBILLS

Total Sightings: 10,007 Total Individuals: 914



TURTLE SIGHTINGS & NEW INDIVIDUALS NORTH MALÉ



	This Year	Total Since Records Began
Total Number of Turtle Sightings	899	10,094
Total Number of New Individuals	89	996



RECORDED SEA TURTLE NESTING ACTIVITY

*Data for nesting is limited due to the small number of marine biologists collecting nesting information.



Total Number of True Nests: 96
Total Number of False Crawls: 54

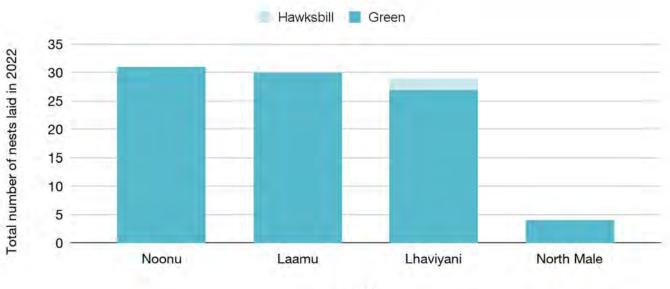


Total Number of Live Hatchlings Counted:

2,807* (to date, not all nests have hatched & some nests were not observed hatching due to staff being off resort)

Average Hatching Success: Average time of incubation:

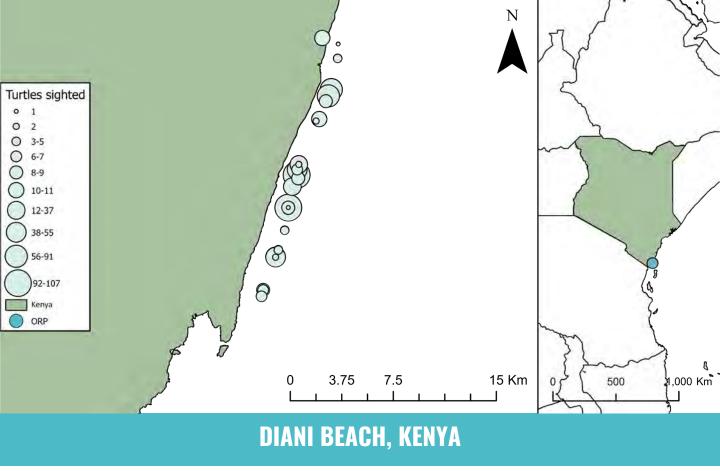
71% 58 days





KENYA



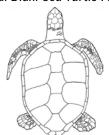


The ORP team in Kenya was able to continue its work from January 2021 due to a generous sponsorship from our partners Marine Life Protectors and continuous logistic support from the dive centre Diving the Crab in Diani.

As the world continued facing travel restrictions due to the ongoing Covid-19 pandemic, the team was reorganised with biologist Leah Mainye taking the lead as on-site Project Coordinator, under remote supervision by Project Manager Dr Joana Hancock.

We performed a total of 135 dives and two snorkeling surveys along Diani beach, and one dive survey at Kisite Mpunguti Marine and Reserve, in the last year. These efforts resulted in the sighting of 722 green turtles and 84 hawksbill turtles, adding 116 new greens and 11 new hawksbill s to our database.

As in previous years, ORP was a proud participant in the annual Diani Sea Turtle Festival, held in June. We were also



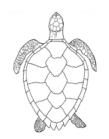
GREENS

Total Sightings: 2,750 Total Individuals: 590

featured in Kenya's video chapter of the celebrations of the 20th Anniversary of the IOSEA Marine Turtle MoU, promoted by @ Indian Ocean South East Asia (WSTD@IOSEA), on World Sea Turtle Day.

In order to promote ORP Kenya's work, we participated in different community outreach programs as well as workshops, such as the compilation of National Wildlife Census report meeting hosted by Kenya Wildlife Service; the Transboundary Conservation Area workshop hosted by WIOMSA; a consultative meeting with African Network of Animal Welfare and turtle conservation groups; a public consultative meeting with stakeholders to restore self-sustaining and functional reef ecosystem presented by Reefolution Foundation; and many more smaller community group meetings.

