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Status of Olive Ridley Turtle in Point Calimere Wikdlife Sanctuary, Tamilnadu and hatcheries as a Conservation Tool

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Abstract

Five of the seven species of marine turtles found worldwide are reported to occur in Indian Coastal waters. Five species of the marine turtles, which are listed under Schedule I of the Indian Wildlife (Protection) Act 1972, have been recorded from the coastal waters of Tamilnadu. Olive ridley turtle, one of the common and yet vulnerable species among the Indian marine turtles, nests along the Tamil Nadu coastline. They are noted for mass nesting along the coast of Orissa, but reports from Tamil Nadu are scanty. In the present investigation an attempt has been made to study the status of biodiversity in the coastline ecosystem and also the Olive ridley turtles in the Point Calimere Wildlife Sanctuary, located in the Nagapattinam district, includes the coastline of Point Calimere, Tharangambadi, Vanagiri, Koolaiyur and Madavamed, and suggestions have been made for their conservation. Increasing the population of turtles in the wildlife sanctuary by protected hatching of eggs through hatcheries, creation of awareness among the local stakeholders to prevent poaching of turtles and encouraging them to involve in anti poaching activities had been the objectives of the study.Turtle protection camps enabled the recovery of threatened eggs, hatching through incubation for 45-52 days and subsequent reintroduction of the hatchlings into the sea. Eggs collected from different locations included 23352, which also represented three fold higher than the previous year. Among them 16847 hatchlings were produced on incubation with a success rate of hatching by 72%. Establishment of turtle egg hatcheries has steadily increased the success rate of and awareness programs have brought about an immense check on poaching of turtles and their eggs in this ecosystem.

Keywords: Hatcheries, Olive ridley turtles, Point Calimere, Reintroduce, Rescue of turtle eggs, Tamilnadu

INTRODUCTION

Sea turtles had their origin during the reign of dinosaurs and tenaciously survived and flourished up until now. Nevertheless today the number has drastically reduced and all the seven species of sea turtle are considered either globally threatened or endangered. Among them five species of sea turtles are distributed in the Indian region and four of them the Olive Ridley turtle (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricate*) nest in the Indian coasts (Kar and Bhaskar, 1982; Pandav et al., 1994). Olive ridley turtle is one of the abundant species which nests in varied densities along the entire coast of India. This study brings out the sporadic nature of Olive ridley turtle nesting along the coast of Tamilnadu. The conservation of Olive ridley turtle has gained importance after the drastic consequences of tsunami. The major threat for the population of the Olive ridley turtle has been perceived and the larges scale mortality has been attributed to the mechanised marine fishing activities. In this background, the present project was undertaken in collaboration withTamilnadu Forest Department, and the article deals with the hatchery establishment and development as the major tool of conservation.

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MATERIALS AND METHODS

Study area

Nagapattinam district of Tamilnadu has a long stretch of 161kms of coastal environment. The coastal region stretches from Point Calimere (Map.1 and 2) to a distance of 40 km, a place called Voimedu , which is a swampy land, and the other stretch extends from Point Calimere to Kollidam , a distance of 120kms, which is full of sandy coast providing a suitable habitat for turtles. The study area covers an area of 2250Ha which lies between 10º19' N and 79º52' E. Point Calimere Wildlife Sanctuary. It includes the coastline of Point Calimere, Tharangambadi, Vanagiri, Koolaiyur and Madavamedu. Turtle protection camps were made at Point Calimere, Keechan odai, Manian Theevu, Arukatuthurai, Pushpavanam,Tharangambadi, Vanagiri, Koolaiyur and Madavamedu.

Field sample collection methods

Eggs were collected, transported and placed in the hatchery within 2 hours after egg deposition. Eggs were collected in a plastic or cloth bag, either directly from beneath the turtle while eggs were laid, or dug out from the nest after she has laid and left the nest. The bags or buckets were kept clean and free from contamination. Each clutch was relocated within the hatchery in a microhabitat, which was as natural as to that of the nest. They were buried at the same depth as

in the natural nest which was approximately 1 to 1.5ft. The nests were constructed in the shape of the natural nest i.e. with a narrow neck and a flask shaped bottom. The eggs were placed carefully in the nest and then covered first with moist and then dry sand. Eggs were incubated in the nest for 45-52 days and the hatchlings usually begin to emerge from the nest after two to three days. Hatchlings were released into the sea in groups immediately after emergence, but at different periods of times and at different points to avoid threats during reintroduction. Hatchlings were allowed to crawl across the beach to allow imprinting.

