Nesting Of Olive Ridley (*Lepidochelys Olivacea*) Across Western Coastline, Karnataka

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ABSTRACT
The present study on Olive Ridley (*Lepidochelys Olivacea*), Sea Turtle Nesting Amidst the Global Pandemic along the Karnataka, India,' renowned nesting sites were scrutinized. The research methodology adhered closely to the long-standing practices of the forest department. Conducted with official approval and executed in collaboration with watch guards, strict protocols were implemented to safeguard hatchlings. Notably, during the pandemic, with restrictions on tourism and fishing activities, there was a noteworthy increase of approximately 10-15% in nesting along the western coast. Despite the influence of climatic conditions on the hatching process, a relatively substantial number of hatchlings were successfully released by the end of the season.

INTRODUCTION

Sea turtles are among the oldest creatures on earth and have remained essentially unchanged for 110 million years. However, they face an uncertain future. The Olive Ridley Sea turtle is the only species of sea turtle known to nest along the coast of Karnataka by Kar and Bhaskar (1982). Only Olive Ridley nesting was confirmed along the Karnataka coast during the survey conducted by B K Sharath et al., (2003) on 'Status survey of sea turtles along the Karnataka coast, India'. Concern for the plight of sea turtles is growing and people around the world are working to protect them on nesting beaches and at sea. Therefore, in the present study, an attempt was made to document the nesting of olive ridley along the coast of Karnataka.

MATERIAL AND METHOS

Selection of location for Hatchery, to avoid underground flooding of eggs, the hatchery site was located well above the level of the highest spring tides and it was made sure that hatchery location does not contain excessive amounts of roots, humus or weeds.

Tracing the turtle tracks and locating the nesting pits, nesting pits of turtles were located by following the track marks of turtle on the sand by Kurian, A., and Nayak, V. N. (2003).

Relocating the Eggs from nesting pit to hatchery, the eggs were stacked in the bucket in such a way that they do not roll when the bucket is being carried to the hatchery. After pinpointing the nesting pits, the construction of a hatchery pit follows. Subsequently, each egg is delicately placed one by one into a plastic bucket or tub, filled with sand at the bottom to a depth of approximately two finger widths. This method is employed to provide stability to the eggs during the incubation process.

Prevention of predators from entering the Hatchery:
Mesh for Hatchery

It was necessary to have a mesh constructed for hatchery to avoid predation. As per some studies, hatchlings are known to

be affected by the earth's magnetic field and they may even use this as one of the cues for their movement in the sea (Valverde, R. A., & Plante, C. J., 2015)

Hatching Process

The hatchery underwent regular checks, with inspections occurring every hour during the late afternoon and at frequent intervals, with a minimum frequency of every 30 minutes. When a few hatchlings were observed making a scratching or shuffling motion with their flippers in the loose sand, this behavior occasionally prompted the remaining hatchlings to initiate their emergence, resembling an "eruption."

Releasing the Hatchlings

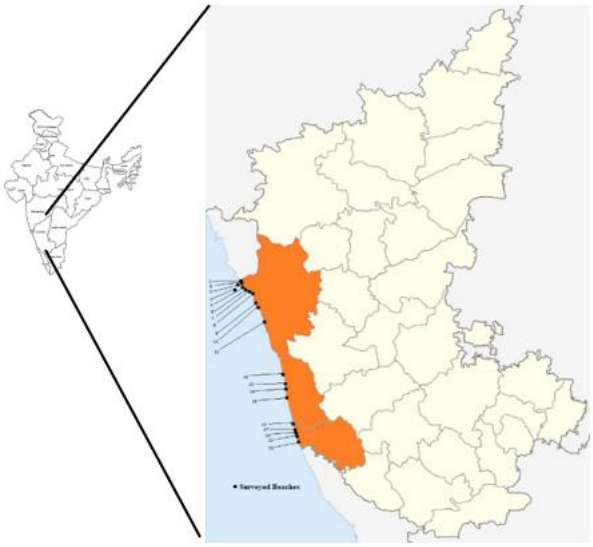
Hatchlings were exclusively released during nighttime unless specific circumstances necessitated daytime releases. To minimize disorientation, hatchlings were released at a considerable distance from light sources. The hatchlings typically found their way toward the beach by orienting themselves partially based on the lowest bright horizon.

In instances where artificial lights or particularly dark/overcast nights caused confusion for the hatchlings, it became imperative to guide them to the sea. This was achieved by shining a light onto the seawater a short distance from the shore. Once the hatchlings entered the sea, precautionary measures were taken to switch off the guiding light promptly, preventing any attraction of the hatchlings back to the beach.

When a nest had not hatched post 65 days, the nest was excavated as soon as possible, and the contents were recorded. Hatching was ascertained by digging the nest cavity five days post emergence of the 1st hatchling by counting the hatched eggshells observed by Kar and Dash (1990).

