REPORT OF THE 3rd MEETING OF THE NORTHERN INDIAN OCEAN MARINE TURTLE TASK FORCE

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Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia

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1. Opening of the Meeting

Melanie Virtue (Secretariat) welcomed everyone to the 3rd Meeting of the Northern Indian Ocean Marine Turtle Task Force (NIO-MTTF-3). The NIO-MTTF had been established in 2015 as the second Task Force in the IOSEA region. The last meeting was in Sri Lanka in 2018 and, while there was supposed to have been a meeting in 2019, with changes in membership and COVID, it had been delayed to now. She noted that, while online meetings were not the same as being in person, they did make it easier for more people to participate. She wished everyone success and thanked the MOU Coordinator Heidrun Frisch-Nwakanma for the hard work she has put into organizing the meeting

Muralidharan Manoharakrishnan (Chair / NGO Member India) said it was good to get back on track with the NIO-MTTF. He was hoping this meeting would be the start of something new, and acknowledged some of the challenges that each of the countries had gone through in their conservation activities since the last meeting.

2. Adoption of the Agenda and Schedule

The Chair first did a tour-de-table, inviting participants to introduce themselves. The list of participants is contained in Annex 1.

Bettina Reinartz (Secretariat) outlined the Online Meeting Protocol and the Chair introduced CMS/IOSEA/NIO-MTTF-3/Doc.2/Rev.1 Provisional Agenda and Schedule which was adopted without revision. The agenda is contained in Annex 2.

3. Key Outcomes of the 8th Meeting of the Signatories (MOS8) and Progress Report

Heidrun Frisch-Nwakanma (Secretariat) introduced CMS/IOSEA/NIO-MTTF-3/Doc.3 Progress Report on Implementation of the Work Programme 2020-2024, which reflected the Work Programme adopted at MOS8 in Vietnam along with an update on its implementation. The Work Programme was organized following the MOU Conservation and Management Plan, and highlighted who the expected actors were for each measure. At MOS8, each of the sub-regions had assigned priorities to the activities leading to an overall priority. In the last column the Secretariat had added an indication of the status of progress, where known, using a traffic light system.

She highlighted nine activities as completed and noted that there were many more AC and Secretariat activities ongoing.

Outside of the national reporting cycles there was no mechanism for tracking progress of Signatory States in implementing the many activities foreseen for them. Accordingly, she had not attempted to indicate progress made with the many activities Signatory States had assigned to themselves. She was looking forward to hearing the country reports to get a feel for what had happened.

The implementation of many activities required funding including tasks related to capacity building so the Coordinator encouraged Signatory States to pay their contributions to make the MOU as useful as possible across the region.

The Chair thanked her and encouraged Signatory State representatives to review the Work Programme.

4. Outcomes of NIO-MTTF-2 (2018)

The Chair referred to the Report of the 2nd Meeting of the NIO-MTTF which had been held in Colombo, Sri Lanka, in which all the member countries had participated, together with AC members and invited experts. The key issues on the agenda had included: reducing mortalities of adult turtles in fishing gear; protection of onshore habitats; improved research and monitoring techniques; and increased public awareness. Salient points discussed included: the expansion of the IOSEA Site Network in the region by identifying new sites in the region; developing National Plans of Action (NPoA) for marine turtles; identified gaps in the IUCN Marine Turtle Specialist Group (MTSG) reporting for the region; and collaborative research and conservation projects that could be undertaken in the region. A detailed discussion on the regional challenges based on the input of country representatives had also taken place.

In ensuing discussion, Jack Frazier (AC Chair) emphasised the need to strengthen work on social issues related to marine turtle conservation, noting that the Western Indian Ocean Task Force (WIO-MTTF) had developed a plan for such work a few years earlier, which sadly had mostly not materialized. Given it was humans that interacted with turtles at different levels, engagement with stakeholders was vital to be more effective in promoting marine turtle conservation.

The Chair welcomed this suggestion and agreed that the NPoAs tended to be top-down with limited engagement with local communities, and that there was a need to strengthen capacities on reporting and local level management of marine turtles in the NIO region. In India the government had formally recognised the importance of working with NGOs in engagement with stakeholders.

5. Presentations from each Country

The Chair invited presentations on the situation in each country, noting that the Members from Sri Lanka had communicated their apologies.

Pakistan

Shoaib Abdul Razzaque (NGO Member Pakistan) and Zona Zaidi (Governmental Member Pakistan) presented updates on conservation efforts in relation to marine turtles in Pakistan.

Mr Abdul Razzaque first noted that in Pakistan there was a history of using a participatory approach and co-management between stakeholders in government, the fishing and coastal communities. He highlighted recent work with the fisher communities working with tuna fishers in offshore waters and a small network of coastal fishers on reporting entanglements and safe release of entangled turtles during fishing operations. He also outlined a project supporting sustainable fisheries entrepreneurship for monitoring and reporting of marine turtle bycatch in coastal fisheries, and conducting a trial on efficacy of nets using LED lights for reducing bycatch of sharks and marine turtles. He explained he would give more detail about these projects in his presentations under Agenda Items 7.2 and 7.3.

He described ongoing monitoring activities of Green Turtle nesting sites. There were approximately six to eight hotspot nesting grounds, three of which – Astola Island, Gwadar District and Hawks Bay – were the main nesting grounds for Green Turtles in Pakistan. From 2018-2021 there had been systematic monitoring of adults and hatchlings of Green Turtles on

the nesting ground at Jiwani. Carcasses of Hawksbill and Olive Ridley Turtles had also been found at that location.

He also described a new study on pathways for plastic pollution (ALDFG) in tuna fisheries, using questionnaires in nine of the main fishing grounds, which was conducted as part of a campaign by WWF-Pakistan.

Other activities included: developing a guidebook for safe handling and release of marine turtles in small scale fisheries with a stepwise approach for fishers, managers and scientists; ongoing awareness-raising on the conservation of marine turtles, including celebrating the IOSEA 20th Anniversary and educational sessions with schools, universities and corporate personnel at Hawks Bay; and conducting marine turtle watch activities using red lights to sensitize participants to threats and their impacts on marine turtles.

Ms Zaidi then outlined the national policies and laws in relation to marine turtle conservation in Pakistan. All marine turtles were covered under regional and national laws and international conventions. The CITES Management Authority had banned export of any reptiles in Pakistan and import was under scrutiny.

Emerging threats or challenges included: coastal development, particularly infrastructure development at Hawks Bay; plastic pollution, including discarded fishing gear and other debris; direct take and killing of turtles, including hatchlings, for illegal trade at local level; predation of eggs and hatchlings by feral dogs and other predators; impacts of climate change which caused changes to the natural sex ratios of hatchlings and increased the likelihood of disease outbreaks; limited information on genetic and diseases; lack of proper rehabilitation facilities; lack of resources for monitoring of all the remote nesting grounds; and inadequate coverage of monitoring and reporting accidental catches from coastal fisheries.

Six research publications had been published and the Sindh and Balochistan Wildlife Departments had been monitoring activities relating to nesting monitoring and release of hatchlings, providing updates on social media, and carrying out educational sessions and capacity building training for fishers.

Martin Stelfox (Invited Expert / Olive Ridley Project) reported dumping of fishing gear on Astola Island as well as wrecks and gillnets. Mr Abdul Razzaque said the Balochistan Wildlife Department was aware and trying to address the problem.

Mr Frazier said that there had long been evidence of many turtles nesting in Balochistan. Trawling had been banned there in the past with fishers from Sindh fishing there and catching turtles accidentally. Mr Abdul Razzaque explained there was a gap in monitoring as these areas were so remote but new monitoring activities had been resumed from 2018 and had found a healthy population with 942 Green Turtles observed. There were some administrative difficulties and, despite the ban on trawling in Balochistan, it was hard to limit the movements of the trawler fishers. Mostly the Sindh fishers did not enter the Balochistan area but mainly fished in the EEZ. There were no reports of bycatch from them. The government was trying to monitor the activities of these trawlers and to restrict the movement of deep-sea trawlers into coastal waters.

<u>The Maldives</u>

Lisama Sabry (Maldives) presented a country update for the Maldives.

New research included: the project Enhancing National Development through Environmentally Resilient Islands (ENDhERI) which surveyed some of the nesting areas in Laamu Atoll with the hope of protecting these areas under environmental legislation soon; the project

Conservation of Atoll Ecosystems through an effectively managed national Protected Area Estate (CATENATE) – there were a lot of protected areas in the Maldives but to date only five had management plans; an Ecosystem-based Adaptation (EBA) project was being formulated to apply to the Adaptation Fund with a view to increasing the resilience of coral reefs, sea grass beds, shoreline of islands and inhabitants and biodiversity as well as the adaptive capacity of the country as a whole to climate change; the Maldives Sustainable Fisheries Resources Development project for better management of fisheries in the Maldives with a plan to develop mari-culture for targeted atolls; and Noo Raajje (translation – Blue Maldives), a collaboration between the government of the Maldives and an international NGO to make ocean planning and management more robust through developing marine spatial planning for the whole country.

New research and projects included: a nationwide genetic study on Green and Hawksbill Turtles to better understand the management units; improving data collection relating to nesting Hawksbill and Green Turtles; expanding data collection on photo-IDs nationwide; behavioural studies of Green Turtles and links to lifecycle function; a parasite study linking to sea turtle health; research into the socioeconomic value of marine turtles linked to tourism in the Maldives; poaching research; research into environmental factors that drive marine turtle behaviour; and a satellite tagging project to identify foraging habitat.

The Maldives Marine Research Institute was mostly focused on habitat for marine turtles with a 20+ year Maldives Coral Reef Research Programme helping to understand recent events and to ensure developmental activities do not affect the coral reefs. There was also a National Coral Reef Restoration and Rehabilitation Programme.

The Environmental Protection Agency (EPA) was establishing a network of citizen science surveyors, with a pilot which started in 2021, collecting sea turtle nesting information with the help of island councils in each inhabited island, and planning to conduct a joint study on sea turtle genetics with the Olive Ridley Project.

Ms Sabry outlined a number of developments affecting marine turtles and their habitats including: establishment of tourism zones in inhabited islands which could also have positive impacts as people were taking ownership of turtle conservation; island and regional waste management centres as waste was a huge challenge in the Maldives, in particular plastics; water and sewerage network establishments which were outside the reefs making it very difficult to understand their impact on coral reefs; harbour, port and airport development projects; dredging works reclamation; the Greater Male Connectivity Project; and resort development projects, noting that they were trying to create the norm that each island was managed by one resort manager.

On national policy, laws, or management frameworks she referred to: the Strategic Action Plan 2019-2023; National Biodiversity and Action Plan 2016-2025 which had conservation targets that directly benefit marine turtles, such as control of illegal trade, protection of species and habitats; the publication of the Protected Species Regulation 2020 which mandated the Ministry of Environment to carry out species protection activities such as creating a management plan for all protected species in the Maldives; and the Maldives Red List Initiative with the final assessment expected in February 2022.

Other area-based conservation measures were ensuring that areas outside of protected areas were managed. In 2018 a pledge had been made to protect at least one island, one reef and one wetland from each atoll, focusing on areas of ecological importance.

Finally she outlined the National Biodiversity Strategy and Action Plan (NBSAP) for the Maldives which was a comprehensive plan in development with proposed guidelines for: the management of sea turtle habitat, nesting turtles, hatchlings, injured and entangled turtles and

confiscated turtles; best practices and codes of conduct; sea turtle rehabilitation guidelines and euthanasia; general guidelines for sea turtle research and educational display and possession; sea turtle research gaps and databases; violation and enforcement strategies; and a roadmap for conservation strategies. The NBSAP was in the review phase after the stakeholder consultation process and expected to be published in the first or second quarter of 2022.

Emerging threats or challenges included: climate change and associated impacts which were a huge problem for the Maldives, with some islands suffering extreme erosion while some of the coral reefs had been recovering well; mobilisation of funds for protection of sea turtles and their habitats which was challenging especially with the financial losses due to the pandemic; ghost gear, which washed up from afar despite the Maldives having banned nets within its EEZ; poaching, with a research priority being to understand why it still existed and trying to get voluntary compliance; limited enforcement capacity; and development projects.

Success stories included: recent establishment of Addu and Fuvahmulah as UNESCO Biosphere Reserves which were ecologically significant areas inhabited by marine turtles; the establishment of 73 protected areas; the commencement of the Red List assessment for all sea turtles in the country; expansion of rehabilitation options nationwide to help care for stranding events (usually through ghost gear); continued baseline data collection on sea turtle populations and distribution; and coral restoration projects. She highlighted the FaruKoe Programme (translated – Children of the Sea) initiated by the Ministry of Education. The programme aims to ensure that each child in the Maldives gets to go into the sea and experience it through snorkelling trips for example. This had been very successful and there was a healthy competition between schools. When they celebrated World Sea Turtle Day in 2021, they had seen excellent outcomes from these schools as a result of this programme, in particular how well the children understood the situation. Finally, she highlighted the project Protection of Sea Grass in the Maldives as some resorts had been actively removing seagrass meadows to meet tourist expectations but through this campaign a lot of hotels had started protecting their seagrass meadows.

Mr Frazier was impressed by the work with students as they were the next generation. He hoped this could be continued and Ms Sabry could provide more information for others to learn from. He had read an article long ago about an island in the Maldives where trash was piled up as a result of tourism. He encouraged policymakers in Maldives to learn from what now happens in Mt Everest which also relied on tourism as for many years people just left their junk on the mountain until it was required that anything that was brought in had to be taken out again. He was also concerned that financial benefits of tourism often did not reach the country, with tourists paying to foreign travel companies. Ms Sabry explained that in the Maldives they charged tourists a green tax which went into a Green Fund, and that they had received a lot of money for conservation from this fund. However, this Fund was currently focused on waste management. It would take time, but she hoped they would see a good future from it.

India

The Chair presented a country update from India, noting that the Indian government representative was not able to attend so while he would offer the information he could, he would necessarily be more focused on the work of his organization, Dakshin Foundation, which focused on marine flagship species, with an emphasis on sea turtles, through in-water and nesting surveys.

New research or conservation projects related to marine turtles and/or their habitats included: the sea turtle flipper tagging (approx. 20,000 turtles) programme in Odisha and the Andaman Islands by the Zoological Survey of India (ZSI), mainly focused on the Olive Ridley Turtle population in Odisha; long-term monitoring of Leatherback Turtle movements in the Andaman

and Nicobar islands (Dakshin Foundation, Indian Institute of Science (IIsC) and the Ministry of Environment Forests and Climate Change): and Long-term Ecological Observatories (LTEO).

On large infrastructure developments affecting marine turtles and/or their habitats he highlighted: a proposed port development at Galathea Bay in the Nicobars (which had the largest Leatherback Turtle nesting grounds in the world), although the government had reassured that all necessary mitigation measures would be taken to address potential threats; and the proposed tourism development expansion plans in the Little Andamans (an important Leatherback Turtle habitat).

On significant changes in management frameworks, he highlighted the National Marine Turtle Action Plan (NMTAP, 2021-2026) which had been launched in January 2021. It was a comprehensive document listing all the important habitats for sea turtles in the country and the plans. The NMTAP aimed to conserve marine turtles and their habitats for maintaining a healthy marine ecosystem and had five broad objectives: to reduce direct and indirect causes of marine turtle mortality; to protect, conserve, and rehabilitate marine turtle habitats; to improve understanding of marine turtle ecology and populations through research, monitoring and information exchange; to increase public awareness of the threats to marine turtles and habitats, and enhance public participation in conservation activities; and to enhance national, regional, and international cooperation.

The key emerging threat was that of ghost gear and marine plastics, and he stressed the need for a proper monitoring plan. Currently under development but not yet available were standardized rescue and rehabilitation guidelines. The coastline was heavily populated by fishing communities, so light pollution was an increasing problem and a coastal lighting policy was to be framed for important sea turtle areas.

He also mentioned that they had participated in the IOSEA World Sea Turtle Day 20th anniversary event highlighting all the coastal network of conservation partners with the support of the Indian government and the Ministry of Environment and Forests.

In India, the most important nesting event for sea turtles was the mass nesting on the East coast of India in Odisha in two nesting sites as well as a minor Olive Ridley Turtle mass nesting event in the Andaman Islands. This had driven several of the conservation policies as well as most of the research interest in India and several members of the AC had participated in these monitoring programmes in advisory capacities. India hosted a very large population and there were dense aggregation sites off the nearshore waters of the nesting grounds. The Dakshin Foundation had been monitoring Olive Ridley Turtle arrival and aggregations since 2009, finding a largely stable or increasing population, although this could be also an effect of more turtles nesting at one site. He showed a graph indicating that these were extremely fluid aggregations compared to the mass nesting event which got more intense. These aggregating events occurred even in the years that mass nesting did not happen so the coastal waters hosted a large population of turtles.

On climate change impacts, Dakshin Foundation had been carrying out long-term monitoring at nesting sites in Odisha of nest temperatures and the impact on sex ratios, finding quite a fluctuation in temperatures across the years which was correlated with the sex ratios.

The other key nesting habitat in India was for Leatherback Turtles primarily on the Andaman and Nicobar Islands. They had been getting many tag recaptures in recent years considering they started in 2007-2008 and still had not reached saturation. Annually they tracked a few individuals coming to nest and there seemed to be a wide variety of individuals in the population. The tagging work showed the Leatherback Turtles as distributed across the Indian Ocean, migrating across to the Australian coast and to Mozambique and Madagascar.

The increasing numbers of Green Turtles in Lakshadweep due to successful conservation efforts and a decline in large sharks predating on turtles had had a substantial effect on the sea grass meadows there. They were continuing to monitor these populations to understand better what to do and whether they moved to other foraging grounds in the region.

A major problem in the region was bycatch of 'trash fish' or '"buy"catch'. They were undertaking a study of the fishing system and the findings indicated that, while most of this trash fish used to be discarded at sea, now it had value as it was turned into fish meal and fish oil for mariculture and aquaculture feed. This reduction fishery system was willing to purchase any quantum of trash fish being landed which made it an important source of income for trawl fishermen even on days they did not get the target catch. The demand for this fishmeal and oil required increased trawling and capture of trash fish and was linked to the decline in target catch. Species that were previously discarded were being sold in this reduction fishery system. They were trying to understand the linkages between wild harvest for consumption by humans and how much went into the reduction fishery system, what kind of species were being caught in different types of gear, and the processing and implications on trade.

