SELECTIVITY STUDIES ON MALAYSIAN TRAWLS

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It is hereby certified that we have read this thesis entitled "Selectivity Studies on Malaysian Trawls" by Mohd. Ibrahim bin Haji Mohamed, and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirements for the degree of Doctor of Philosophy

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SELECTIVITY STUDIES ON MALAYSIAN TRAWLS

by

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DEDICATION

To my wife Aidah,

&

my son Adil Ridha,

Your sacrifices, undying support, and constant encouragement will forever be remembered.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

NOMENCLATURE

D = maximum body depth

D_c = critical body depth

D_R = depth ratio

L_{25} = 25 percent retention length

L_{50} = 50 percent retention length

L_{75} = 75 percent retention length

L_c = length of first capture

L_∞ = the maximum length of a species

L_o = optimum length of first capture

L/G = length - girth

M' = vertical mesh opening of a net

M_s = mesh size of a net

$M_{ext.}$ = mesh size extension after loading

M_o = optimum mesh size for a fishery

S_C = selection curve

S_f = selection factor

S_R = selection range

K = growth constant

F = rate of fishing mortality

M = rate of mortality

Z = rate of natural mortality

E = experimental L_{50} / Predicted L_{50}

C_L = carapace length

T_L = total length

Abstrak tesis yang dikemukakan kepada Senat Universiti Pertanian Malaysia sebagai memenuhi sebahagian daripada keperluan untuk Ijazah Doktor Falsafah.

SELECTIVITY STUDIES ON MALAYSIAN TRAWLS

oleh

Mohd. Ibrahim Bin Haji Mohamed

Jun, 1987

Penyelia : Profesor Madya Dr. Gunzo Kawamura

Penyelia Bersama : Profesor Madya Dr. Abu Khair Mohammad Mohsin

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Suatu kajian yang menggunakan kaedah "Covered Cod-end" dan 70 tundaan pukat tunda ikan dan udang telah dijalankan di Laut China Selatan dan Selat Melaka untuk mengkaji corak pemilihan pukat pukat tunda di Malaysia. Penyiasatan ini adalah bertujuan untuk mengurangkan tekanan yang hebat terhadap sumber-sumber ikan terutamanya terhadap tangkapan anak-anak ikan komersial.

Suatu "model" untuk meramalkan geraf pemilihan spesis ikan dan udang berasaskan ukuran panjang dan lebar spesis tersebut telah dicipta. "Model" ini akan menyenangkan kerja penyiasatan pemilihan pada pukat dengan hanya mendapatkan makluman tersebut dari sampel ikan atau udang dari mana-mana tangkapan.

Hasil penyelidikan ini menunjukkan bahawa saiz mata keroncong 25 mm menangkap 98.20 peratus berbanding dengan saiz

mata keroncong 51 mm yang menghasilkan 56.10 peratus dari ikan-ikan yang memasuki pukat tunda ikan. Dengan pukat tunda udang pula, saiz mata keroncong 25 mm menangkap 92.60 peratus manakala saiz mata keroncong 38 mm menangkap 51.35 peratus dari jumlah ikan yang memasuki pukat tersebut.

Bersamaan ini, ikan baja merupakan 46.40 peratus dari tangkapan pukat tunda ikan dan 68.20 peratus dari tangkapan pukat tunda udang yang menggunakan saiz mata keroncong 25 mm. Ini berbanding dengan 34.60 peratus bagi pukat tunda ikan yang menggunakan saiz mata keroncong 51 mm dan 56.80 peratus untuk pukat tunda udang yang menggunakan saiz mata keroncong 38 mm.

Walaupun kenaikan kelajuan menunda mengurangkan pemilihan dan tambahan masa menunda menambah pemilihan pada pukat saiz mata keroncong yang besar, saiz mata keroncong yang kecil telah menghasilkan keputusan yang berlawanan. Kesan-kesan kelajuan dan masa menunda hanya kecil dan diatasi oleh kesan tangkapan yang besar. Tangkapan besar mengurangkan pemilihan pada semua saiz mata keroncong dan pukat tunda ikan mahupun pukat tunda udang.

Berbeza dari anggapan ramai, saiz mata pukat kecil yang biasa digunakan dalam industri perikanan di Malaysia, mengakibatkan faktor pemilihan yang dependen kepada saiz mata pukat. Berasaskan kepada faktor pemilihan yang didapati, saiz mata pukat yang optimum bagi industri pukat tunda negara adalah 55 mm bagi pukat tunda ikan dan 38 mm untuk pukat tunda udang.