- Dr. Joana Hancock, Project Manager, Kenya

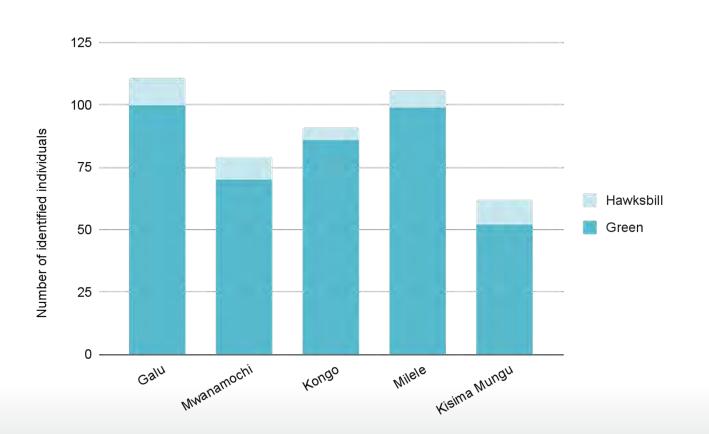


HAWKSBILLS

Total Sightings: 358
Total Individuals: 74



TURTLE SIGHTINGS & NEW INDIVIDUALS KENYA



	This Year	Total Since 2018
Total Number of Turtle Sightings	806	3108
Total Number of New Individuals	123	664





PAKISTAN

ORP's work in Pakistan was affected by the pandemic in 2021 due to several lockdowns in the region. For long periods, the beaches where we recover ghost gear were off limits and in-person school visits were also off the agenda. Nonetheless, we still managed to recover almost 400 kg of ghost gear.

One of the sights we frequently visit is a tugboat wreck off the coast of Gadani. The wreck has become a hot spot for ghost nets as the entire tugboat is covered with nets and traps hundreds of marine animals. The ecosystem that has developed in and around the tugboat is rich in marine life. Hence it has also become a fishing spot where fishers cast their nets – which often get entangled. It is important for the fishers to understand the topography of the underwater ecosystem to reduce the risk of net entanglement, and we have been educating the fishers in the area about why they are losing their nets. The tugboat is also developing into a popular scuba location and removing ghost nets also helps make it a safe place for recreational divers.

Many of the beaches in the region where we operate are green turtle nesting beaches, and also popular tourist spots. We plan to initiate Turtle Watching Tours along some of these nesting beaches in 2022. The aim is to educate people on the appropriate code of conduct around sea turtles, whether it is a nesting female or a hatchling, so that minimal stress or discomfort is caused to the turtles.

This initiative will employ residents of Kakapir, a village located on the edge of Sandspit Beach, where green sea turtles come to nest each year. The plan will be put into effect from the beginning of the next nesting season.

With the help of ORP Pakistan volunteers and other divers in the area, we were able to raise funds to secure new football kits for the local football team of Abdul Rehman Goth, Buleji Baloch in the first half of the year. Most of the players in the team are also fishers and often help ORP collect and manage ghost gear. The ORP logo on the team's t-shirts invokes people's curiosity and questions about the logo initiate a dialogue helping the team impart information on ghost gear. We now literally have a football team of outreach people helping promote ORP's message as they go around playing matches in other fishing villages!

ORP - Pakistan is also working with MAHI (Maritime Archaeological and Heritage Institute) to locate and remove ghost nets on shipwreck sites. Moreover, MAHI and ORP collaborate in creating awareness around ghost nets and its impact across fishing villages like Ibrahim Hyderi, Gharo and Gujju.

-Usman Iqbal, Project Manager, Pakistan



GHOST GEAR REPURPOSING - A CIRCULAR ECONOMY PROJECT

Pakistan's coastline is split into two major provinces, Sindh and Baluchistan. Significant green turtle nesting occurs in Sindh province between the Hawksbay and French Beach coastlines. Between these two nesting sites is the fishing village of Abdul Rehman Goth (ARG). This village consists of around 3000+ small scale artisanal fishers who operate close to marine turtle nesting and foraging activity.

