

ON THE EFFECT OF TICKLER CHAIN ON THE CATCHES LANDED BY A 55 FT. TRAWL NET

S. D. DESHPANDE & N. A. GEORGE,

*Central Institute of Fisheries Technology (Craft & Gear Wing),
Cochin.*

[The communication deals with the results of comparative tests conducted from Cochin base to study the effect of a tickler chain on the catches landed by a 55' shrimp otter trawl.

The net was operated with and without chain and 82 hauls of 61 hours and 28 minutes total duration were made. The following are the conclusions :

- (a) The catch of shrimp per hour of trawling is increased by about 71 percent due to attachment of the chain to the ground rope.
- (b) The attachment of the tickler chain also increased the catch of fish by 25 per cent.

The increase in the catch of shrimps and fish is probably due to the disturbance caused by moving chain attached to the foot-rope.]

Introduction

Gopinath (1953) and Panikkar and Menon (1955) described the method of dragging a heavy iron chain along the bottom for scaring the prawns in the nets laid. Davis (1958) pointed out the use of an iron chain attached to the trolloping nets and otter trawls for the capture of demersal fishes including prawns. In the Gulf of Mexico, shrimp fishery, Bullis (1955) made a passing reference about the attachment of a tickler chain in between otter boards of a shrimp trawl. Attachment of an iron chain to the beam and otter trawls appears to be a common practice followed by the Japanese fishermen (Miyamoto, 1956). To determine the utility of tickler chain for increasing shrimp landings, the authors conducted a series of comparative tests and the results are communicated here.

Methods

The fishing experiments were conducted from 2—2—1961 to 20—4—1961 with the vessel Fishtech No. II (32 ft. O.A.L., 36 BHP).

The net and boards used were the 55' four seam overhang shrimp trawl and the 45" × 25" otter boards described by Satyanarayana et. al. (1962).

The tickler chain attached was a thin galvanised iron link chain 8.23 M. in length having 5 mm. diameter and 3.26 kg. total weight. Two loops on the foot rope made were with a 4 mm diameter nylon line, 2.43 M. away from the wing tip on either side. The chain was attached to these loops with shackles and remained one foot ahead of the ground-rope during the operation.

Five aluminium alloy floats 12.7 cm. diameter and 0.79 kg. extra buoyancy each were tied to the head-rope. On each day of fishing operation 4 to 8 regular hauls were made. The comparative fishing hauls (with and without chain) were made over the same ground, using same length of warp and trawling speed. The fishing direction was also kept the same for each paired drag.

TABLE — I
PARTICULARS OF FISHING EXPERIMENTS

Date	With tickler chain					Without tickler chain						
	No. of hauls	Duration		Average horizontal opening	Catch (lbs.)		No. of hauls	Duration		Average horizontal opening	Catch (lbs.)	
		Hrs.	Mts.		Prawns	Fish		Hrs.	Mts.		Prawns	Fish
2-2-61	1	1.00		31' 3"	30	187	1	1.00		34'	5	169
3-2-61	2	2.00		37' 11"	95	836	2	2.00		38' 2"	47	515
4-2-61	2	2.00		31' 3"	104	845	2	2.00		36' 1"	65	628
7-2-61	2	2.00		...	175	920	2	0.45		...	16	165
8-2-61	1	1.00		35'	30	262	1	1.00		31' 9"	12	303.5
9-2-61	2	2.00		32' 4"	85	635	2	2.00		33' 4"	39	513
10-2-61	1	1.30		28' 11"	400	362	2	2.00		32' 5"	400	727
13-2-61	2	2.00		31' 6"	56	624	1	0.30		33' 4"	5	132
14-2-61	2	2.15		...	495	390	1	1.00		...	130	260
20-3-61	3	1.48		29' 2"	234	172	3	2.10		29' 1"	196	185
21-3-61	3	1.30		30' 10"	135	247	3	1.55		31' 3"	76	87
22-3-61	2	1.00		30' 3"	47	173	2	1.15		28' 9"	25	254
23-3-61	3	2.10		28' 1"	260	209	3	1.10		27' 2"	144	113
13-4-61	3	2.05		35' 8"	242	477	3	2.12		33' 11"	67	409
15-4-61	2	1.00		28' 7"	18	206	1	0.45		33' 4"	12	134
17-4-61	2	1.40		29' 3"	73	238	4	2.00		29' 6"	95	298
18-4-61	1	1.00		35'	25	115	2	2.00		32' 3"	33	138
19-4-61	4	2.15		32'	85	492	3	1.43		31' 3"	66	323
20-4-61	3	1.45		30' 5"	198	308	3	1.45		31' 9"	58	263
TOTAL	41	32.18			2,787	7,698	41	29.10			1,491	5,616.5
AVERAGE				31' 7"						32' 2"		

