

REPORT



## SYMPOSIUM ON SEA TURTLE CONSERVATION IN SOUTHEAST ASIA AT THE 5<sup>th</sup> INTERNATIONAL MARINE CONSERVATION CONGRESS, KUCHING, SARAWAK, MALAYSIA, 27<sup>th</sup> JUNE 2018

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During the 5<sup>th</sup> International Marine Conservation Congress (IMCC5) from 24-29<sup>th</sup> June 2018, Seh Ling Long, a postgraduate student from Universiti Malaysia Terengganu (UMT) and Pelf Nyok Chen, co-founder of Turtle Conservation Society of Malaysia, organised a symposium titled 'Sea Turtle Conservation in Southeast Asia: Where we are and how do we move forward?' The symposium was held on 27<sup>th</sup> June 2018 at the Waterfront Hotel in Kuching, Sarawak, Malaysia, and brought together sea turtle researchers, conservationists, academics and non-academics in the Southeast Asia region to promote their research, share their findings, and identify common threats and legislation loopholes. It also provided a platform to discuss how these findings can be translated into advances in conservation policies and legislation, and communicated to the public. Seven speakers presented, followed by a discussion period at the end of the symposium.

### **Presentation 1: Illegal sea turtle trade in Sabah, Malaysia: New mode of operation with national and regional linkages**

Gavin Jolis, a Senior Marine Conservation Officer under the Marine Programme of the World Wide Fund for Nature Malaysia (WWF-Malaysia), highlighted a new mode of sea turtle poaching operation in the state of Sabah in East Malaysia with national and regional linkages. Between 2004 and 2016, there were at least 23 poaching cases amounting to more than 835 turtles. From 2004 to 2009, poaching occurred in the west coast waters of Sabah but the areas of poaching had extended to Kudat in the north and Semporna and Sandakan in the southeast of Sabah since 2014. In 2004, the state's Marine Police found more than 130 dead turtles onboard a Chinese fishing trawler from Hainan in the west coast of Sabah. The confiscated turtles were already preserved in formaldehyde, indicating that these fishers were also skillful taxidermist. Between 2014 and 2015, decomposing turtles were discovered on

a secluded island north of Sabah. Meanwhile between 2014 and 2017, turtle carcasses with missing plastron and marginal scutes were found lying on beaches and floating on the water surface in the southeast of Sabah. The enforcement authorities investigated and gathered intelligence information on the reported cases, leading to discoveries of hotspot poaching areas, type of gears used for capture, mode of transportation, and further information. In earlier years, foreign fishers were catching turtles around the waters in Sabah. Recently, local fishers and communities have been involved in the operation, using nets to catch turtles at foraging grounds, for example in Kudat and Semporna, but the mode of operation differed between sites. They either stockpiled live turtles, took only parts of turtles and left the rest behind, or processed the turtles on secluded islands first before trading to foreign fishers who then transported the turtles to countries in East Asia such as China to fulfill the demand of turtle meat for consumption and shell for ornamental purposes. The operation from capturing to trading turtles is well-organised and planned, involving various individuals from poachers to local middlemen to foreign fishermen. The authorities carry out various efforts at the district and state levels including advocacy, establishment of a taskforce unit, revision of the existing laws and improved prosecution and conviction of cases with high penalty and sentencing. Nonetheless, poaching of sea turtles is one of the biggest threats and goes beyond the state boundary, hence requiring regional efforts. Equally important is community engagement as part of the solutions to address this threat.