On outreach and communications, he reported that the Dakshin Foundation held a large amount of information on outreach and communications. Several of their partners had contributed to the Indian Ocean Turtle Newsletter, and they had been expanding informal knowledge systems including through an online portal called Sea Turtles of India. He also invited members to visit the online exhibition arribada.in that contained many stories about sea turtles. They hoped to initiate dialogues with partner countries in the region to develop similar systems to make it easier for the public to access information on what is going on in their country to do with sea turtles.

Mr Frazier welcomed what India is doing, noting the challenge given the number of different languages and dialects spoken along the coast. The Chair confirmed there were more than ten coastal languages which made it difficult to disseminate information, so a key aspect of their work was to enhance networks and communication within the country itself and not work in separate silos. Mr Frazier said it was about understanding humans and being able to work with humans. The Chair emphasised it was also about not trying to fit the same management plan for different regions. Most of the management plans for India were based on the extremely large turtle populations off the coast of Odisha which meant that the same approach might not be applicable on other parts of the coast. There had been an attempt to have the same kind of regulations in Tamil Nadu where the situation was very different, which caused a lot of conflict with fisher communities. He hoped that the NSTAP would bring a refreshing change as it specifically mentioned working with grass root organisations and was not a top-down plan.

Ahmad Mahdavi (Observer / University of Tehran) asked whether there were studies about the effect of toxic pollutants and microplastics on turtles as well as on other marine animals in the area. The Chair said they did have some information on toxic accumulation in marine turtles, but the last study looking at heavy metal contaminants in sea turtle eggs and hatchlings was in the 1970/80s to early 1990s.

Ms Frisch-Nwakanma welcomed the information on the NTSAP, noting that the objectives followed the MOU Conservation and Management Plan indicating it was still relevant. She also commended India for taking into account regional differences, and noted this had application throughout the MOU area.

The Chair said that since the launch of the NTSAP, field-based implementation had been slowed down by COVID and each individual state had been asked to submit proposals and work in partnership with agencies for fundraising and managing turtles. They were yet to see a formal engagement. He proposed using the NIO-MTTF to develop something online for the region and invited members to consider this.

Bangladesh

Mohammed Zahirul Islam (NGO Member Bangladesh) was not able to attend most of the meeting but gave a brief report that COVID had not had much impact on nesting in Bangladesh but that there was a nesting decline due to development work. He also explained that there was a need to receive the appointment of a new governmental member and hoped this would be resolved soon. He requested the MOU Coordinator to send a letter to the Forest Conservancy.

6. Sub-Regional Situation and Priorities

This agenda item was taken in conjunction with agenda item 8.

7. Pilot Research Projects for Collaboration

7.1 Ghost Gear Management

Mr Stelfox presented on the Olive Ridley Project activities around ghost gear management in the Maldives. Most of the gear they found drifting into the Maldives was unmarked so it was difficult to identify its source so they were using drift models to pinpoint its origins. A key gap was the lack of gear marking.

Many fish aggregating devices were drifting into the Maldives. Control samples had been put into the ocean on which a significant growth of organisms was found, pointing to a potential danger of invasive species transfer through ghost gear allowing organisms to hitchhike from one place to another. They had found that percentage of cover and barnacle size were key indicators to determine minimum drift times. Drift patterns during the south-west monsoon pointed to fisheries operating with fish aggregating devices in the WIO; whereas drift patterns during the north-east monsoon season pointed to a majority of gillnet and trawl fisheries with a more broadly distributed origin.

On genetic analysis, Mr Stelfox explained that they had found, through skin sampling, that Olive Ridley Turtles entangled in the Maldives belonged to the genetic stocks of the eastern coast of India and Sri Lanka. There was minimal impact to these large genetic stocks in India compared to a major impact to the small genetic stocks in Sri Lanka which were genetically unique and a separate MU with little data and information. Orphan haplotypes suggested the need for improved resolution of Olive Ridley Turtle phylogenetics in the region.

He outlined several recommendations for addressing Abandoned, Lost and Discarded Fishing Gear (ALDFG):

- Gear marking following the UN Food and Agriculture Organisation (FAO) voluntary Guidelines on the Marking of Fishing Gear which would mean they would not need to use such a complex process to identify ghost gear origin.
- Supporting local clean-up efforts particularly on foraging and nesting habitats.
- Harmonizing efforts to drive greater transparency and compliance from industrial fisheries within Indian Ocean Tuna Commission (IOTC).
- Improved portside and beachside disposal facilities for end-of-life fishing gear. The Olive Ridley Project had been running a project in Pakistan since 2015 working with the local community and had recovered about 10 tonnes of fishing gear which was being recycled into dog leashes and bracelets. This was a circular economy model and in some months the women working on that project earned more than the men from fishing. Communities could invest in and benefit from the project.

- Improved rescue and beach side disposal facilities for end-of-life fishing gears as there were very few in the IO and fishers threw the gear overboard if it was easier.
- Improved rescue and rehabilitation facilities in the NIO. The Olive Ridley Project had a facility in the Maldives. They offered internships for anyone and had worked with organisations in Kenya and India to help build capacity in the region.
- Expanding data collection to improve statistical model design in the NIO – building predictive models – and which gears were most problematic to sea turtles. Most of data was centred in the Maldives but they also had data from Oman, India, Sri Lanka and Pakistan and it could be used anywhere.
- Avoiding combining bycatch and ghost fishing in future analyses as they are two very different issues with different management process issues.
- Improved phylogeographic resolution for sea turtles in the NIO.

Mr Stelfox then demonstrated how to submit information on sea turtle sightings and ghost nets on the Olive Ridley Project website as they were collecting data on ghost gear and strandings to feed into the models for the entire Indian Ocean region. All the research was open access and they would open the data within reason to anyone who wanted to do analysis on the data.

The Chair asked if they had any information on sex/size specific entanglements. He also asked what kind of practices were taking place post-aggregation. Mr Stelfox said that for Olive Ridleys they predominantly found juveniles and sub-adults entangled and rarely found males. He went on to say that much emphasis was placed on repurposing of gear – in Oman the gear was recycled overseas into nylon. There were also individuals in India who were active in terms of beach cleaning. The focus was on clean-up and recycling and efforts needed to be more focused on the prevention.

Mr Abdul Razzaque reported that Pakistan had had an observer programme since the 1990s indicating that Olive Ridley Turtles never visited the Pakistani beaches for nesting purposes. However, Olive Ridley Turtles had been found in offshore waters. He wondered if the Olive Ridley Project had been able to collect samples of Olive Ridley Turtles in Pakistan waters. He noted that in Pakistan beach cleaning activities were not a solution as the pollution came from both land and sea. He was not aware that origins of ghost gear found on beaches had been investigated.

Mr Stelfox explained that the Olive Ridley Project had only worked in one specific location in Sindh, Pakistan, which was quite isolated. Most of the ghost gear they found was artisanal in nature although they did find trawling gear, mainly on nesting beaches, but also in foraging habitats. Fishers reported the gear lost and the Olive Ridley Project recovered it and gave it back or got it recycled. They had done little work offshore and found quite a bit of resistance when they tried. The communities they worked with said there was a lot of conflict between the gillnet fishers and trawlers and the trawlers rarely followed up on their promises though they were initially accommodating.

Ms Frisch-Nwakanma highlighted that Signatory States had included a point in the MOU Work Programme encouraging the submission of data on ghost gear to the Olive Ridley Project database. She wondered whether there was anything that the Secretariat could do to enhance the flow of information.

Mr Stelfox said the fact that the website was in English limited the number of individuals who could use it with ease. If they could translate the pages into different languages, this would help. The intention was to gain an understanding of each region; to date, they only had good data for the Maldives as they had worked there intensively. Any information they could get from elsewhere would be helpful, but they would need champions in each region and were open to facilitating what was needed.

Ms Sabry enquired about the differences in ghost gear encounters between the north-east and north-west monsoon seasons, and noted that on social media there were posts from many fishers actively involved in rescuing sea turtles, so acceptance appeared to be high. Mr Stelfox confirmed that during the north-east monsoon season they were seeing the most entanglements of sea turtles.

Mr Abdul Razzaque highlighted the lack of resources in Pakistan – many beaches were inaccessible, and it was difficult to monitor at sea. It was hard to know how much bycatch there was and to collect ghost gear. He was not sure how fishermen could identify the place they lost gear and there were limitations to collecting it and retrieving it from the sea. He emphasised the needed to rely more on technology and passive ways of taking ghost gears from the land and water. Working with local communities took time to build trust. In Pakistan they were focusing on the educational element, with individuals within the fishing community who were champions of the circular economy. They were also focusing on education for young people as it would be future generations who made the change. He also emphasized communication around the ghost gear issue as a transboundary issue, with the ghost gear itself moving and affecting migratory species.

The Chair said this was one of the reasons for having this session on something important across the region on which the MTTF could facilitate collaboration.

Mr Stelfox's presentation is contained in Annex 3.

7.2 Bycatch Mitigation: LED Light Sticks and Sub-Surface Gillnetting

7.3 Use of Observers/Cameras On-Board Tuna Gillnetters

Mr Abdul Razzaque presented on WWF-Pakistan projects developing bycatch reduction tools (BRTs) and mitigation tools, addressing both agenda Items 7.2 and 7.3 together.

He first presented the WWF-Pakistan project on LED Light Sticks. As part of BRT, the objective was to trial LED lights with coastal fishermen, observing the effect of the use of LED lights on target catch and bycatch through data collection. In previous studies the illuminated LED sticks attached to gillnets had been considered deterrents that could prevent the entanglement of Green, Loggerhead and Leatherback Turtles.

In 2018, in a first phase, they researched the issue in collaboration with fishers and identified the most critical aspects to focus on. The fishers were using gillnets targeting pelagic species in coastal areas of the Indus canyon, an area known for bycatch of megafauna and a foraging area and migratory route for sea turtles. After selection of the study areas, they developed research protocols and selected two categories of vessels: experimental vessels equipped with LED lights and control vessels without. They used green LED lights on small-scale fishing boats of 36 feet in length (~11 metres). Training exercises were carried out with the fishers in the community and in the field on how to use the data collection tools.

From January to March 2019 they collected data in the area, including the physical parameters and the average depth of water, average temperature and the turbidity. They collected fishing operation data critical to understanding the fishing effort and the biological data through random sampling for species length frequencies. Several fish categories were recorded during the study with the dominant species being: Narrow-barred Spanish Mackerel, Goatee Croaker, Giant Sea Catfish and Barracuda. It was found that less Mackerel were caught by the control vessel, but more Croaker. There was little difference in the Catfish catch but for the Barracuda, fewer were caught by the experimental vessel. During these trials the number of entanglements of sea turtles were much more frequent in the control vessel compared to the

experimental vessel. The species composition of commercially important species, such as Narrow-barred Spanish Mackerel, were higher in the experimental vessel than the control vessel. The use of LED lights had also not affected overall catch. The higher proportion of commercially important species and the reduced frequency of sea turtle interactions during fishing operations were the drivers of motivation for the fishers to remain involved during the trials.

There were some challenges, including that the coastal fisheries in Pakistan were dynamic, seasonal and multi-gear fisheries. The duration of the trials had been limited by a change of fishing gear used after some months to target different species. The trials were conducted with the fishers themselves rather than independent observers for the data collection over a complete fishing season. Methodologically, it had not been possible to record the distance between control and experimental vessel, therefore it was not clear whether conditions had always been comparable. Also, attaching the LEDs and collecting data required more effort for the fishers during their fishing operations.

In response to a question from the Chair, Mr Abdul Razzaque confirmed that they had recorded individual encounters of entangled turtles as catch per unit effort (CPUE). He also emphasised the need to continue the trials to get more aggregate results that would show seasonal differences.

He then presented on sub-surface gillnetting as a low-cost mitigation of bycatch of endangered, threatened and protected (ETP) species. WWF-Pakistan had been working with a network of fishers from 2012 to gain an understanding of tuna gillnet fisheries. They had started with two fishers and then expanded so they now had 75 collaborators targeting tuna fisheries in offshore waters. Such crew-based observer programmes had been endorsed by the Indian Ocean Tuna Commission (IOTC) as an alternative data collection mechanism and the use of sub-surface gear had been recognized by the IOTC and International Whaling Commission (IWC) as a technique for the bycatch mitigation of ETP species such as dolphins and sea turtles.

Data sheets complied with the IOTC's minimum data collection and reporting requirements. WWF had provided the fishers with the data sheet and cameras for data collection during their fishing trips to enable recording information on the net configuration, the species caught, composition and length frequencies of catch and bycatch, and how catch and bycatch were treated. The fishing trips were generally 15–25 days, sometimes 30. When they came back, the fishers would debrief at the WWF office. During this debrief, every fisher was interviewed to validate the data collected.

While working with these tuna fishers, a conventional fishing method of 'subsurface gear setting' for targeting yellowfin tuna was adopted by the fishermen where the drift gillnets were set two metres below the surface of the water. Based on the data gathered between 2012-19, there was no significant difference in the target catch of tuna, but a significant reduction in the number of ETP species entanglements, particularly of sea turtles.

WWF-Pakistan had also been working with fishermen piloting Electronic Monitoring Systems (EMS) in gillnet fisheries and had installed night vision CCTV cameras on their boats. The CCTV cameras were used to verify and validate the data collected by fishermen regarding the use of subsurface gear and handling and safe release of sea turtles. They had trialled allow-cost EMS system called Shellcatch Virtual Observer, using remote-based cameras collecting data. It was managed by an App and could collect data images for 30 days. It could also analyse data, track the vessel and speed of the net, and could download and analyse according to fishing gear and target and had artificial detection technology. It was trialled between August-September 2019. Unfortunately, the cameras were not night-vision cameras and these fisheries mainly operated at night, so due to operational limits of this older version

of Shellcatch this had not worked out long-term. However, the technology had potential for data collection and EMS on small-scale fisheries, particularly for the monitoring of megafauna such as sea turtles. It had already been used in Mexico and Thailand.

Mr Razzaque also reported on a WWF-Pakistan project with coastal fishermen on sustainable fisheries entrepreneurship with financial support from Engro Foundation Pakistan. An Android mobile application was being developed to reduce the effort of data collection and reporting. It would cover all fishing data, including administrative, operational and biological information for each fishing vessel and each fishing trip. The App listed 120 species for the fishermen to select the fish and do random sampling. One aspect missing in the LED light trial was that the data sheet did not show how fish were treated, i.e., retained, discarded, or released, and this had now been included in the App to help motivate fishers as they would benefit from a summary of their catch at the end of each trip to enable them to calculate the economics.

In these projects, all five species of marine turtles reported in the Indian Ocean were also found in Pakistan waters. Of these, Olive Ridley, Loggerhead, Hawksbill and Leatherback Turtles, did not nest in Pakistan, but used the area for foraging. This was a great example of the contribution of the fishers to enhancing the scientific knowledge of the fauna of this region.

WWF-Pakistan was also training fishers on safe release of ETP species by showing them how to handle and treat the sea turtles and sensitizing them on how to collect data.

The Chair was interested that the one of the graphs in the presentation indicated small Green Turtles offshore and that the Olive Ridley Turtles seemed to be adult given there had not been nesting recorded in the region for some time. He wondered if they were looking at tissue samples for the genetics for Olive Ridley Turtles and suggested they could work with Mr Stelfox on this. Mr Razzaque said they would like to do this but would either need to have trained personnel on board the vessel, or provide training to the fishermen so they could collect the tissue samples. He also mentioned WWF-Pakistan had purchased a Wildlife Satellite tracker in 2018 which they would like to install on one of the Olive Ridley Turtles but did not have the operational costs at this point.

The Chair then asked how the observer programme using CCTV cameras on vessels had been received by the fisher communities as in some places this had been a point of contention around invasion of privacy and the risk of the potential for prosecution if something illegal was recorded. He also wondered if they had considered masking identities for individual privacy purposes. Mr Razzaque said that it had taken a long time to build trust with the fishers, but they now also saw the benefits, such as being able to use the technology provided for navigation. They had become excellent champions who promoted the data collection and the safe release. He acknowledged it might be difficult to roll it out more broadly, as it depended on long-term relationships with the individuals.

In response to a question from the Secretariat, Mr Abdul Razzaque explained that the information on these programmes had been published on the IOTC website as documentation for the meetings of the Working Party on Ecosystems and Bycatch (WPEB). The data that was collected by the fishermen had also been communicated to the government of Pakistan and had increased the Pakistan government's data reporting from 5% to 55% under the IOTC. Sri Lanka had already also adopted this tool.

Andrea Phillott (Invited Expert / FLAME University) wondered how open to changing to sub-surface nets fishers might be if this were a general recommendation, with Mr Razzaque responding that the fishers they had worked with were happy as it did not affect their yellowfin tuna catch and so these 75 fishers had willingly changed their fishing practices.

Ms Frisch-Nwakanma wondered if any other countries had carried out similar practices so they could observe how this could be transferred to other fisheries and how the MOU could potentially stimulate this. Mr Abdul Razzaque believed the trials had been successful because of the regular data collection by independent crew-based observers. Projects in Indonesia and Peru had had good results reducing bycatch of sea turtles through the use of LED lights too, but it was important to consider bio-physical conditions, season, temperature and turbulence of any area where LED trials might be replicated. For replicating sub-surface gear setting and crew-based observer programmes, the acknowledgement by the IOTC and IWC was encouraging and could lead to uptake by other coastal states in the region. Sri Lanka had already also adopted this approach.

The Chair noted that in the second meeting of the Task Force, they had also discussed the potential of expanding this training to other NIO countries, but this had not yet materialised. He urged the members to re-initiate the dialogue.

Mr Abdul Razzaque's presentation is contained in Annex 4.

7.4 Reported Impacts of COVID-19 on Monitoring and Conservation

Ms Phillott presented on the reported impacts of COVID-19 on monitoring and conservation in the Northern Indian Ocean region. She described what was reported through the Indian Ocean Turtle Newsletter (IOTN) in Issue 32 (July 2020) as challenges after the first lockdown in early 2020. As COVID-19 circulated round the world the International Sea Turtle Symposium in Colombia was cancelled. There had been different concerns and predictions about the impact on sea turtles of the "anthropause," when international and domestic travel was paused, and human activities reduced; some positive and some negative. These included that:

- Reduced human presence on beaches would lead to reduced monitoring and research, reduced enforcement and increased illegal take including increased bycatch with illegal fishing activities that might be occurring.
- Media reports pointed to increased nesting numbers due to reduced disturbance on beaches, however, this was biologically implausible due to the time required to prepare for nesting, and the long life cycle of marine turtles.
- There was increased waste due to masks and gloves etc. from COVID measures not properly disposed of.