Unfortunately, fishing nets are often abandoned, lost or discarded (ghost gear) resulting in a significant threat to sea turtle habitats. ORP has been working alongside the village since 2015 to develop initiatives that aim to avoid gear abandonment or disposal at sea or on beaches.

A circular economy initiative allows fishers and their families to convert ghost gear into products, such as dog leashes and bracelets, helping individuals secure an alternative income for themselves and the community. Moreover, owing to our educational programmes, fishers are returning end of life fishing gear and recycling gear to avoid it being disposed off in the environment in the first instance.

15 men and 4 women are currently involved in the circular economy project, making ghost net bracelets and 'ghost leashes' - a pet leash made out of ghost gear. Each ghost leash repurposes 81.5sqm / 880sqf of ghost net recovered from the Indian Ocean.

Both the ghost leashes and the ghost net bracelets are sold on ORP's website and are quite popular: 71 dog leashes and 73 bracelets were sold in 2021. All proceeds are returned to the local community and in 2021, the sales of these products raised approximately £400 additional income for the artisans.

We plan to expand the product range and duplicate our circular economy project in other nearby villages over the next year.

> -Usman Iqbal, Project Manager, Pakistan

	This Year	Total Since Project Began
Ghost Nets Recovered	393 kg	5,158 kg
Ghost Leashes Made / Sold	97 / 71	545 / 479
Ghost Net Jewellery Made / Sold	100 / 73	565 / 505



INTERNSHIP PROGRAM



BUILDING LOCAL CAPACITY

One of our long term goals is to build local capacity for sea turtle rescue, science and conservation in Maldives. ORP's internship programme for Maldivians was instituted to this end and currently, is the only veterinary-led training facility in the country.

The interns work at the Rescue Centre for a period of three to four months and play an integral role in the daily functioning of the facility, receiving in return, a financial stipend, food and accommodation.

During the course of the internship, our interns are trained in sea turtle conservation, husbandry, veterinary assistance, guest education and outreach. Our interns then graduate to become turtle ambassadors, and many individuals go on to work in conservation projects across Maldives.

The Marine Turtle Rescue Centre was supported by four interns this year: Ali Jinaad, Aminath Zein Ismail, Mohamed Shah and Mariyam Niuma.

EDUCATIONAL OUTREACH

EDUCATION - A POWERFUL TOOL

We firmly believe that education forms the basis for positive change. Therefore, educational outreach is integral to ORP's mission of protecting sea turtles and their habitats.

Our educational initiatives are conducted in different forms based on the audience they are aimed at, such as turtle workshops and rescue centre visits for school children and local communities, sessions on best practices for rescuing entangled sea turtles aimed at boat crews, divers, fishermen tourists, turtle science talks for biologists and researchers, and online courses for our audience from across the world.

We also organize yearly sea turtle festivals in collaboration with our partners and other organizations working on educational initiatives. These festivals are a great medium to engage new audiences and interact with people.





ONLINE LEARNING & COURSES

Our <u>e-learning platform</u> was created in the pursuit of our goal to educate, especially at a time when learning was deeply impacted, as the world came to a standstill in the light of the pandemic.

We used technology to our benefit and created an online hub of learning, with an aim to provide steady, uninterrupted stream of knowledge on sea turtle biology and conservation, at zero cost.

Our two courses, e-Turtle School and Sea Turtle Science and Conservation, were conceptualised differently from one another so as to meet the needs of our wider audience!

<u>e-Turtle School</u> employs an interdisciplinary approach to help our audience learn the fundamentals of sea turtle biology and conservation, right from evolution and anatomy, to threats that sea turtles face and the steps that can be taken to help.

