# TAGGING AND NESTING STUDIES OF GREEN TURTLES (*Chelonia mydas*) AT PULAU TALANG-TALANG KECIL, SARAWAK

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BY

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## ABSTRACT

This report presents the results of a study on the tagging and nesting biology of green turtles (*Chelonia mydas*) at Pulau Talang-Talang Kecil, Sarawak, conducted from March 21 to May 21 1998.

The sand samples collected from the nesting beach of Pulau Talang-Talang Kecil, Sarawak for this study ranged from 0.3 mm to 0.9 mm with moderately well sorted to moderately sorted sand (0.5$\phi$ - 0.8$\phi$). The sand moisture content ranged from 3.38% to 19.73% while the averaged sand temperatures recorded varied from 28.3 $\pm$ 0.72 $^0$C to 30.4 $\pm$ 1.23 $^0$C. A significant negative correlation between temperature and moisture was found.

Grain size distribution, sand moisture and temperature were not of over riding importance to a green turtle in her choice of a nesting site. Nest site selection was found related with available nesting space of the beach and offshore approaches. The green turtle on Pulau Talang-Talang Kecil was also noted to nest at an average of 15.83 $\pm$ 5.93 m (range, 3.52 – 44.85 m) from the high water mark and at an average of 6.07 $\pm$ 4.52 m (range, 0.10 – 24.50 m) from the vegetation.

During the study period of 62 days, emergences of green turtles occurred during the night between 19:00 to 06:00 hours. The number of landings for green turtles varied each night with an average of 3.58 $\pm$ 2.62 landings (range, 0 – 14 landings) and an average of 2.50 $\pm$ 2.05 successful nestings (range, 0 – 9 nestings).

Higher tide level was observed to play an important role in the emergences of the green turtles.

Nesting biology of the green turtles is described with morphometric and meristic measurements collected from 63 individuals. Green turtles laid an average of 2.54 ± 1.46 clutches (range, 1 – 6 clutches) with a mean clutch size of 106.26 ± 23.16 eggs (range, 20 – 158 eggs) during the study period. Successive egg clutches were laid at intervals of 11.41 ± 1.37 days (range, 9 – 15 days). The averaged curved carapace length of an adult female green turtle was 100.25 ± 5.48 cm (range, 85.30 – 114.00 cm) and 89.16 ± 5.91 cm (range, 74.20 – 99.00 cm) in width. Green turtle eggs had an average diameter of 40.26 ± 1.29 mm (range, 36.80 – 43.76 mm) and mean weight of 34.37 ± 3.60 g (range, 24.00 – 41.40 g). The hatchlings had a mean straight carapace length of 45.98 ± 1.90 mm (range, 42.48 – 51.12 mm), width of 35.98 ± 2.38 mm (range, 31.37 – 41.41 mm) and weighed 20.01 ± 1.70 g (range, 18.10 – 22.97 g). Regression analyses showed a positive correlation between size of nester with clutch size but no correlation occurred between the size of nester with size range of eggs and hatchlings.

The probability of tag loss for inconel tags (style 681) applied on the left flipper and the right flipper over the study period had no significant differences. However, tag loss was observed to be higher in the earlier stage of application than later.

## ABSTRAK

Laporan ini mengemukakan keputusan mengenai kajian penandaan dan biologi persarangan penyu agar (*Chelonia mydas*) di Pulau Talang-Talang Kecil, Sarawak yang dijalankan dari 21 Mac hingga 21 Mei 1998.

Sampel pasir yang dikutip dari pantai Pulau Talang-Talang Kecil, Sarawak dalam kajian ini mempunyai julat min saiz pasir antara 0.3 mm - 0.9 mm dengan julat sisihan pasir antara 0.5ϕ - 0.8ϕ. Kelembapan pasir berjulat 3.38% - 19.73% manakala suhu pasir yang dicatat adalah dalam julat 28.3 $\pm$ 0.72 $^{0}$C - 30.4 $\pm$ 1.23 $^{0}$C. Analisis regresi menunjukkan terdapat perhubungan negatif di antara suhu dengan kelembapan pasir.

Min saiz serta sisihan pasir, kelembapan pasir dan suhu pasir bukan merupakan faktor yang terpenting dalam pemilihan tempat persarangan oleh penyu agar. Pemiliham tempat persarangan oleh penyu agar didapati berkaitan dengan keluasan tempat persarangan yang sesuai serta keadaan pantai yang mudah dimasuki. Penyu agar di Pulau Talang-Talang Kecil didapati membuat sarang secara puratanya pada jarak 15.83 $\pm$ 5.93 m (julat, 3.52 – 44.85 m) dari air pasang dan 6.07 $\pm$ 4.52 m (julat, 0.10 – 24.50 m) dari kawasan tumbuhan.

Dalam kajian selama 62 hari ini, pendaratan penyu agar berlaku pada waktu malam daripada jam 19:00 hingga 06:00. Bilangan pendaratan penyu agar berbeza-beza dengan purata 3.58 $\pm$ 2.62 pendaratan semalam (julat, 0 – 14) manakala purata

aktiviti persarangan yang berjaya adalah 2.50 ± 2.05 (julat, 0 – 9). Air pasang didapati memainkan peranan yang penting dalam aktiviti pendaratan penyu agar.

Ciri-ciri persarangan penyu agar secara biologi adalah ditentukan daripada pengukuran morfometrik dan meristik daripada 63 individu. Semasa tempoh kajian, penyu agar bersarang pada purata 2.54 ± 1.46 kali (julat, 1 – 6) dengan purata saiz sarang yang mengandungi 106.26 ± 23.16 biji telur (julat, 20 – 158). Penyu agar didapati bertelur semula selang 11.41 ± 1.37 hari (julat, 9 – 15). Purata ukuran panjang lengkok karapas penyu agar betina yang dewasa adalah 100.25 ± 5.48 cm (julat, 85.30 – 114.00 cm) dengan lebar karapas 89.16 ± 5.91 cm (julat, 74.20 – 99.00 cm). Purata diameter telur penyu agar adalah 40.26 ± 1.29 mm (julat, 36.80 – 43.76 mm) dan purata berat 34.37 ± 3.60 g (julat, 24.00 – 41.40 g). Anak penyu agar pula mempunyai purata panjang karapas 45.98 ± 1.90 mm (julat, 42.48 – 51.12 mm), lebar 35.98 ± 2.38 mm (julat, 31.37 – 41.41 mm) dan berat 20.01 ± 1.70 g (julat, 18.10 – 22.97 g). Analisi regresi menunjukkan terdapat perhubungan yang positif di antara saiz pesarang dengan saiz sarang telur yang dihasilkan manakala analisis regresi di antara saiz pesarang dengan saiz telur serta saiz anak penyu pula tidak menunjukkan perhubungan di antara satu sama lain.

Kebarangkalian kehilangan penanda inconel antara penanda yang diletak pada tangan penyu agar yang berbeza tidak menunjukkan perbezaan yang ketara dalam tempoh kajian ini. Walau bagaimanapun, kadar kehilangan penanda adalah tinggi untuk aplikasi penanda peringkat awal jika dibandingkan dengan kehilangan penanda pada peringkat akhir.