The report from Bangladesh (Islam 2020; IOTN 32:5-6) noted that nesting occurs from October-March/April and the 2020 lockdown occurred towards the end of the nesting period. Many daily wage earners continued their activities but tourism to coastal communities ceased. The implications of this were that some NGOs lost their funding from ecotour operators and biologists and central researchers could not conduct field work during the final part of the nesting season. A network of 56 local turtle conservation assistants along the 350km coastline continued nightly patrol for monitoring and mitigating illegal take and disturbance. The reduced tourism allowed for replenishment of dunes, vegetation and invertebrate communities which improved beach health.

The report from India (Swaminathan and Kale 2020; IOTN 32:6-7) noted that most of the nesting occurs between November-April and the 2020 lockdown was from 24 March 2020 towards the end of the nesting season. In Rushikulya, Odisha, the Arribada was on 21-26 March, so researchers were on the beach for the initial days and the Forest Department continued monitoring after lockdown. A daytime nesting event during the Arribada was misreported as being due to reduced human presence as in fact daytime nesting events do happen during the Arribada. In Chennai, Tamil Nadu, nesting finished before lockdown and the Sea Turtle Conservation Network was permitted to continue to run the hatchery with the Forest Department. In Vela, Maharashtra, tourism was shut down and the annual Velas Turtle

Festival broadcast hatchling releases online. There was an increased online presence in India in general and overall, there was less fishing, bycatch, pollution and more online education and outreach activities.

The report from Pakistan (IOTN 32:7-8; IOTN 34:7-10) noted that most of the nesting takes place between July-December and lockdown started well before the nesting period. In the Sindh Province there was a reduced human presence on beaches with lowered disturbance of nesting turtles, nests and hatchlings, and the amount of waste on the beaches reduced. There were no markets open so there was less illegal trade in hatchlings. In Balochistan Province, the number of visitors to the beaches increased but Daran beach had not yet recovered from Cyclone Kyarr in October 2019, so there were no turtles, nests or hatchlings there to disturb. Daran beach had now also been reported as a landing spot for fuel smuggled from Iran, leading to fuel being spilled and sand being trampled. Overall, there was less fishing and lower bycatch predicted.

The report from Malaysia (Rusli et al 2020; IOTN 32:2-4) noted that a new market for eggs was observed in Malaysia. Wet markets were closed where sea turtles would normally be sold legally in the state of Terengganu and there was a movement control order after 18 March 2020. When turtle nesting began in April, sellers accumulated product and sought new markets, selling eggs successfully online. This all raised concerns about a new market model reaching far beyond Terengganu.

The report from the Persian Gulf (Al-Muhannadi et al. 2020; IOTN 32:2-4) noted that in the UAE there were fewer field workers available for monitoring and fewer beach clean-ups, with rubbish accumulating on beaches and people spending longer in the field. In Qatar there were fewer fieldworkers available too and there was informal beach monitoring. In Bahrain there was no nesting, and during the lockdown there were reduced reports and rescues of stranded turtles due to fewer people around.

While there had not been a report from Sri Lanka in the IOTN, Ms Phillott updated on the situation in Sri Lanka from work she had undertaken with Rupika Rajakaruna. Nesting occurs in Sri Lanka between November-May and lockdown was from 20 March 2020. They had been working on assessing the impact of reduced tourism on hatchery operations after the 2019 terror attacks and extended this work to include the COVID lockdown period. They had conducted interviews with hatcheries and egg collectors who had reported reduced staff, wages and work hours. Hatcheries had released captive turtles and continued to purchase eggs mainly because they were concerned that eggs would otherwise be sold on illegal markets.

Ms Phillott concluded by noting that the reduction in access to education in rural and smaller coastal communities due to COVID had a potential impact on literacy in the future across peoples' lives. There had been problems with undergraduate and graduate university students being able to complete education including Masters and PhD research involving sea turtle monitoring conservation and human dimensions of conservation. There had also been an impact on people who were active in turtle conservation including reduced fieldwork access due to reductions in available funding or family obligations during the lockdown.

Ms Sabry said that in the Maldives the lockdown had mainly only affected the capital island. Most research was carried out on the resort islands and uninhabited islands which were not so impacted by COVID. She had asked specific researchers for feedback on COVID impacts but few islands had had restrictions.

Mr Islam reported that COVID had not had much impact on nesting in Bangladesh but that there was a nesting decline due to development work.

Ms Phillott's presentation is contained in Annex 5.

7.5 Knowledge Gaps

Ms Phillott presented an analysis of knowledge gaps in sea turtle research in the Norther Indian Ocean, drawing from her roles as editor of the IOTN and Regional Vice-Chair for the Middle East and South Asia IUCN-SSC Marine Turtle Specialist Group as well as the annual regional reports. She had looked for common threads between publications to make a list of some of the gaps. She also noted that there had been multiple comments during the meeting about human threats to sea turtle conservation.

There were severe concerns around fishing gear disposal, incl. removing ghost gear and beach clean-ups and the need to focus on preventing it getting into the ocean. She highlighted knowledge and management gaps throughout the region on common practices of gear disposal, understanding the underlying factors, such as lack of disposal facilities, attitude etc., and the need for authorities to provide disposal facilities close to fishing landing spots and recycling facilities.

Regarding illegal take, she highlighted the need for determining the rate of take and assessing the need for and type of response. In some cases, NGOs said there was still a lot of illegal take of eggs but other researchers said the illegal take was quite low. There was a potential for people to rely on historical data so knowledge gaps existed about how much illegal take is currently occurring and what would be the most appropriate response. Also here, identifying drivers was essential. These could e.g. be nutritional (including through lower incomes from COVID lockdowns), economic (lack of alternative livelihoods or desire for more money), or cultural.
Another topic were hatchery practices. It was essential to understand barriers to hatcheries using best practices, e.g. lack of resources or other reasons. There was a need for financial and human capacity building. Also essential was to consider local alternatives to hatcheries instead of moving everything to a hatchery.

Ms Phillott highlighted that several conversations during this and previous NIO-MTTF meetings had been about monitoring and mitigating high nest temperatures which were an increasing threat due to climate change. There would potentially be a feminization of hatchling sex ratios, and the risk of embryo mortality also increased. Hatcheries had long been concerned about high temperatures and were using shading and/or watering to reduce nest temperatures. These strategies, however, were sometimes used without prior data and ongoing monitoring, so, without knowing the temperature of the nest, the hatcheries might be applying the strategies unnecessarily or skewing sex ratios. A 50/50 sex ratio within a nest was not necessarily the norm so it was important to know what was happening within nests before attempting to mitigate assumed problems.

On migratory pathways and in-water habitat, she pointed out that most studies in the Indian Ocean had focused on nesting turtles and nests as they were easier to access. There was a knowledge gap around males and different life stages. One way to address this would be through flipper tagging which had been discussed during NIO-MTTF-2. This could be actioned through applying intensive tagging at regularly monitored nesting beaches and through bycatch programmes, complemented by national tag reporting programmes for fishers, researchers, conservationists, Forest Departments etc. and a regional tag database. Such programmes could go a long way to help identify where nesting turtles had their foraging grounds but also to identify the in-water habitat turtles were using through the different stages of their life for turtles tagged through bycatch programmes.

On satellite tagging she noted that the IOTN had had some special issues focused on satellite tracking and the MTSG Regional Report also had data for the Middle East and South Asia. There was some knowledge from studies in Bangladesh on Green Turtles and Olive Ridley Turtles; from India on Leatherback Turtles and Olive Ridley Turtles; from Pakistan; and from Sri Lanka on Green Turtles. There were few satellite tracking studies on other life cycle stages than nesting/post-nesting, but these could provide valuable information about in-water habitat and potentially migration pathways. Possibilities includes satellite tracking bycaught or rehabilitated turtles, and courting males. Satellite tagging required more funding than flipper tagging but got good information in a shorter period.

She also pointed out that bycatch reports could provide valuable information about where different species of sea turtles were being encountered in waters off the coasts. In a publication in IOTN from July 2021, a compensation scheme through the Maharashtra Forest Department and Fisheries Department was described where fishers that encountered entangled sea turtles and successfully released them but incurred damage to their nets in the process could submit reports including latitude and longitude, photos of the animal being released and photos of it as a live animal and receive compensation. The data gathered showed different species being encountered. Interviews with fishers (in particular in inshore waters) could also help identify turtle feeding and courting areas for further systematic study.

Ms Phillott further highlighted the need for genetic samples from Green and Hawksbill Turtles in the Maldives, as there were questions about whether they belonged in the NWIO or SWIO Regional Management Unit (RMU) as defined by the MTSG in 2010. Similarly for Bangladesh, there was a debate about whether the Olive Ridley Turtles belonged in the NEIO or the WPAC RMU. She proposed that, with the right kind of training, there was no reason why fishers could not collect samples from bycatch and stranded turtles for analysis.

In summary, she stressed the importance of knowledge-sharing and exchange about ongoing studies, so that the growing body of knowledge could be used to make decisions about sea turtle and habitat management at a regional level. She urged the NIO-MTTF members to share their project results, through journal publication, professional newsletters such as IOTN and MTN, IOSEA news, SWOT articles and online reports through government agencies or NGOs.

The Chair thanked Ms Phillott for her comprehensive presentation, highlighting logistical challenges and opportunities for collaboration. The MOU Coordinator also encouraged people to submit information on ongoing projects for the IOSEA newsletter and articles on the website.

Ms Phillott's presentation is contained in Annex 6.

7.6 Other Issues

No other issues were raised for discussion.

8. Recommendations and Actions

Members highlighted and discussed some of the recommendations that had been made during the meeting.

The Chair highlighted that while there was a need for more genetic understanding, genetic analysis had been raised as a logistical challenge especially where there was not the capacity to carry out genetic work or send samples to regional partners for analysis. CITES requirements also posed a challenge.

Mr Stelfox agreed that doing genetic analysis was challenging in their work in the Maldives. They had just sent off 5 or 6 Hawksbill Turtle samples and the CITES permit process was very complex, with the UK refusing to give a permit unless they had a draft import permit and the Maldives refusing to give a draft import permit unless they had an export permit. He also noted that the Olive Ridley Project was hoping to fill the data gap by conduct a genetic study of Green and Hawksbill Turtles in the Maldives. The Chair proposed that the NIO-MTTF was a good platform to address the sample issue. In India, for example they processed samples at their lab as it was not possible to get samples out of India.

Mr Islam reported that they had not done any genetic studies yet in Bangladesh – the Bangladesh Forest Department had developed the facility to do this, but they did not have the experts to carry out the work.

The Chair proposed that some of Ms Phillott's suggestions could be considered as recommendations and action points with Mr Razzaque agreeing with her comments on the need for tagging. He also suggested, supported by Ms Phillott, to use tagging to investigate the post-capture survival of released turtles following entanglement. The Chair proposed collaborating on collating information on flipper tagging and satellite telemetry data. He acknowledged that where information had been collected by government agencies, there might be restrictions on sharing information but proposed this was a task the MTTF could work together on collating what had already been done in the region and updating the flipper tag series numbers in the list maintained by the Secretariat. He also recommended considering the different types of tagging options such as acoustic tags, long-range radio tags – considering the best option for the specific objectives.

Ms Sabry emphasised the need for locals to initiate and be involved in conservation activities, saying that currently activities often centred around international NGOs and there was a need for local people to experience the value of conservation of these species. The Chair agreed that there was a need for local involvement and enabling a fair exchange of information as well.

Mr Razzaque emphasized capacity building, extending collaboration to the university level and developing dialogues. He urged focusing on emerging technologies such as artificial intelligence. He also urged replicating successful mitigation trials elsewhere.

It was also recommended that each region would submit a list of identified universities or institutions, and vendors of equipment for information of the MTTF. Countries were encouraged to submit NPoAs for sea turtles to the Secretariat so it could act as repository.

In order to facilitate communication, it was suggested to set up a WhatsApp group for the MTTF.

Mr Mahdavi recommended research on toxic exposure with the Chair noting the lack of information in the region on this.

9. Revision of the Terms of Reference of the NIO-MTTF

Ms Frisch-Nwakanma introduced CMS/IOSEA/NIO-MTTF-3/Doc.9 Proposed Revisions to the Terms of Reference of the NIO-MTTF, reminding the members that the Terms of Reference (ToR) had been agreed when the MTTF was established in 2015. In the meantime, there had been some lessons learnt and some practical issues had come up that needed to be addressed. The revised ToR also attempted to reduce redundancy in the text and clarify some provisions. There had been recent updates to the ToR for the WIO-MTTF, also giving

opportunity for some harmonization. All substantive changes were clearly indicated in the document.

The Chair invited comments section-by-section, changes were made on screen and the meeting agreed to the revised ToR contained in Annex 7.

10. Review of Membership

Ms Frisch-Nwakanma reminded participants that each of the countries in the sub-region were entitled to nominate both a governmental and a non-governmental member to the MTTF. As had been agreed under the previous agenda item, the member list would be circulated to the Focal Points and the NIO-MTTF members before each meeting to ask whether there were updates. She requested everyone to let her know of changes in the intersessional period, too, though, so that the MTTF could remain in contact with each other and the Secretariat.

At present, there was no governmental member for Bangladesh, and official confirmation of the non-governmental member for Sri Lanka was pending, although the person had already been named. The Maldives non-governmental member was out-of-touch. The Secretariat had also not been able to get in touch with the Indian governmental member, explaining that the position was attached to a role and there had been changeover. She hoped that there might be renewed commitment with the Indian government's interest in the NSTAP.

Ms Sabry said she had tried contact the NGO Member for the Maldives and would follow up with an official communication that there might be a need to nominate a new person if he could not contribute to the MTTF.

11. Election of New Leadership

Ms Virtue explained that the Terms of Reference, both in their previous and their new form, required the election of a new Chair and Vice-Chair. The revised Terms of Reference would allow the current Chair to continue as Vice-Chair, should the group so wish.

Following her call for nominations, Mr Manoharakrishnan nominated Ms Sabry as the new Chair, which was seconded by Mr Abdul Razzaque. Mr Abdul Razzaque then nominated Mr Manoharakrishnan as Vice-Chair, seconded by Ms Sabry. This was agreed and Ms Sabry and Mr Manoharakrishnan congratulated for their new roles.

12. Next Meeting

Ms Sabry, as newly appointed Chair, introduced this Agenda Item, inviting views as to the timing and modalities of the next meeting.

The newly appointed Vice-Chair said he would prefer an in-person meeting, moving to online if this did not work out. The Chair agreed would be good to meet in person as did the Secretariat, who noted she would need to know who would host this within the next 4-5 months if an in-person meeting was to take place within the next year. If they could not find a host or the pandemic prevented meeting in-person, then they could resort to an online meeting which would not need as much time to organize.

The Vice-Chair said at the meeting in 2018 they had discussed hosting a meeting Bangladesh, but the retirement of the previous governmental member might not make that possible. He suggested that the Maldives could host as an alternative. Ms Sabry said she would inquire into

this and update the MTTF later. Ms Frisch-Nwakanma proposed aiming to meet in about a year's time.

13. Any Other Business

There was no other business.

14. Closing of the Meeting

The Chair thanked everyone for electing her as the new Chair, welcoming the opportunity and expressing her gratitude to Mr Manoharakrishnan to support her as Vice-Chair so they could continue to benefit from his experience. She hoped for everyones' continued collaboration and thanked the Secretariat. The Vice-Chair said he had enjoyed working as Chair with a fantastic group of people and great support from the Secretariat, acknowledging that they had all been through a steep learning curve and could now expand the scope of the MTTF with the new members.

Ms Frisch-Nwakanma thanked the previous and current Chair and was looking forward to continuing to work with everyone.

The Chair closed the meeting.

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Agenda

1. Opening of the Meeting

2. Adoption of the Agenda and Schedule

3. Key Outcomes of MOS8 and Progress Report

4. Outcomes of NIO-MTTF-2 (2018)

5. Presentations from each Country

6. Sub-Regional Situation and Priorities

7. Pilot Research Projects for Collaboration
   - 7.1 Ghost Gear Management
   - 7.2 Bycatch Mitigation: LED Light Sticks and Sub-Surface Gillnetting
   - 7.3 Use of Observers/Cameras On-Board Tuna Gillnetters
   - 7.4 Reported Impacts of COVID-19 on Monitoring and Conservation
   - 7.5 Knowledge Gaps
   - 7.6 Other Issues

8. Recommendations and Actions

9. Revision of the Terms of Reference of the NIO-MTTF

10. Review of Membership

11. Election of New Leadership

12. Next Meeting

13. Any Other Business

14. Closing of the Meeting

Presentation on Ghost Gear Management

Ghost Gear: Impact on Sea Turtles

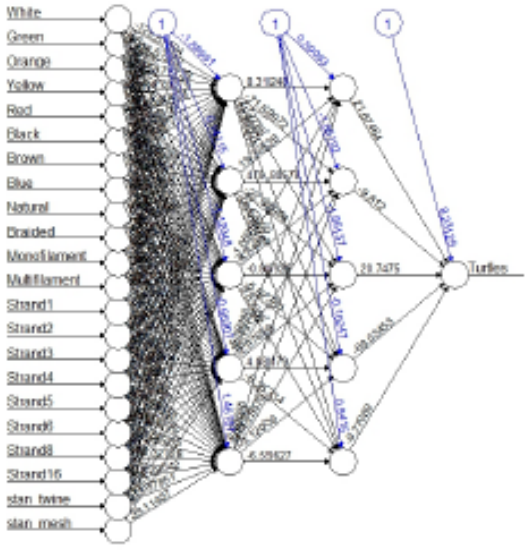
UNIVERSITY of DERBY

Dr. Martin Stelfox

OLIVE RIDLEY PROJECT

1

Statistical Modelling – Predictive models



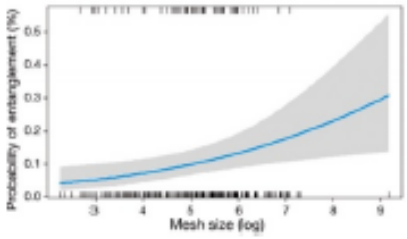
- Define characteristics that increase the likelihood of turtle entanglement
- Build predictive models to estimate the scale of the ghost fishing issue

Untangling the origin of ghost gear within the Maldivian archipelago and its impact on olive ridley (*Lepidochelys olivacea*) populations

2

Results

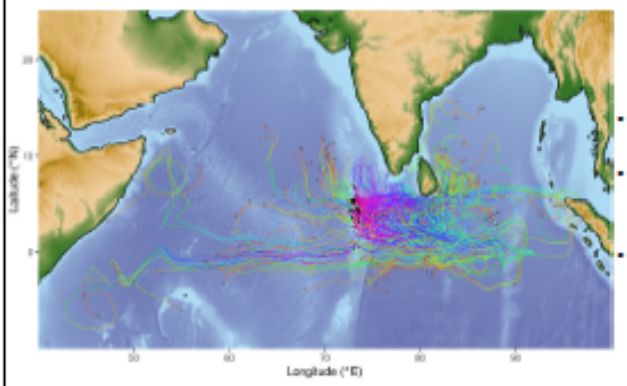
Coefficient	Estimate	SE	Z	p
Intercept	−4.021	0.673	−5.979	<0.0001
Logmesh	0.335	0.122	2.738	0.006
NE monsoon	0.568	0.256	2.219	0.027
Floats	−0.917	0.247	−3.709	0.0002
Blue	0.489	0.280	1.743	0.081



- Mesh size, seasonality, net colour and absence of floats are all influential variables in predictive models.
- As mesh size increases the likelihood of sea turtle entanglement also increased.
- From the ~750 nets reported in this study, models suggest between 3400 -12200 olive ridley sea turtles may have become entangled prior to being detected in the Maldives.

