ARTICLES

TURTLE DIARY, 2018 - STUDENTS' SEA TURTLE CONSERVATION NETWORK. THIRTY YEARS OF SEA TURTLE CONSERVATION ON THE CHENNAI COAST

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2018 was a special year- SSTCN (Students' Sea Turtle Conservation Network) completed 30 years of olive ridley sea turtle conservation on the Chennai coast!

We began the season on a positive note and with a lot of hope. There was no anxiety about having enough volunteers to patrol the beaches or man the hatchery. Many of our volunteers now have been with the group for several years and take on responsibility for coordinating the programme. In addition, Raghu, an SSTCN volunteer for more than 11 years, decided to help with the work full time and also take on overall coordination of the daily patrolling and hatchery monitoring. Also for the first time in our existence, the Principal Chief Conservator of Forests and Chief Wildlife Warden Mr. P.C. Tyagi, facilitated the creation of a written agreement or 'minutes' between the Wildlife Warden, Chennai, and SSTCN, that authorised SSTCN to carry on conservation work and to work in close association with the Tamil Nadu Forest Department. The group continued to be a part of the Nodal Task Force that had been set up by the High Court in Chennai to monitor and work on reducing sea turtle mortality in the ocean. This diary highlights the season's events.

The start of the season

We began with a report of three nests in the last week of December 2017. Excited that there might be early nesting this season, we established the hatchery on 1st January 2018 and were rewarded with our first nest on the 3rd January. We collected 27 nests in this first month. Unfortunately, it has become the trend for the season to start with a huge number of dead turtles. While we always observed dead turtles from December onwards, the number recorded throughout the season has been very high in the last few years. In January 2018, we recorded most of the 280 dead turtles encountered through the entire season. On one single night we recorded 27 dead turtles, almost all of which were adult females. We wondered if these females were coming to nest at Chennai beaches or had been caught in nets while migrating along the east coast to nest in Andhra Pradesh or Odisha. There seems to be no clear way to find this out.

Distressed by the number of dead turtles, there were a number of press reports, some initiated by SSTCN volunteers. The team also got in touch with the concerned Government agencies. The Fisheries Department claimed that a large number of trawlers were docked in their harbour and there was no reason for an increase in the number of dead turtles. There was much speculation about illegal gill nets being used. Many fishers informally told us that there was a marked increase in the use of gill nets. Again, there was no way of ascertaining this. It will be helpful if, through our network or through Government support, we are able to set up an off-shore patrol to get a sense of the fishing activities in future years.

Pseudonesting

We came across two turtles that did not nest successfully on their first attempt this season. One was on 14th February 2018; the turtle measured ~69cm curved carapace length (CCL) x ~69cm curved carapace width (CCW). She dug a body pit and egg chamber and seemed to nest, but when we checked after she left, there were no eggs. The second pseudonesting was on the afternoon of 30th March 2018. The turtle was spotted by the hatchery supervisor who waited till the turtle left and was surprised to find that she had just gone through the motions briefly and had not laid a single egg. This behaviour has been previously described in olive ridley turtles (Swaminathan & John, 2011; Arun & Swaminathan, 2016) and may be due to limited oviductal responsiveness to hormonal stimuli and/or oviductal motility during a turtle's first nesting season (Phillott, pers.comm., 2019).

Three-flippered turtle

In January 2017 we helped a three-flippered turtle at Elliot's beach, which couldn't dig a proper egg chamber due to a

missing hind flipper. Our volunteers helped her dig the nest by lying down behind her and scooping out the sand without touching her, after which she nested. We believed the same turtle returned this year to Elliot's beach as she was recognisable due to a small notch in the carapace just above the missing flipper. One of the volunteers in 2018 was Shantanu Krishnan, whose brother Shravan Krishnan had helped the same three-flippered turtle nest in 2017.

Two-flippered turtle

A very sad sight this year was that of a turtle that had lost both hind flippers to unknown causes. She couldn't dig anything at all with the remaining stumps. Fortunately, both the times she came ashore (22nd February and 12th March 2018), at locations between the hatchery and the Adyar estuary, our volunteers helped her dig a hole and collected the eggs as she kept laying. If we had not been there, she might have laid her eggs on the beach surface or had to release them at sea if she could not nest at all.

