



UNIVERSITI PUTRA MALAYSIA

**FEEDING PREFERENCES AND POPULATION PARAMETERS OF
SERGESTID SHRIMPS, *Acetes japonicus* KISHINOUE IN THE
COASTAL WATERS OF KEDAH, MALAYSIA**

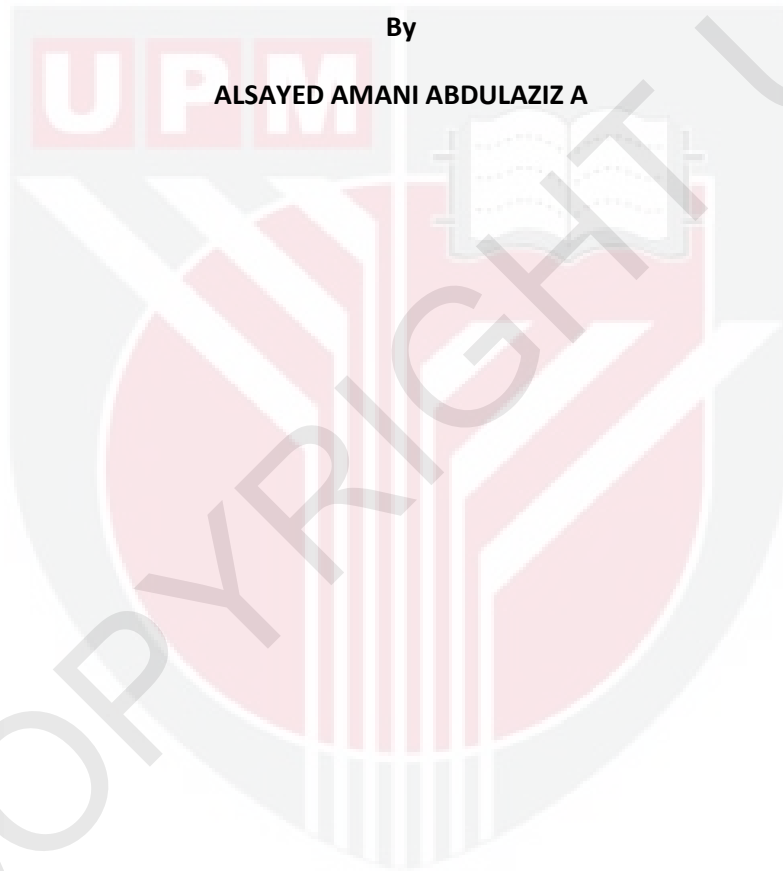
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WATERS OF KEDAH, MALAYSIA**

By

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**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfillment of the Requirements for the Degree of Master of Science**

May 2011

Abstract of thesis was presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science
Feeding Preferences and Population Parameters of Sergestid Shrimps, *Acetes japonicus* Kishinouye in the Coastal Waters of Kedah, Malaysia

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May 2011

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Food and feeding habits, diet composition and population parameters of *Acetes japonicus* in the estuarine waters of Tanjung Dawai, Kedah Peninsular Malaysia were studied between June 2008 and May 2009. The total catches of Set Bag Net (SBN) were constituted of three major fauna groups and they were *Acetes* shrimps (89%), juvenile fishes (9%) and non- *Acetes* shrimps (2%). The annual mean percentage composition of sergestid shrimp comprising of *A. japonicus*, *A. vulgaris* and *A. indicus* were 89%, 7% and 4% respectively. Although seven species of juvenile fishes were recorded together in the bag net from the study area, the abundance was however very low (9%). Feeding habits of sergestid shrimps *A. japonicus* were done by examining the stomach contents of 164 specimens during one year study period. Analysis on the percentage of numerical abundance (C_i) showed that plant matter (28.18%) and crustacean appendages (18.70%) as the two highest values amongst the eight categories of feeding items. In addition, percentage frequency of occurrence (F_{pi}) values of phytoplankton, zooplankton, algae, plant matter, appendages of

crustacean, debris, unidentified items and sand-mud were 3.45%, 7.05%, 5.07%, 27.44%, 17.42%, 15.80%, 8.94% and 19.81% respectively. From the diet composition found in the stomach, it is revealed that *A. japonicus* is probably omnivorous in feeding habit. Population parameters of male and female *A. japonicus* were studied using the monthly length frequency data by FiSAT software to evaluate the mortality rates and its exploitation level. The sex ratio (males: females) was found to be 1: 0.94. Asymptotic length (L_{∞}) was 25.20 mm and 28.88 mm for male and female respectively. Growth co-efficient (K) for males and females was estimated at 1.80 yr⁻¹ and 1.30 yr⁻¹ respectively. Total mortality (Z) was calculated at 5.98 yr⁻¹ and 4.44 yr⁻¹ for male and female of *A. japonicus* correspondingly. Natural mortality (M) was 2.82 yr⁻¹ and 2.19 yr⁻¹ for male and female shrimps. While fishing mortality (F) was 3.16 yr⁻¹ and 2.25 yr⁻¹ for male and female respectively. Exploitation level (E) for male and female of *A. japonicus* was calculated at 0.53 and 0.51. The exploitation level was slightly over ($E > 0.50$) the optimum level of exploitation ($P = 0.50$). The stock of *A. japonicus* was found to be slightly over exploited in Tanjung Dawai coastal waters.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai
memenuhi keperluan untuk ijazah Master Sains
**Keutamaan Pemakanan dan Paramater Populasi *Acetes japonicus* Kishinouye di
Perairan Kedah, Malaysia**

