

IDENTIFICATION OF BACTERIA IN ROTTEN EGGS OF  
GREEN TURTLE (*Chelonia mydas*) AT CHAGAR  
HUTANG, REDANG ISLAND

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**IDENTIFICATION OF BACTERIA IN ROTTEN EGGS OF GREEN TURTLE  
(*Chelonia mydas*) AT CHAGAR HUTANG, REDANG ISLAND**

**By**

**Nurul Atiqah binti Jafri**

**Research Report submitted in partial fulfillment of  
the requirements for the degree of  
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**Department of Marine Science  
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DEPARTMENT OF MARINE SCIENCE

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU

**DECLARATION AND VERIFICATION REPORT  
FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled Identification of Bacteria in Rotten Eggs of Green Turtle (*Chelonia mydas*) at Chagar Hutang, Redang Island by Nurul Atiqah binti Jafri, Matric No UK22396 have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfilment towards obtaining the Degree of Science (Marine Biology), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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## LIST OF ABBREVIATIONS

bp	-	base pair
C		Celcius
cm	-	centimeter
E	-	East
F	-	Forward
g	-	gram
h	-	hour
kg	-	kilogram
km <sup>2</sup>	-	kilometer square
m	-	meter
mAmps	-	miliampere
min	-	minute
ml	-	mililiter
mM	-	milimolar
N	-	North
pmol	-	picomol
psi	-	pound per square inch
R	-	Reverse
rDNA	-	ribosomal deoxyribonucleic acid
rpm	-	revolutions per minute
rRNA	-	ribosomal ribonucleic acid
S	-	Svedberg unit
sec	-	second
TBE	-	Tris/Borate/EDTA
μ	-	micron
μl	-	microliter

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## ABSTRACT

Sea turtle population had decreased globally and facing serious extinction. There are many factors that lead to this situation. One of the factors is predation of sea turtle eggs and bacterial infection which can disrupt the embryonic development of turtle eggs. Because of that, this study was conducted to investigate which bacteria species exist in the rotten eggs. This study was conducted at Chagar Hutang Turtle Sanctuary, Redang Island with objectives to identify bacteria in rotten Green turtle (*Chelonia mydas*) eggs. The rotten green turtle egg samples from Chagar Hutang, as well as sediment sample from the egg chamber were brought back to the laboratory for further analysis and identification. All bacteria isolated were regularly cultured on nutrient agar. The 16S rRNA cloning via Polymerase Chain Reaction (PCR) was done to amplify the target region and the sample was sent to 1st Base Sdn. Bhd. for DNA sequencing. Sequencing results revealed four species of bacteria from rotten egg and sediment samples. These bacteria were identified as *Escherichia coli*, *Pseudomonas aeruginosa*, *Vibrio hepatarius* and also *Klebsiella pneumoniae*. All these bacteria are known to be pathogen to human and may interfere with the embryonic development of green turtle eggs. Bacteria that present in the sediment might enter turtle eggs through pores that present on the shells and cause infection to the developing embryo. The study will aid in providing valuable information on the occurrence of bacteria isolated from rotten eggs of green turtle and sediment sample of nesting sites and it will be a platform to provide better understanding of bacterial infection that may affect the hatching success of green turtle eggs.

# IDENTIFIKASI BAKTERIA DI DALAM TELUR BUSUK PENYU AGAR (*Chelonia mydas*) DI CHAGAR HUTANG, PULAU REDANG

## ABSTRAK

Populasi penyu laut di seluruh dunia telah menurun dan menghadapi masalah kepupusan yang serius. Terdapat banyak factor yang boleh menyumbang kepada situasi ini. Salah satu faktornya ialah pemburuan telur penyu dan jangkitan bakteria yang boleh mengganggu perkembangan embrio telur penyu. Oleh itu, kajian ini telah dijalankan untuk menyiasat spesis bakteria yang wujud di dalam telur busuk. Kajian ini telah dijalankan di Tempat Perlindungan Penyu Chagar Hutang, Pulau Redang dengan objektif untuk mengenalpasti bakteria di dalam telur busuk penyu agar. Sampel telur busuk daripada Chagar Hutang dan juga sampel sedimen daripada sarang penyu telah dibawa balik ke makmal untuk dianalisis dan ditentukan spesiesnya. Kesemua bakteria yang didapati telah dikultur di atas agar nutrient. Pengklonan 16S rRNA melalui PCR telah dilakukan untuk menguatkan kawasan sasaran dan semua sampel telah dihantar ke 1<sup>st</sup> Base untuk penjujukan DNA. Keputusan jujukan mendedahkan empat spesis bakteria daripada telur busuk dan sampel sedimen. Bakteria-bakteria ini telah diidentifikasi sebagai *Escherichia coli*, *Pseudomonas aeruginosa*, *Vibrio hepatarius* dan juga *Klebsiella pneumoniae*. Kesemua bakteria ini telah dikenalpasti sebagai patogen kepada manusia dan mungkin mengganggu perkembangan embrio di dalam telur penyu agar. Bakteria yang terdapat di pasir mungkin memasuki telur penyu melalui liang yang terdapat di kulit telur dan menyebabkan jangkitan kepada embrio yang sedang terbentuk. Kajian ini akan menyediakan maklumat berharga mengenai kehadiran bakteria yang didapati dari telur busuk dan sampel pasir di sarang penyu dan ia akan menjadi platform untuk



menyediakan pemahaman yang lebih baik tentang jangkitan bakteria yang mungkin mempengaruhi kejayaan penetasan telur penyu agar.