

Does shading affect hatching success and sex ratio of hatchery relocated eggs of green turtles?

S. Hewapathirana^{1,2} and R.S. Rajakaruna^{1*}

¹*Department of Zoology, University of Peradeniya, Peradeniya, Sri Lanka,*

²*Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka*

**rupikar@pdn.ac.lk*

The hatching success and sex ratios of hatchery relocated eggs of the green turtle (*Chelonia mydas*) buried in two incubation pens receiving different amount of sunlight were studied. Two incubation pens: one under shady conditions and the other one under direct sunlight in the same hatchery enclosure were selected in a hatchery in Bentotain the Southwestern coast of Sri Lanka. Data loggers, programmed to record temperature every 60 mins at 0.5 °C increments, were wrapped in a plastic bag and were placed inside the nest at the time of the reburial of eggs. Once all hatchlings came out, the percentage hatching success was calculated and the nest temperature data were downloaded onto OneWireViewer version 0.3.17.44 interface. The mean middle third incubation temperature was calculated to estimate the sex ratio of the hatchlings. Data was gathered from 14 nests with a total of 1,314 eggs for a period of one year from March 2015 to March 2016. There was no significant difference in the hatching success of the eggs incubated in the shady (86.6%) and the sunny (84.6%) incubation pens (Chi square test; $p > 0.05$). The hatching success of the green turtle eggs in the present study was much higher compared to nearby hatcheries (52%) and that of the natural nests (77%) on Kosgoda beach. The mean middle third incubation temperature in the shady incubation pen (29.3°C) was significantly lower than that of the pen in the sunny area (33.3°C; Student's *t* test, $t = 10.58$, $p = 0.005$). For sea turtles, temperatures below 28°C during the middle third incubation period have known to produce 90-100% males and temperatures of 30.5°C or higher produce 94-100% females. This shows that the hatchling population of the eggs incubated in the sunny area was highly skewed towards producing more females. The present study reveals that the location of the pen has no effect on the hatching success but the presence of shade regulates the temperature within the nests in the incubation pens thereby contributing to maintain the pivotal temperature that leads to having advantageous sex ratios than the eggs incubated in pens exposed to direct sunlight.

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