

DETECTING MORPHOSPECIES DIVERSITY WITHIN
SYSTEMUS LATERISTRIGA USING MERISTIC,
MORPHOMETRICS AND GRASS NETWORK ANALYSIS

ASMA HAFIZAH ABDULLAH

FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

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**DETECTING MORPHOSPECIES DIVERSITY WITHIN *SYSTEMUS
LATERISTRIGA* USING MERISTIC, MORPHOMETRICS AND TRUSS
NETWORK ANALYSIS**

By
Asma Hairunnisa Binti Abdullah

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the requirements for the award of the degree of
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**DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITI MALAYSIA TERENGGANU
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II


Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Detecting Morphospecies Diversity within *Systemus lateristriga* using Meristic, Morphometrics and Truss Network Analysis oleh Asma Hairunnisa Binti Abdullah, No.Matrik: UK12445 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Gunaan (Pemuliharaan dan Pengurusan Biodiversiti), Fakulti Sains dan Teknologi, UMT.

Disahkan oleh:


.....
Penyelia Utama
Nama: **FAZILAH BINTI ARIFFIN**
Cop Rasmi: **Pensyarah
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu.**

Tarikh: 2/7/08.....


.....
Penyelia Bersama
Nama: **NORAINY BT MOHD HUSIN**
Cop Rasmi: **LECTURER
INSTITUTE OF TROPICAL AQUACULTURE
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU.**


Tarikh: 6/5/2008.....


.....
Ketua Jabatan Sains Biologi
Nama: **PROF. MADYA DR. AZIZ BIN AHMAD**
Cop Rasmi: **Ketua
Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu**

15 JUN 2008
Tarikh:

DECLARATION

I hereby declare that this thesis entitled Detecting Morphospecies Diversity within *Systemus lateristriga* using Meristic, Morphometrics and Truss Network Analysis is the result of my own research except as cited in the references.

Signature : 

Name : Asma Hairunnisa Binti Abdullah

Matrix No : UK 12445

Date :

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ABSTRACT

A total of 100 specimens of *Systomus lateristriga* from 13 localities of 5 states (Terengganu, Perak, Johor, Pahang and Perlis) were analysed in terms of morphometric and meristic characters in order to study the morphological differences and variation of *S.lateristriga* in Peninsular Malaysia. Eight side view standard morphometric measurements, 15 meristic measurements and 18 side view morphometric truss network measurements were obtained from 100 individuals. Data was analysed using multivariate analyses (Principal Component Analysis-PCA and Discriminant Function Analysis-DFA). Morphometric characteristics were much more adequate than meristic characters for a good separation of this species. The most relevant morphometric characteristics differences between the individuals of *Systomus lateristriga* from different localities were body depth, head morphology, area adjacent to caudal peduncle and the posterior of fish. Meristic analysis showed the differences between the individual of specimens from different localities were circumferential scale, dorsal fin-ray, pectoral fin-ray, post-dorsal scale, pre-dorsal scale and lateral line scale. The results demonstrated the usefulness of morphometric in classification of species and defining shape and size differences among the individuals of *S.lateristriga* from different locality.

ABSTRAK

Sejumlah 100 spesimen *Systemus lateristriga* daripada 13 kawasan di 5 buah negeri (Terengganu, Perak, Johor, Pahang dan Perlis) telah dianalisis berdasarkan ciri-ciri morfometrik dan meristik untuk mengkaji perbezaan dan variasi morfologikal *S.lateristriga* di Semenanjung Malaysia. Lapan ukuran pandangan sisi morfometrik piawai, 15 ukuran meristik dan 18 ukuran pandangan sisi morfometrik rangkaian truss telah diperoleh daripada 100 individu. Data telah dianalisis menggunakan analisis multivariat (Analisis Komponen Prinsipal-PCA dan Analisis Fungsi Diskriminan-DFA). Sifat-sifat morfometrik lebih padan dan sesuai untuk pemisahan yang baik berbanding dengan ciri-ciri meristik untuk spesies ini. Sifat-sifat morfometrik yang paling berhubungan atau berkaitan dalam membezakan individu-individu *S.lateristriga* daripada kawasan yang berlainan ialah kedalaman badan, morfologi kepala, kawasan yang berdekatan dengan pedunkel kaudal dan bahagian belakang ikan. Analisis meristik menunjukkan perbezaan antara spesimen-spesimen individu dari kawasan yang berlainan pada sisik bahagian yang mengelilingi di hadapan sirip dorsal, sirip-lembut dorsal, sirip-lembut pektoral, sisik post-dorsal, sisik pre-dorsal dan sisik di bahagian garisan lateral. Keputusan menunjukkan kegunaan morfometrik dalam pengelasan spesies dan mentafsirkan perbezaan bentuk dan saiz dikalangan individu-individu *S.lateristriga* daripada lokasi atau kawasan yang berlainan.