Meanwhile, the <u>Sea Turtle Science & Conservation Course</u> covers some of the more advanced research techniques that scientists use to collect data on study populations, and collaborative methods for working with local communities in meeting conservation objectives. Both of these are equally important facets for developing strong conservation plans.

Apart from these courses, our learning hub also includes a treasure trove of other educational resources - quick FAQs to answer common queries on turtle behaviour and biology, latest research papers published by ORP scientists, ORP book club with book recommendations for all ages, sea turtle infographics on protocols and code of conduct - some of which is also available in other languages, and sea turtle science videos.

-Rosie Brown, Communications Officer

	This Year	Total Since Project Began
Students Enrolled	425	670
e-Turtle School Graduates	65	73
Sea Turtle Science & Conservation	38	53

WEBINARS

(Right) This year ORP hosted a webinar on World Turtle Day for the Maldivian community on 23rd May. The webinar was co-hosted by Maldives Underwater Initiative, the Ministry of Environment, Climate Change and Technology (MoECCT), and the Environmental Protection Agency (EPA).

A range of topics were covered from historic use of sea turtles in the Maldives and the legal history of turtle protection to reporting illegal activity concerning turtles today, such as poaching and keeping hatchlings as pets, and how best to swim with sea turtles. Over 50 different people joined the event, most of whom were extremely engaged with the event!



(Left) ORP celebrated World Sea Turtle Day on the 16th June by hosting a webinar '*Protecting Sea Turtles in the Maldives*' for marine biologists and conservationists in the Maldives, along with MoECCT and EPA. Over 150 people attended the event.

The webinar focused on how to assist with sea turtle research and conservation as citizen scientists and researchers, and shared ORP's research on population studies, nesting studies, and ghost-gear studies. ORP also covered code of conducts and best practices for wild turtle and nesting turtle encounters.

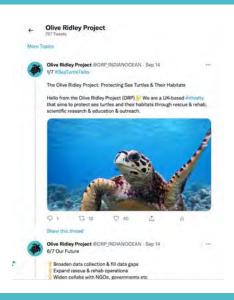


The goal was to reach marine biologists working in the Maldives and provide information on how to submit sightings and encounter data to research organizations. We reached almost 200 people with the webinar, with participants joining online via zoom and streaming it on Facebook live.





ONLINE - ISTS TWITTER EVENT 2021



In September 2021 ORP took part in Sea Turtle Talks, an online Twitter conference. We delivered a series of tweets on 'The Olive Ridley Project: Protecting Sea Turtles and Their Habitats' covering our core goals, past achievements and future directions.

Sea Turtle Talks was a free 3-day, ISTS supported, virtual event and was a fantastic opportunity to connect with sea turtle conservationists from all around the world. A lot of new and exciting sea turtle research was presented at the conference, all of which is still available on the oseaTurtleTalks Twitter page.

SOCIAL MEDIA

Although many conferences and events were cancelled for the year, such as ISTS and Scuba Digital, our digital presence continued to increase, particularly on social media. On Instagram, we welcomed over 4,800 new followers and over 1,400 on Facebook. We even set up a TikTok account and have had almost 20,000 views of our 2021 content alone.

Since the pandemic began, the importance of our digital presence has really been put on display. A big part of our work is education and outreach and we are incredibly grateful to be able to educate our ever-growing following on social media and share our most up-to-date news with our supporters, whether that be about a new sea turtle patient, the latest scientific report or an exciting education/outreach initiative.



LAAMAFARU FESTIVAL



Laamafaru Festival is a joint venture between our partner resort, Six Senses Laamu and the Laamu community, and focuses on raising awareness about the marine ecosystems in Laamu.

Due to travel restrictions related to COVID-19, this year Six Senses Laamu held the festival simultaneously across 7 different islands in November, and also at an 8th school that was unable to participate earlier due to monitoring status. The event coordinated different educational activities across the islands. These activities included speeches, debates and performances by the students, as well as clean-ups and poster competitions. This year's edition of the festival was the biggest to date.

