

COMPARATIVE EFFICIENCY OF FRAME NETS AND TRAMMEL NETS

R. M. NAIDU, A. A. KHAN & G. NARAYANAPPA

C. I. F. T. Sub-station, Burla, Orissa

Fishing experiments were conducted simultaneously with frame nets and trammel nets in the Hirakud Reservoir and the results indicated the relative superiority of frame nets, whose catch rate was two times more than that of the trammel nets.

INTRODUCTION

The entangle nets are known for their fish catching efficiency in a water body where the fishery is of a diffused nature. Sulochanan *et al.* (1968) conducted comparative studies with simple, vertical line and frame nets and recorded that frame nets were 1.4 to 4.76 times more effective than simple gill nets. Naidu and George (1972) subsequently experimented for the effectiveness of frame size and recommended that frame nets with 1.75 m. compartments were more effective for the endemic population of the Hirakud reservoir. The other entangling gear like trammel nets proved to be 2.5 to 5 times more efficient than the 'Rangoon' nets, when they were operated in the Mettur-Dam reservoir (Gulbadamov, 1962). Since the frame and trammel nets come under the same category of entangling gear, comparative fishing experiments were carried out with both the types in order to evaluate the relative efficiency of each gear.

MATERIALS AND METHODS

Ten units each of frame and trammel nets having 35 m. length and 5.25 m. hung depth were operated. The compartments in the frame nets were 1.75 m. and the ratio of inner and outer mesh in trammel nets was 1:3. The design details of nets have already been given by Kuriyan (1973). During operations the nets were set both parallel and perpendicular to the shore. The net positions were interchanged every day so as to give equal chance to both the units. The weight and number of each species of fish caught by both units were recorded separately.

RESULTS AND DISCUSSION

The catch per 1000 sq. m. of webbing of frame and trammel nets for each year and for the total period are given in Table I.

From the Table it is evident that frame nets are more efficient and on an

TABLE I
Catch details of frame and trammel nets for the years 1972-74

Year	Total area in sq. m.		Total catch in kg.		Catch/100 sq. m. of webbing in kg.	
	frame	trammel	frame	trammel	frame	trammel
1972	197125	191380	888.90	440.80	4.50	2.30
1973	153565	149750	856.30	244.30	5.57	1.63
1974	143375	131400	387.05	252.60	2.69	1.92
For the total period	494065	472530	2132.25	937.70	4.31	1.98

TABLE II
Analysis of variance of fish catch

Source	S. S	D. F.	MS	
Total	50736.2394	3229		
Between nets	416.1637	1	416.1637	*
Between species	1120.9772	4	280.2443	*
Between days	8539.3364	322	26.5196	*
Net X species	262.7144	4	65.6786	*
Net X days	32283.5293	322	18.1972	†
Species X days	25681.3983	1288	19.9389	*
Residual	11431.1201	1288	8.8758	

† Significant at 5% level.

* Significant at 1% level.

average the catch of frame nets was two times than that of the trammel nets.

The data were subjected to statistical analysis to assess the efficiency of the particular gear and also to ascertain whether a particular species has any preference in respect of any of the gear experimented. The analysed data are presented in Table II.

Though the place, time and duration of operation of the nets were identical,

frame nets gave better catches than trammel nets, the difference between the nets being significant at 1% level.

When the proportion of catch of one species to the total catch is different for the two nets, the interaction between net and species can be significant. Here it is significant at 1% level. The seasonal variation in availability of fish and difference in the pattern of seasonal variation of individual species account for the significance of the difference between days and the interaction between

TABLE III
Catch details of frame and trammel nets during summer and winter

Season	Area of nets operated in sq. m.		Catch in kg.		Catch/1000 sq. m. of net in kg.	
	frame	trammel	frame	trammel	frame	trammel
Summer	150850	138770	448.20	180.55	2.97	1.30
Winter	207940	201400	589.70	400.75	2.35	1.98

species and days. The difference between the species is significant as the availability of different species differs. *Catla catla* and *Silondia silondia* were the dominant species among the catch. The catch of *Cirrihina mrigala* and *Labeo fimbriatus* were insignificant. The 'other varieties' comprised mostly of uneconomical species. The frame net registered a higher catch rate and the catch consisted of commercially important species.

It is a known phenomena that during summer and winter seasons, the turbidity is less and hence the visibility is more. In order to ascertain the seasonal variation, if any, in the catch of the different types of nets, the data were analysed as shown in Table III.

The result of this analysis is also in conformity with that of the result given in Table I. The lower landings from the trammel nets can be attributed to the visibility factor. The trammel net with its three-welled structure make it more conspicuous in this case.

ACKNOWLEDGEMENT

The authors are highly indebted to Shri. G. K. Kuriyan, Director, Central Institute of Fisheries Technology, Cochin for his encouragement in this study and to Shri. M. Velu, Officer-In-Charge, Craft & Gear Wing for critical evaluation of the manuscript. Thanks are due to Shri. A. K. Kesavan Nair, Assistant Statistician for the statistical analysis of the data. Initial help rendered by Shri. Y. Sreekrishna, former Assistant Fishery Scientist (Craft and Gear) is also gratefully acknowledged.

REFERENCES

- Gulbadamov, S. B. 1962. FAO Report No. 1499.
- Kuriyan, G. K. 1973. *Fish. Technol*; **10**, 1 : 1.
- Naidu, R. M. & V. C. George. 1972. *Fish. Technol*; **9**, 1 : 31.
- Sulochanan, P., V. C. George and R. M. Naidu. 1968. *Fish. Technol*; **5**, 2 : 81.