RESULTS

Olive Ridley turtles preferred sand dunes above 8m to 10m from the seashore region for laying eggs. Nesting of Olive Ridley turtle was monitored from the protection camps established at the locations of Point Calimere, Keechan odai, ManianTheevu, Arukatuthurai, Pushpavanam, Tharangambadi, Vanagiri, Koolaiyar and Madavamedu. Olive ridley turtle laid a minimum of 100 to a maximum of 170 eggs which weighed approximately 50g each. Olive ridley turtle eggs were collected since 2006 as a conservation measure after Tsunami. The percentage of success of hatching was found steadily increased (Table.1) from 66% to 72% during the period 2006 to 2013.s

DISCUSSION

Sporadic nesting of Olive Ridley turtle was observed during their nesting season of December to March in Nagapattinam district has been reported (Thirunavukarasu and Sundararaju, 2009). Inspite of Olive Ridley turtle being listed in Schedule I of the Indian Wildlife (Protection) Act 1972, human induced activities continue to threaten the survival of Olive Ridley turtle in the Nagapattinam district. Specifically in Point Calimere, the threatsare mainly due to harvest of eggs and adult turtles for human consumption, mortality during mechanised fishing, loss of nesting habitats due to planting of *Casuarina* plants as bio-shields, nest destruction by wild pigs, feral dogs, loss of eggs as a result of beach erosion and disturbance caused by artificial illumination has

Table:1. Number of eggs collected and hatched, hatching success rate for seven years.

S.No.	Year	No. of eggs collected	No. of eggs hatched	Hatching Success Rates	No. of young ones
1	2005-2006	680	452	66.47	452
2	2006-2007	487	292	59.96	292
3	2007-2008	1755	1149	65.47	1149
4	2008-2009	5100	5100	100	5100
5	2010-2011	13573	11822	87.10	11822
6	2011-2012	6946	5623	80.95	5623
7	2012-2013	23352	16847	72.14	16847

Map 1: Tamilnadu Map showing Point Calimere.

Map 2: Map depicting Point Calimere with the areas of vegetation around the coastal region.

cumulatively exerted enormous pressure on the existence of Olive Ridley turtle. Hence, measures of conservation have been accelerated to protect the existing turtle population. The conservation measures include establishments of hatcheries and protection camps, which enabled collection of eggs.

Hatchery-based *ex situ* conservation practices are widespread in sea turtle conservation (Shanker, 2003; Chan, 2001; NRC, 1990). The main objective of a hatchery is to secure eggs laid on unprotected beaches by removing them and incubating them under natural conditions and releasing the hatchlings back into the ocean. Hence, eggs are protected from threats including egg collectors, predators and also the possibility of eggs are being washed in to the sea during rough and high seas. This action ensures higher hatchling rates and affords protection to hatchlings until they are released back in to the sea.

Establishment of hatcheries has raised the percentage of success in hatching to 72% in 2012-13 which is high enough to suggest this as a suitable conservation measure in this ecosystem. The success rate in hatching has been attributed to the ensured protection of turtle eggs from the land predators, which ensures the increased number of eggs remain viable to produce increased number of hatchlings. It ultimately leads to increase in the population of turtle. Emerged hatchlings are safely reintroduced into the sea at certain places which are generally beyond the reach of inland lights and dol not face threats from the coastal predators such as fish, and thus they are conserved.

Further advantage and beneficial step in the conservation of Olive Ridley turtle is the approach of involving the villagers in the collection of the eggs of Olive Ridley turtle for the hatchery, which dissuades other collectors from collecting these eggs for human consumption. The extensive awareness programme organised for the conservation of Olive Ridley turtle has largely encouraged the local participation from the villages in the collection of eggs and management of fishing activities, which has also improved their economic status. Other conservation steps include annual closing season for fishing and community participation in conservation of Olive Ridley turtle, have drastically reduced poaching It enhanced the possibility of effective conservation of turtles, and ultimately this has helped to move a step forward in the conservation of the entire biodiversity of the coastal ecosystem. The future conservation measures for the turtles include the efficient management of nesting grounds along with the existence of bio-shields, fishing activities and regular monitoring of collection of eggs and hatchery maintenance.

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