### **Presentation 2: Local to global sharing: Lessons learnt on human-sea turtle interactions of coastal communities in South China Sea**

Jarina Mohd Jani from UMT shared insights on human-sea turtle interactions as her team embarked on a journey following the turtle's trail from Terengganu to Lawas in

Sarawak and Natuna Island in Indonesia. In Terengganu, there is a long history of turtle egg trade and the Terengganu Turtle Enactment was first promulgated in 1951 to regulate turtle egg collection. The enactment was amended twice, in 1987 and 1989, to include provisions that provided more legal protection including the creating of turtle sanctuaries as well as the ban of sale and consumption of leatherback turtle eggs. Today the law allows for concession (except for leatherback turtle eggs) to co-exist with conservation, which ideally balances the livelihood and conservation interests if optimally used. The trade is a thriving economy but opportunistic in nature since major nesting beaches are already protected as turtle sanctuaries and reserve beaches. In marine park islands, there is a transformative nature of sea turtles as natural capital from consumptive to non-consumptive use. Collecting turtle eggs was one their main economic activities but now conservation and tourism development provide for other turtle-related livelihood activities such as work opportunities in conservation (i.e. rangers) and turtle-based tourism (i.e. turtle watch tour providers). In Kuala Lawas, turtles only forage but do not nest. The locals wished that the turtles had also nested there as they wanted turtle eggs. Meanwhile, in Natuna Island, community-based conservation co-exists with community-based trade. They trade 50% of the eggs and incubate the remaining 50%. When the hatchlings hatch, they were headstarted before they were released into the wild. These findings provide important insights towards improved protection and conservation measures, ensuring the sustainability of both people's livelihoods and sea turtle populations at local, national and regional levels. The way forward is to invest in people through (1) more engagement with local stakeholders and acknowledge them as worthy and knowledgeable potential partners in conservation, (2) collaborative enforcement of existing laws, (3) more inter-state understanding on the complex human-sea turtle dimensions, and (4) more effective international research and engagement in understanding transboundary nature of sea turtle conservation.

### **Presentation 3: Preliminary study on geomorphology of Terengganu turtle nesting beaches and its vulnerability to climate change**

Noor Azariyah Mohtar, a Marine Conservation Officer for Terengganu Turtle Project under the Marine Programme of WWF-Malaysia, discussed her current project in collaboration with Universiti Malaysia Sarawak (UNIMAS) to create a baseline database to monitor the impact of climate change towards sea turtles in Terengganu. Four species of sea turtles are known to nest along the coastline of Terengganu but only the nesting of green turtles is increasing. Climate change is affecting

turtles in multiple ways and at all life stages, including the loss of nesting beaches resulting from sea level rise and increased erosion. Terengganu has distinct monsoon seasons, namely the post-monsoon (April - May), pre-monsoon (September - November) and the Northeast monsoon (December - March) which dynamically shape the shoreline and beaches. Nesting activities occur between March and September every year, and decreases rapidly during the monsoon seasons due to rough seas. To monitor the vulnerability of nesting beaches to monsoon conditions, they carried out beach profiling, shoreline tracing and Coastal Integrity Vulnerability Assessment Toolkit (CIVAT) at six main nesting beaches in Terengganu (i.e. Kuala Baharu Selatan and Telaga Papan in Setiu as well as Kerteh, Ma'Daerah, Chakar Hutang and Paka in Kemaman) before and after the monsoon seasons in 2016 and 2017. The Northeast monsoon severely impacts the coastline as the beach profile showed great changes of beach slopes. Not only that, there are a lot of anthropogenic activities on these nesting beaches. The creation of a new river mouth at Kuala Baharu Selatan, Setiu, has caused sediment deposition where the shoreline has shifted. The government has since invested in sand dredging to remove the sand as the river mouth is getting too shallow and the boats cannot pass through. In Paka, the local community has to build a new jetty and the state government has to put revetment along the beaches to prevent further erosion that is already encroaching the village settlement. All these have an impact on nesting activities such as shifting of nesting areas. Of all six nesting sites, Ma'Daerah (also a turtle sanctuary) and Chakar Hutan are highly vulnerable and need immediate mitigation intervention. On-going monitoring of the shoreline is not only needed to measure the changes and potential loss of nesting areas for green turtles but also how it impacts the coastal communities living there. WWF-Malaysia is currently conducting a series of workshops to introduce Local Early Action Plan (LEAP) to include adaptation planning with a focus on ecosystem-based actions in the existing local state plans.

