

Thirty years of sea turtle conservation on the Madras coast: a review

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Introduction

The earliest reports of marine turtles in Tamilnadu in southern India are found in Tamil Sangam literature (circa 4th century A.D.), from a poem which describes a nesting turtle (Sanjivaraj 1958). Olive ridley turtles nest along much of the Tamilnadu coast and may also forage in the Gulf of Mannar in southern Tamilnadu. Principal nesting areas include the Madras coast, Point Calimere and Nagapattinam, and Mandapam in southern Tamilnadu. Nesting data are available from Madras thanks to a series of conservation programs, starting in 1973, while landing data are available from Mandapam (Gulf of Mannar) from the research stations of the Central Marine Fisheries Research Institute (CMFRI). Recent surveys by Bhupathy and Saravanan (2002) provide information on status and threats to sea turtles along the entire coast of Tamilnadu.

The first conservation efforts on the Madras (Chennai) coast were started in 1972, curiously around the same time that J.C. Daniel and S.A. Hussain of the Bombay Natural History Society reported the mass nesting beaches in Orissa. Subsequently, a research and conservation program was initiated in Orissa after Bustard (1976) described Gahirmatha as the 'world's largest olive ridley rookery'. Meanwhile, sea turtle conservation in Madras was initiated by a few dedicated herpetologists, conservationists and wildlife enthusiasts, including R. Whitaker and Satish Bhaskar, who was also to serve later as mentor to the founders of the Students' Sea Turtle Conservation Network (SSTCN). Since then, remarkably, one organization or another (both government as well as non-government) has been active on the Madras coast, most recently the SSTCN since 1988. Other sea turtle conservation programs have been initiated along both coasts of India by the Forest Department, students and local fishing communities, notably in Goa, Kerala and northern Andhra Pradesh.

Nesting along the Madras coast

In northern Tamil Nadu, nesting occurs primarily along a 50 km stretch from Adyar river, Madras to Kalpakkam to the south (Valliapan & Whitaker 1974, Abraham 1990, Shanker 1995, Bhupathy & Saravanan 2002). While nesting occurs at sandy beaches north of the Adyar river, this area is highly developed with well-lit public beaches, thermal power stations, and the Madras Port. The first survey of this coast was conducted from December, 1973 to March, 1974 (Valliapan & Whitaker 1974) from Madras to Kalpakkam. No nesting estimates are provided, but 40 depredated nests were found on a single night during the peak season (10 – 15 km of beach were covered each night). They also found 17 dead turtles during the survey. Eleven nests were collected and incubated in a hatchery, the first in India (Valliapan & Whitaker 1974).

The Madras Snake Park Trust (MSPT) maintained a hatchery for the next 4 years, during which 197 nests were collected (Whitaker 1979). In 1975 and 1976, 18 and 42 nests were collected (Anon 1976). In 1977, the Central Marine Fisheries Research Institute (CMFRI) became involved in the program and paid for 125 nests (Anon 1977); 14,546 eggs were collected for the hatchery.

From 1978 – 1983, the CMFRI had an egg-collection and hatchery program at Kovalam, south of Madras (Silas and Rajagopalan 1984). During this period, 72 – 309 clutches per year were collected for the hatchery, but no information is available on the annual effort in terms of distance covered. Since eggs were purchased from egg-collectors, the eggs may have been brought from the entire coast spanning nearly 50 km. Collection periods approximated one month, and collections from mid-February to mid-March were about 100 nests per month, while collections from mid-January to mid-February were 200-300 nests per month. In 1982,

the World Wildlife Fund – Tamilnadu Branch hatchery collected 44 nests (Anon 1982).

The Forest Department of Tamilnadu (TNFD) took over the egg-collection and hatchery management programmes in 1982-83. They established 5 hatcheries in the state, of which two were near Madras (Moll *et al.* 1983). Shanmughanathan & Jogindranath (1984) report that a total of 94,000 eggs were collected during 1982-83. During this season, 25,000 eggs were collected in the Madras hatcheries (probably about 200 nests). Moll *et al.* (1983) suggest that these two hatcheries covered 40 km of beach, giving a nesting density of about 5 nests / km / season, but it is unlikely that all nests were collected. The Forest Department maintained hatcheries till 1987-88, but no data are available for many of these years.

The Students Sea Turtle Conservation Network (SSTCN) was formed and established its first hatchery in December 1988. The sea turtle programme including beach monitoring, hatchery management, protection of wild nests, education and awareness and has continued from 1988 till present. Egg collections were mostly carried out over 6 km between Besant Nagar and Nilankarai, though an additional distance of about 10 km was patrolled in some years (Abraham 1990, Abraham *et al.* 1990, Mathew *et al.* 1991, Anon. 1993, Sivasundar *et al.* 1994, Sivasundar *et al.* 1995, see Shanker 1995 for a review and map, SSTCN, unpubl. data).

