

EFFECTS OF FEEDING RATIOS ON THE GROWTH  
OF RAINBOW TERRAPIN (*PHECUNA*).

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2006

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Effect of feeding rations on the growth of painted terrapin hatchlings / Nurul Huda Zakaria.

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Lihat sebelah

HAK MILIK  
PERPUSTAKAAN KUSTEM

*This thesis is dedicated to.....*

*Mama and abah...*

*"Saranghae..."*

*Tok Bedak, Angah, Abang, Achik, Emi, and Nadiak...*

*"Aja Aja Fighting...!"*

*My dearest friends...*

*Mard, Yunie, Banosh, Pon, and Emon..*

*"You are the best..."*

*My friends...*

*Sue, Ain, Hara, Mas, Pae, Fad, Aishak, and Zurina...*

*"Thanks for all your supports....."*

*Bedat...*

*"Gam sa ham ni da..."*

*My beloved cat...*

*Popo...*

*"Meow...."*

**EFFECTS OF FEEDING RATIIONS ON THE GROWTH OF PAINTED  
TERRAPIN, *Callagur borneoensis* HATCHLINGS**

**BY**

**NURUL HUDA BINTI ZAKARIA**

**Research report submitted in partial fulfillment of  
the requirements for the degree of  
Bachelor of Science (Marine Biology)**

**Department of Marine Science  
Faculty of Science and Technology  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA  
2006**

This Project Report should be cited as:

Nurul, H. Z., 2006. Effects of Feeding Ration on the Growth of Painted Terrapin, *Callagur borneoensis* Hatchlings. Undergraduate Thesis, Bachelor of Science in Marine Biology, Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia. p62.

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**JABATAN SAINS SAMUDERA  
FAKULTI SAINS DAN TEKNOLOGI  
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**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk :

EFFECTS OF FEEDING RATIOS ON THE GROWTH OF PAINTED TERRAPIN, *Callagur borneoensis* HATCHLINGS oleh NURUL HUDA BINTI ZAKARIA No.matrik UK 8356 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah SARJANA MUDA SAINS (BIOLOGI MARIN), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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Tarikh: 26.04.06

## Acknowledgements

I would like to express my sincere gratitude to many people in the course of undertaking this project.

First and foremost, I would like to thank my supervisor, Prof. Dr. Chan Eng Heng for her support, guidance, and inspiration. My thanks are also due to my second supervisor, Mr. Choo Chee Kuang, postgraduate students, Ms. Chen Pelf Nyok and Mr. Soh Chong Leng for their constant encouragement and help.

Many thanks also to the Department of Fisheries and TUMEC for their assistance in providing me the samples of painted terrapin, *Callagur borneoensis*.

To my parents, Mr. Zakaria bin Mansor and Mrs. Rosni bt. Ahmad, and all my family members, my heartfelt gratitude to them for their patience, love, and support during my time in the university.

I would also express my gratitude to my friends, Noorhashikin bt. Mamat; Roslaili bt. Khalid; Nor Marianti bt. Azaham; Suhaida Saedin; Asar Zaim b. Ishak; Mr. Lukman Hakim b. Mohd Din; and others for sharing their times and providing helpful hands.

Finally, my utmost gratitude to Al-Mighty Allah S.W.T for giving me this opportunity, strength and guidance to complete this study.

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## LIST OF ABBREVIATIONS

%	-	Percentage
SCL	-	Straight carapace length
SCW	-	Straight carapace width
SD	-	Shell depth
Fig.	-	Figure
KUSTEM	-	Kolej Universiti Sains dan Teknologi Malaysia
No.	-	Number
ANOVA	-	Analysis of Variance
cm	-	Centimeter
g	-	Gram
TUMEC	-	Turtle and Marine Ecology Centre
DOFM	-	Department of fisheries Malaysia
DWNP	-	Department of Wildlife and National Park
IUCN	-	The World Conservation Union
CITES	-	Convention on International Trade in Endangered Species or wild flora and fauna
SNK	-	Students-Newman-Keuls