### **Presentation 4: Turtle Watch Camp - Batu-Batu, Pulau Tengah - Findings and recommendations from a turtle conservation project in Johor, Malaysia**

Tanya Leibrick, the Conservation and Sustainability Manager for Turtle Watch Camp and Batu-Batu Resort, reported on their turtle conservation work at Pulau Tengah and other marine parks islands in Johor since 2015. Turtle Watch Camp is a privately operated conservation programme founded by Batu-Batu Resort which aims to protect green and hawksbill turtles. One of the main threats to these species is the collection of turtle eggs by licensed and unlicensed egg collectors who subsequently

sell the eggs in the markets. Boat strikes in the area are also frequent, and they recorded 10 stranded turtles with fatal lacerations in 2016 and 2017. Since 2015, they have incubated 21,961 eggs from 149 hawksbill and 42 green turtle nests in the hatchery, collected by egg collectors from 12 islands, resulting in the release of 11,743 hatchlings. In the beginning, they had relatively low hatching success. By providing training for egg collectors in eggs handling and hiring experienced staff in hatchery management, the hatching success has increased. As turtle egg collection is sporadic, they have also increased boat patrol to monitor seven other islands to protect more nests. They engage various stakeholders in outreach activities to educate and raise awareness on conservation issues affecting sea turtle populations, which includes presentations and hatchery tours to resort guests, beach clean-ups, nest adoptions, school programmes, collaborative training with government agencies. Tanya highlighted the need to assess the efficacy of current legislation and enforcement, increase community-level education and engagement programmes and assess the current population status of sea turtles throughout the state of Johor.

**Presentation 5: Finding the balance: Sea turtle tourism interaction in Apo Island, Phipillines**

Sue Andrey Ong, the Co-Project Leader of Apo Island Sea Turtle Research and Conservation Project under the Large Marine Vertebrates Research Institute Philippines, described various ways to study in-water sea turtle population and assess sea turtle tourism interaction in Apo Islands, Philippines. Apo Island Protected Landscape and Seascape (AIPLS) is a marine protected area and a popular holiday destination for diving and turtle watching activity, drawing approximately 17,000 tourists (51% Filipino) in 2015. Despite the growing diving-related tourism and snorkelling interactions with turtles, there has never been dedicated work to assess the green turtle population and tourism interactions with the species in this area. To do so, they conducted behavioural observation, habitat surveys and photographic identification (photo-ID) in June-July 2017 and daily since November 2017. They have also deployed temperature-depth recorder archival tags on two resident turtles to further understand the habitat use and complement visual observation data. Using I<sup>3</sup>S Pattern Software, they have identified 158 individual turtles from 5,621 encounters, with an average of 32 individuals identified per day (range 5–72). They identified eight algae species and by categorising a feeding area into four sites, preliminary results show that sea turtles demonstrate habitat preference to one site. To also understand the presence and site fidelity of the resident turtles, the project integrated the photographic catalogue with systematic but opportunistic photo-ID

data collected since 2013 by a resident dive operator and online citizen science searches. The longest photographic match dated back to 2007. They also monitored the presence and distribution of tourists and counted the highest number/density of tourists between 10-11 am. They undertook a tourist compliance assessment and administered over 500 questionnaires to tourists and local stakeholders to assess their perception on the interaction and areas for improvement. AIPLS is an important hotspot for green turtles and the local community heavily rely on their economic value for tourism, therefore finding a balance is of utmost importance.