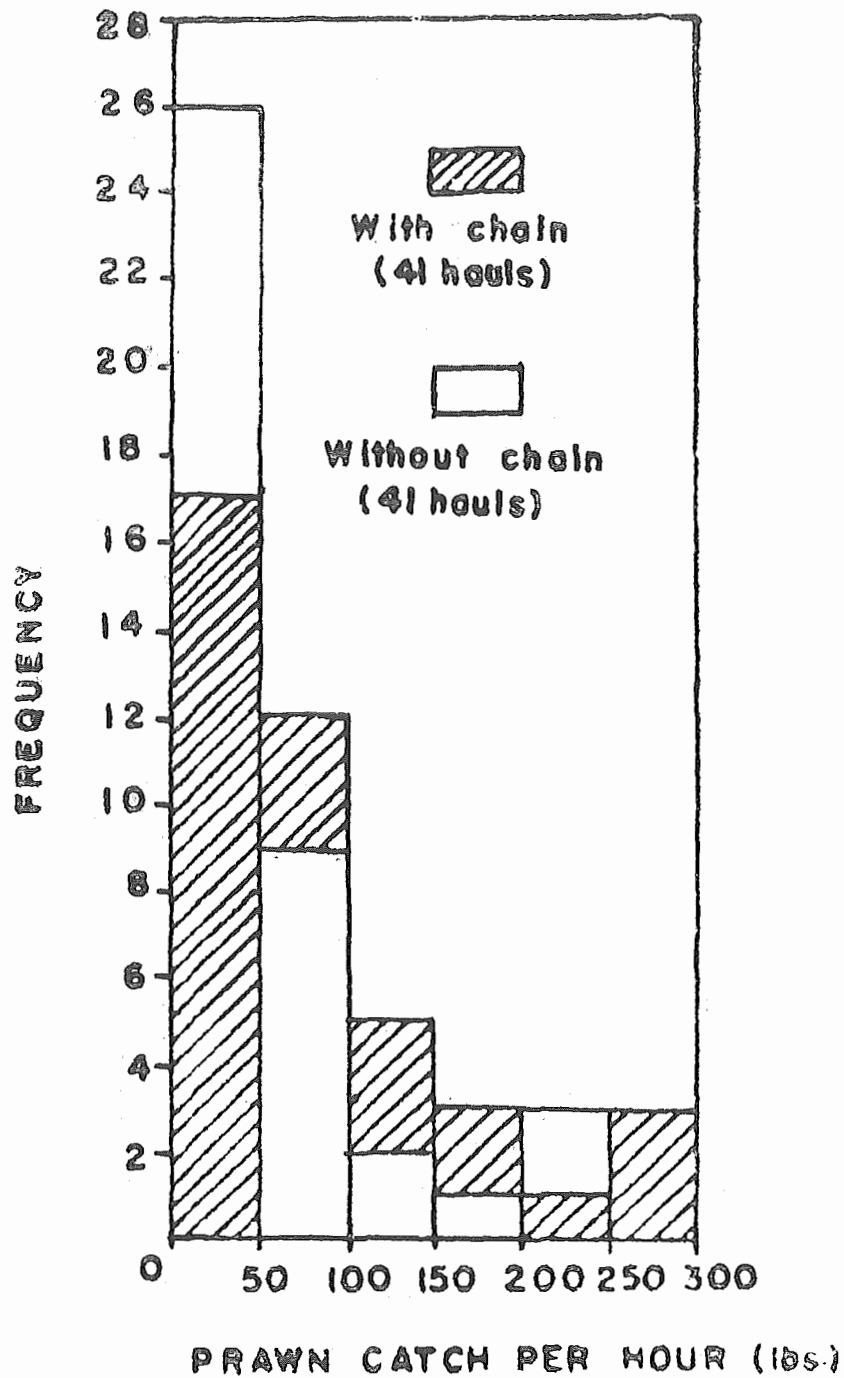


Figure 1: Frequency occurrence of catch per hour of prawns caught by the 55 ft. net during comparative fishing trials.

