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**OBSERVATIONS ON MASS NESTING OF THE OLIVE RIDLEY
LEPIDOCHELYS OLIVACEA AT GAHIRMATHA, ORISSA DURING THE 1987 SEASON ***

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ABSTRACT

Observations made during the 'arribadas' or mass nesting of the Olive ridley *Lepidochelys olivacea* during 1987 at Gahirmatha rookery, Orissa are reported. The first mass nesting occurred in a stretch of 5.7 km from 5th to 14th January and two lakhs turtles nested. During the second mass nesting in a stretch of 4.5 km from 5th to 14th March four lakhs turtles nested. Hatchlings of first mass nesting batch emerged after 60 days of incubation in March 1987 and the percentage of live hatchlings emerged from the natural nests varied from 63.25 to 98.66 (87.72). The mean carapace length in mm from 20 clutches examined varied from 40.2 to 42.8 and carapace width varied from 32.7 to 34.5. The mean weight in gm of the hatchlings varied from 14.75 to 19.10. The emergence of hatchlings of second mass nesting noticed after an interval of 50 days in May 1987 and the mean percentage of live hatchlings emerged varied from 17.95 to 90.38 (54.34). The mean carapace length in mm from 65 clutches examined varied from 36.48 to 42.85 and the carapace width varied from 27.69 to 34.06. The mean weight of hatchlings in gm varied from 13.6 to 18.6 gm. The hatchling success of first and second mass nesting occurred in 1987 at Gahirmatha was compared and the high percentage of spoil and unfertilized eggs and dead hatchlings was observed in second mass nesting batch.

INTRODUCTION

The INTERESTING phenomena of 'arribada' or mass emergence of the Olive ridley *Lepidochelys olivacea* along the northeast coast of India, more specifically along the Gahirmatha Beach, Bhitarkanika Wildlife Sanctuary, Orissa have been reported by Bhaskar (1981), Biswas (1982), Bustard (1976), Bustard and Kar (1981), Davis and Bedi (1978), Kar (1982), Kar and Bhaskar (1982), Kar and Dash (1984), Silas *et al.* (1983, 1984, 1985 a, b), Whitaker (1984) and Whitaker and Kar (1984). The present paper deals with the observations made during first and second mass nesting in 1987 at Gahirmatha. This study was undertaken to

compare the mass nesting during 1987 with that of the previous years, 1976-1987.

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FIRST MASS NESTING

The first mass nesting in 1987 at Gahirmatha was extended over a period of 10 days from 5-1-87 to 14-1-87. On 5th January, about 6,000 turtles emerged for nesting. The nesting intensity increased to about 40,000 on 8th January 87 and decreased thereafter. It is estimated that about 2 lakhs turtles would

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have emerged for nesting. The occurrence to 144 (119). During 1985 (Silas *et al.*, 1985 b) to the observations (49.5 cm) made in the first mass nesting season in 1985. The ambient atmospheric temperature at night was 19.0-22.5°C (20.6) and the nest temperature ranged from 24.5 to 26.0°C (25.5).

TABLE 2. Details of nesting females during second 'arribada' at Gahirmatha in 1987 season

Estimated number of nesting females	Dates
53	6-3-1987
84	7-3-1987
23,450	8-3-1987
44,360	9-3-1987
1,37,735	10-3-1987
1,13,640	11-3-1987
70,480	12-3-1987
12,350	13-3-1987
20	14-3-1987
Total 4,02,172	

During January '87, about 360 carcasses of olive ridley were washed ashore at Gahirmatha in different state of decomposition in a stretch of 11.7 km. The mortality of olive ridley was due to entanglement in the fishing gears especially trawl net and gill net. During 1985 and 1986, it was estimated that 694 and 531 carcasses of olive ridley were washed ashore. The decreasing trend in the number of stranded carcasses off Gahirmatha Beach over the 3 year period was due to the effective steps taken by the Orissa and West Bengal State Forest Department in preventing the illegal capture and trade of sea turtles (James *et al.*, 1988).

TABLE 1. Details of estimated number of nesting females during 'arribadas' at Gahirmatha from 1976 to 1987 season

Year	Estimated number of nesting females	Source
1976	1,50,000	Kar and Bhaskar, 1982
1977	1,50,000	"
1978	2,00,000	"
1979	1,30,000	"
1980	2,00,000	Orissa State Forest Depart-
1981	2,00,000	ment Report
1982	176	"
1983	2,00,000	Silas <i>et al.</i> , 1983
1984	5,00,000	Silas <i>et al.</i> , 1985 a
1985	2,87,000	Silas <i>et al.</i> , 1985 b
1986	48,000	Orissa State Forest Depart-
1987	6,02,000	ment Report
		Present paper

first 'arribada' commenced in close correlation with the phase of the moon (one week from full moon). However in 1987, the first 'arribada' commenced one week after new moon. The first mass nesting at Gahirmatha beach occurred in a stretch of 5.7 km from Ekkula to Ekkula Nasi with the peak intensity in the stretch of 2 km south of Ekkula Nasi where the Kanahansua-Pasala River enters the sea. Similar observation of intense first mass nesting near Ekkula Nasi was observed earlier in 1984 (Silas *et al.*, 1984). During 1987 the carapace length (curved) of nesting females varied from 66 to 76 cm (70.8) and carapace length (straight line) varied from 61 to 71 cm (65.9) in the first mass nesting. Regarding carapace width (curved), it ranged from 60.5 to 75.0 cm (68.8) and carapace width (straight line) varied from 5.30 to 65.5 cm (57.6) (Table 4). Clutch size varied from 96