**Presentation 6: Understanding the movement of green turtles in Terengganu, Malaysia through a shared photographic identification database**

Kok Lynn Chew, Camp and Field Project Manager of Lang Tengah Turtle Watch, shared the the potential of a shared photo-ID database in understanding the movement of green turtles between nesting and foraging sites. Photo-ID of individual sea turtles through facial scale patterns has been increasingly used for in-water population and behavioural studies. The Perhentian Turtle Project (PTP) and Lang Tengah Turtle Watch (LTTW) have been collecting sighting photographs of sea turtles from dedicated turtle surveys and citizen scientists at Perhentian Islands and Lang Tengah Island in Terengganu since 2014. The database consisting of photographs of the left and right facial scale patterns of green turtles from PTP (181 nesting and 66 in-water individuals) and LTTW (12 nesting individuals) were consolidated in 2017. They ran all photographs through an automated pattern matching software called Interactive Individual Identification System Pattern (I<sup>3</sup>S), which produced a list of matches based on a match score starting from 0 (perfect match) to over 100, or “No Match”. They then visually checked the list for any correct matches and found a match between an in-water green turtle from PTP database and a nesting green turtle from LTTW database, suggesting movements between foraging and nesting sites that are approximately 20km apart. The turtle has been sighted 44 times at the same foraging site at Perhentian Islands from 2013-2016, and was found nesting once at Lang Tengah Island on 2<sup>nd</sup> June 2017. This study shows the efficacy of I<sup>3</sup>S in matching individuals within a shared database, provided that the photographs are of high resolution and the facial scales are visible. The matches found demonstrate the potential of a shared photo-ID database in having a greater understanding of the movements of sea turtles between nesting and foraging grounds in a wide geographical area.

### **Presentation 7: Measuring success of the uptake of Turtle Excluder Device (TEDs) in Malaysia**

Nicolas Pilcher, founder of the Marine Research Foundation (MRF), discussed MRF's flagship project to introduce Turtle Excluder Devices (TEDs) to Malaysian trawl fisheries. Bycatch of sea turtles is of grave concern in Sabah. Due to the overlapping turtle and shrimp habitats, shrimp fishing is one the leading causes of sea turtle mortality today. More than 2,000 turtles are killed each year in trawl fisheries. The ecotourism value of a turtle is approximately USD 10,000 (equivalent to MYR 40,000), which means the state loses a possible annual contribution of MYR 20,000,000 from ecotourism when they lose 2,000 turtles to fisheries per year. Fortunately the solution to mitigate this is through the use of TEDs. The MRF works closely with the Department of Fisheries Malaysia (DOFM) and the Department of Fisheries Sabah (DOFS) to successfully introduce TEDs in Malaysia, starting in 2007 with a volunteer trial programme in Sabah, and culminating with legal requirement for TEDs in 2017 with staged implementation until 2022. However, TED uptake requires buy-in from fishers and needs to be demonstrated to be effective. To boost buy-in, MRF commissioned a professional video in three languages, conducted site visits to the US with fishermen and DOFM and DOFS officers, developed a portable fuel-flow meter to measure fuel savings, and developed a real-time video system (TEDsCam) using GoPro cameras

and drone technology to deliver live video feeds to boat captains. To measure impact, MRF calculated fuel savings and translated these into CO<sub>2</sub> emissions savings, and used fishing effort and past statistics to determine number of turtles potentially saved by the fishery. TEDs work as they save turtles and reduce fuel consumption so less CO<sub>2</sub> enters the atmosphere. MRF estimated saving up to 1,000 turtles per year and 150,000 kg of CO<sub>2</sub> emissions per year at the current implementation stage, and for this to quadruple once full national adoption is reached. In addition, the product value increases as shrimps in better condition (present in nets equipped with TEDs) can sell at a higher price and fishermen spend less downtime repairing their nets. Together with the buy-in from the government and fishing communities across Malaysia, the adoption of TEDs enhances the conservation of sea turtles and reduces the national carbon footprint, while ensuring preservation of fisher livelihoods.

During the discussion period, IMCC5 participants asked several questions on the mode of transportation of the illegal trade happening in Sabah, the use of automated matching software to photo-ID sea turtles, the engagement of local communities in mitigating loss of nesting beaches due to climate change and other humans factors, the tourist briefing in Apo Island and others, the implementation of TEDs, etc. The symposium ended with a thank-you note from the symposium chair to all presenters, participants and IMCC organisers.