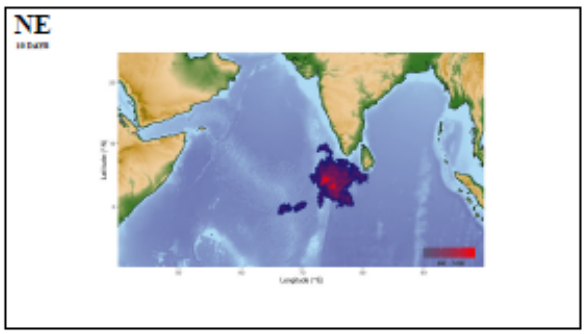
3

Ocean Drift Patterns



- Determine the origin of ghost gear found in the Maldives
- Overlay spatial distribution of operating fisheries reporting to the Indian Ocean Tuna Commission (IOTC)
- Evaluate methods to determine minimum drift times

4



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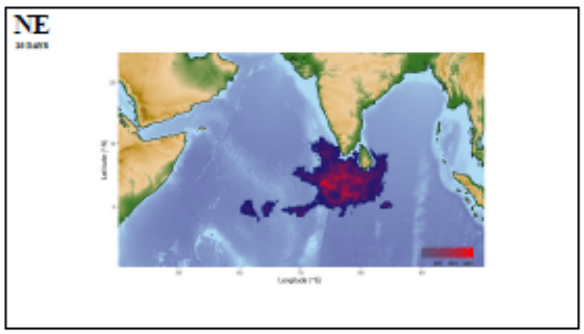
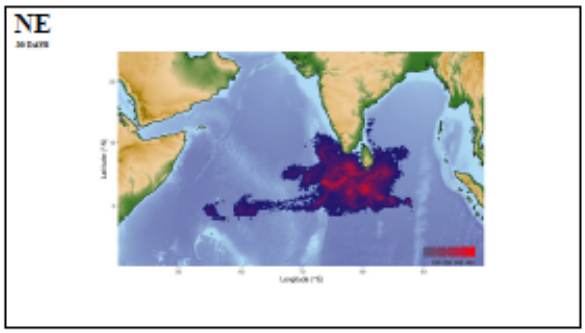


6



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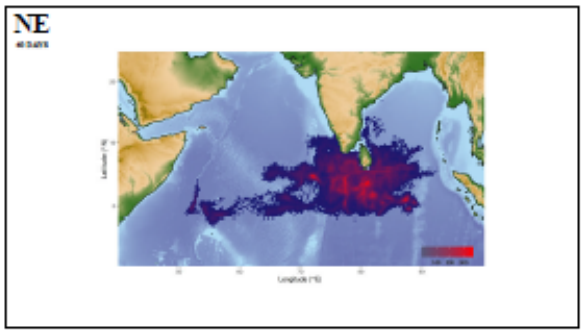

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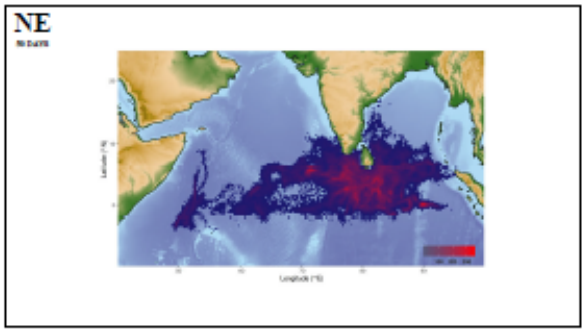

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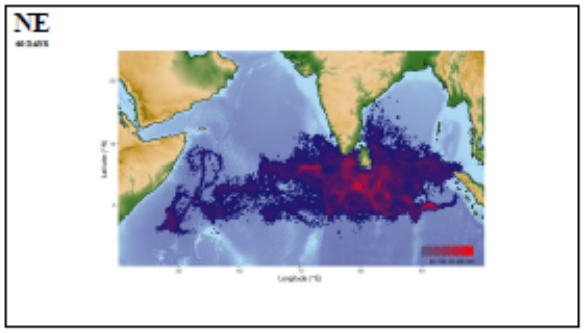

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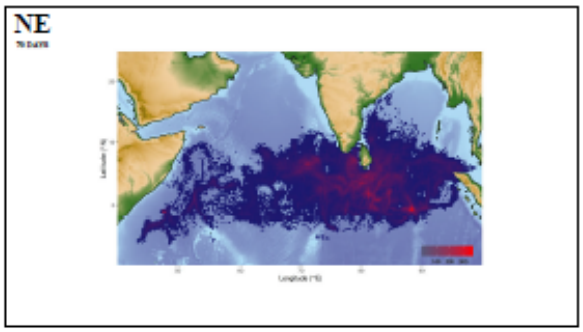

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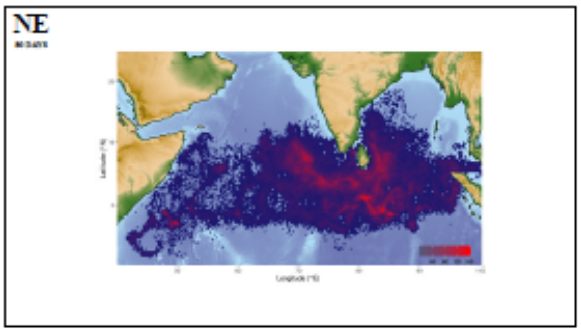

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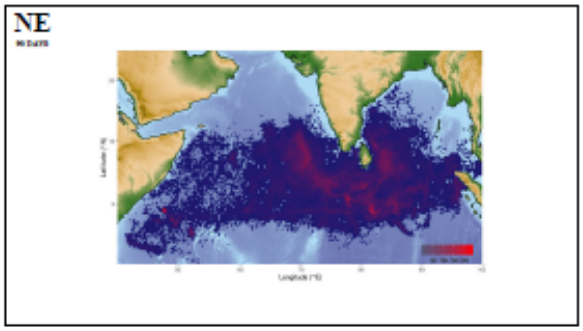

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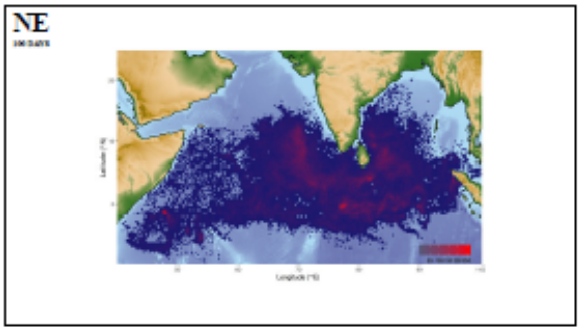

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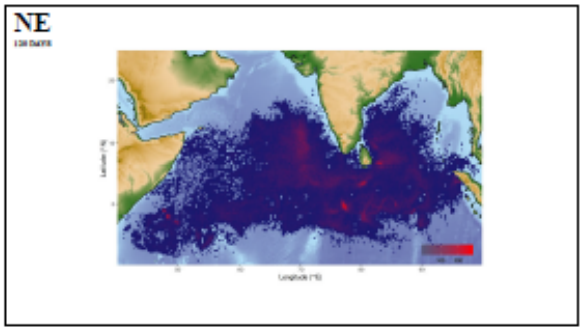

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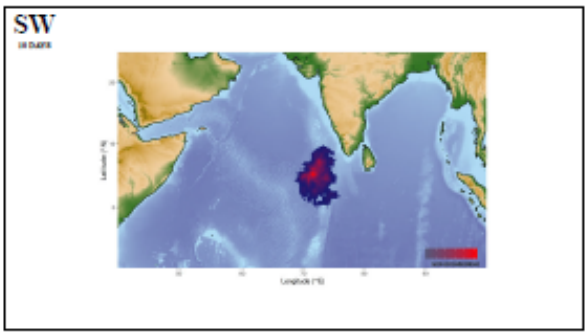

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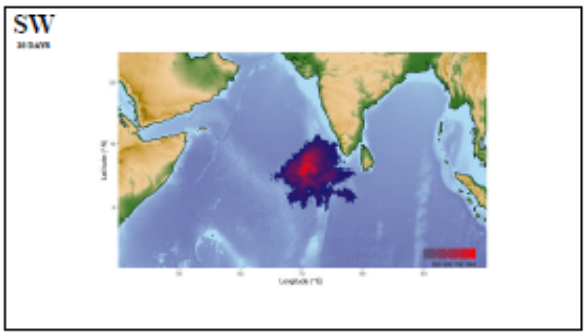

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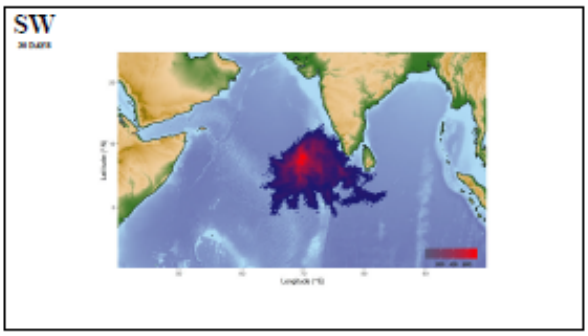

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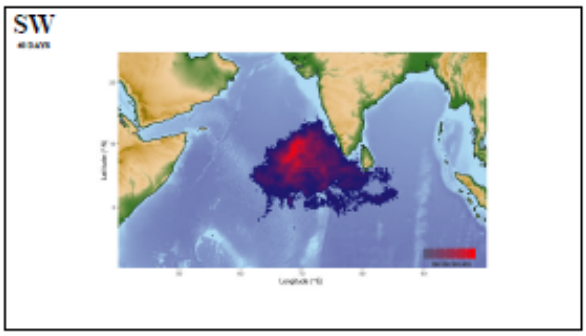

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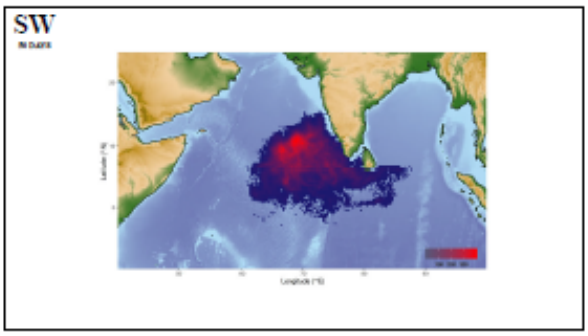

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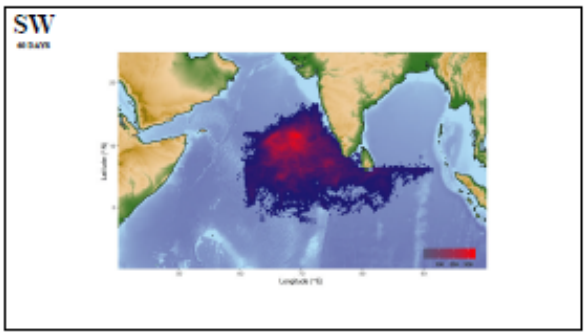

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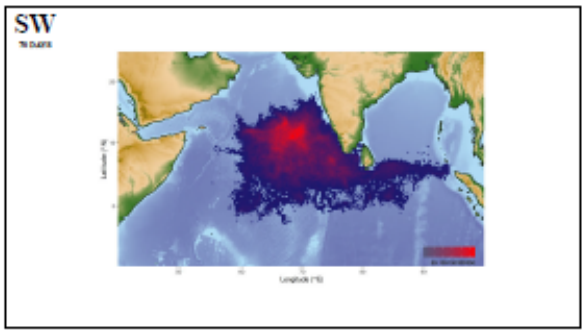

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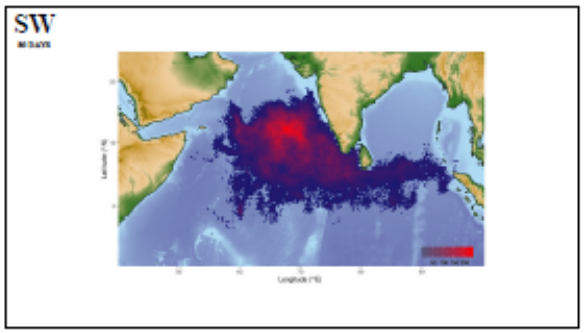

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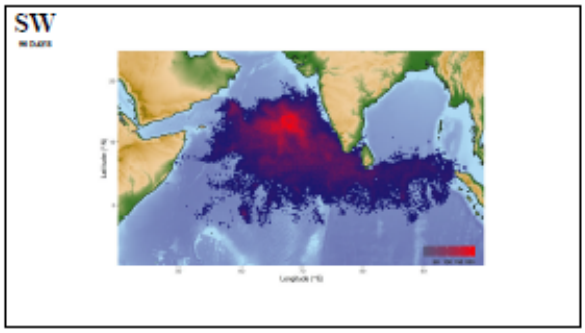

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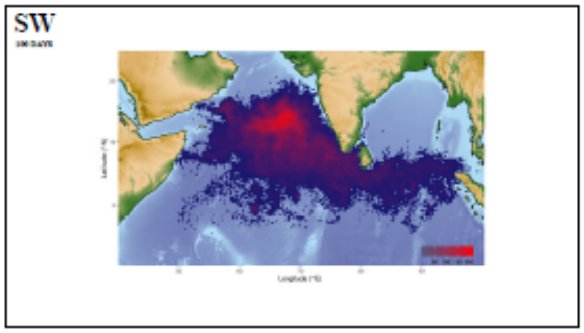

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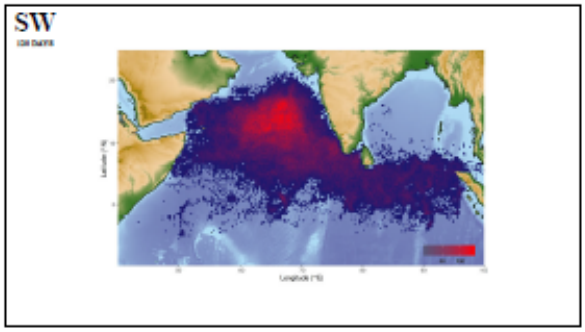

