

EFFECT OF WEIGHT OF OTTER BOARDS ON THE HORIZONTAL OPENING OF TRAWL NETS

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The paper gives briefly the experiments carried out to determine the optimum weight of otter board that should be used for a trawlgear for better efficiency

INTRODUCTION

The weight in relation to the size of the otter board is an important factor contributing to the functional efficiency of the board in as much as the ground shearing forces are directly dependent on it. (Ben-Yami 1963, Crewe 1964, Dickson 1962, Mukundan 1970). However, excessive weight has to be avoided to prevent the door from digging into the mud and thereby reduce the ground shear. The need for determination of the optimum weight of the board should therefore be apparent. The experiments reported in this communication were carried out with this specific purpose.

MATERIAL AND METHODS

Otter board and net used

A horizontal curved wooden otter board of size 120 Cm. X 60Cm. and having an initial weight of 50 Kg. (Mukundan et. al 1967) was selected for the study. The design details of the gear used for the study is shown in Text Fig. 1. To increase the weight of the door to 55 Kg., and 60 Kg., iron plates of appropriate weights were added to the shoe of the board. Comparative fishing hauls were taken with

all three weights of boards keeping the following factors constant; length of warps released, speed, direction and duration of tow. Data on horizontal opening, tension on the warps and the catch for 30 comparative hauls are presented in Table I.

DISCUSSION

The data were analysed by using the ANOVA technique. Data on horizontal opening and tension were taken as such but catch figures of prawns and fish were converted into their logarithmic values. From the ANOVA Table (Table II) it could be seen that the variation between the net rigged with otter boards of different weights and variation between days were significant ($P < .01$). The critical difference for the weight of otterboards at 5% level were found for horizontal opening, tension, prawn catch and fish catch separately. The mean horizontal opening, the mean tension (Kg.) the mean logarithmic catch of prawns and fish were worked out for the gear with 50, 55 and 60 Kg. weights of otter board and are indicated in the Table. It is clear that the net fitted with otter boards weighing 55 Kg. was giving significantly higher horizontal opening, prawn catch and fish catch compared to net fitted with otter boards weighing 50 and 60 Kg. Ten-

TABLE I

	Wt. of otter boards (kg.)	No. of hauls	Total duration of hauls (Hr.)	% Horion- tal open- ing	Tension (kg.)	Prawn	Catch in Fish	Kg. Total	Catch/Hr. (kg.)
A	50	30	30	50	307	117	869	986	32.8
B	55	30	30	54.5	311	262	1237	1499	49.9
C	60	30	30	47.7	324	122	588	710	24.0

sion offered by the gear rigged with 60 Kg. weight otter board is significantly higher followed by 55 Kg. and 50 Kg. weight otter boards.

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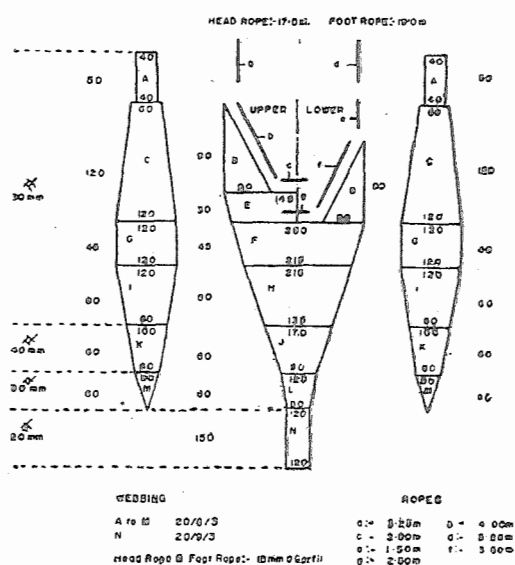


Fig. 1

TABLE II ANOVA TABLE

Source of Variation	Horizontal opening			Tension			Prawn catch			Fish catch		
	SS	DF	MS	SS	DF	MS	SS	DF	MS	SS	DF	MS
Total	126.7260	65		435869	65		12.3624	65		13.0242	65	
Bet. weight of otter boards	23.0168	2	11.5084*	3448	2	1724*	1.4148	2	0.7075*	1.5625	2	0.7812*
Bet. days	89.5401	21	4.2638*	430858	21	20517*	10.0900	21	0.4805*	10.3229	21	0.4916*
Error	14.1691	42	0.3374	1563	42	37.21	0.8575	42	0.0204	1.1388	42	0.0271
* indicate significance at one percent level.												
Critical difference at 5% level for weight of otter boards	0.3504											
Mean	50	55	60	50	55	60	50	55	60	50	55	60
	11.0068	12.0245	10.6255	307.27	311.18	324.18	0.5705	0.9186	0.6698	1.3911	1.5492	1.1738