

## Importance of temperature in ex-situ hatchery management in Chennai

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Olive ridley turtles nest on the coast of Chennai on the east coast of India. TREE Foundation and the Wildlife Wing of the Forest Department support a community sea turtle conservation programme, namely the Kadal Aamai Padhukavalargall (KAP) (Sea Turtle Protection Force).

This study was carried out in five selected villages along the Chennai coast from December 2006 to April 2007. The first nest was recorded on December 20, 2006 and the last one on March 26, 2007. A total of 107 nests were recorded during this period (Periyar Neelangerai – 20, Injambakkam – 19, Panaiyur – 20, Nainar Kuppam

– 35, and Reddy Kuppam – 11) (Table 1). Peak nesting was recorded during February, with a total of 40 nests, including 16 nests that were left in-situ. During 2007, five in-situ nests were lost to predation by feral dogs. There was no poaching in these areas.

**Table 1:** Nests recorded during 2006 and 2007

	2006	2007
Total nests	90	107
Total eggs	10,273	10,980
Hatchlings	8,821	8,791
In situ nests	15	28

Hatchling emergence started from February 8, 2007 onwards and the hatching success was documented by excavation of nests. During the previous year, hatching success was very low, especially towards the end of the season. Based on the suggestions of turtle conservationists, loosely woven coconut leaves (thatch) were placed over the hatchery from March 15, 2007. Temperatures were periodically checked and recorded with a thermometer placed 22.5 cm (10 inches) below the surface. During the period from March 17 to April 7, the day temperatures were about 28°C (at seven a.m.), while the afternoon temperatures ranged from 30°C-31°C and the night temperatures ranged from 30°C-31°C (at nine p.m.) within the hatchery. From April 14 onwards, the morning temperatures ranged from 29°C-30°C, afternoon between 32°C-33°C and night 31°C-32°C.

The data presented below is for nests which emerged after April 25 each year. On April 25, 2007, between 7:00 p.m.- 9:30 p.m., we witnessed 395 hatchlings emerge from four nests at the

Periya Neelangarai hatchery. At this time of the year in 2006, nests produced practically no hatchlings at all. Thus the thatch may have proved successful in reducing temperatures during the day and preventing mortality of the hatchlings. During 2007, the last hatchlings emerged on May 7, 2007.

It was also observed that most of the hatchlings that emerged during this period were well-formed, healthy and very active. On checking the residual nest contents, there were few dead hatchlings and only a few unhatched eggs. It was also observed that nests with more than a hundred eggs had a high mortality rate in the middle of the season. In Periya Neelangarai, the KAP members placed nests with large numbers in wider nests than normal natural nests. The experiment appeared to be successful: in one case, 148 out of 165 eggs hatched and emerged successfully. The appointment of 8 KAP members as Turtle Guards by Ashish Kumar Srivastava, IFS, Wildlife Warden has encouraged the KAP members to get more involved in conservation.

**Table 2:** Hatching success of relocated nests in different villages in 2006

<i>Village*</i>	<b>Nests</b>	<b>Eggs</b>	<b>Hatchlings</b>	<b>Dead in pipped Eggs</b>	<b>Dead hatchlings</b>	<b>Unhatched eggs</b>	<b>Hatchings (%)</b>
PN	1	109	0	0	0	109	–
IB	0	0	0	0	0	0	–
PK	8	923	91	120	57	655	9.9
NK	9	997	310	26	–	592	31.1
RK	0	0	0	0	0	0	–
Total	18	2,029	401	146	126	1,356	–

**Table 3:** Hatching success of relocated nests in different villages in 2007

<i>Village*</i>	<b>Nests</b>	<b>Eggs</b>	<b>Hatchlings</b>	<b>Dead in pipped Eggs</b>	<b>Dead hatchlings</b>	<b>Unhatched eggs</b>	<b>Hatchings (%)</b>
PN	5	609	525	15	6	63	86.2
IB	1	100	93	4	0	3	93.0
PK	2	214	144	18	25	27	67.3
NK	11	1040	950	78	18	94	91.4
RK	0	0	0	0	0	0	0
Total	19	1,963	1,716	115	49	187	–

\* *PN* – Periya Neelankarai; *IB* – Injambakkam; *PY* – Panaiyur Kuppam; *NK* – Nainar Kuppam; *RK* – Reddy Kuppam