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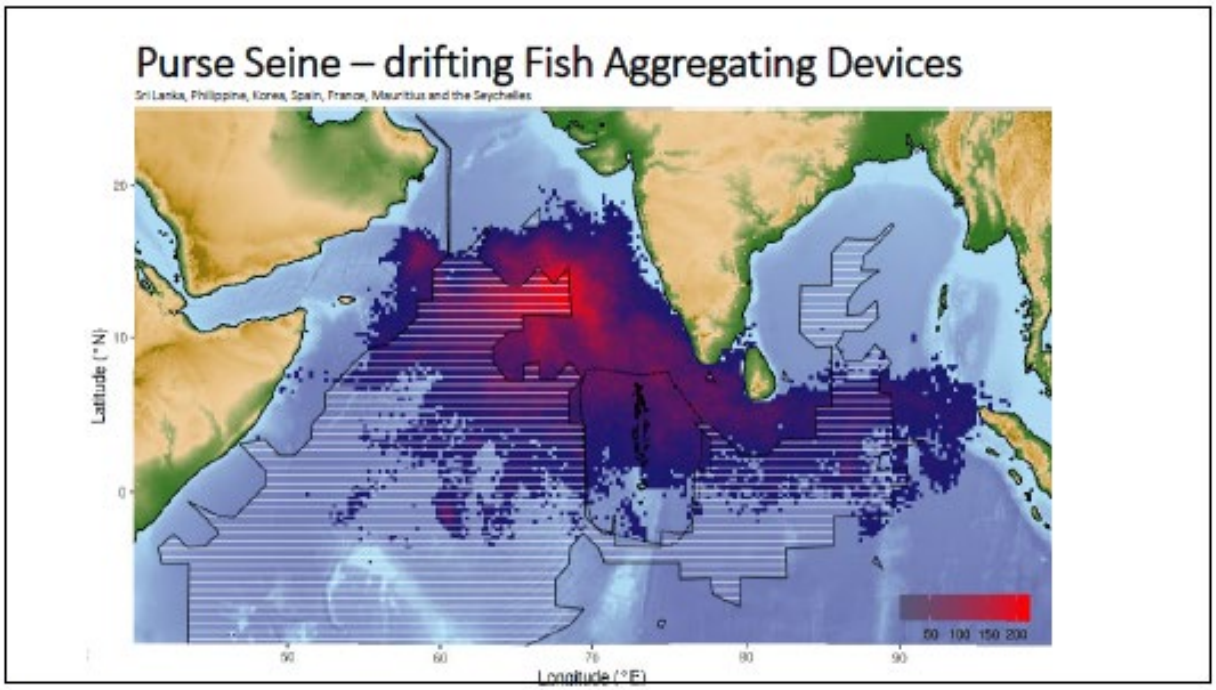
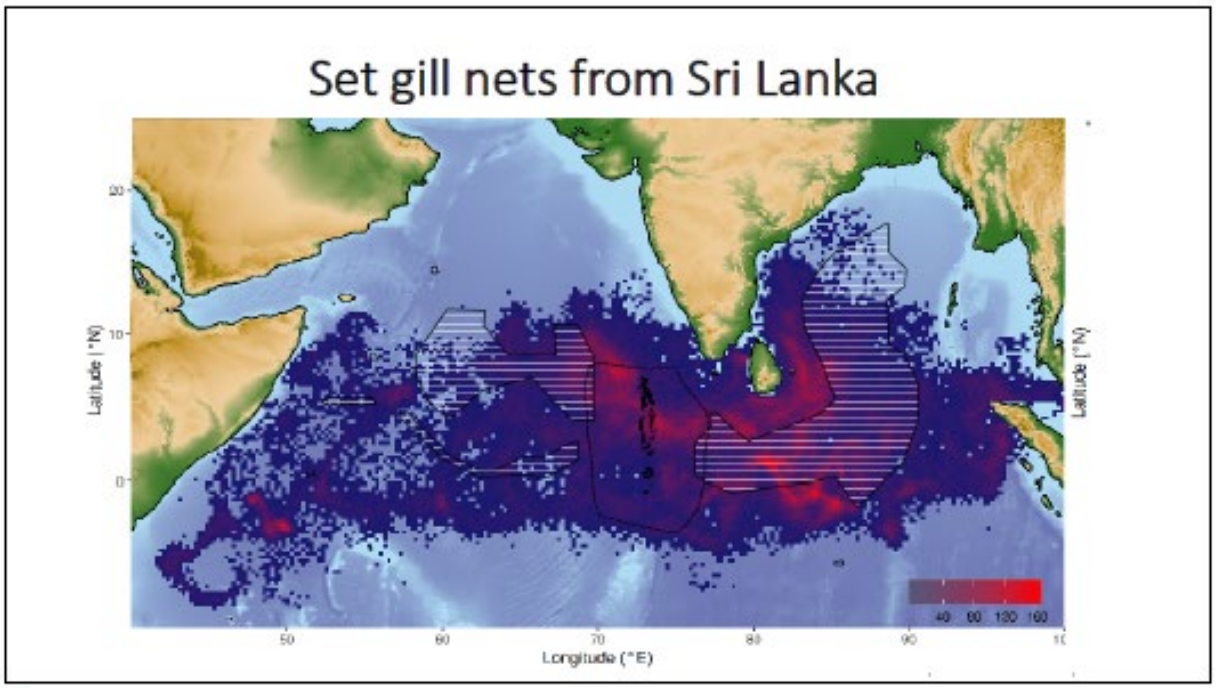
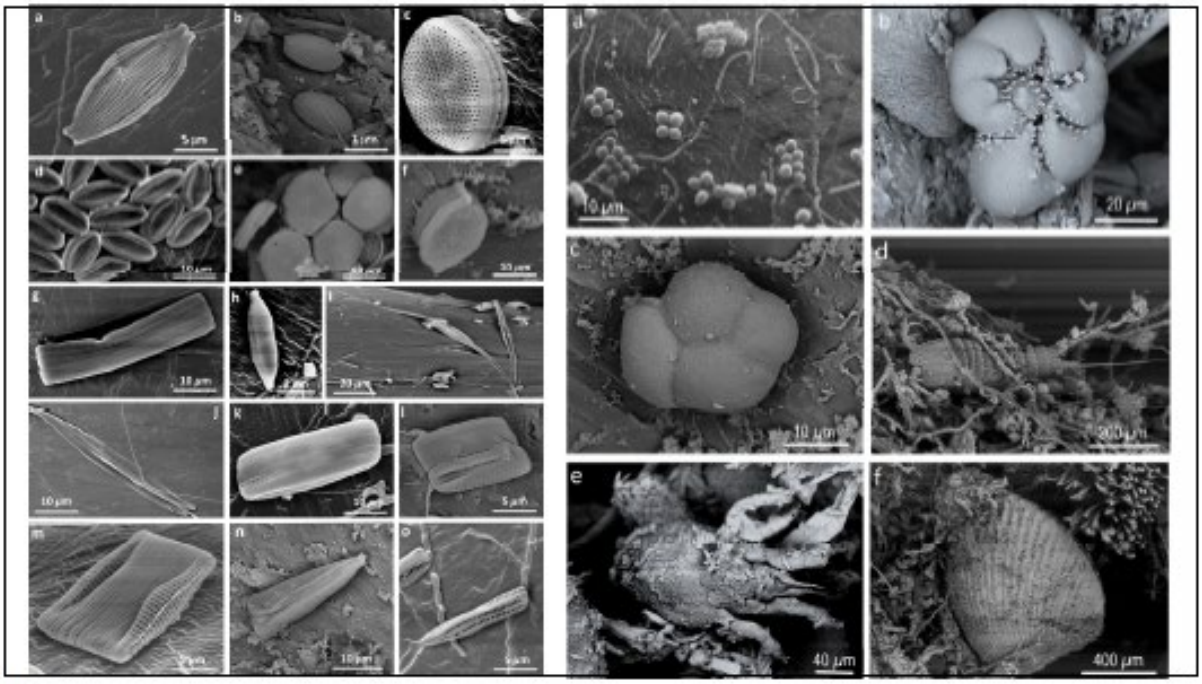

Purse Seine – drifting Fish Aggregating Devices
Sri Lanka, Philippine, Korea, Spain, France, Mauritius and the Seychelles
Latitude (°N)
Longitude (°E)
50 100 150 200

27


Set gill nets from Sri Lanka
Latitude (°N)
Longitude (°E)
40 80 120 160

28



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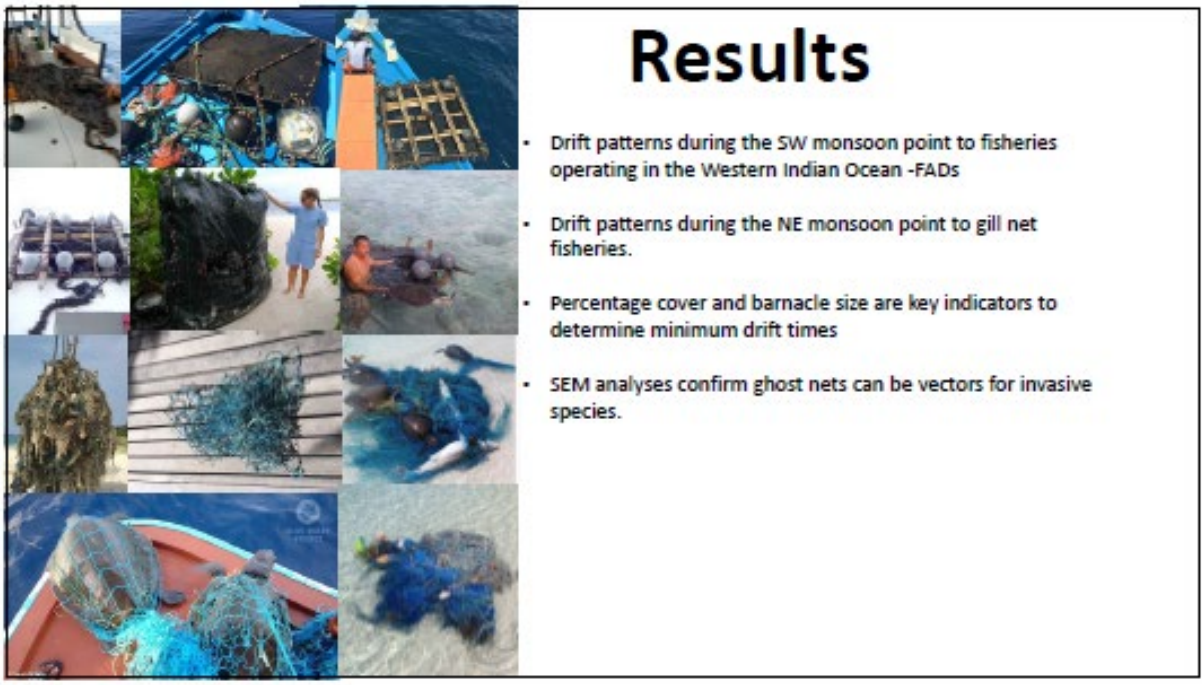
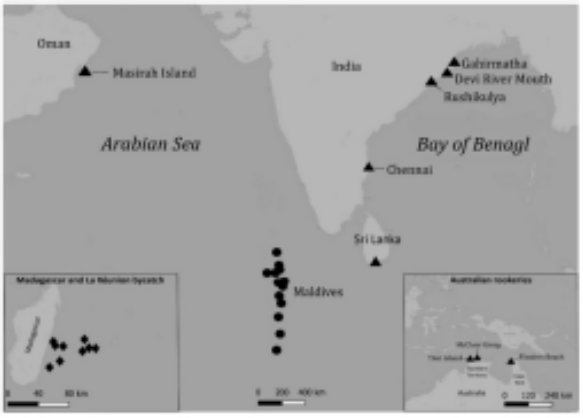

Results
• Drift patterns during the SW monsoon point to fisheries operating in the Western Indian Ocean -FADs
• Drift patterns during the NE monsoon point to gill net fisheries.
• Percentage cover and barnacle size are key indicators to determine minimum drift times
• SEM analyses confirm ghost nets can be vectors for invasive species.

30

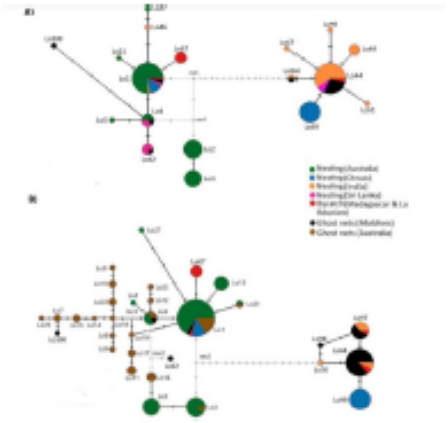
Genetic analysis



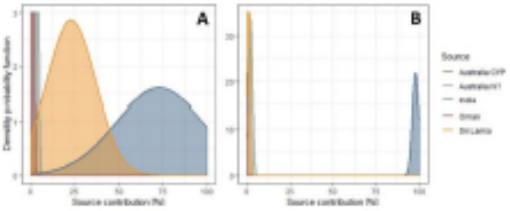
- **Which genetic stocks do entangled olive ridleys found in the Maldives belong too?**
- **What impact, if any, may ghost fishing have on these genetic stocks?**

31

Results



- Olive ridleys found entangled in the Maldives belong to the eastern coast of India and Sri Lankan genetic stocks.
- Minimal impact to large genetic stocks (east coast of India)
- Major impact to small genetic stocks (Sri Lanka) - May reduce yearly recruitment by as much as 41%.
- Orphan haplotypes suggest the need for improved resolution of olive ridley phylogenetics in the region.



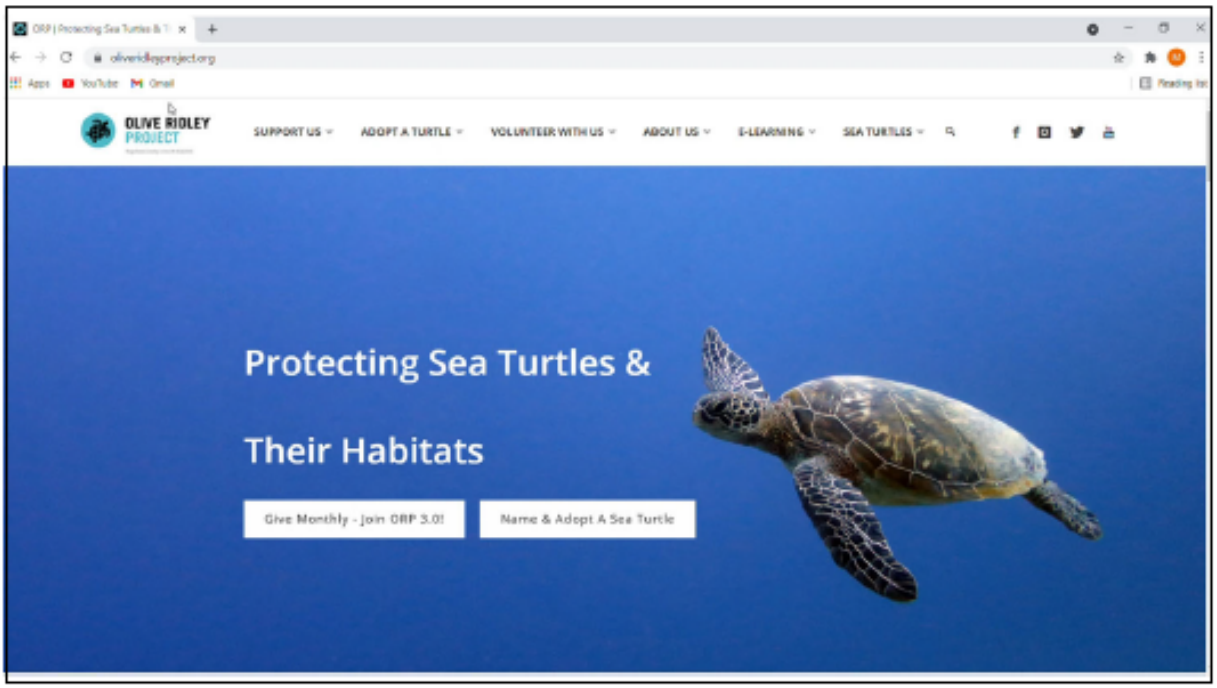
32

Recommendations

- ✓ Urgent need for gear marking following the FAO voluntary guidelines of the marking of fishing gear.
- ✓ Severe penalties for dFADs found drifting into sensitive habitats.
- ✓ Improved compliance and transparency of data (location and numbers set) by DFADs and gill net fisheries within the IOTC. Must be open source and publicly available.
- ✓ RFMOs to publish annual reports on abandoned, lost or discarded fishing gear and recovered gear.
- ✓ Improved data resolution by reporting fisheries (some reporting 5º x 5º grids).
- ✓ Improved portside and beach side disposal facilities for end of life fishing gear.
- ✓ Revisit the definition of "non entangling dFADs" and remove the use of shade cloth and other webbing material in its design.
- ✓ Phase out of dFADs – temporary/permanent spatial and temporal closures - complete ban.

33

34

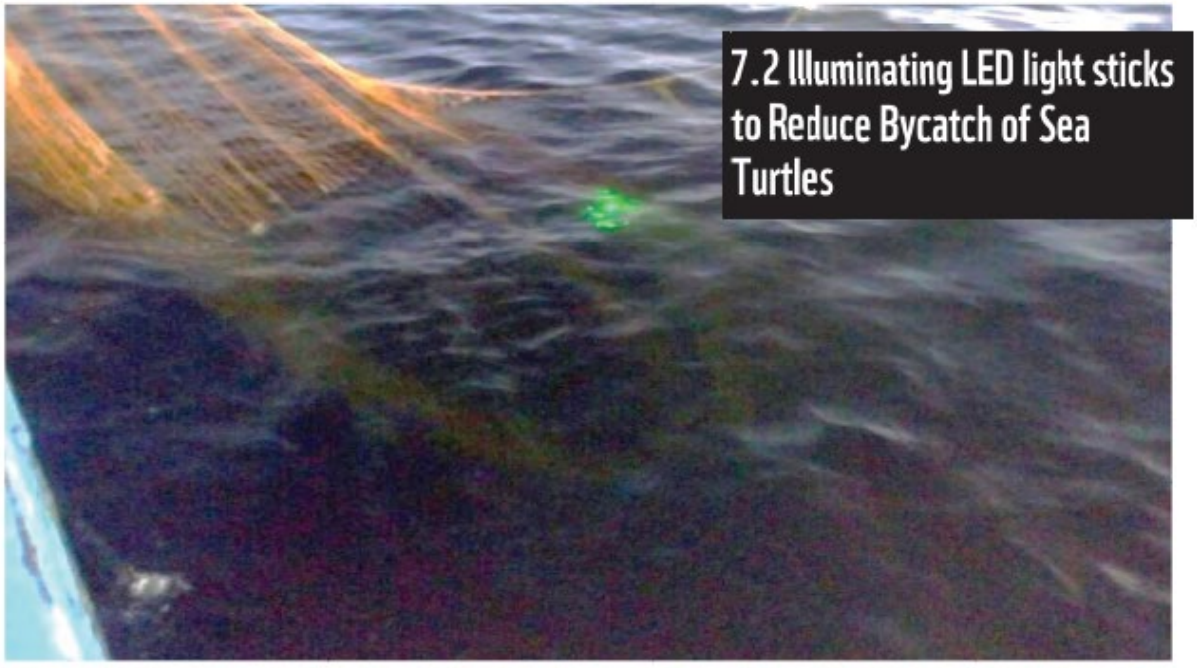

OLIVE RIDLEY PROJECT
SUPPORT US
ADOPT A TURTLE
VOLUNTEER WITH US
ABOUT US
E-LEARNING
SEA TURTLES
Protecting Sea Turtles &
Their Habitats
Give Monthly - Join ORP 3.0!
Name & Adopt A Sea Turtle

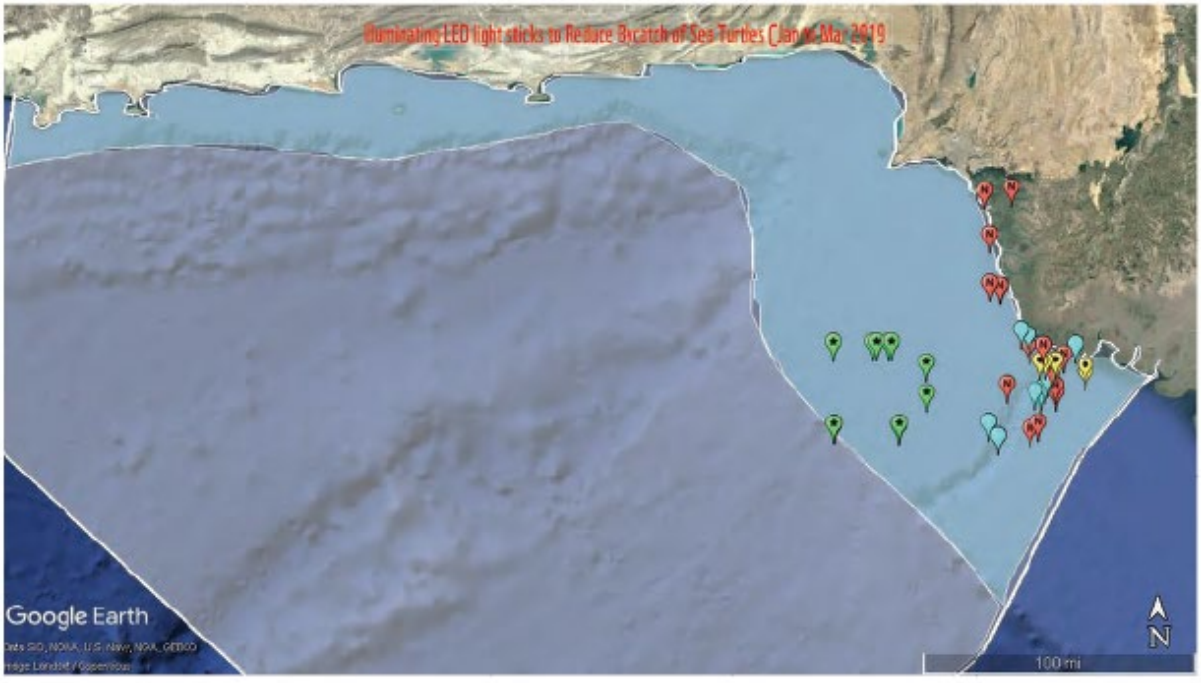
35


OLIVE RIDLEY
PROJECT
Registered Charity in the UK #1165905
Any Question?

