

TAGGING AND NESTING STUDIES OF GREEN (*Chelonia mydas*)
AND HAWKSBILL (*Eretmochelys imbricata*) TURTLES
IN PULAU GULISAAN, SABAH, MALAYSIA

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AND HAWKSBILL (*Eretmochelys imbricata*) TURTLES
IN PULAU GULISAAN, SABAH, MALAYSIA**

By

JUANITA JOSEPH

**This project report is submitted in partial fulfilment of the
requirements for the degree of Bachelor of Fisheries Science**

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ABSTRACT

This report presents the results of a study on the tagging and nesting biology of green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles of Pulau Gulisaan, Turtle Islands Park of Sabah, conducted from April 26 to July 1 1996. A close relationship between nesting and tidal cycle was observed. Usually, the turtles will nest randomly on the island and have no specific nesting area. Generally, most of the turtles preferred to nest on the northern and eastern part of Pulau Gulisaan.

Nesting biology of turtles is described with morphometric and meristic measurements collected from 279 green and 54 hawksbill turtles over 67 nights of beach patrols. Green and hawksbill turtles laid an average of 2.15 and 1.58 clutches during the study period. Successive egg clutches are laid at intervals of about 13.40 days for green and 17.22 days for hawksbill turtles. During renesting emergences, the gravid turtles showed a strong fidelity to nest in Gulisaan compared to the other islands nearby.

Average curved carapace length of an adult female green turtle was 98.22 cm and width was 86.53 cm and for an adult female hawksbill turtle it was 76.26 cm in length and 65.74 cm in width. The average clutch size measured for green turtles was 92.30 eggs and for hawksbill turtles it was 121.80 eggs. Green turtle eggs had an average diameter of 4.23 cm and an average weight of 37.60 g. Hawksbill eggs had an average diameter of 3.41 cm and an average weight of 19.87 g. Average hatchery incubation period for green turtle eggs was 48.50 days and for hawksbill eggs it was 53.60 days.

Hatchlings of green turtles had an average straight carapace length of 4.87 cm, width of 4.15 cm and weight of 19.78 g. Hatchlings of hawksbill had an average straight carapace length of 3.99 cm, width of 3.13 cm and weight of 10.23 g. Regression analysis showed a positive correlation between size of nester with clutch size. Regression analysis showed no correlation between size of nesters with size of eggs and hatchlings.

From the results of the short-term double tagging study in Pulau Gulisaan, the probability of tag loss was estimated for monel metal tags (style 49 & 56) and inconel tags (style 681) applied on the green and hawksbill turtles. Tag loss was variable, being a function of type of tags and species of turtles. Tag loss was greatest on the green turtles compared to hawksbill turtles and monel tags were lost at a greater rate than inconel tags.

ABSTRAK

Laporan ini mengemukakan keputusan mengenai kajian penandaan dan biologi persarangan penyu agar (*Chelonia mydas*) dan penyu sisik (*Eretmochelys imbricata*) di Pulau Gulisaan, Taman Pulau-pulau Penyu Sabah yang dijalankan dari 26 April hingga 1 Julai 1996. Dalam kajian ini, terdapat perhubungan di antara persarangan harian dengan pusingan pasang-surut. Biasanya, penyu akan bersarang secara rawak dan tidak mempunyai kawasan persarangan yang spesifik. Walau bagaimanapun, kebanyakan penyu memilih kawasan di bahagian utara dan timur Pulau Gulisaan.

Ciri-ciri persarangan penyu secara biologi adalah ditentukan daripada pengukuran morfometrik dan meristik daripada 279 penyu agar dan 54 penyu sisik, sepanjang 67 malam pengawasan pantai. Semasa tempoh kajian, penyu agar dan penyu sisik bersarang pada purata 2.15 dan 1.58 sarang. Penyu hijau didapati akan bertelur semula selang 13.40 hari dan 17.22 hari untuk penyu sisik. Ibu penyu menunjukkan ketepatan yang tinggi untuk bertelur semula di Pulau Gulisaan berbanding pulau-pulau lain yang berdekatan.

Purata ukuran panjang lengkok karapas penyu hijau betina yang dewasa adalah 98.22 cm dengan lebar karapas 86.53 cm dan untuk penyu sisik betina pula, ia mempunyai panjang lengkok karapas 76.26 cm dan 65.74 cm lebar. Purata saiz sarang untuk penyu hijau adalah 92.30 biji telur dan untuk penyu sisik pula adalah 121.80 biji telur. Purata diameter telur penyu hijau adalah 4.23 cm dan purata berat adalah 37.60 g. Telur penyu sisik pula mempunyai purata diameter 3.41 cm dan purata berat 19.87 g.

Tempoh pengeraman telur penyu hijau di tapak penetasan adalah selama 48.50 hari dan untuk telur penyu sisik pula adalah selama 53.60 hari. Anak penyu hijau mempunyai purata panjang karapas 4.87 cm, lebar 4.15 cm dan berat 19.78 g. Anak penyu sisik pula mempunyai purata panjang karapas 3.99 cm, lebar 3.13 cm dan berat 10.23 g. Analisis regresi menunjukkan terdapat perhubungan yang positif di antara saiz pesarang dengan saiz sarang telur yang dihasilkan. Analisis regresi di antara saiz pesarang dengan saiz telur serta saiz anak penyu pula tidak menunjukkan perhubungan di antara satu sama lain.

Daripada keputusan kajian jangka pendek mengenai dwi-penandaan penyu hijau dan penyu sisik di Pulau Gulisaan, kebarangkalian kehilangan penanda pada penyu adalah dianggarkan berdasarkan jenis penanda iaitu di antara penanda logam monel dengan penanda inconel. Didapati kehilangan penanda adalah berbeza, bergantung kepada jenis penanda dan spesies penyu yang dikaji. Kadar kehilangan penanda adalah tinggi pada penyu hijau berbanding dengan penyu sisik dan penanda monel didapati hilang pada kadar yang tinggi daripada penanda inconel.