PUBLICATIONS - RESEARCH PAPERS

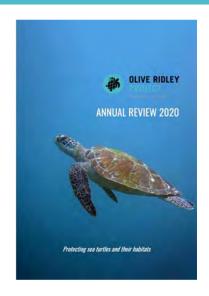
- > Stelfox M, Martin-Cerceda M, Vahed K, Hudgins J, Köhnk S, Iqbal U, Shameel I, Hancock JM and Sweet M 2021. The Olive Ridley Project (ORP): A successful example of how to engage researchers, conservation practitioners and civil society. Research for All 5(2): 448–73.
- Köhnk S, Liddell A and Brown R 2021. Finding of a two-headed green turtle embryo during nest monitoring in Baa Atoll, Maldives. Onderstepoort Journal of Veterinary Research 88(1): a1940.
- Köhnk S, Petros C, Lomas C, Riyad EM, Shameel I, Hawlitschek O and Stelfox M 2021. Stowaways: Marine Leeches infecting Olive Ridley Sea Turtles washed into Maldivian Waters entangled in Ghost Nets. Comparative Parasitology 88(2): 169-176.

CONFERENCE PRESENTATIONS

- (Right) Dr. Claire Petros invited expert speaker at the first regional turtle workshop of West Africa discussing sea turtle medicine and first aid. Seven countries attended this workshop including Sierra Leone, the Gambia, Mauritania, Guinea-Bissau, Guinea, Cape Verde, and Senegal.
- Dr. Martin Stelfox invited expert speaker at the 3rd Northern Indian Ocean Marine Turtle Task Force, Six countries attended including the Maldives, Bangladesh, India, Pakistan, India and Sri Lanka.
- Dr. Joana Hancock invited guest speaker at SSI Marine Ecology Series to discuss the importance of citizen science in monitoring sea turtle foraging aggregations, using Kenya as a case study. The talk (held virtually) was promoted by MEGADIVE Diving Centre (Portugal) and was attended by about 50 diving enthusiasts.



PUBLICATIONS - OTHERS



- Olive Ridley Project 2021. Annual Review 2020. Technical Report.
- Afeef I, Hudgins J, Köhnk S and Stelfox M 2021. Nesting in Laamu Technical Report 2020. Olive Ridley Project.
- Afeef I, Hudgins J, Köhnk S and Stelfox M 2021. Laamu Yearly Report 2020. Olive Ridley Project.



FINANCIAL SUMMARY

2021 Funding & Overheads

ORP is entirely funded through donations and grants. The majority of our income is direct donations from individuals followed by donations from our corporate partners. 88% of our funding was unrestricted and 12% restricted in 2021.

In 2021, 99.7% of our overheads were spent on charitable activities undertaken to further our charitable objectives and 0.3% was spent on fundraising. Our charitable activities include veterinary care, rescue and rehabilitation, research, education and outreach programmes (53%); operational and technical support, management of in-field staff and volunteers, IT systems etc. (31%); equipment (11%); as well as governance (3%) and travel (2%). 62% of our overhead cost were unrestricted and 38% were restricted.

Receiving a Windfall

We were fortunate enough to receive a large donation at the end of 2021 which allowed us to revisit our strategy for the next five years and bring forward programmes planned for 2023-2026, as well as incorporate new initiatives that otherwise would not have been possible. We once again wish to express our deepest gratitude to our generous donor, who has requested anonymity, for this life altering donation.

We have allocated 53% of this donation to be spent on direct charitable activities over the next two years, focusing on education and outreach initiatives, scientific research, and rescue and rehabilitation efforts. We are, for example:

- Starting educational Sea Turtle Watch Tours on nesting beaches in Pakistan;
- Growing our veterinary team in the Maldives to increase our capacity to care for injured sea turtles and fill data gaps in veterinary research;
- Expanding our research programmes to include and advance satellite tagging, genetics, parasites and behaviour to gain a better understanding of their foraging habits, population health and environmental drivers that change behaviour;

- Expanding our research areas along the south coast from Diani, Kenya and increasing capacity building; and
- Planning a podcast to reach a wider audience and different demographic.