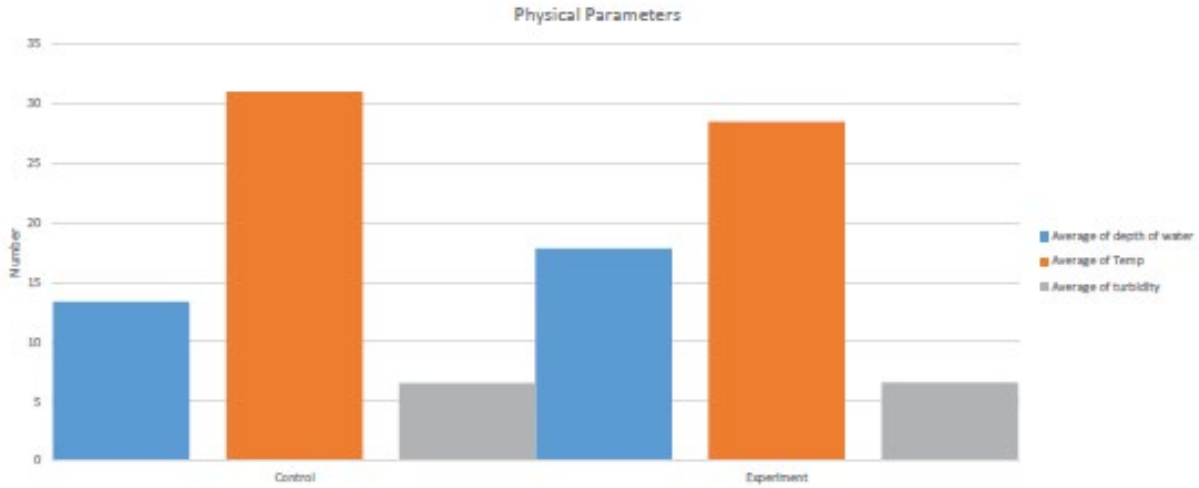
36

Presentation on Bycatch Mitigation: LED Light Sticks and Sub-Surface Gillnetting & Use of Observers/Cameras On-Board Tuna Gillnetters

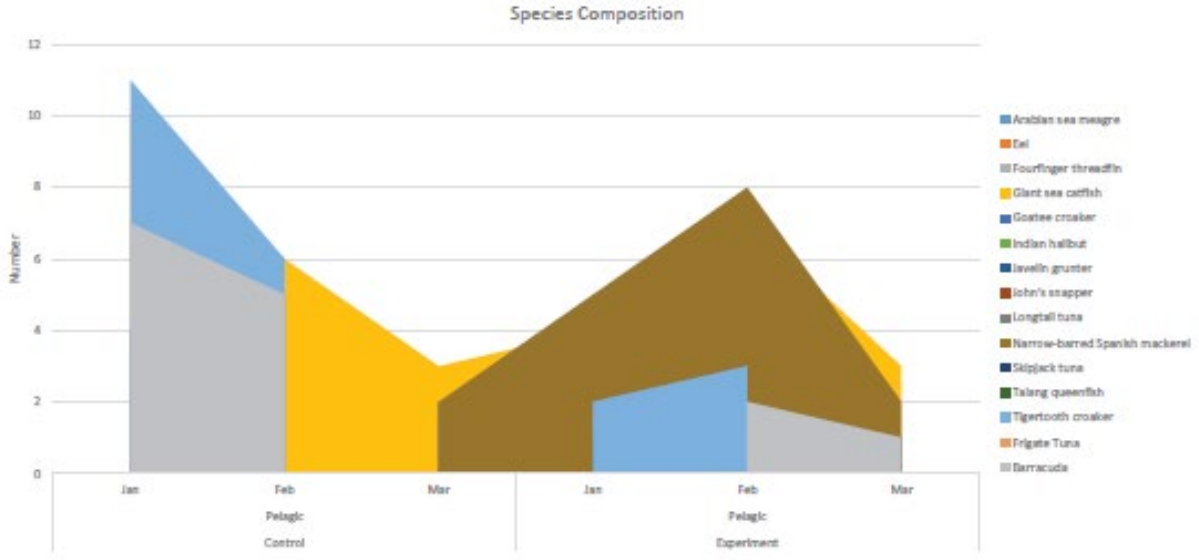



Illuminating LED light sticks to Reduce Bycatch of Sea Turtles (Jan to Mar 2019
Google Earth
100 mi
N

Illuminating LED light sticks to Reduce Bycatch of Sea Turtles (Jan to Mar 2019)

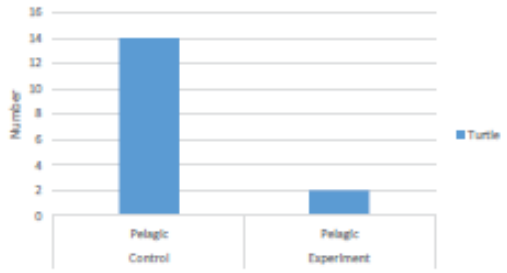


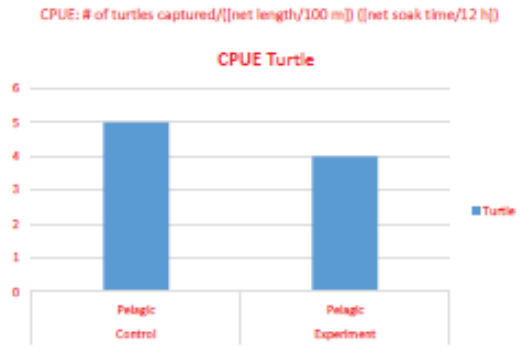
Illuminating LED light sticks to Reduce Bycatch of Sea Turtles (Jan to Mar 2019)




Illuminating LED light sticks to Reduce Bycatch of Sea Turtles (Jan to Mar 2019)
CPUE: # of fish captured/([net length/100 m]) ([net soak time/12 h])
CPUE Narrow-barred Spanish mackerel
Narrow-barred Spanish mackerel
Pelagic Control
Pelagic Experiment
CPUE Tigertooth croaker
Tigertooth croaker
CPUE Giant sea catfish
Giant sea catfish
CPUE Barracuda Spp
Barracuda

Illuminating LED light sticks to Reduce Bycatch of Sea Turtles (Jan to Mar 2019)





Challenges

- Dynamic costal fisheries, seasonal and multi-gear fisheries
- Bycatch of is a major threat to ETP species
- Dependent observer for the data collection
- Pairing of the vessels and distance between control vs treatment vessel.
- Fishing effort increased- set net and haul back.


7.3 Sub-surface gear setting as a low-cost mitigation of ETP species
Crew-based observer program adopted by IOTC as alternative data collection mechanism and use of sub-surface gear approved as CMM by IOTC and IWC as low-cost technique for the bycatch mitigation of ETP species such as Colphins and sea turtles.


OBSERVERS
Numbers
80
70
60
50
40
30
20
10
0
2012
2013
2014
2015
2016
2017
10:05.2015 08:34

Template Data Sheet

TUNA FISHERIES INFORMATION

Date_____ Name of Place _____ Time_____

Name of person writing information _____ Name of Boat _____ Registration No. _____

Type of Boat _____ Fish catching Method _____ Duration_____

Area of Fishing _____ No. of Persons on Board _____ Name of Captain _____

No. of Panels_____ Length of one Panel _____ Length of net _____

Breadth of net _____ Ice on Board _____ Rafter _____ Diesel _____

Water _____ No. of Storage Compartments _____ Filled in Compartments_____

Quantity of Fish (weight) _____ Placed with Ice _____

Quantity of Fish discarded _____ Fish without Ice _____

Fish Laying position (GPS)_____ N Net Hawing Position (GPS) _____ N

_____ E _____ E

TYPES OF TUNA

Type of Fish	Total Number	Total Weight	Fish Disposal/with ice
Yellowfin tuna			
Longtail tuna			
Skipjack			
Kawakawa			
Frigate tuna			
Bullet Tuna			

BYCATCH SPECIES

Type of Fish	Total Number	Total Weight	Fish Disposal/with ice
Billfish			
Dolphinfish			
Narrow barred Spanish mackerel			
Shark (Type)			
Dolphin/Whale			
Tu ma			
Any other species			

INFORMATION ABOUT MARKET

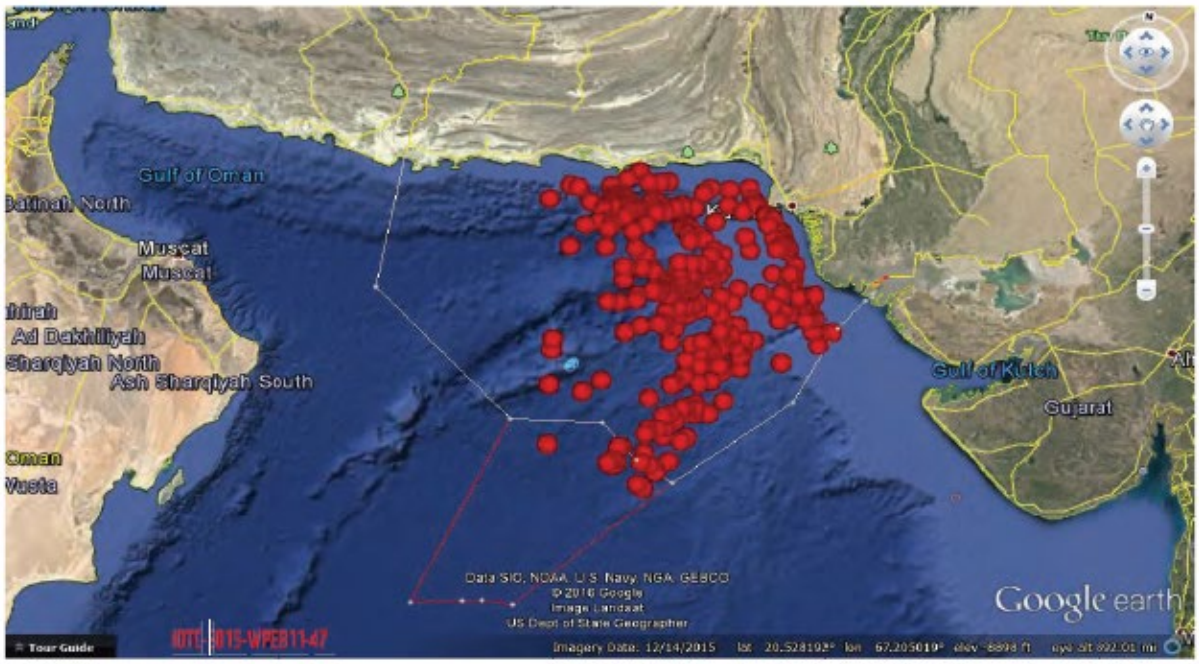
Auctioned in Fish Harbour _____ Sent to Iran by Boat _____

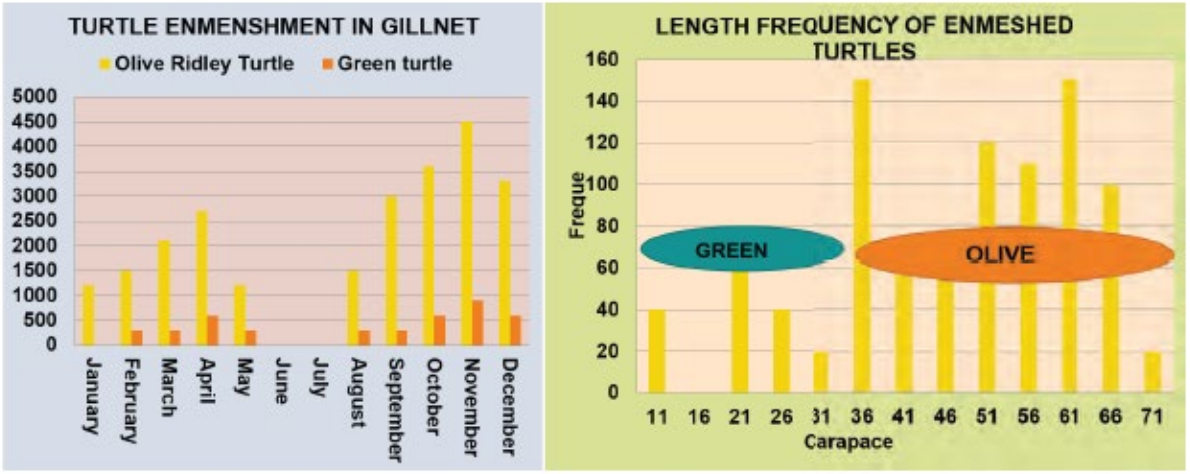
Sent to Sri Lanka _____ Sold for Karachi Market _____

Fish Sold for Processing _____ Any Other _____

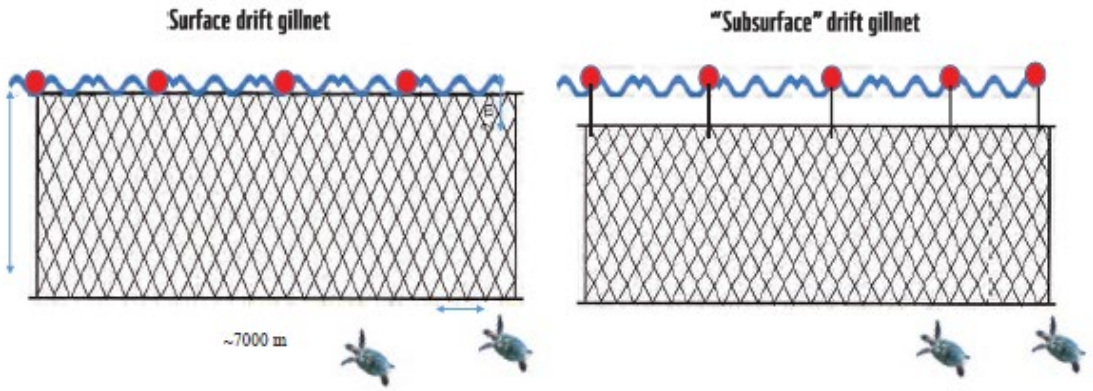
INFORMATION ABOUT TUNA/OTHER SPECIES LENGTH

Tuna/Other Species	Total length

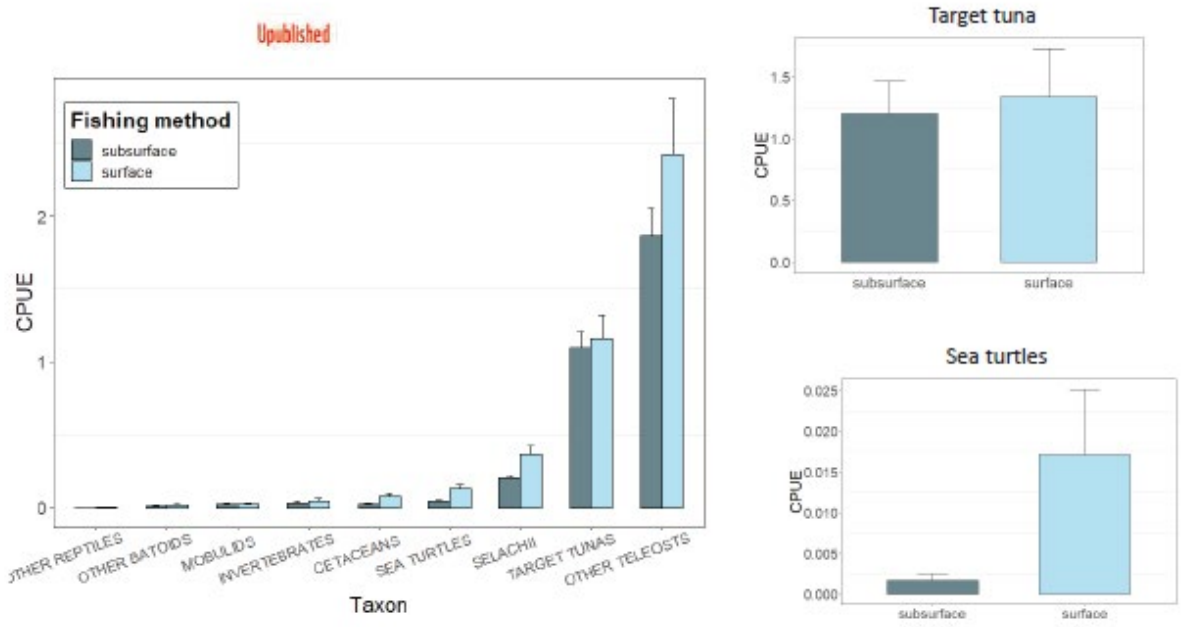




Meazzam., M., Nawaz, R., (2015) Turtle mortality in fishing operations



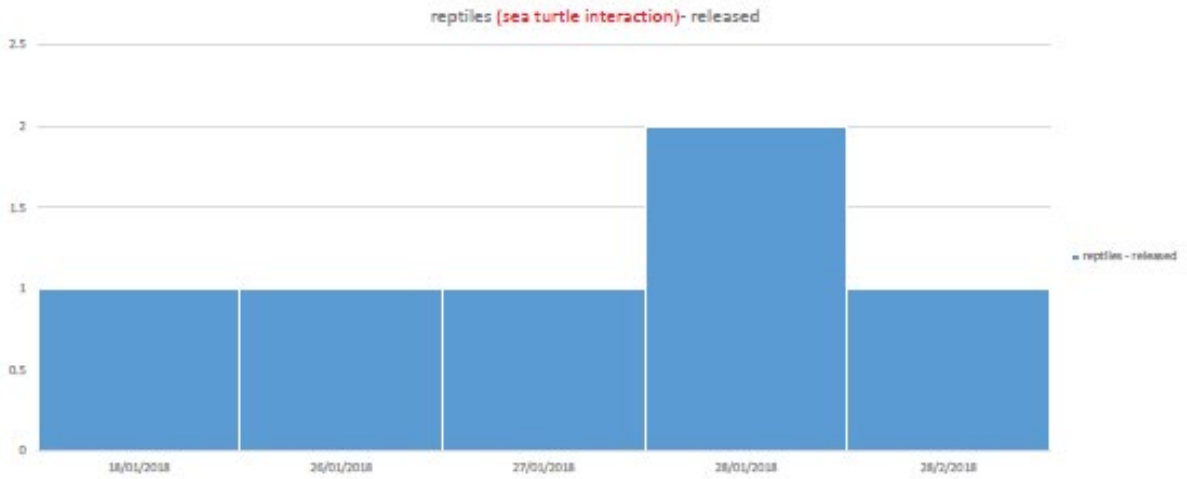
Subsurface gear setting where the gillnet is place 2 meters below the surface water