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Kajian telah dijalankan dari Jun 2008 hingga Mei 2009 bagi mengetahui makanan dan tabiat pemakanan, komposisi diet dan parameter populasi untuk *Acetes japonicus* di perairan Kedah, Malaysia. Jumlah tangkapan bagi gombang terdiri daripada tiga kumpulan fauna iaitu udang *Acetes* (98%), ikan juvenil (9%) and spesies udang bukan *Acetes* lain (2%). Komposisi purata peratusan tahunan bagi udang sergestid *A. japonicus*, *A. vulgaris* dan *A. indicus* adalah masing-masing pada 89%, 7% dan 4%. Meskipun tujuh spesies anak ikan telah direkodkan bersama tangkapan gombang di tempat kajian tetapi kelimpahannya adalah sangat rendah (9%). Pemeriksaan kandungan isi perut ke atas 164 spesimen telah dijalankan bagi tempoh satu tahun bagi mengetahui tabiat pemakanan bagi *A. japonicus*. Analisis peratus kelimpahan numerik (*Ci*) menunjukkan yang bahan tumbuhan (28.18%) dan appendej krustasea (18.70%) sebagai dua nilai tertinggi di kalangan lapan kategori bahan pemakanan. Sebagai tambahan, peratus frekuensi kekerapan (*F_{Pi}*) bagi komposisi makanan *A. japonicus* masing-masing adalah 3.54%, 7.05%, 5.07%, 27.44%, 17.42%, 15.8%,

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This thesis was submitted to the Senate of Universiti Putra Malaysia has been accepted as fulfillment of the requirements for the degree of Master of Science. The members of Supervisory Committee were as follows:

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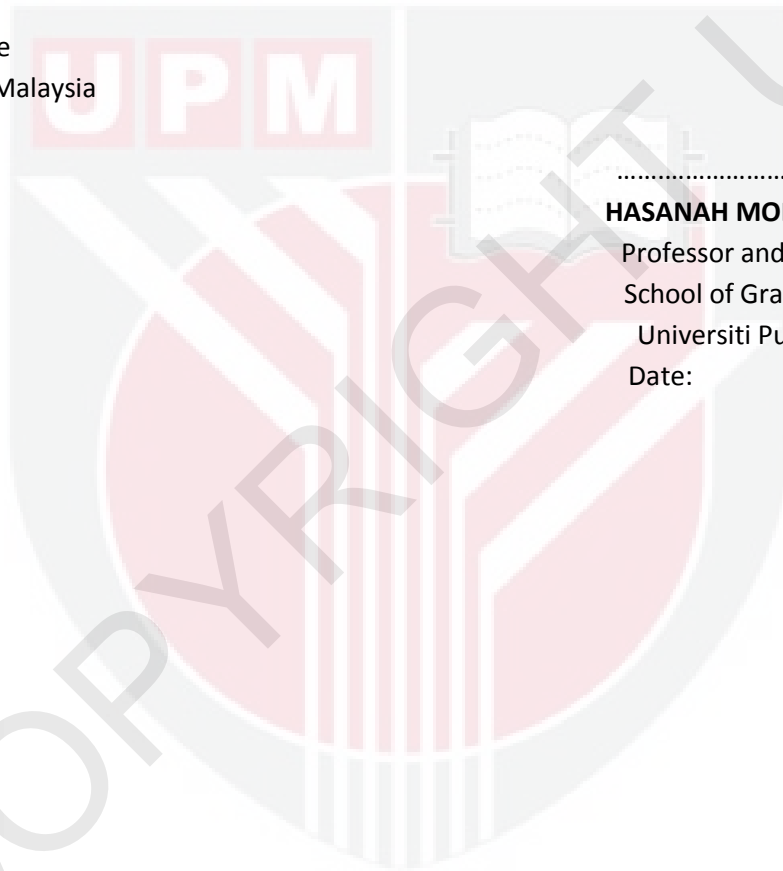
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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledge. I also declare that it has not been previously and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or other institutions.

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