Building Financial Security

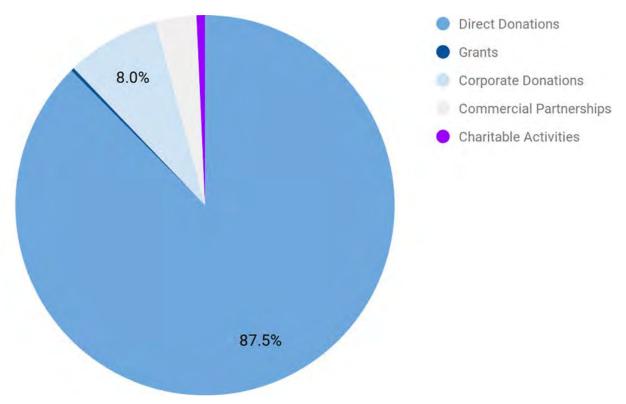
The remainder of the donation will be invested in the long-term success and financial sustainability of the charity. This includes bringing on board two new key team members: a fundraiser and a Chief Operating Officer (COO). Until now, ORP has relied on volunteers and willing team members to fundraise. However, as the charity grows and expands, this becomes an unsustainable way of operating and ensuring financial security. A dedicated fundraiser will help ensure ORP's financial sustainability by establishing and maintaining diverse income streams from individual givers and corporate partners, as well as through grants, legacy, and trust donations.

Bringing onboard a COO will allow the Chief Executive Officer (CEO) to focus more time on advocacy, policy, expansion plans, and creating and building relationships with other stakeholders. The goal is to bridge the gap between policymakers and researchers by communicating our research findings effectively, as well as making sure that our research informs policy decisions in the areas of sea turtle conservation and management.

The COO's role will be to oversee daily business and administrative processes; support the charity's objectives, programmes and team members; and assist the CEO in all aspects of running the charity.

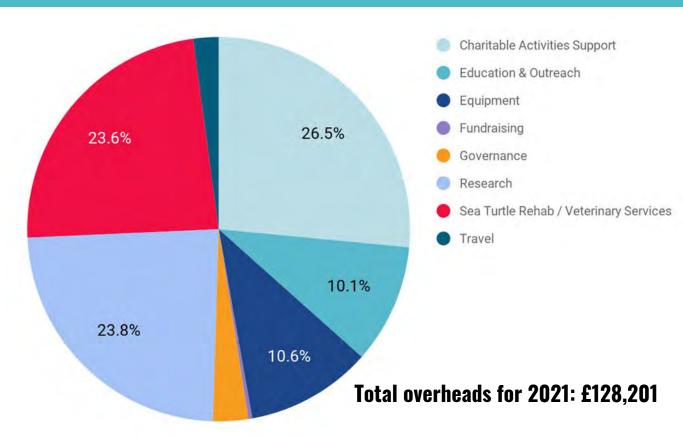
Charities are required to retain adequate reserves to continue operating and not be at risk of financial failure in the event of unexpected shortfalls in income or sudden increases in costs. ORP currently holds enough allocated reserves to operate the charity on a skeleton staff for 3 months, out of which 40% is invested.

