# PRELIMINARY STUDY ON ARTIFICIAL FOODS FOR THE SPOTTED SEAHORSES, *HIPPOCAMPUS KUDA*

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# PRELIMINARY STUDY ON ARTIFICIAL FOODS FOR THE SPOTTED SEAHORSES, *HIPPOCAMPUS KUDA*

By
**LIEW SEE LENG**

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

**Department of Marine Science**
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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:
Preliminary Study on Artificial Foods for the Spotted Seahorses, *Hippocampus kuda* oleh Liew See Leng, No. Matrik UK 7643 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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## LIST OF ABBREVIATIONS

L : Liter

mg : Milligram

°C : Degree centigrade

ppt : Part per thousand

% : Percentage

*SL* : Standard Length

*W* : Weight

*V* : Volume

ρ : Density

CF : Condition Factor

> : More than

< : Less than

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## ABSTRACT

Seahorses have not generally been reared on artificial food in commercial culture due to difficulties in getting them to accept non-live foods (Woods, 2002). In this study, feeding trials were undertaken to measure growth and survival adult seahorses, *Hippocampus kuda*; fed with two types of artificial feed compared to natural feed. The artificial feeds tested were a shrimp-flour mix (Type A) and a fish-flour mix (Type B) while the natural feed was frozen shrimps. Growth rates however did not vary among the three treatments. The incremental growth and high survival rate of *H. kuda* among the artificial feed and natural feed were promising for the development of seahorse aquaculture. The shrimp-flour mix and fish-flour mix can be gradually phased in to replace both frozen shrimp and natural foods items. Market survey of the prices conducted in Terengganu and Kuala Lumpur found shrimp to be more expensive than fish. Protein constituted the most expensive component of seahorses' diets. Proximate analysis revealed that artificial food type B had higher protein 66% than the others. Weekly growth in addition of the relationship between growths rate between the three treatments were obtained in the 24 week period. Survival rates of up to 90 % were achieved by the end of the experimental period. This constituted an important preliminary study towards formulating artificial feeds for seahorses for large scale commercial culture.

## ABSTRAK

Ikan Lumba Kuda Laut biasanya tidak kultur dalam makanan tiruan di komersial kultur dengan sebab kesusahan bagi mereka untuk menyesuaikan diri dengan makanan yang bukan hidup (Woods, 2002). Dalam kajian ini, ujian makanan telah dijalankan untuk mengukur kadar pertumbuhan dan kadar kemandirian bagi dewasa ikan, *Hippocampus kuda*; memakan dengan dua jenis makanan tiruan berbanding dengan makanan asal. Ujian makanan tiruan adalah adunan udang-tepung (Jenis A) dan adunan ikan-tepung (Jenis B) manakala makanan asal adalah udang beku. Kadar pertumbuhan walaubagaimanapun tidak menunjukkan perbezaan antara tiga jenis perlakuan. Pertambahan dalam pertumbuhan dan ketinggian dalam kadar kemandiran bagi ikan lumba kuda laut di antara makanan buatan dan makanan asal telah mempunyai harapan yang baik dalam akuakultur. Adunan udang-tepung dan adunan ikan-tepung boleh beransur-ansur digantikan dengan udang beku dan makanan asal. Kajian harga pasaran yang dijalankan di Terengganu dan Kuala Lumpur mendapati udang lebih mahal daripada ikan. Protein menjadi sejenis komponen yang mahal dalam makanan ikan lumba kuda laut. Analisis Proximat telah menunjukkan makanan buatan jenis B mempunyai protein yang tertinggi iaitu 66% jika berbanding dengan makanan yang lain. Pertumbuhan dalam mingguan, di samping hubungan antara kadar pertumbuhan di antara tiga kelakuan telah didapati dalam jangka masa 24 minggu. Kadar kemandiran sebanyak 90% telah mencapai sepanjang masa esperimen tamat. Ini merupakan satu kajian pendahuluan yang penting untuk fomula makanan buatan bagi ikan lumba kuda laut dalam komersial kultur.