Overall trends in the past twenty five years do not indicate a drastic decline (Table 1). However, the data largely refers to nests in hatcheries and may not be an accurate reflection of nesting. Furthermore, different distances were covered by different workers, which adds error when evaluating trends. Since 1988, 6 km of beach has been sampled intensively each season, and there is wide inter-annual variation in nesting numbers, but again no conclusive evidence of a downward trend (Figure 1).

Nesting densities are consistent with results from recent surveys (Bhupathy and Saravanan, 2002) which indicate that olive ridley nesting densities range are about 4 nests / km / season for Chennai and Nagapattinam coasts (~ 50 km each).

Threats

While the long term conservation program may have prevented a drastic decline thus far, the intensity of threats may have increased. The main threat to adult sea turtles is fishery related mortality, with about 10 – 20 dead turtles washed ashore every season. Apart from this, depredation of eggs by humans and animals represents a major threat. Fishing villages dot the entire coastline and opportunistic poaching by members of the fishing community is, and depredation by feral dogs is major problem. Furthermore, as residential colonies spread along the coast, beachfront lighting is becoming a problem along a greater stretch of this coast each year.

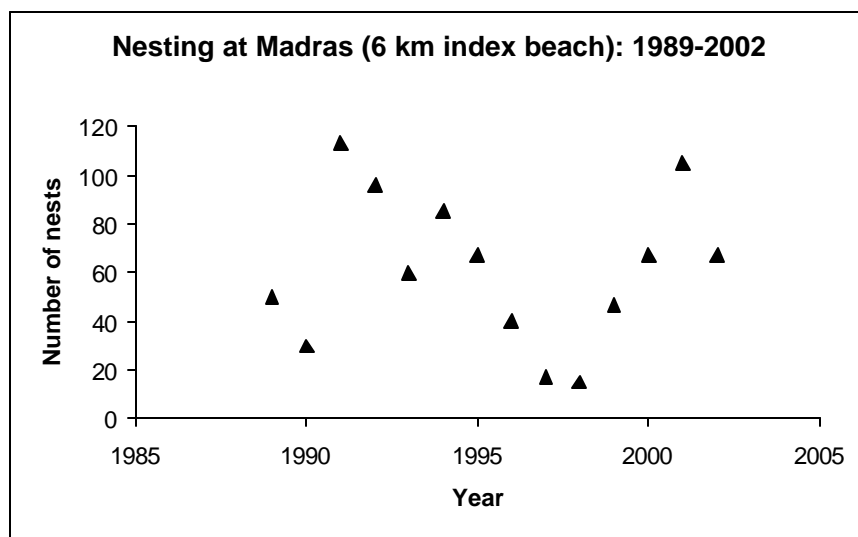


Figure 1: Number of nests collected from a 6 km stretch of beach in Madras between 1989 and 2002

Education and Awareness

Education and awareness has always been a major component of the sea turtle conservation programs in Madras. In the 1980s, the WWF, Tamilnadu office conducted 'turtle walks' for the public and students, and eggs collected during these walks were relocated in Forest Department hatcheries. Since 1988, the SSTCN has been conducting education and awareness programs. Many schools and colleges have participated in the walks and been involved in running the program. In the mid 1990s, an attempt was made to initiate an in-situ management program. This has gained momentum this year with the

References

ABRAHAM, C. (1990) Preliminary observations on the nesting of the olive ridley sea turtle (*Lepidochelys olivacea*) on the Madras coast, south India. *Hamadryad* 15: 10–12.

ABRAHAM, C., K. SHANKER, & Y. THIRUVELVAM (1990) *Conservation and Management of Sea turtles on the Madras coast: 1989-90*. Students Sea Turtle Conservation Network, Madras. India.

ANONYMOUS (1976) *Hamadryad* 1(1): 2-7.

ANONYMOUS (1977) *Hamadryad* 2(1): 1-2.

ANONYMOUS (1982) *Hamadryad* 7(2): 2.

ANONYMOUS (1993) *Report on the Sea Turtle Programme 1992-1993*. Students Sea Turtle Conservation Network, Madras. India.

BHUPATHY, S. & S. SARAVANAN (2002) Status of Sea turtles along the Tamilnadu coast. *Kachhapa* 7: 7-13.

BUSTARD, H.R. (1976) World's largest sea turtle rookery. *Tiger Paper* 3: 25

MATHEW, J., R. RAJAGOPAL & K. SHANKER (1991) *Conservation and Management of Sea turtles on the Madras coast: 1990-91*. Students Sea Turtle Conservation Network, Madras. India.

involvement of TREE, who have mobilised youth from fishing villages along the coast in turtle conservation (see article pp 22). It is hoped that the sea turtle programmes of the students and fishing community will work synergistically to give impetus to conservation on the Madras coast and beyond.