In the ten clutches examined the diameter of the egg varied from 33.4 to 39.8 mm (36.7) and the weight ranged from 20.4-39.0 gm (31.1) (Table 3). During the observations made

Data on the number of eggs laid, live hatchlings emerged successfully from the pit, those in pipping stage, dead hatchlings in the pit, those dead in pipping stage and spoilt and unfertilized eggs were observed and the details were gathered (Table 6). The percentage of live hatchlings emerged from natural varied from 63.3 to 98.7 with an average of 87.7. The percentage of live hatchlings in pipping stage varied from 0.69-39.25 with an average of 11.9%. The percentage of dead hatchlings and dead hatchlings in pipping stage varied from 0.69 to 5.05 (1.9) and 0.66-4.27 (2.0) respectively. With regard to spoilt and unfertilized eggs, it varied from 0.69 to 16.67 (4.9). The present observation of 87.7 per cent hatchling success of olive ridley is comparable with the earlier observations made by the CMFRI team at Gahirmatha. During 1984 and 1985, about 74.5 and 89.7% of hatchling success were observed. In the turtle hatchery at Kovalam, Madras (Sillas and Rajagopalan, 1984), the hatchling success was about 66% which is less than the hatchling success of 74.5, 89.7 and 87.7% observed in 1984, 1985 and 1987 respectively at Gahirmatha.

TABLE 3. Variation in the diameter and weight of eggs of olive ridley from 10 clutches (mean in parentheses) at Gahirmatha examined in 1987 season (ten eggs were taken at random from each clutch)

	First mass nesting January 1987	Second mass nesting March 1987
Diameter (mm)	36.5-39.3 (37.7)	30.0-33.0 (31.0)
Weight (gm)	33.0-37.0 (33.8)	30.0-33.0 (31.0)
Diameter (mm)	33.4-37.8 (35.8)	31.0-37.0 (34.5)
Weight (gm)	29.0-31.0 (29.4)	29.0-40.6 (34.5)
Diameter (mm)	35.1-36.8 (35.8)	29.0-40.6 (34.5)
Weight (gm)	29.0-30.0 (29.4)	29.0-40.6 (34.5)
Diameter (mm)	35.3-38.3 (36.8)	30.0-36.0 (32.9)
Weight (gm)	30.0-32.0 (33.8)	30.0-36.0 (32.9)
Diameter (mm)	37.3-38.5 (38.0)	34.8-39.2 (38.4)
Weight (gm)	33.0-35.0 (33.8)	34.8-39.2 (38.4)
Diameter (mm)	35.4-36.9 (36.1)	30.0-42.0 (34.9)
Weight (gm)	29.0-30.0 (29.9)	30.0-42.0 (34.9)
Diameter (mm)	34.4-36.9 (36.0)	34.0-40.0 (36.8)
Weight (gm)	27.0-30.0 (27.8)	34.0-40.0 (36.8)
Diameter (mm)	36.4-39.8 (38.0)	30.0-35.0 (32.8)
Weight (gm)	35.0-39.0 (36.8)	30.0-35.0 (32.8)
Diameter (mm)	34.4-37.7 (36.0)	28.0-32.0 (29.6)
Weight (gm)	24.0-28.0 (26.2)	28.0-32.0 (29.6)
Diameter (mm)	36.7-38.1 (37.4)	30.0-38.0 (33.9)
Weight (gm)	27.0-31.0 (29.3)	30.0-38.0 (33.9)
N = 100	100	100
R = 33.4-39.8	34.8-43.7	28.0-42.0
M = 36.7	38.0	33.2

EMERGENCE OF HATCHLINGS IN MARCH 1987
The hatchlings emerged in March 1987 after interval of sixty days from mass nesting.

The second mass nesting at Gahirmatha commenced after a period of two months from the first mass nesting. The second 'arribada' commenced with 53 turtles emerging on the along the beach mostly remains of those killed by birds. Large number of dead hatchlings were seen and crows was also observed (Pl. II C, D). noticed. Predation of hatchlings by sea gulls hatchlings and developing embryos were coincidence of second mass nesting and emergence of hatchlings heavy destruction of increased to 10,000 on 8th March. Due to the March with emergence from 44 nests and The hatchling emergence commenced on 5th emergence of hatchlings of first 'arribada'. The second mass nesting coincided with the

SECOND MASS NESTING

The second mass nesting at Gahirmatha commenced after a period of two months from the first mass nesting. The second 'arribada' commenced with 53 turtles emerging on the

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