

HYDRODYNAMIC RESISTANCE OF  
TRAWL NET IN THE EAST COAST OF PENINSULAR  
MALAYSIA

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TESIS

**HYDRODYNAMIC RESISTANCE OF  
TRAWL NET IN THE EAST COAST OF PENINSULAR MALAYSIA**

**By**

**HASANSUKRI MAMAT**

**DEDICATION**  
THIS HARD WORK IS DEDICATED TO MY LATE PARENTS, JAMUD,  
WAESAPYAH AND ALSO FOR YOU.

**Thesis Submitted in Fulfilment of the Requirements for the  
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Abstract of thesis submitted to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Master of Science.

## **HYDRODYNAMIC RESISTANCE OF TRAWL NET IN THE EAST COAST OF PENINSULAR MALAYSIA**

**By**

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**April 2000**

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A study on hydrodynamic resistance of trawl nets in the East Coast of Peninsular Malaysia was carried out with three objectives: determining the length of structural characteristics of trawl net in relation to the net resistance, formulating a general net resistance equation and determining the resistance in each section of trawl net components which is currently employed by Malaysian fishermen.

The experiment on the element length of structural shape was conducted by collecting data of trawl net samples from states of Kelantan, Terengganu and Pahang. Resistance of the trawl net samples was estimated using Shu's empirical formula. Linear regression method was used to determine the relationship between the resistance of trawl net samples and the structural characteristics. Net resistance was also determined using empirical method and the resistance in each section was investigated using basic hydrodynamic resistance formula.

Result of the linear regression shows that only the stretched length of maximum circumference is strongly correlated with the net resistance. Based on the data collected, the results suggest that net resistance depends strongly on the stretched length of maximum circumference.

Result of the trawl net resistance obtained by empirical method shows that the resistance increases exponentially with the exponential towing velocity value of 1.52. Based on the findings from this experiment, the empirical formula for the estimation of two-seam net resistance including bottom friction is suggested to be:

$$R_n = 27 (d/l) v^{1.52} \text{ (kgf)}$$

Result of net resistance in each section found that the netting parts constitute about three-fourth (71.3 %) while appendages constitute about one-fourth (28.7%). The distribution of resistance on netting part was observed to be 16, 4, 76, 4 percent on Wing, Square, Baiting and Codend respectively. This enables a resistance-efficient trawl net be designed by improving resistance of critical parts without altering the general shape and expected durability of the net.