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MOLL, E.O., BHASKAR, S. & VIJAYA, J. (1983) Update on the olive ridley on the coast of India. *Mar. Turt. Newsl.* 25: 2-4.

SANJEEVA RAJ, P.J. (1958) Egg-laying Habits of Sea Turtles described in the Tamil Sangam literature. *J. Bomb. Nat. Hist. Soc.* (2): 361-363.

SHANKER, K. (1995) Conservation of sea turtles on the Madras coast. *Mar. Turt. Newsl.* 64: 3-6.

SHANMUGANATHAN, K. & J. JOGINDRANATH (1984) Status report of Tamil Nadu on sea turtles. *CMFRI Special Publication* 18: 108-109.

SILAS, E.G. & M. RAJAGOPALAN. (1984) Recovery programme for olive ridley *Lepidochelys olivacea* (Eschscholtz) along Madras coast. *Bull. Cent. Mar. Fish. Res. Inst.* 35: 9-21.

SIVASUNDAR, A. ET AL. (1994) *Conservation of Sea Turtles on the Madras coast: 1993-94*. Students Sea Turtle Conservation Network, Madras. India.

SIVASUNDAR, A. ET AL. (1995) *Conservation and Management of Sea Turtles on the Madras coast: 1994-95*. Students Sea Turtle Conservation Network, Madras. India.

VALLIAPAN, S. & R. WHITAKER (1974) Olive Ridelys on the Coromandel Coast. Madras Snake Park, Madras. India.

WHITAKER, R. (1979) Captive rearing of marine turtles. *J. Bomb. Nat. Hist. Soc.* 76(1): 163-166.

Table 1: Nesting and Hatcheries in Madras along the east coast of India. Blank cells indicate lack of data.

Year	Agency	Distance (km)	No. of nests	Density	No. of eggs	Hatching success (%)	Dead	References
1974	MSPT		11			21760 eggs 13059 hatchlings (60 %)	20	Whitaker & Valliapan 1974
1975	MSPT		18					Anon. 1976
1976	MSPT		42		~ 4500			Anon. 1976
1977	MSPT/CMFRI	10 - 15	125	~ 10	14546			Anon. 1977
1978	CMFRI	> 20	106		11423			Silas & Rajagopalan 1984
1979	CMFRI	> 20	309		38317			Silas & Rajagopalan 1984
1980	CMFRI	> 20	165		20438			Silas & Rajagopalan 1984
1981	CMFRI	> 20	128		13403			Silas & Rajagopalan 1984
1982	CMFRI/WWF	> 20	234 + 44		30013			Silas & Rajagopalan, 1984; Anon. 1982
1983	CMFRI/TNFD	> 20	72 (+ ~ 200)		8133			Silas & Rajagopalan 1984
1984	TNFD	> 20	~ 200		50000			Moll <i>et al</i> 1983
1985	TNFD	> 20						
1986	TNFD	> 20						
1987	TNFD	> 20						
1988	TNFD	> 20					12	
1989	SSTCN	6 – 15	68	~ 8	8625	66.4 %	4	Abraham 1990
1990	SSTCN	15	55	3.7	6635	63.9 %		Abraham <i>et al.</i> 1990
1991	SSTCN	15	206	13.7	24586	50.7 %		Mathew <i>et al.</i> 1991
1992	SSTCN	15	175	11.7	19626	84.8 %		Shanker 1995
1993	SSTCN	6	27 ^h + 33 ^w	10.0	3198 ^h	93.0 %		Anon 1993
1994	SSTCN	6	66 ^h + 20 ^w	14.3	7621 ^h	64.8 %	12	Sivasundar <i>et al.</i> 1994
1995	SSTCN	6	41 ^h + 26 ^w	11.2	4920 ^h	63.7 %	12	Sivasundar <i>et al.</i> 1995
1996	SSTCN	6	40	6.7	4782	82.3 %		SSTCN, unpubl. data
1997	SSTCN	6	17	2.8	2166	68.7 %		SSTCN, unpubl. data
1998	SSTCN	6	15	2.5		80.0 %		SSTCN, unpubl. data
1999	SSTCN	6	47	7.8		86.0 %		SSTCN, unpubl. data
2000	SSTCN	6	67	11.2		82.0 %		SSTCN, unpubl. data
2001	SSTCN	6	105	17.5		60.0 %		SSTCN, unpubl. data
2002	SSTCN	6	67	11.2				

w- wild nests; h – nests in hatchery