HOW WE ARE FUNDED - 2021



Total income for 2021: £365,884

WHAT WE SPENT 2021



GENERAL OBJECTIVES 2022



- 1. Continue to expand research projects
- Fill our understanding of sea turtle populations dynamics
- Expand sea turtle epibiont research
- Investigate survival rates of olive ridleys post rehabilitation release
- Assess environmental factors influencing sea turtle behaviour
- Assess green turtle feeding behaviour and diet composition.
- Identify major foraging habitats.
- Identify and fill data gaps in sea turtle research
- 2. Expand our ghost gear recovery and repurposing projects in the Maldives and Pakistan
- Expand our ghost gear recovery efforts in the Noonu Atoll, Maldives
- Refine circular economy model in Pakistan.
- 3. Increase collaborative projects with local groups and governments
- Assist with Sea Turtle Red List Assessment in the Maldives
- Continue to work with governments to assist in data collection and/or conservation management of sea turtles.
- Engage local groups and individuals in sea turtle conservation and research.
- 4. Provide the best possible care for injured sea turtles in the Indian Ocean
- Expand our rescue and rehabilitation facilities in the Maldives and in other areas in need of facilities
- Utilise emerging evidence based veterinary medicine to ensure best veterinarian practices are implemented at our rescue centre and share these gold standard practices with other turtle rescue centres internationally.
- Continue our visiting veterinarian program and harness knowledge gained from these specialists and provide training for vets from low resource countries.
- 5. Build capacity
 - Build relationships with local NGOs, universities and local groups to help protect sea turtles and their habitats.
- Continue to work with school groups to teach sea turtle ecology and threats.
- Expand our online learning tools to compliment national and international learning projects.

PARTNERS, COLLABORATORS & DONORS 2021





























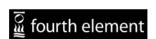






































It takes a global village to protect sea turtles and their habitats and we are truly grateful for the community of sea turtle lovers from all over the world who support our work; we could not do it without you!

Thank you to our citizen scientists for your invaluable data contributions; thank you to our rescuers and ghost gear busters for helping us rescue stranded turtles and remove ghost gear from the ocean; thank you to our volunteers who help us care for our turtle patients; thank you to all our followers for encouragement and for helping us spread our message about sea turtles; thank you to our students for wanting to learn more about sea turtles; thank you to our adoptive parents, donors and fundraisers for your generosity; and thank you to our collaborators and partners for your logistical and financial support, for hosting us and flying out turtle patients!

Together we have:

- Treated more than 164 injured sea turtles and successfully release 96 back into the wild to date;
- recovered more than 10 tons of ghost gear from beaches and oceans, and saved countless turtles and other animals from getting entangled;
- Made big headways in our research into sea turtle populations, distribution and threats, including the identification of more than 5,800 individual sea turtles in the Indian Ocean and documentation of tens of thousands of sea turtle sightings;
- Educated thousands of school children, tourists, divers, fishers and resort employees;
- Contributed information, together with a network of stakeholders, that led to the designation of six new Marine Protected Areas in Laamu Atoll in the Maldives.

Thank you!

THE ORP TEAM 2021



Dr. Martin Stelfox, Founder & CEO



Dr. Stephanie Köhnk, Senior Project Scientist



Dr Jillian Hugins, Scientific Advisor



Dr. Claire Petros, Lead Veterinary Surgeon

IN THE MALDIVES



Dr. Minnie Liddell, Veterinary Surgeon



Shameel Ibrahim, Project Coordinator



Risha Ali Rasheed, Project & Volunteer Coordinator



Jo Goodfellow, Sea Turtle Biologist



Isha Afeef, Sea Turtle Biologist



Emily Mundy, Sea Turtle Biologist



Joe Rigby, Sea Turtle Biologist

IN KENYA



Dr. Joana Hancock, Project Manager



Leah Mainye, Project Coordinator

IN PAKISTAN



Usman Iqbal, Project Manager



Asif Baloch, Project Coordinator



Waqar J Khan, Fashion Designer

BEHIND THE SCENES



Rosie Brown, Communications Officer



Susie Gibson, Graphic Designer



Rushan bin Abdul Rahman, Researcher



Jane Lloyd Researcher

INTERNS - MARINE TURTLE RESCUE CENTRE



Ali Jinaad Sep 2020 - Jan 2021



Aminath Zein Ismail March - June 2021



Mohamed Shah June - October 2021



Mariyam Niuma October - February 2022

AMBASSADORS



Andy Torbet, Explorer & TV Presenter



Matt Sorum, Rock 'n' Roll Legend

BOARD OF TRUSTEES 2021



Dr. Michael Sweet, Trustee



Jannicke C Hallum, Trustee/Digital Media Manager



Matthew Shoulders, Trustee/Treasurer



Cliona Kirby, Trustee



Amanda Costain, Trustee