INCREASING LIVE FOOD VISIBILITY FOR JUVENILE SEAHORSES, *Hippocampus kuda* WITH COLORANTS

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Increasing live food visibility for juvenile seahorses, Hippocampus kuda with colorants / Farahanis Mat Yaman.

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Lihat Sebelah

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By

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DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:
Increasing live food visibilityfor juvenile seahorses, *Hippocampus kuda* with Colorants

by Farahanis binti Mat Yaman, Matric No. UK23058 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 Bachelor of Science (Marine Biology), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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ABBREVIATIONS

λ_{peak}	:	Approximate peak response to wavelength (Hawryshyn, 1992)
µm	:	Micrometre
ANOVA	:	Analysis of variance
Artemia	:	*Artemia* sp.
°C	:	Degrees Celsius
CITES	:	The Convention on International Trade in Endangered Species
cm	:	Centimetre
DIY	:	Do-It-Yourself
Exp	:	Experiment
H.	:	*Hippocampus*
H. kuda	:	*Hippocampus kuda*
Ind.	:	Individuals
IUCN	:	International Union for Conservation of Nature
L	:	Litre
mg	:	Milligram
mm	:	Millimetre
mL	:	Millilitre
MYT	:	Malaysia time
N/A	:	Not Available

NH_3	:	Ammonia
NH_4^+	:	Ammonium cation
No.	:	Number
pH	:	Potential of Hydrogen
ppt	:	Parts per thousand
ppm	:	Parts per million
PVC	:	Polyvinyl chloride
SD	:	Standard deviation
SEM	:	Standard error of the mean
TM	:	Total magnification
UMT	:	Universiti Malaysia Terengganu
UV	:	Ultraviolet
x	:	Times

ABSTRACT

The study attempts to increase live food visibility for juvenile seahorses, *Hippocampus kuda* with edible non-toxic colorants by manipulating the prey and tank background colour. Effects of four different colours of dyed *Artemia* prey – red Ponceau 4R, brilliant blue, apple green and clear, normal *Artemia* – against three background colours: white, black and clear tanks, towards prey ingestion were determined. There were two experiments involved in this study: Experiment A, testing on the effects of mixed prey colours against three background colours towards *H. kuda* juvenile seahorses from 1 to almost 3 months old. Red prey colour was significantly more consumed ($p<0.05$) than clear *Artemia* in all tank backgrounds. There were no significant effects ($p>0.05$) of background colour toward prey ingestion. Experiment B was to test the effects of one prey colour against three backgrounds colours. No significant differences ($p>0.05$) were found between coloured prey ingestion in all background colours and in between background colours with respect to one prey colour ($p>0.05$). Two-way ANOVA tests also recorded no significant interaction ($p>0.05$) between prey colour and background colour. Prey colour preference sequence by *H. kuda* according to percentage of prey ingestion in experiment A was red > blue > green > clear while experiment B sequence was red > green > blue > clear.

Meningkatkan Kadar Penglihatan Makanan Hidup untuk Kuda Laut Juvana, *Hippocampus kuda* Dengan Menggunakan Pewarna

ABSTRAK

Kajian ini telah dijalankan untuk cuba meningkatkan penglihatan makanan hidup untuk kuda laut juvana, *Hippocampus kuda* menggunakan pewarna makanan tidak toksik dengan memanipulasi warna makanan dan latar belakang tangki. Kesan dari *Artemia* yang diwarna dengan empat warna berbeza – merah Ponceau 4R, biru "brilliant blue", hijau epal dan *Artemia* normal yang jernih – terhadap tiga warna latar belakang: putih, hitam dan jernih, ke atas pengambilan mangsa telah dinilai. Terdapat dua eksperimen di dalam kajian ini: Eksperimen A, menguji kesan warna *Artemia* yang bercampur terhadap tiga warna latar belakang ke atas kuda laut *H. kuda* juvana dari umur 1 hingga hampir 3 bulan. Mangsa berwarna merah didapati dimakan secara lebih signifikan ($p < 0.05$) berbanding *Artemia* yang jernih dalam kesemua warna latar tangki. Juga, tiada kesan warna latar belakang yang signifikan ($p > 0.05$) ke atas pemakanan mangsa dapat dilihat. Eksperimen B menguji kesan hanya satu warna mangsa terhadap tiga warna latar belakang . Tiada perbezaan yang signifikan ($p > 0.05$) didapati antara pengambilan mangsa yang diwarna antara kesemua latar tangki dan juga di antara warna latar dengan mana-mana satu warna mangsa yang berkenaan ($p > 0.05$). Ujian ANOVA dua hala juga mencatatkan bahawa terdapat tiada interaksi yang signifikan ($p > 0.05$) antara warna mangsa dan warna latar tangki. Warna mangsa mengikut urutan keutamaan oleh *H. kuda* mengikut peratusan pengambilan mangsa dalam eksperimen A adalah merah > biru > hijau > jernih manakala eksperimen B urutan adalah merah > hijau > biru > jernih.