HATCHING SUCCESS ON RELOCATED HAWKSBILL TURTLE (*Eretmochelys imbricata*) NESTS IN PADANG KEMUNTING TURTLE HATCHERY, MALACCA, AND THE IMPLICATION OF IDENTIFIED FUNGI

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SCHOOL OF MARINE AND ENVIRONMENTAL SCIENCES
UNIVERSITI MALAYSIA TERENGGANU

2015

Lihat Sebelah

HATCHING SUCCESS ON RELOCATED HAWKSBILL TURTLE (*Eretmochelys imbricata*) NESTS IN PADANG KEMUNTING TURTLE HATCHERY, MALACCA, AND THE IMPLICATION OF IDENTIFIED FUNGI

By

Hoh Zhi Wei

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A5: Declaration and Verification Report

SCHOOL OF MARINE AND ENVIRONMENTAL SCIENCES
UNIVERSITI MALAYSIA TERENGGANU

DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled *Hatching Success on Relocated Hawksbill Turtle (Eretmochelys imbricata) Nests in Padang Kemunting Turtle Hatchery, Malacca, and the Implication of Identified Fungi* by Hoh Zhi Wei, Matric No. UK 28224 have been examined and all errors identified have been corrected. This report is submitted to the School of Marine and Environmental Sciences as partial fulfillment towards obtaining the Degree Bachelor of Science (Marine Science), School of Marine and Environmental Sciences, Universiti Malaysia Terengganu.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

°C	-	degree Celcius
µL	-	microlitre
µm	-	micrometer
cm	-	centimeter
DoF	-	Department of Fisheries
g	-	gram
L	-	Litre
mL	-	millilitre
PDA	-	Potato Dextrose Agar
PKTH	-	Padang Kemunting Turtle Hatchery
psi	-	pounds per square inch
UMT	-	Universiti Malaysia Terengganu
WWF	-	World Wide Fund for Nature

LIST OF APPENDICES

ABSTRACT

In recent years, number of nesting hawksbill along the coast of Malacca had shown increasing trend. All the nests are relocated to Padang Kemunting Turtle Hatchery (PKTH) for incubation. However, low hatching rate was observed in the hatchery over the past few years and that was believed due to fungal infection on turtle eggs. In collaboration with Department of Fisheries and World Wide Fund for Nature, Malacca, this study was conducted to determine the hatching and emergence success rate of relocated nests in the hatchery, and identification of fungi isolated from unhatched eggs and sand from nest chamber. Overall, the hatching success rate of hawksbill turtle in PKTH range from 0 % to 92 %. The mean hatching and emergence success rate was 32.3 ± 25.0 % and 30.3 ± 23.3 %, respectively. Nests originated from Tanjung Belanga had the highest hatching rate (61.9 ± 36.9 %). Moreover, nests from Padang Kemunting were recorded with the highest contribution in hatchlings (45.8 %) among all sites. During excavation, signs of fungal infection were observed on egg shell, egg yolk and dead embryos with different colour spots and unknown substances. Four types of fungi were isolated from sand and egg-related materials: *Aspergillus* sp., *Fusarium* sp., *Penicilllium* sp., and one unidentified fungi. All identified fungi were soil-borne, suggesting the contamination might come from the sand. Replacing the sand used for incubation in the hatchery would be the best way to reduce fungal infection on turtle egg in hope to increase the hatching success rate. Another alternative would be applying materials such as chitin or chitosan that exhibit anti-fungal properties. More importantly, further research shall be carry out to determine the other factor that may affect the hatching rate in PKTH.

KADAR PENETASAN TERHADAP SARANG DIPINDAH UNTUK PENYU KARAH (*Eretmochelys imbricata*) DI PUSAT PENETASAN PENYU, PADANG KEMUNTING, MELAKA, DAN IMPLIKASI KULAT YANG DIKENAL PASTI

ABSTRAK

Dalam tahun kebelakangan ini, bilangan sarang penyu karah di sepanjang pantai Melaka telah meningkat. Semua sarang akan dipindahkan ke Pusat Penetasan Penyu di Padang Kemunting (PKTH) untuk tujuan inkubasi. Walaubagaimanapun, kadar penetasan yang rendah telah diperhatikan sejak beberapa tahun kebelakangan ini dan dipercayai adalah disebabkan oleh jangkitan kulat pada telur penyu. Atas kerjasama dengan Jabatan Perikanan Melaka dan World Wide Fund for Nature, Melaka, kajian ini telah dijalankan untuk menentukan kadar kejayaan penetasan dan kemunculan sarang yang telah dipindahkan ke tapak penetasan, dan identifikasi kulat yang diisolasikan daripada telur yang tidak menetas dan pasir dari ruang sarang. Secara keseluruhan, kadar kejayaan penetasan penyu karah di PKTH adalah dalam julat 0 % hingga 92 %. Purata kejayaan penetasan dan kemunculan adalah 32.3 ± 25.0 % dan 30.3 ± 23.3 % masing-masing. Sarang dari Tanjung Belanga mempunyai kadar penetasan yang tertinggi (61.9 ± 36.9 %). Selain itu, sarang dari Padang Kemunting mempunyai sumbangan anak penyu yang tertinggi (45.8 %) di kalangan pantai bersarang. Semasa melakukan penggalian sarang, tanda-tanda jangkitan kulat telah diperhatikan pada kulit telur, kuning telur dan embrio yang mati dengan spot warna yang berbeza dan bahan-bahan yang tidak diketahui. Empat jenis kulat telah diisolasikan daripada pasir dan telur: *Aspergillus* sp, *Fusarium* sp, *Penicilllium* sp, dan satu kulat yang gagal dikenal pasti. Semua kulat yang dikenal pasti adalah didapati dari tanah, menunjukkan jangkitan ini mungkin datang dari pasir. Menggantikan pasir yang digunakan untuk inkubasi di tapak penetasan adalah cara

yang terbaik untuk mengurangkan jangkitan kulat pada telur penyu dengan harapan untuk meningkatkan kadar kejayaan penetasan. Satu lagi alternatif adalah menggunakan bahan seperti kitin atau kitosan yang mempunyai ciri-ciri anti-kulat. Lebih penting lagi, penyelidikan selanjutnya haruslah dijalankan untuk menentukan faktor yang mempengaruhi kadar penetasan di PKTH.