RESULTS

The comprehensive study under consideration encompasses a survey conducted from September 2020 to September 2021. Situated in the geographic coordinates of approximately 11.5° to the North and 18.5° Latitude, and 74° to 78.5° East longitudes, Karnataka's coastline is specifically located at longitude coordinates 15.317227 and 75.713890.

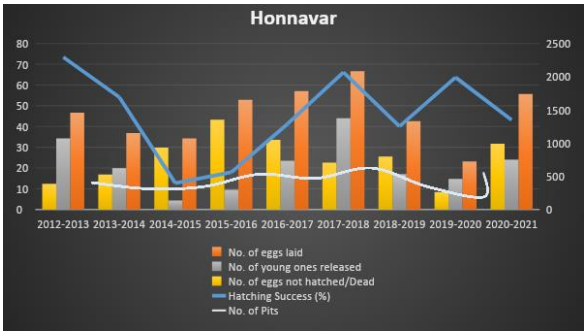


S.No	Beach	S.No	Beach
1	Kagal	7	Tarebagilu
2	Dhareshwar	8	Pavinakurve
3	Holanagadde	9	Karki
4	Alavikodi	10	Haldipura
5	Kadekodi	11	Kasarkod
6	Suvarnagadde	12	Apsarkonda

Table 1: List of surveyed beaches in Karnataka

Turtle Nesting details of Honnavar, Uttara Karnataka					
Year	No. of Pits	No. of eggs laid	No. of young ones released	No. of eggs Unhatched/Dead	Hatching Success (%)
2012-13	13	1458	1071	387	73.4
2013-14	10	1150	623	527	54.1
2014-15	11	1070	136	934	12.7
2015-16	17	1651	297	1354	17.9
2016-17	15	1782	734	1048	41.1
2017-18	20	2082	1376	706	66.0
2018-19	11	1331	533	798	40.0
2019-20	6	724	461	263	63.6
2020-21	18	1740	751	989	43.1

Table 2: Turtle Nesting details of Honnavar (Haladipura, Taribagil, Pavinakurve, Kasarkod, Apsarkonda, Karki, Suvarnagadde beaches)

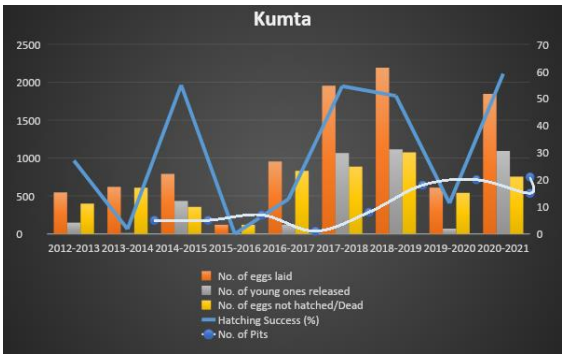


Graph 1: Graph representing Turtle Nesting trend in Honnavar

Six beaches under Kumta region were considered for observation, from the above table it is seen that the number of pits is at its maximum since 2012. From the above table, it is seen that the nesting has eventually increased since year, and so do the hatchling success percentage. Graph indicates the drop of Olive Ridley nesting and hatchling percentage.

Turtle Nesting details of Kumta, Uttara Karnataka					
Year	No. of Pits	No. of eggs laid	No. of young ones released	No. of eggs not hatched/Dead	Hatching Success (%)
2012-13	5	547	148	399	27.05
2013-14	5	620	11	609	1.77
2014-15	7	790	434	356	54.93
2015-16	1	120	0	120	0
2016-17	8	955	123	832	12.87
2017-18	18	1953	1065	888	54.53
2018-19	20	2191	1116	1075	50.93
2019-20	15	610	69	541	11.31
2020-21	21	1847	1092	755	59.12

Table 3: Turtle Nesting details of Kumta (Dhareshwar, Holanagadde, Alvekodi, Mattu, Kadekodi, Kagal beaches)



Graph 2: Graph representing Turtle Nesting trend in Kumta

DISCUSSION

From the current study, it was been observed that, Global Pandemic has positive impact on Olive Ridley's Nesting during the year 2020-2021 in western coastline of Karnataka. Olive Ridley were quite often visiting the shores for nesting during dark, artificial lights near the shore with respect to tourism and business had impacted and eventually reduced the number of nesting. It was evidenced that, during the pandemic, closing of the tourism and crowd has drastically increased the nesting. From experimental field work that directly implicates artificial lighting in deterring sea turtles from nesting which was also observed by Witherington, (1996). Noise pollution therefore drive turtles away from critical foraging and nesting habitats which was also noted by Warner, (2008). Thus, increasing the nesting sites in coastline of Karnataka during pandemnic.

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