ASSESSMENT OF TAG LOSS AND PHOTOGRAPHIC IDENTIFICATION OF SEA TURTLES AT CHAGAR HUTANG, REDANG ISLAND

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UNIVERSITI MALAYSIA TERENGGANU
2011

Assessment of tag loss and photographic identification of sea turtle at Chagar Hutang, Redang Island / Vicki Chew Yii Ching

Lihat sebelah

ASSESSMENT OF TAG LOSS AND PHOTOGRAPHIC IDENTIFICATION OF SEA TURTLES AT CHAGAR HUTANG, REDANG ISLAND

By

Vicki Chew Yii Ching

Research Report submitted in partial fulfillment of
the requirement for the degree of
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DEPARTMENT OF MARINE SCIENCE
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DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:

Assessment of Tag Loss and Photographic Identification of Sea Turtles at Chagar Hutang, Redang Island by **Vicki Chew Yii Ching**, Matric No. **UK16956** have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree of **Bachelor of Science (Marine Biology),** Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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IUCN	-	International Union for Conservation of Nature
PIT	-	Passive Integrated Transponder
SEATRU	-	Sea Turtle Research Unit

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ABSTRACT

Sea turtle tagging enables us to obtain valuable information regarding various aspects of sea turtle biology. However, there is the problem of tag loss which causes bias in sea turtle studies. Photographic identification (photo-ID) would help alleviate this problem from occurring as it utilizes the natural facial markings to identify individuals. This study was carried out to estimate the extent of tag loss in green turtles of Chagar Hutang for both intra-seasonal and inter-seasonal, as well as to test the feasibility of photo-ID technique along-side inconel tagging. For tag loss assessment, tagging data from the Sea Turtle Research Unit (SEATRU) database was assessed using the model of Limpus (1992). Field sampling for photo-ID of the sea turtles was conducted between 13th May 2010 and 21st June 2010 at Chagar Hutang, Redang Island. The scute patterns were drawn using Adobe Photoshop CS4 and later compared manually. Assessment of tag loss was done for 951 green turtle individuals. Intra-seasonal analysis showed higher tag retention for inconel tags compared to titanium tags which could be attributed to tag design. The highest probability of inconel and titanium intra-seasonal tag loss was recorded at 0.037 and 0.068 respectively. Inter-seasonal inconel tag loss (highest tag loss probability = 0.500) exhibited a decline in tag retention rates with increase in tag years while titanium tag loss (highest tag loss probability = 0.231) indicated that titanium tag retention for green turtles of Chagar Hutang is independent of tag age. Positive results were obtained for photo-ID as all 43 green and 2 hawksbill turtles were correctly identified. Some individuals were observed to display incomplete sides to a scute which contributes to the diversity of patterns that can be found on sea turtles. Each sea turtle did not display similar symmetry between the left and right facial scutes while

profiles of green turtles which were re-sighted (9 – 30 day interval) did not display any changes in facial scute patterns. Photographic identification is a non-invasive method which utilizes natural facial markings to identify individuals. Besides reducing stress on the animals, this method is less costly. Most importantly, by implementing photo-ID as a complement to the flipper tagging method for the sea turtles of Chagar Hutang, problems of misidentification of individual sea turtles due to tag loss would be alleviated.

Kajian Penganggaran Kadar Kehilangan "Tag" Dan Foto-ID Penyu Agar (*Chelonia mydas*) dan Penyu Karah (*Eretmochelys imbricata*) Di Chagar Hutang, Pulau Redang

ABSTRAK

Penandaan penyu membantu dalam mendapatkan maklumat berguna dalam pelbagai aspek biologi penyu. Akan tetapi, terdapat masalah kehilangan "tag" yang menyebabkan ralat berlaku dalam kajian ke atas penyu. Teknik foto-ID dijangka dapat membantu dalam mengatasi masalah ini di mana tanda-tanda semula jadi yang terdapat di badan haiwan digunakan untuk mengenalpasti setiap individu penyu. Kajian ini dijalankan untuk menganggar kadar kehilangan "tag" pada penyu agar di Chagar Hutang antara dan dalam satu musim serta menguji kerbekesanan menggunakan foto-ID bersama dengan penandaan tag inconel. Untuk penilaian kadar kehilangan tag, data-data diperolehi daripada pengkalan data Sea Turtle Research Unit (SEATRU) dan dinilai menggunakan model Limpus (1992). Kerja lapangan untuk foto-ID ke atas penyu dijalankan dari 13 Mei 2010 sehingga 21 Jun 2010 di Chagar Hutang, Pulau Redang. Corak sisik wajah dilukis menggunakan Adobe Photoshop CS4 dan kemudian dibanding secara manual. Penilaian kadar kehilangan "tag" dijalankan ke atas 951 individu penyu. Analisis intra-musim (dalam masa jangka satu musim) menunjukkan kadar kehilangan yang lebih tinggi bagi tag inconel berbanding dengan tag titanium yang boleh dikaitkan dengan rekaan tag. Kebarangkalian tertinggi untuk kehilangan tag intra-musim bagi inconel dan titanium yang dicatat masing-masing adalah 0.037 dan 0.068. Bagi inter-musim (antara musim), kadar kehilangan tag inconel (kebarangkalian tertinggi = 0.500) menunjukkan penurunan kadar retensi dengan peningkatan usia tag manakala kadar

kehilangan tag titanium (kebarangkalian tertinggi = 0.231) menunjukkan kadar retensi tag titanium bagi penyu agar di Chagar Hutang tidak dipengaruhi dengan usia tag. Keputusan positif diperolehi untuk foto-ID kerana kesemua 43 ekor penyu agar dan 2ekor penyu karah dapat dikenalpasti dengan betul. Terdapat beberapa individu penyu yang menunjukkan corak yang tidak lengkap. Ini menyumbang kepada kepelbagaian corak yang terdapat pada penyu. Corak sisik di kedua-dua belah wajah juga adalah berbeza dalam setiap individu penyu. Selain itu, profil sisik penyu agar yang kembali (antara 9-30 hari) tidak menunjukkan perbezaan dalam corak sisik. Foto-ID merupakan kaedah bukan invasif yang menggunakan corak sisik semulajadi penyu untuk pengenalpastian. Di samping mengurangkan tekanan ke atas penyu, kaedah ini juga adalah lebih jimat dari segi kewangan. Yang paling penting, dengan pelaksanaan foto-ID sebagai pelengkap kepada penandaan tag pada flipper penyu di Chagar Hutang, masalah kesalahan pengenalan individu penyu dapat dielakkan.