

PART II

SCIENTIFIC AND TECHNICAL

ON THE TROLL LINE INVESTIGATIONS OFF COCHIN DURING FIVE FISHING SEASONS

III*. INVESTIGATIONS DURING 1965-66 and 1966-67 SEASONS

N. SUBRAMONIA PILLAI, R. S. MANOHARADOSS AND M. SHAHUL HAMEED
Central Institute of Fisheries Technology, Craft & Gear Wing, Cochin-5

During these two seasons investigations were carried out with a view to exploring the possibility of this operation on commercial basis and to study the effect of certain meteorological factors on catch. Operations were carried out from Fishtech No. 5.

RESULTS

During 1965-66 season economics of the trolling operations on commercial basis was worked out and the results are described hereunder.

During 1965-66 season, a total number of 40 fishing trips were made catching 852 fishes weighing 3,000 kg. Approximate expenditure worked out to Rs. 50/- per day. In the 1966-67 season, a total of 275 fishes weighing 1,020 kg were caught. The catch during low tide was 76% and that during high tide 24% of the total number of fish caught. Catches in relation

to the time of the day were: 8-9 hrs: 16.4%, 9-10 hrs: 24.3% 10-11 hrs: 19.4% 11-12hrs: 15.7%, 12-13 hrs: 12.0%. 13-14 hrs: 9.0% and 14-15 hrs: 3.2% of the total catch. The distribution of catches in relation to surface temperature of the water was 27°C: 3.4%, 28°C: 17.3%, 29°C: 42.7%, 30°C: 34.8% and 31°C: 1.8% of the total catch. Catches during a clear sky were 72% and those during a cloudy sky 28% of the total. Similarly, clear blue water gave 73% and turbid green water 27% of the total catch.

Pulling force of the hooked fish: The maximum pulling force exerted by the fish at the time of hooking was recorded by using a spring balance provided with a dumm pointer. The balance was attached to the main line instead of the shock absorber. Table I shows the pulling force and estimated pulling force of fishes of different weights.

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TABLE I ESTIMATED AND OBSERVED PULLING FORCES OF FISH OF DIFFERENT WEIGHTS

Weight of fish (kg)	Observed pulling force (kg)	Estimated pulling force (kg)
0.25	3.00	5.2
0.50	4.00	5.8
0.50	6.00	5.8
0.50	7.00	5.8
2.00	9.00	9.3
2.00	10.00	9.3
2.00	11.00	9.3
4.00	14.00	14.0
4.50	16.00	15.2
5.00	17.00	16.4
5.00	18.00	16.4
7.00	20.00	21.1
7.50	21.00	22.2

The data were analysed by fitting regression line of pulling force on the weight of the fish by the principle of least squares. The equation to the fitted regression was

$E = 2.347 W + 4.63$, where $E =$ pulling energy and $W =$ weight of fish.

By using the above formula the estimated pulling forces were worked out (Table I). It is seen from the table that the estimated and observed pulling forces more or less agreed for fish of weight 2.0 kg and above.

The correlation between the pulling force and the weight of fish is: $R = 0.9727$ which is significant at 1% level indicating the fitted regression is in good agreement to the given data (Fig. 2).

DISCUSSION

The results show that the average return per day works out to 75 fishes which fetch Rs. 225/- @ Rs. 3/- per kg making a profit four times the actual expenditure incurred. The catch was more during low tide than at high tide. This may be due to the fact that during low tide, seers are moving towards the shallow waters, but on the other hand during high tide they move towards the deeper waters, as the fish in general have the tendency to

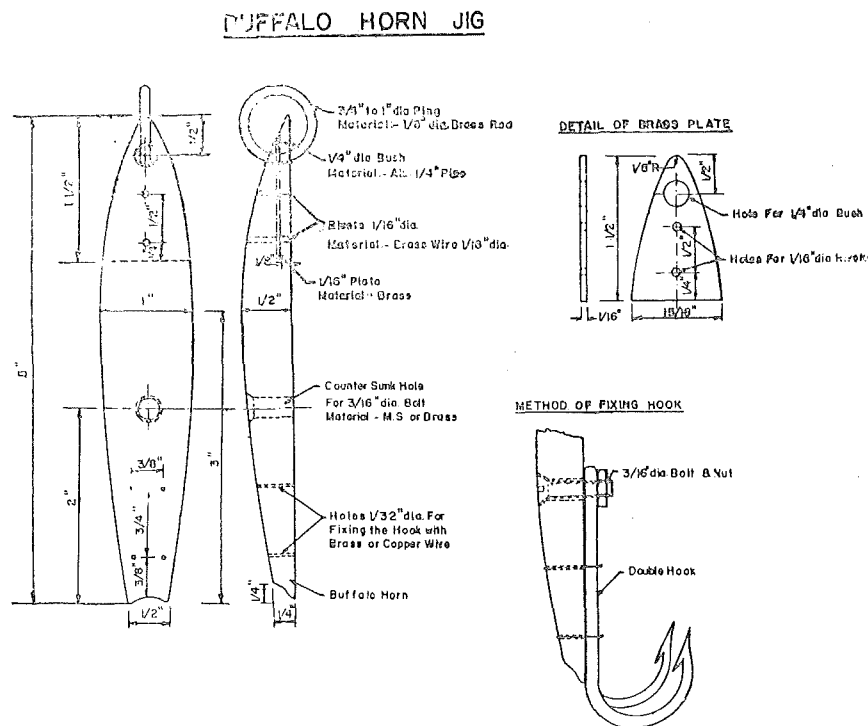


Fig 1. Design details of Buffalo horn jig.

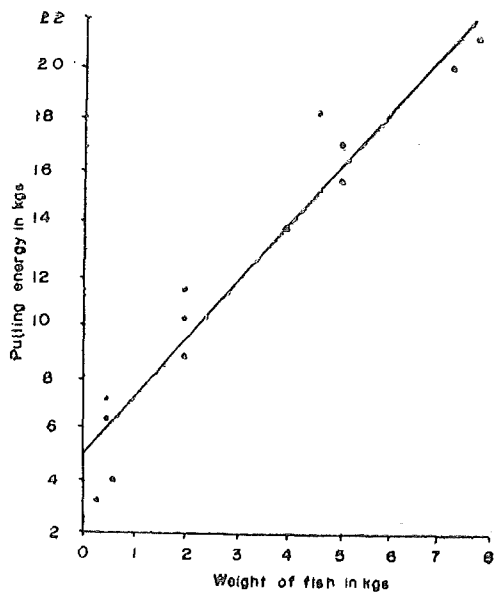


Fig 2. Fitted regression showing the relationship between the weight of the fish and pulling force of the fish.

swim against the current. So fishes are caught more during low tide periods. The maximum catch of 24.3% was at 09 to 10.00 hours. The percentage of catch was more during early hours from 08.00 to 12.00 accounting for 75.8% of the total catch while after 12.00 hours the catch decreased gradually. This factor had a

direct bearing on the surface water temperature, recording more catch when the temperature was 29 to 30°C, which corresponded to 09.00 to 12.00 hours. During this temperature the seers generally come to the surface. When the temperature increases the fish move towards the column region. It was also recorded that after 13.00 hours, the temperature increased to 31 to 32°C and the lower catch after 12.00 hours can be attributed to this.

The catch was considerably more during clear sky conditions and in clear water. This leads to the assumption that the two factors favourably affect the visibility of the jigs.

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