Rescue and rehabilitation

Shravan Krishnan, in collaboration with the Theosophical Society (TS), started an animal dispensary on the Society grounds this year and, at the start of the season, we obtained permission from the Tamil Nadu Forest Department to carry out rescue and rehabilitation of injured turtles on these premises. One juvenile olive ridley turtle (Figure 1), measuring ~17cm CCL x 17cm CCW was found by Youssuf Labbidi from the group "Save Our Turtles" and handed to us. An injury on the front flipper was sutured by veterinarians at the dispensary then the turtle was held for nearly a month. It had to be force fed initially but later began to eat independently. The turtle was force fed fish- mostly *nethili* (anchovy) and mackerel caught by shore seine nets. It later preferred freshly caught mackerel and often refused refrigerated fish! It was kept in a tank filled with sea water that was changed twice every day. Once the healing process and recovery were well underway and after a couple of trial runs in some backwaters for an hour each time, the turtle was released in to the sea by senior staff in the Forest Department. We also treated a nesting turtle which suffered dog bites (Figure 2) and released it the following day.

Working with the Forest Department

This marks the third nesting season we have worked with the Forest Department (FD) and we had a very good understanding with them this year. Special mention must be made of Mr. P.C. Tyagi, PCCF (who retired just before the season), who made a special effort to set-up processes which would ensure understanding and cooperation between the FD staff and our volunteers. We would also like to make special mention of Ms. Geethanjali IFS, the Wildlife Warden of Chennai, and Mr. Murugesan, the

Figure 1. Injured juvenile olive ridley turtle that was treated and released by SSTCN. (Photo credit: SSTCN.)

Figure 2. Injured nesting olive ridley turtle that was treated and released by SSTCN. (Photo credit: SSTCN.)

Ranger, for their valuable collaboration with our team.

We had two different arrangements for our two stretches of beach. In the Neelangarai-Besant Nagar stretch, SSTCN and FD staff walked at different times to ensure that patrols happened throughout the whole night. When we walked earlier in the night, they walked later and vice versa. On public walk nights we often walked together. At Marina Beach, we each walked our respective stretches throughout the night. Both strategies ensured that we maximised our efficiency.

Hatcheries

We usually set up SSTCN hatcheries on either side of the Adyar River, one on Marina Beach (north of the river mouth) and one on Besant Nagar Beach (just south of the river mouth). However, we had very poor hatching success in the Marina hatchery in 2017 due to high sand moisture. Since there was no alternative site possible in 2018, we decided to set up only one large hatchery in Besant Nagar. We were a bit anxious about putting all the eggs in one hatchery, but it worked out quite well. The first nests emerging during the season usually have a high hatching success as temperatures are comparatively cooler. But this year we observed lower hatching success in earlier nests possibly due to some unexpected rains in early March. By the end of the season, the SSTCN hatchery had released 19,212 hatchlings, (19,052 hatchlings from the hatchery and 166 hatchlings from *in situ* nests) from 224 nests with an average hatching success of 78.7%. After many years, we again had an ant infestation (unknown species) in the hatchery but knew how to handle it from past experience. We mixed powdered neem cake with the top 3-4 inches of sand above each nest so hatchlings wouldn't be attacked by ants as they emerged.

The Forest Department hatchery was established about 100m from ours. As always, they allowed us to keep an eye on their hatchery, particularly the night time checking and releasing of hatchlings.

The Estuary stretch of beach

SSTCN refers to the 1km of coast south of the river mouth as the Estuary stretch of beach. Adjacent is the TS, (Theosophical Society) which extends all the way from the last fishing hamlet right up to the river. This compound is filled with vegetation and very few buildings. It is close to ideal conditions for a coastal property. However, there are a lot of feral dogs and some jackals that live in the TS grounds, making it necessary to patrol that beach stretch to prevent nest depredation. The Estuary stretch saw higher-than-usual nesting this year with at least two (and sometimes several) nests almost every single night especially in February but also in early March. (Overall 75 to 80 nests were found on this stretch alone some of which were relocated in the forest department hatchery and the rest in SSTCN hatchery). In spite of intense monitoring (before we realised the nesting pattern), in just the first week or so, we lost 16 nests to dogs/jackals (6 of them only partially destroyed) before we could relocate the nests to our hatchery. To minimise the risk of losing nests to predators, we deployed two people, in addition to our daily team, to patrol the Estuary stretch alone. This meant we needed six volunteers a night, two each for the Estuary, Marina and Neelangarai-Besant Nagar stretches of beach. For a volunteer run organisation, this is not a small task. But we are happy to say we succeeded and the higher nesting here also allowed many of the people, including some school groups who came for public walks, to see nesting turtles.