Unpublished
Fishing method
subsurface
surface
CPUE
Taxon
OTHER REPTILES
OTHER BATOIDS
MOBULIDS
INVERTEBRATES
CETACEANS
SEA TURTLES
SELACHII
TARGET TUNAS
OTHER TELEOSTS
Target tuna
Sea turtles
subsurface
surface


Piloting EMS in gillnet fisheries


CCTV trials for the validation of the bycatch ETP species


CCTV trials for the validation of the bycatch ETP species


reptiles (sea turtle interaction)- released
2.5
2
1.5
1
0.5
0
18/01/2018
26/01/2018
27/01/2018
28/01/2018
28/2/2018
reptiles - released


CAM01
CCTV trials for the validation of the bycatch ETP species

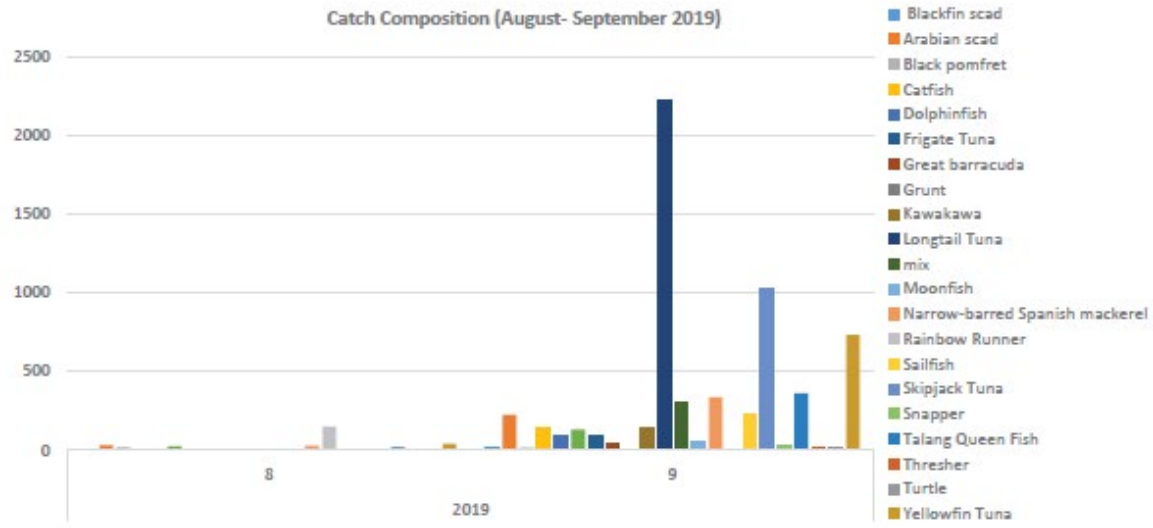
CCTV trials for the validation of the bycatch ETP species

Shellcatch trials for the validation of the bycatch ETP species

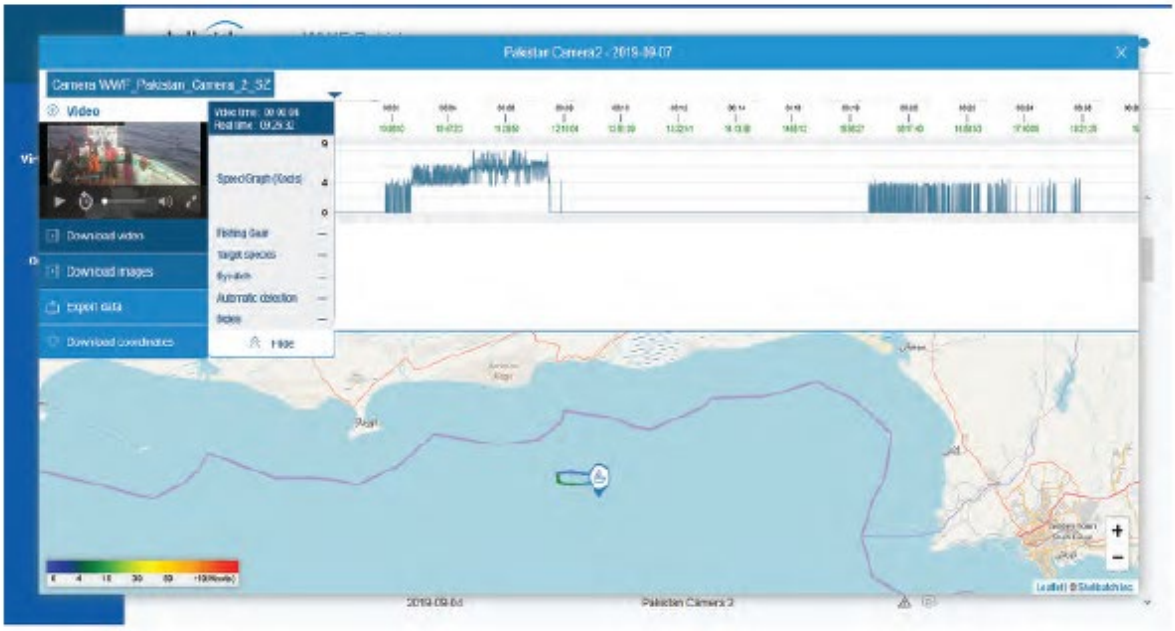
Dimension	58 x 121 x 203 mm
Weight	714g
Battery	13000 mAh
Input Voltage	7 - 24 V
Picture resolution	8 MP (3280 x 2464 px)
Picture format	JPEG
Video format	H.264
Connectivity options	Wifi + GPS
Other options	2G / 3G / NBIoT (Narrow-Band IoT) / Iridium Satellite

Shellcatch trials for the validation of the bycatch ETP species

Shellcatch trials for the validation of the bycatch ETP species

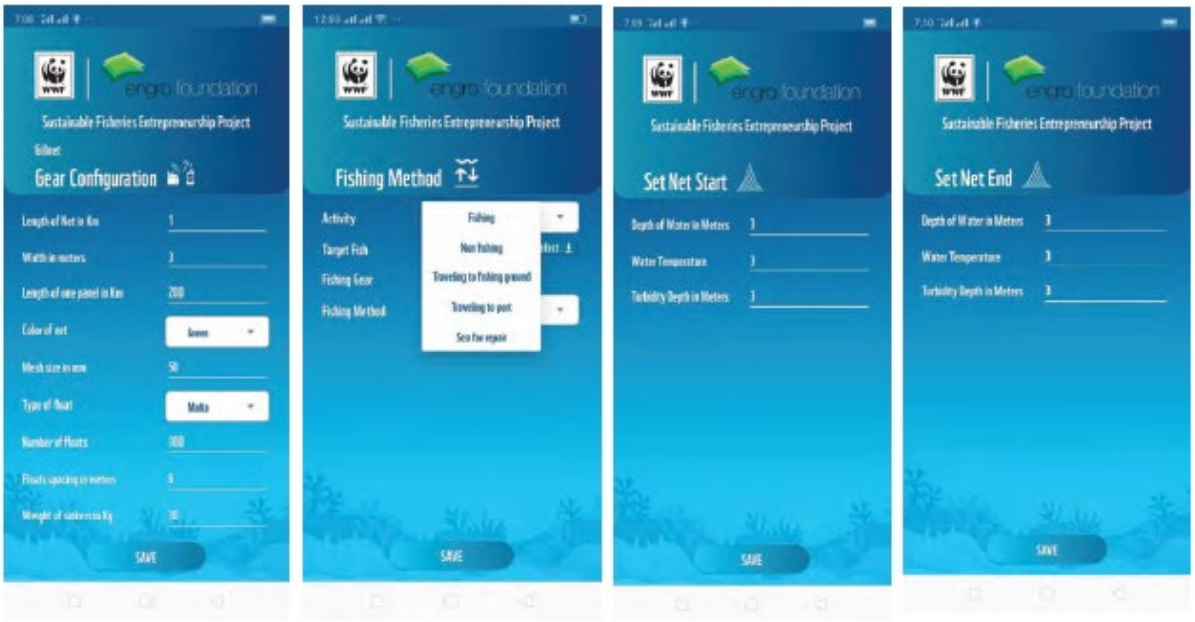


Shellcatch trials for the validation of the bycatch ETP species

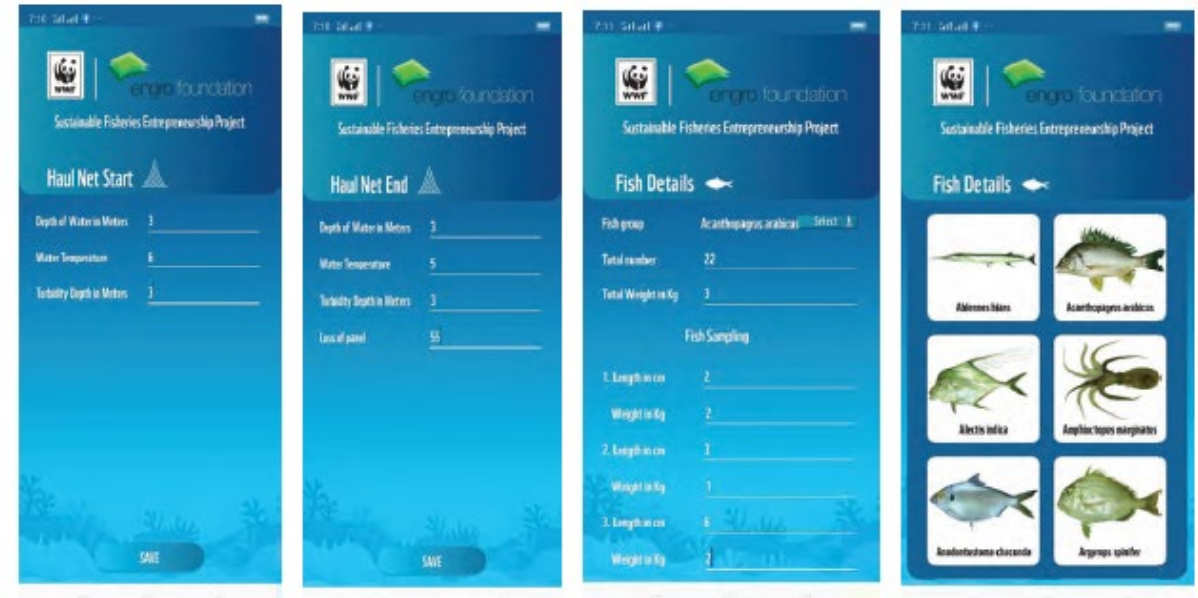


E-log mobile application for improving data collection and reporting from onboard observer, port sampling and processors

E-log mobile application for improving data collection and reporting from onboard observer, port sampling and processors



E-log mobile application for improving data collection and reporting from onboard observer, port sampling and processors



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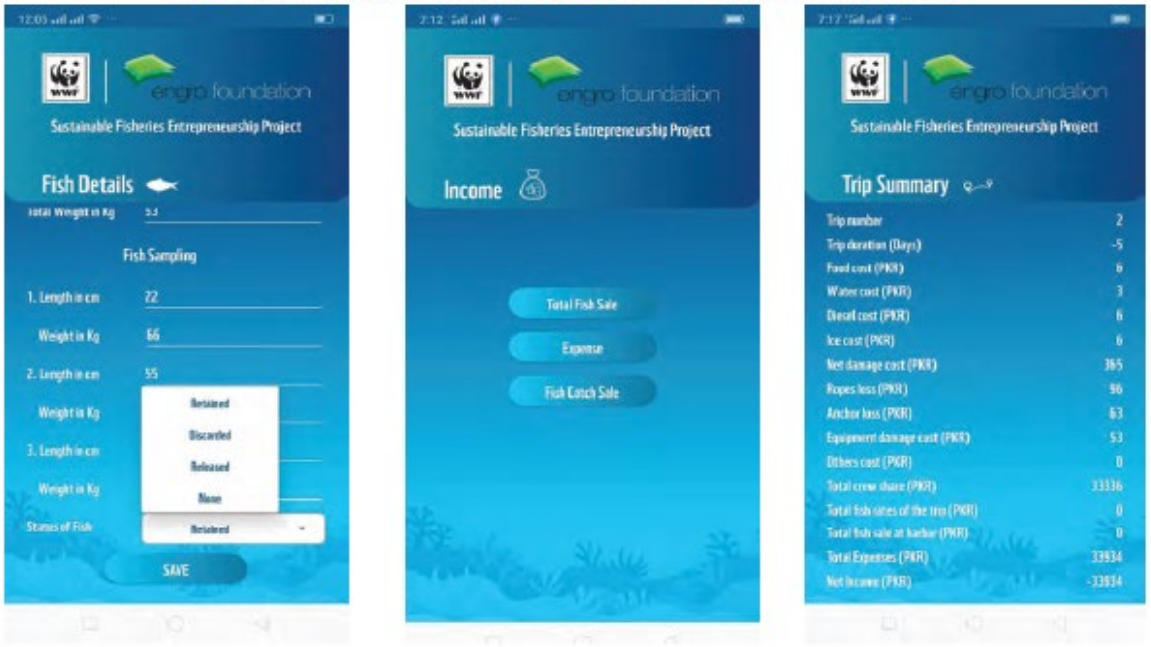

Acknowledgement

Presentation on Reported Impacts of COVID-19 on Monitoring and Conservation

Reported impacts of COVID-19 on sea turtle monitoring and conservation in the Northern Indian Ocean

Dr. Andrea D. Phillott

Professor Environmental Studies, FLAME University, India
Editor, Indian Ocean Turtle Newsletter
Regional Vice-Chair, Middle East and South Asia, IUCN-SSC Marine Turtle Specialist Group

1

Initial predictions regarding COVID-19, the 'Anthropause', and Sea Turtles

- Reduced human presence on beaches

  - Reduced monitoring and research
  - Reduced enforcement and increased illegal take
  - Reduced tourism and recreation so less disturbance

- Overall increased nesting numbers

  - Biologically implausible due to time required to prepare for nesting
  - However, beaches with less disturbance may have observed more nesting

- PPE waste 

2

Reports in IOTN Issue 32 (July 2020)

- Bangladesh
- India
- Pakistan
- (Sri Lanka)
- Malaysia
- Arabian Gulf

3

Bangladesh (Islam 2020; IOTN 32: 5-6)

- Nesting Oct-Mar/Apr; lockdown from 26th Mar 2020

Image: Md. Zahirul Islam

- Many daily wage earners continued their activities
- Tourism to coastal communities ceased
- Local conservation NGOs lost funding from ecotour operators
- Biologists and central researchers could not conduct field work
- 56 local turtle conservation assistants along 350km of coastline continued nightly patrol for monitoring and mitigating illegal take and disturbance
- Replenishment of dunes, vegetation, and invertebrate communities

4

India (Swaminathan & Kale 2020; IOTN 32: 6-7)

Image: Aniket Sayam

- Nesting Nov-Apr; lockdown from 24th Mar 2020
- Ruhikulya, Odisha
  - *Arribaba* on 21st-26th Mar; Forest Dept continued monitoring after lockdown when researchers couldn't. Daytime nesting event misreported as due to reduced human presence
- Chennai, Tamil Nadu
  - Nesting finished before lockdown; SSTCN permitted to run hatchery with Forest Dept.
- Velas, Maharashtra
  - Velas Turtle Festival broadcast hatchling releases online
- Overall- less fishing, bycatch, pollution; more online education and outreach activities

5

Pakistan (IOTN 32: 7-8; IOTN 34: 7-10)

Image: Anonymous

- Nesting Jul-Dec; lockdown from 24th Mar 2020
- Sindh Province
  - Reduced human presence on beaches lowered disturbance of nesting turtles, nests, and hatchlings, amount of waste on beaches
  - No markets for illegal sale of hatchlings
- Balochistan Province
  - # visitors to beaches increased but Daran Beach not yet recovered from Cyclone Kyarr in Oct 2019 so no turtles, nests, hatchlings to disturb
  - Landing spot for fuel smuggled from Iran
- Overall- less fishing, bycatch

6

Sri Lanka (Rupika Rajakaruna and Andrea Phillott)

Image: Rupika Rajakaruna

- Nesting Nov-May; lockdown from 20th Mar 2020
- Study on impact of reduced tourism on hatchery operations after 2019 terror attacks was extended to include the COVID lockdown period
  - Hatcheries reduced staff, wages, work hours and released captive turtles but continued to purchase eggs
  - Concerned that eggs not purchased by hatcheries would be sold for food
  - Ongoing interviews with hatcheries and egg collectors

7

Malaysia (Rusli et al. 2020; IOTN 32: 2-4)

- Closure of wet markets and movement control order after 18th March 2020
- When turtle nesting began in April, sellers in Terengganu accumulated product and sought new markets
- High online sales of turtle eggs, good product reviews, inter-state sales raised concerns about a new market model

Gulf Region (Al-Muhannadi et a;. 2020; IOTN 32: 2-4)

- UAE- fewer field workers for monitoring and fewer beach clean-ups
- Qatar- informal beach monitoring
- Bahrain- reduced reports and rescue of stranded turtles

8

Impact on Turtle Researchers and Conservationists

- Reduced access to education
  - Primary and high school students
  - Undergraduate and Graduate university students

- Researchers and conservationists, especially:
  - Those caring for young and elderly family members
  - Those reliant on external funding

9

Presentation on Knowledge Gaps

Knowledge gaps in sea turtle research in the Northern Indian Ocean

Dr. Andrea D. Phillott

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Editor, Indian Ocean Turtle Newsletter

Regional Vice-Chair, Middle East and South Asia, IUCN-SSC Marine Turtle Specialist Group

Humans and Sea Turtles

- Fishing gear disposal
  - Describe common practices of gear disposal
  - Identify underlying factors- lack of disposal facilities, attitude etc
  - Develop disposal facilities
- Illegal take
  - Determine rate of take and assess need for, and type of, response
  - Identify drivers of take- nutritional, economic, cultural etc
- Hatchery Practices
  - Understand barriers to hatcheries using best practices
  - Build capacity- financial and human- to enable best practices
  - Consider local alternatives to hatcheries

Monitoring and Mitigating High Nest Temperatures

- High temperatures can result in:
  - Feminisation of sex ratios
  - Av. nest temp >35°C or spikes >35°C: increased embryo mortality
- Hatcheries are concerned about high temperatures and using shading and/or watering to reduce nest temperatures
- The strategies are sometimes used without prior data and ongoing monitoring; may be unnecessary, or skewing sex ratios
- What % of nests are experiencing feminising or potentially lethal nest temperatures?
- What impact is shading/watering having on nest temperatures and sex ratios?

