

A COMPARISON OF HATCH SUCCESS AND SEX RATIOS OF
GREEN TURTLE (*Chelonia mydas*) EGGS
INCUBATED UNDER *IN SITU* CONDITIONS AND
IN HATCHERIES AT PULAU TALANG-TALANG
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CHAT SAU SAN

FACULTY OF APPLIED SCIENCE AND TECHNOLOGY
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BY

CHAI SAU SAN

**This project report is submitted in partial fulfillment of the
requirements for the Degree of
Bachelor of Science (Marine Science)**

**Faculty of Applied Science and Technology
UNIVERSITI PUTRA MALAYSIA TERENGGANU**

1999

1100024116

ACKNOWLEDGMENTS

I am extremely thankful to my family for all the love and support they have given throughout the duration of my study in Universiti Putra Malaysia. I am very indebted to my supervisor, Assoc. Prof. Dr. Chan Eng Heng for her invaluable advice, guidance and encouragement. Without her supervision, the completion of this project may not have been possible. I would like to thank my co-supervisor, Mr. Liew Hock Chark for his advice, valuable comments and review of my work during my studies.

This work would not have been possible without the approval of the Forestry Department of Sarawak and the assistance of their staff. I am grateful to Mr. Ian Butler and Mr. James Bali for helping me to carry out my studies at Pulau Talang-Talang Kecil, Sarawak. Special thanks to all the workers and officers who served in the island during my stay for their hospitality and technical assistance. I am also very much indebted to the many people who have helped in collecting data or assisted in their interpretation. I thank my "project-mate" Miss Clare Wong Hui Ling and Mr. Pang Anak Nyukang for their support, co-operation and understanding. Thanks also to ever helping laboratory assistants Mr. Mohammad Embong, Puan Zarina Mohd Shariff and Puan Kartini Mohammad. My most sincere thanks are extended to all my friends who have help me tremendously in providing moral support, Ai Pyng, Yii Siang, Travis, See Ien, Tink Sük, Jong and Yee Kuan. Special thanks to Yee Lerk for helping me in correcting my project report. Ya Taek and Asian, my ever helping juniors at the island, thank you.

ABSTRACT

A comparative study on hatching success and sex ratios of green turtle eggs incubated under *in situ* and hatchery conditions was conducted in Pulau Talang-talang Kecil, Sarawak from 21 March to 28 May 1998. A total of 30 nests were used. Average hatching success for *in situ* nests was $42.8 \pm 36.4\%$ (range 0.0% - 94.1%), $69.5 \pm 33.1\%$ in Hatchery A (range 0.0% - 97.6%) and $65.7 \pm 40.6\%$ in Hatchery B (range 0.0% - 100.0%) nests. Significant differences were detected among *in situ* and hatchery hatching success. Turtle nesting activities and water inundation were found to reduce hatching success of *in situ* significantly. Incubation duration ranged from 49 - 61 days in *in situ* nests, 52 - 59 days in Hatchery A and 53 - 59 days in Hatchery B. No significant differences were found for incubation duration under three different incubation methods. Mortality of *in situ* nests was caused mainly by nesting activities of turtles.

The study also determined the sex ratio of green turtle hatchlings incubated in *in situ* nests and hatcheries. Results obtained indicated that there were significant differences between the sex ratio and the method used for egg incubation. Eggs incubated in *in situ* nests produced an average of 71 % female hatchlings, where as Hatchery A and B produced similar female hatchling percentage at 94%. Sex ratio of hatchlings was dependent on temperature. The average middle trimester incubation temperature showed differences for *in situ* ($29.94 \pm 0.76^{\circ}\text{C}$), Hatchery A ($30.80 \pm 0.68^{\circ}\text{C}$) and B ($30.52 \pm 0.75^{\circ}\text{C}$) nests. Average incubation temperature throughout the

incubation duration in the Hatchery A and B were higher ($30.58 \pm 0.50^{\circ}\text{C}$ and $30.43 \pm 0.42^{\circ}\text{C}$ respectively) in comparison with *in situ* nests ($29.82 \pm 0.83^{\circ}\text{C}$). Pivotal temperature was found to occur at 28.86°C .

According to this study, *in situ* incubation is not recommended due to the high mortality factors discussed. However, current hatchery management on Pulau Talang-Talang Kecil needs to be improved. Further studies should be conducted to provide more precise information.

ABSTRAK

Kajian mengenai perbandingan tiga kaedah pengeraman telur penyu iaitu di sarang "*in situ*", pusat penetasan A dan B di Pulau Talang-talang Kecil, Sarawak dari 21 Mac hingga 28 Mei 1998. Sejumlah 30 sarang penyu hijau telah digunakan. Kajian ini mendapati bahawa telur penyu yang dieramkan menunjukkan purata kejayaan penetasan yang berlainan di sarang "*in situ*" ($42.8 \pm 36.4\%$, julat 0.0% - 94.1%), pusat penetasan A ($69.5 \pm 33.1\%$, julat 0.0% - 97.6%) and pusat penetasan B ($65.7 \pm 40.6\%$, julat 0.0% - 100.0%). Aktiviti peneluran semula penyu merupakan faktor mortaliti yang efektif terhadap sarang "*in situ*". Aktiviti ini dan rendaman air berkesan mengurangkan kejayaan penetasan pada sarang "*in situ*". Dalam kajian ini, didapati tiada perbezaan bagi tempoh pengeraman dimana 49 - 61 hari di sarang "*in situ*", 52 - 59 hari di pusat penetasan A dan 53 - 59 hari di sarang penetasan B. Suhu pengeraman di pusat penetasan A dan B adalah lebih tinggi ($30.58 \pm 0.50^{\circ}\text{C}$ dan $30.43 \pm 0.42^{\circ}\text{C}$) berbanding dengan sarang "*in situ*" ($29.82 \pm 0.83^{\circ}\text{C}$).

Kajian ini juga bertujuan untuk menentukan nisbah jantina penyu hijau yang dieramkan di sarang "*in situ*", pusat penetasan A dan B. Keputusan yang diperolehi menunjukkan terdapat perbezaan di antara nisbah jantina penyu dan kaedah pengeraman telur yang digunakan. Telur yang dieram di dalam sarang "*in situ*" menghasilkan purata 71% tetasan penyu betina, dimana pusat penetasan A dan B menghasilkan peratusan yang sama pada 94%. Nisbah jantina adalah bersandar pada suhu pengeraman. Suhu pengeraman pada sarang "*in situ*", pusat penetasan A dan B

adalah $29.94 \pm 0.76^{\circ}\text{C}$, $30.80 \pm 0.68^{\circ}\text{C}$ dan $30.52 \pm 0.75^{\circ}\text{C}$. Suhu pivotal adalah didapati pada 28.86°C .

Kajian ini mendapati bahawa pengeraman "*in situ*" adalah tidak sesuai dijalankan yang mana disebabkan oleh faktor kematian yang tinggi. Namun, pengurusan pusat penetasan masih perlu dimajukan. Dengan demikian, pengajian yang lebih lanjut perlu dijalankan untuk memperolehi gambaran yang lebih jelas.