Raghu's role

Raghuraman has been a volunteer with SSTCN for 11 years and is one of the main people in the group. This year he stepped up his contribution by quitting his chartered accountant's job and doing the walks full time. He walked most nights, coordinated the volunteers, and in the last two months took care of the hatchery. Every year, we have one or two of our volunteers doing the lion's share of the work, but Raghu took it to another level this year. In today's times so driven by commercialism and recognition seeking work, it is wonderful that there are gems like Raghu who anonymously contribute their bit to the environment with passion and without any expectation of reward or recognition.

Public walks

As always, we had popular public walks on Friday and Saturday nights. As a group, we try to focus on schools students, college students, individuals and families. We do not take on corporate groups, as a policy. This year many schools and colleges participated and also groups of school teachers joined in. Many times, we had some very engaging conversations going well into the night. We were also lucky that Mr. Ashish Kothari and Ms. Sujatha Padmanabhan from Kalpavriksh, Pune, joined one of our discussion and a part of one walk.

Unlike last year, this year's public walks were more successful with the public either spotting a turtle, watching a nesting turtle, or observing hatchlings being released. Out of the 24 walks, 19 were successful. The hatchling releases also continue to be a hugely popular event.

For the record

We found the following dead marine animals during the 2018 season: nine dolphins (unknown species), one swordfish, three green turtles (~44 x 44cm, ~42 x 42cm,

and ~84 x 77cm CCL x CCW) and one small olive ridley turtle in addition to a few dead cow fish, trigger fish (2), and spotted sharp nosed puffer fish.

Turtle symposium

To commemorate SSTCN completing 30 years of turtle conservation we conducted a symposium in October 2018. The symposium focused on children from fishing communities who are studying in Government schools along the coast, and >150 children from 10 schools participated. We had presentations on turtles, whales, sea birds, and coral reefs and their restoration by experts in their respective fields. An art session allowed the children to express and consolidate their understanding. Despite heavy rains all the children came to the first day of the symposium, but the second day was washed out and with it our planned interactions with senior fishers and other experts. Instead, a small group of interested students assembled at a volunteer's house and an energetic half-day discussion with Shravan took place about wildlife rescue and rehabilitation, along with a detailed talk about sea turtles and marine conservation with SSTCN members.

Conclusion

In all, we had a great 2018 season despite the dead turtles. It seemed to end all too quickly. Over the last decade, SSTCN volunteers have tended to stay on for many years, changing the former trend of an average of two or three years of volunteering. We now have many volunteers who have been with the group for more than 10 years. All of these people have chosen to work with animal care or nature conservation full time. This is a very heartening development. SSTCN always provided a platform for those interested in nature conservation to gain experience and deepen their interests. Now, SSTCN's role has changed and the group itself has begun to absorb these youngsters who are finding ways to commit to the turtle conservation work while finding other ways to engage further with other conservation work during the off-season and, sometimes, even during the season.

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FIRST RECORD OF GREEN SEA TURTLE NESTING AT SHEEDVAR ISLAND, PERSIAN GULF, IRAN

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INTRODUCTION

Some of the islands in the northern Persian Gulf are important nesting sites for hawksbill sea turtles (*Eretmochelys imbricata*) as well as major feeding grounds for green turtles (*Chelonia mydas*). More than a decade of research and surveys indicate that the main islands for nesting populations of hawksbill turtles are: Hendourabi, Hengam, Qeshm, and Sheedvar (Shidvar) Islands in Hormozgan Province in the centre of the Gulf, and Nakhiloo and Ommolkaram Islands in Bushehr Province in the east (Mobaraki, 2004a,b; Zare *et al*., 2012). At least 500 nesting hawksbill turtles have been tagged since 2005 (Mobaraki & Elmi, 2005; Mobaraki, 2010), and data collected on the clutch size, eggs, hatchlings and turtles (Mobaraki, 2004b). Tag returns have been recorded at Sheedvar *Is.* and other sites (Mobaraki, unpubl.). The nesting populations, based on annual visits, seems to be stable (Mobaraki, pers.obs.) and most of the nesting sites are under governmental protection.

In contrast to hawksbill turtles, of which only mature