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## ABSTRACT

This study was conducted to determine suitable feeding rations for the hatchlings of *Callagur borneoensis* in their first three months of growth. Thirty hatchlings were taken randomly from the TUMEC Hatchery in Kampung Mangkok, Setiu, Terengganu (Average body weight of  $45.3 \pm 2.32$  g; straight carapace length of  $6.47 \pm 0.1$  cm; straight carapace width of  $5.94 \pm 0.12$  cm and shell depth of  $3.06 \pm 0.11$  cm). The feeding trial was carried out from 31<sup>st</sup> August to 28<sup>th</sup> November 2005. The hatchlings were divided into three tanks with 10 hatchlings in each tank. Three feeding rations were investigated, (1.5% of body weight; 1.75% of body weight; and 2.0% of body weight). The commercially available tilapia starter food pellets were used to feed the hatchlings during this experiment. From the result obtained, positive growth for the hatchlings was registered in every feeding ration investigated. The average weight gain for the hatchlings at the end of the experiment was  $90.3 \pm 63.85$  g for hatchlings fed at 1.5% of body weight ration;  $104.7 \pm 74.03$  g for hatchlings fed at 1.75% of body weight ration; and  $102.9 \pm 72.76$  g for hatchlings fed at 2.0% of body weight ration respectively. The average increase in straight carapace length was  $2.78 \pm 1.97$  cm for hatchlings fed at 1.5% of body weight ration;  $3.11 \pm 2.2$  cm for hatchlings fed at 1.75% of body weight ration; and  $3.05 \pm 2.16$  cm for hatchlings fed at 2.0% of body weight ration. The average increase in straight carapace width was  $2.57 \pm 1.82$  cm for hatchlings fed at 1.5% of body weight ration;  $2.53 \pm 1.79$  cm for hatchlings fed at 1.75% of body weight ration; and  $2.14 \pm 1.51$  cm for hatchlings fed at 2.0% of body weight ration. Average increase in shell depth hatchlings fed at 1.5% of body weight ration was  $1.34 \pm 0.95$  cm;  $1.43 \pm 1.01$  cm for hatchlings fed at 1.75% of body weight ration; and  $1.45 \pm 1.03$  cm for hatchlings fed at 2.0% of body weight ration. This study indicated that the growth rates of the hatchlings fed at 1.5% of body weight ration significantly differed from 1.75% and 2.0% of body weight ration, but from SNK (Students-Newman-Keuls) test, no significant difference was observed between the hatchlings fed at 1.75% and 2.0% of body weight ration. However, the most suitable feeding ration that resulted in the optimum growth rates of these painted terrapin hatchlings was 1.75% of body weight ration.

## ABSTRAK

Kajian ini telah dijalankan untuk mengetahui jumlah makanan yang paling sesuai untuk pertumbuhan optimum anak tetasan tuntung laut. Tiga puluh ekor anak tetasan telah diambil secara rawak daripada pusat penetasan tuntung laut TUMEC di kampung Mangkuk, Setiu, Terengganu (Purata berat  $45.3 \pm 2.32$  g; purata panjang karapas lurus  $6.47 \pm 0.18$  cm; purata lebar karapas lurus  $5.94 \pm 0.12$  cm; dan tebal karapas  $3.06 \pm 0.11$  cm). Kajian ini telah dijalankan bermula dari 31 Ogos 2005 hingga 28 November 2005. Anak tetasan dibahagikan kepada tiga tangki dengan 10 anak tetasan bagi setiap tangki. Tiga jumlah makanan yang berbeza telah dikaji (1.5% daripada berat badan; 1.75% daripada berat badan; dan 2.0% daripada berat badan). Makanan yang digunakan untuk kajian ini ialah pellet tilapia permulaan (starter) yang boleh didapati secara komersil. Pada akhir eksperimen, pertumbuhan positif telah dicatatkan bagi kesemua jumlah makanan yang dikaji. Purata pertambahan berat anak tetasan yang diberi makan 1.5% daripada berat badan ialah  $90.3 \pm 63.85$  g;  $104.7 \pm 74.03$  g bagi anak tetasan yang diberi makan 1.75% daripada berat badan; dan  $102.9 \pm 72.76$  g bagi anak tetasan yang diberi 2.0% daripada berat badan. Purata panjang karapas lurus bagi anak tetasan yang diberi 1.5% daripada berat badan ialah  $2.78 \pm 1.97$  cm;  $3.11 \pm 2.2$  cm bagi anak tetasan yang diberi 1.75% daripada berat badan; dan  $3.05 \pm 2.16$  cm bagi anak tetasan yang diberi 2.0% daripada berat badan. Purata lebar karapas lurus ialah  $2.57 \pm 1.82$  cm bagi anak tetasan yang diberi 1.5% daripada berat badan;  $2.53 \pm 1.79$  cm bagi anak tetasan yang diberi 1.75% daripada berat badan; dan  $2.14 \pm 1.51$  cm bagi anak tetasan yang diberi 2.0% daripada berat badan. Manakala bagi tebal karapas pula, anak tetasan yang diberi 1.5% daripada berat badan mencatatkan purata pertambahan sebanyak  $1.34 \pm 0.95$  cm; anak tetasan yang diberi 1.75% daripada berat badan dengan  $1.43 \pm 1.01$  cm; dan anak tetasan yang diberi 2.0% daripada berat badan dengan  $1.45 \pm 1.03$  cm. Kajian ini telah menunjukkan bahawa terdapat perbezaan signifikan di antara kadar pertumbuhan bagi jumlah makanan yang dikaji. Terdapat perbezaan signifikan di antara anak tetasan yang diberi makan 1.5% daripada berat badan dengan anak tetasan yang diberi 1.75% dan 2.0% daripada berat badan, tetapi dari ujian SNK (Students-Newman-Keuls), tiada perbezaan yang signifikan diperolehi di antara anak tetasan yang diberi makan 1.75% dengan 2.0% daripada berat badan. Jumlah makanan yang paling sesuai, iaitu yang telah mencatatkan pertumbuhan optimum bagi anak tetasan yang dikaji ialah 1.75% daripada berat badan.