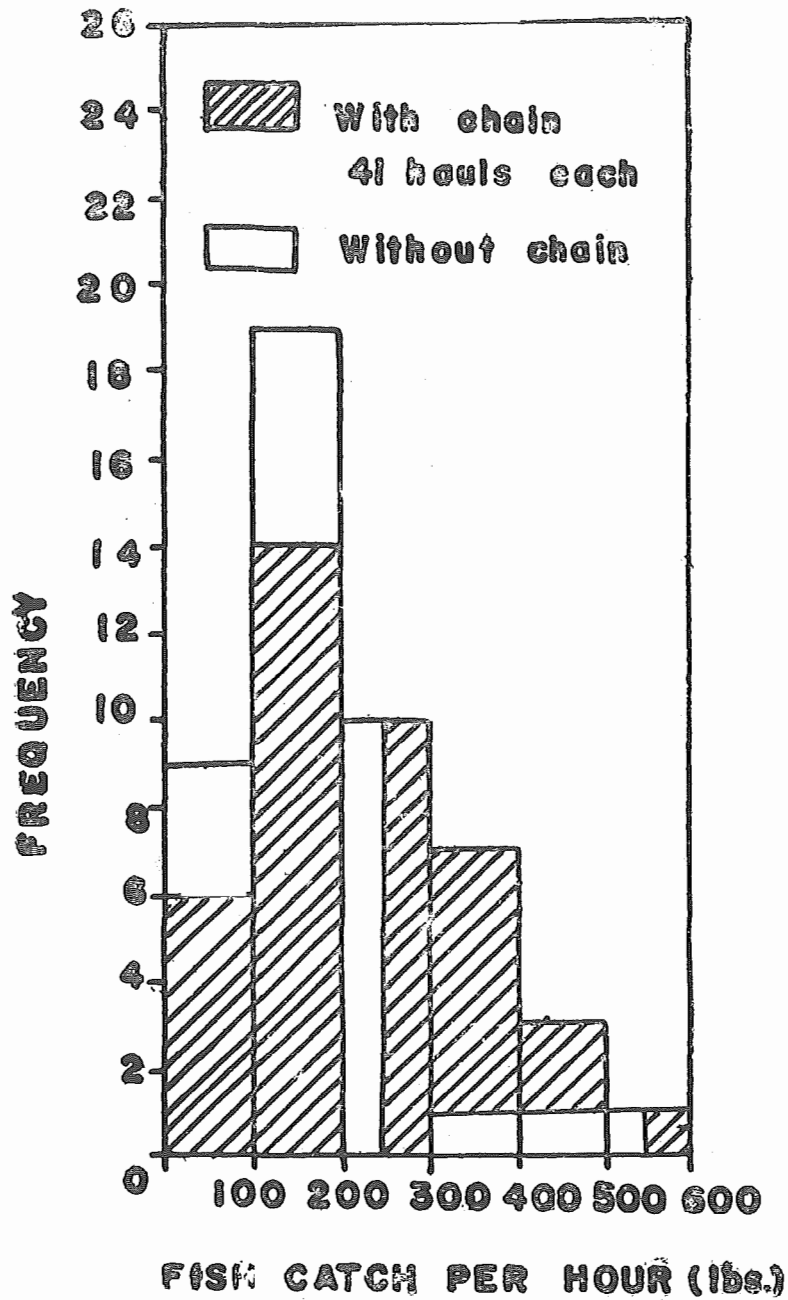


Figure 2: Histogram showing frequency of catch per hour of fish landed by 55 ft. otter trawl during comparative fishing tests.

Results and Discussion

Summary of the catch data gathered during the comparative fishing tests are presented in Table I.

It would be evident from the Table I that about 1,263.9 kg. (2,787 lbs.) of prawns and 3,491.1 kg. (7,698 lbs.) of fish were landed by the net when the chain was attached while without the chain the catches were 676.31 kg. (1,491 lbs.) of prawns and 2,547.6 kg. (5,616.5 lbs.) of fish.

(1) *Effect of tickler chain on the prawn landings*: The prawn catch per hour landed during the comparative hauls (with and without chain) is represented in Figure 1.

It would be seen from the figure that although in the landings less than 50 lbs. per hour there was no apparent effect by the attachment of this chain, in those for above 50 lbs. per hour it was definitely advantageous for increasing the catches. The average catch per hour of prawns landed by attachment and detachment of a tickler chain works out to 39.2 kg. (86.3 lbs.) and 23.2 kg. (51.12 lbs.) respectively which further indicates that the catch of prawns of the 55 ft.

net is increased by about 71% due to attachment of a thin tickler chain.

(2) *Effect of tickler chain on the fish landings*: Figure 2 shows the data on the catches of fish.

The effect of the tickler chain on the catch of fish is clear from the figure. The frequency of the catch rate below 200 lbs. per hour is less while the frequency is either equal or more in the higher catch rates. On an average the increase in the fish catch by the attachment of the tickler chain was 25%.

Horizontal opening of net: The horizontal opening of the net while in operation determined by the method explained elsewhere (Deshpande, 1960) is shown in Table I. It would be seen that the attachment of the chain had no adverse influence on the horizontal opening.

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