Migratory Pathways and In-water Habitat

Flipper Tagging

- Tagging at regularly monitored nesting beaches and through bycatch programs
- Complemented by national tag reporting program for fishers, researchers, conservationists, Forest Department etc and regional tag database

Satellite Tagging

- Have we satellite tracked enough nesting turtles?

Bangladesh (Islam 2020. MTSG RR for Middle East and South Asia)

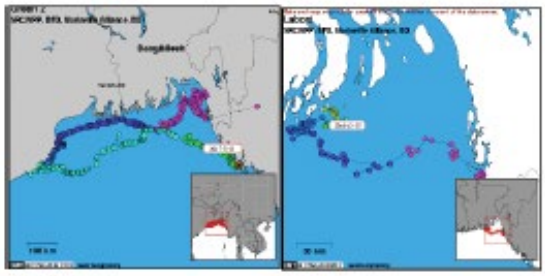


Figure 2. The migration routes and foraging areas of green turtles, nesting adult at left (a) and subadult at right (b).

Figure 3. The foraging habitat of a post-nesting green turtle tagged in Bangladesh. The area is near Sittwe, Myanmar, and is heavily used for fishing.

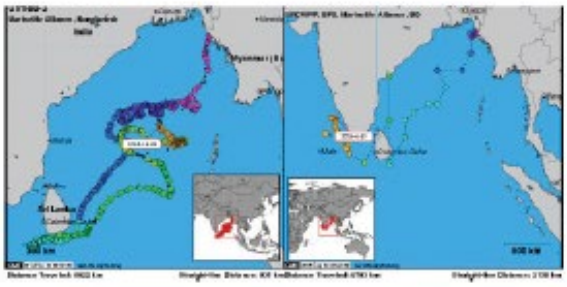
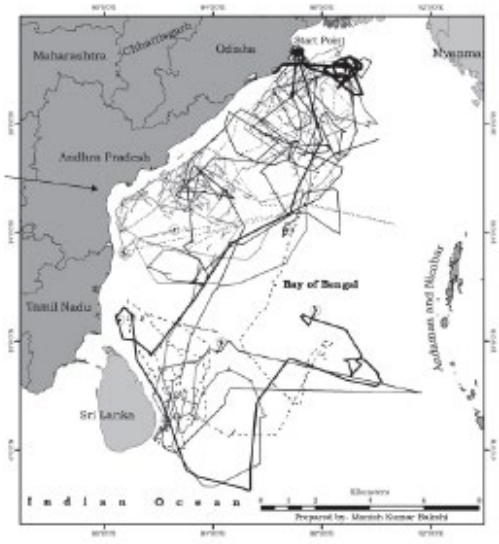


Figure 4. The post-nesting migration and potential foraging habitat of two post-nesting olive ridley turtles tagged in Bangladesh.

India (Swaminathan et al. 2019; IOTN 29: 8-10)

Figure 2. Post-nesting migratory routes of leatherback turtles nesting at Little Andaman. Turtle icons represent the tagging location and the last known locations for each individual turtle. For coloured tracks, see the pdf version, available on-line.

India (Behera et al. 2018; CCB 17: 44-53)



Pakistan (Khan 2013. IOTN 17: 26-30)

Figure 6. Post-nesting migrations of green turtles from Oman to UAE; the dotted armored line is between the last site of transmitter (Ashmahadi) and the active transmitter, while the solid red line shows the turtle movements.

Figure 7. Eastward migration of two satellite tagged green turtles, from Oman to India.

Sri Lanka (Richardson et al. 2019; IOTN 29: 5-8)

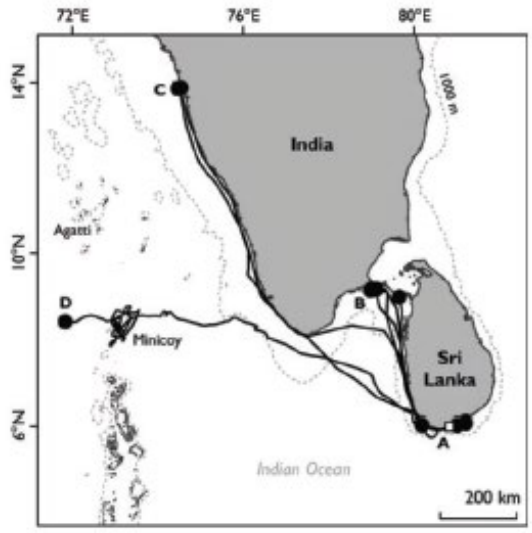
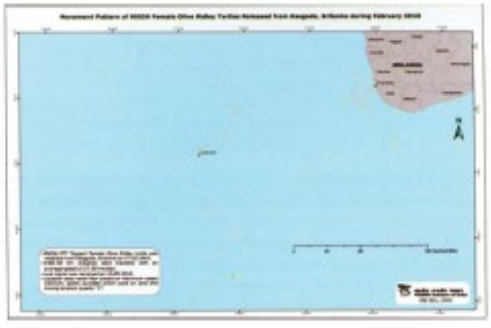


Figure 1. Migrations of 10 green turtles satellite tagged in the study by Richardson *et al*. (2013) at Rekawa Sanctuary (white square) to four geographic areas, A, Southern Sri Lanka (n = 3 turtles), B, Gulf of Mannar (n = 4 turtles), C, Karnataka (n = 2 turtles) and D, Lakshwadeep Islands (n = 1 turtle). Agatti Island is also shown.

Sri Lanka (Sivakumar et al. 2010)



Migratory Pathways and In-water Habitat

Flipper Tagging

- Tagging at regularly monitored nesting beaches and bycatch programs
- Complemented by regional tag reporting program for fishers, researchers, conservationists, Forest Department etc

Satellite Tagging

- Have we satellite tracked enough nesting turtles?
- Consider satellite tracking bycatch turtles, rehab turtles, courting males

Migratory Pathways and In-water Habitat

Bycatch Reports (Thirumalaiselvan et al. 2021; IOTN 34: 14-15)

- Compensation scheme through Maharashtra Forest Dept and Fisheries Dept collects location data

Fishers' Ecological Knowledge (Phillott & Chandrachud 2020; CCB 20: In Press)

- Interviews with fishers can identify turtle feeding and courting areas for further systematic study

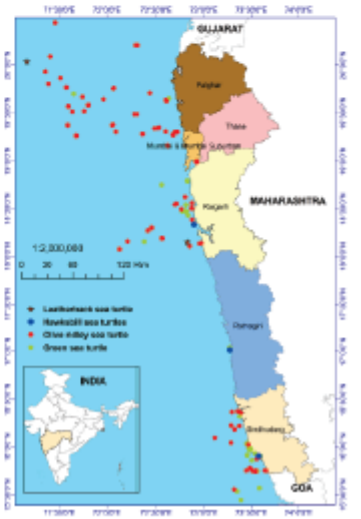
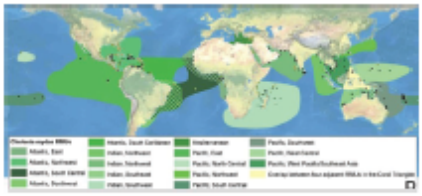


Figure 1. Locations of sea turtles caught in the fishing nets off Maharashtra and other states on the west coast of India from December 2018 to March 2021.

Genetic Studies (RMUs: Wallace et al. 2010; PLoS One 5: e15465)

- Maldives- are nesting green and hawksbill turtles in the NWIO or SWIO RMU?



- Bangladesh- are nesting olive ridley turtles in the NEIND or WPAC RMU?

- Bycatch and stranded turtles

Sharing Information

- Results can be important for sea turtle and habitat management at a regional level

- Please share your project details and results!
  - Journal publication
  - Professional newsletters e.g., IOTN, MTN
  - IOSEA news/article
  - SWOT article
  - Online report

Revised Terms of Reference for the Northern Indian Ocean Marine Turtle Task Force

(as agreed by the 3rd Meeting of the NIO-MTTF, online, 13-14 December 2021)

1. Introduction

The Northern Indian Ocean (NIO) sub-region comprises the following Signatory States: Bangladesh, India, Maldives, Pakistan and Sri Lanka.

The NIO region hosts five species of marine turtle (Green, Hawksbill, Leatherback, Loggerhead and Olive Ridley) and multiple life stages of these species (reproductive (mature adults and eggs), juveniles, sub-adults and adults). Marine turtles are highly migratory and move across multiple national jurisdictions during their different life history stages. They also have high cultural and socio-economic significance for many communities in the region. Therefore, strong cooperation among States in the NIO region is crucial for effective conservation.

Marine turtles in the NIO region face a multitude of threats including destruction of nesting beaches and feeding habitats, incidental mortality in fishing operations ('bycatch'), climate change, marine pollution (especially plastic); abandoned fishing nets ('ghost nets'), inappropriate beach management strategies, natural predation and unsustainable exploitation for meat and eggs.

2. Objectives

The objective of the Task Force is to serve explicitly to facilitate implementation of the IOSEA Marine Turtle MOU (including its Conservation and Management Plan (CMP)) in the Northern Indian Ocean sub-region and, in particular, the regional work programme decided by the Task Force.

The objective of the IOSEA MOU is to protect, conserve, replenish and recover marine turtles and their habitats, based on the best scientific evidence, taking into account the environmental, socio-economic and cultural characteristics of the Signatory States.

The NIO-MTTF is therefore a technical committee spanning both scientific and management expertise.

The Task Force's role is one of technical support to the National Focal Points and Sub-Regional Focal Point of the MOU. As technical experts with detailed knowledge of marine turtle-related research and conservation in their countries, Task Force Members work actively with one another and, where applicable, the governmental Focal Points to assist governments in the implementation of the MOU.

3. Nomination and Appointment

The NIO-MTTF shall be comprised of members of each of the five Signatory States in the NIO region, nominated using a form provided by the Secretariat:

- One country representative, who can be the IOSEA Focal Point or an alternate, depending on the expertise required under the work programme of the Task Force
- One expert from a selected non-governmental organization or scientific institution appointed by each of the five IOSEA Signatory States.

Signatory States should make their nominations on the basis of the Members' technical expertise and the knowledge they have about turtle-related work in the country and within the sub-region. In addition, Signatory States are invited to consider the expertise required to address the priorities for the sub-region as expressed in the IOSEA Work Programme.

In advance of each in-person meeting of the Task Force, the Secretariat will give Signatory States the opportunity to review the membership and inform about any changes. Task Force Members are eligible for reappointment.

The Task Force shall elect its own Chair and Vice-Chair from among its members. The Chairs' terms of office span two in-person meetings of the Task Force, after which a new election will be called for. The Chair and Vice-Chair are eligible for re-election for the same position for a maximum of two consecutive terms. The Chair and Vice-Chair shall be the principal point of contact between the Task Force, Secretariat and other stakeholders.

4. Observers

Meetings of the Task Force shall be open to participation of observers from other relevant organizations and institutions contributing to or affecting marine turtle conservation.

National Focal Points and the Chair and Vice-Chair of other Marine Turtle Task Forces shall be informed of each planned meeting and be invited to attend as observers, or nominate someone to attend on their behalf.

Additional observers, including invited experts, may be proposed by Task Force Members to the Chairs and the Secretariat in advance of each meeting. Except for invited experts, observers shall attend the meetings at their own cost.

5. Rules of Procedure

The IOSEA Marine Turtle MOU Secretariat shall serve as the Secretariat for this Task Force.

The Task Force shall decide its own regional work programme in line with the priorities identified by the latest meeting of Signatory States and with the support of the Advisory Committee, if necessary.

The Task Force shall organize its own business, supported by the Secretariat.

The Task Force shall strive to reach all decisions by consensus.

A quorum shall be complete when at least one member from each country is present in a meeting.

The members of the Task Force shall communicate the implementation of the regional work programme to the Chair and Vice-Chair of the Task Force.

The Chair and Vice-Chair shall

- facilitate communications to and amongst Task Force Members, and with the Secretariat
- organize meetings of the Task Force in collaboration with the Secretariat
- report to each Meeting of the Signatory States on activities of the Task Force and implementation of the regional work programme

- attend, when feasible, relevant meetings of the MOU to ensure the recommendations of the Task Force are brought to the attention of governments.

6. Meetings and Communications

To minimise costs, the Task Force should conduct as much of its activity as possible through electronic communication on a regular basis.

The Task Force should strive for regular meetings to review progress and decide its work programme for the next intersessional period. Meetings could include annual online meetings, as well as in-person meetings to be held at least every two years.

Where possible, in-person meetings shall be arranged in conjunction with the Meeting of IOSEA Signatory States or in conjunction with meetings of other international and regional bodies to review progress, confirm funding and decide on a regional work programme.

The Chair and/or Vice Chair should endeavour to participate in the relevant meetings of the MOU and may also participate on behalf of the Task Force in the meetings of related regional and international instruments and networks. Wherever possible, other Members of the Task Force are also encouraged to attend as observers.

7. Roles and Responsibilities

<u>Strengthen regional cooperation and coordination</u>

- Serve as the coordinating and advisory body to Signatories from the NIO sub-region on marine turtle conservation.
- Develop linkages and dialogue between the conservation sector and other sectors and industries, such as development, tourism, planning, economy, fisheries, protected areas etc., and encourage National Committees to make these linkages.
- Advocate and direct collaborative efforts for marine turtle conservation among stakeholders, including governments, management authorities, the private sector, coastal communities and non-governmental organisations.
- Ensure good relations are maintained among Governments, NGOs, regional, national and local groups and individuals interested in marine turtle conservation, by conveying information to support ideas, goals, achievements and lessons learned.

<u>Review and Reporting</u>

- Develop and standardize protocols for data collection, management and data sharing for research and monitoring programmes.
- Develop methods to regionally review the collective implementation of national commitments to the IOSEA Marine Turtle MoU, making use of the standardised IOSEA National Report template.
- Review and recommend best practice principles for activities requiring the interaction with turtles such as monitoring, education facilities, such as rehabilitation centres and hatcheries, filming and ecotourism ventures.
- Promote both biophysical and socio-economic monitoring and more effective coordination with regional and international monitoring programmes.

<u>Planning, Conservation and Management</u>

- Collaborate with National Committees, NGOs, regional, national and local groups and individuals interested in marine turtle conservation to recommend coherent sub-regional priorities for marine turtle conservation, based on the IOSEA CMP.

- Encourage signatories and non-signatories to the MOU to develop national marine turtle conservation action plans or strategies within the context of the regional framework of the IOSEA CMP.
- Work with National Committees to ensure national planning is compatible with marine turtle conservation planning across the region.
- Obtain government endorsement for a regional strategy.
- Collaborate with National Committees to prioritise future work for the implementation of the IOSEA MoU with individual respect given to each country's situation.
- Solicit funds for activities to be undertaken by the NIO-MTTF and assist in fundraising for other marine turtle conservation activities/projects that will benefit the region and individual countries.
- Assist National Committees to solicit funding for national conservation activities.

Capacity Building

- Support the development of local capacity in research, management and governance by identifying capacity needs, implementing exchange programmes or (where possible) seeking resources to conduct research and monitoring programmes.
- Facilitate the creation or strengthening of National Committees in all countries.
- Encourage National Governments to recognise local issues and establish national legislation or enforcement to further protect marine turtles.

Facilitate Communication

- Provide and facilitate access to technical advice. Act as a reference body and provide advice on proposals for marine turtle conservation projects in the region. Encourage proposals to have a regional perspective and provide linkages between local, national and regional networks where possible.
- Facilitate linkages and collaboration with regional organisations such as IOTC, BOBP-IGO, SACEP, BOBLME Project, SRCWPP, IUCN, WWF, relevant SAARC Centres, etc.
- Facilitate communication and the dissemination of information for the purposes of scientific and public awareness.
- Facilitate and support communication at the national level and serve as a platform to coordinate local initiatives (where required in the absence of national committees).
- Encourage active participation in sub-/regional meetings by institutions and relevant parties in order to raise awareness about priority and emerging issues concerning marine turtles.

Considering the current level of implementation, it is clear that the sub-region has very limited resources for implementation. It is therefore expected that the responsibilities and activities should not be reliant on many additional resources from governments. All of the NIO-MTTF activities will take place in consultation with the Secretariat, and will seek additional resources, opportunities and frameworks.

Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia

UN environment programme

CMS