

A FURTHER ACCOUNT OF THE ROCK-LOBSTER FISHING EXPERIMENTS WITH BOTTOM SET GILL NETS

BY R. BALASUBRAMANYAN, A. V. V. SATYANARAYANA

AND

K. A. SADANANDAN

[Central Institute of Fisheries Technology (Craft and Gear Wing), Cochin-5]

INTRODUCTION

IN their preliminary account, the authors (1960) presented the results of the experimental rock-lobster fishing operations conducted during 1958-59 along the south-west coast of India with a new design of bottom set gill nets. With a view to studying in detail the working of this lobster fishing gear, a series of further tests were made at different fishing grounds extending from Quilon to Muttom along the south-west coast of India during 1959-60 and the results are presented in this paper.

Fishing was conducted under varying conditions and the day-to-day catch of lobsters was recorded. Details of the catch data in relation to depth of grounds fished, nature of the bottom and the set position of the fishing gear are analysed at length and are presented in the form of exhaustive tabular statements. The length and weight range for the lobsters caught in this new fishing gear have also been analysed and recorded.

FISHING GEAR AND BOAT USED

The design details of the bottom set gill nets employed during the present investigations for the capture of rock-lobsters were basically similar to those operated on a former occasion. However, a few modifications were found essential and they were made as detailed below:

The depth of the net was reduced from 15 to 10 meshes. In some of the nets the mesh size was increased from 6 to $6\frac{1}{2}$ " (15.24-16.71 cm.) without altering the total area of webbing, keeping 230 meshes in length and 9 meshes in depth. Twenty numbers of light wooden floats made of "Elavu" (*Bombax malabaricum*) were attached to the head rope, keeping the buoyancy at 0.91 kg. The disc-shaped cement sinkers used on former occasions were found to entangle in the webbings and as such spindle-shaped lead sinkers each weighing 45.4 gm. were used. The total weight thus attached to the foot rope was 1.36 kg. For the net fabric, Nylon and Terylene of size No. 6 were used.

The head and foot ropes were of Nylon of 3 mm. and 5 mm. diameter respectively.

A 9·12 m. (30 ft.) decked fishing boat fitted with a 30 B.H.P. Semi-Diesel Engine (*Fishtech No. 1* of CFTRS) and a small motorized skiff were used for conducting the fishing operations. Deshpande (1960) in his account of the fishing experiments conducted with a 10' beam trawl net, has given detailed specifications of *Fishtech No. 1*. In the absence of deck machineries on board *Fishtech No. 1*, the manual handling of the fishing gear was resorted to.

FISHING GROUNDS INVESTIGATED

Quilon, Varkala, Vizhingam and Colachel-Muttam were the four bases from where day-to-day fishing cruises were undertaken and several fishing operations were conducted at different grounds. The topography of each centre is given as under:—

1. *Quilon* (Fig. 1).—Quilon City ($8^{\circ} 53-54'$ N. Latitude and $76^{\circ} 35'-36'$ E. Longitude) situated on the coast is an important fishing centre.

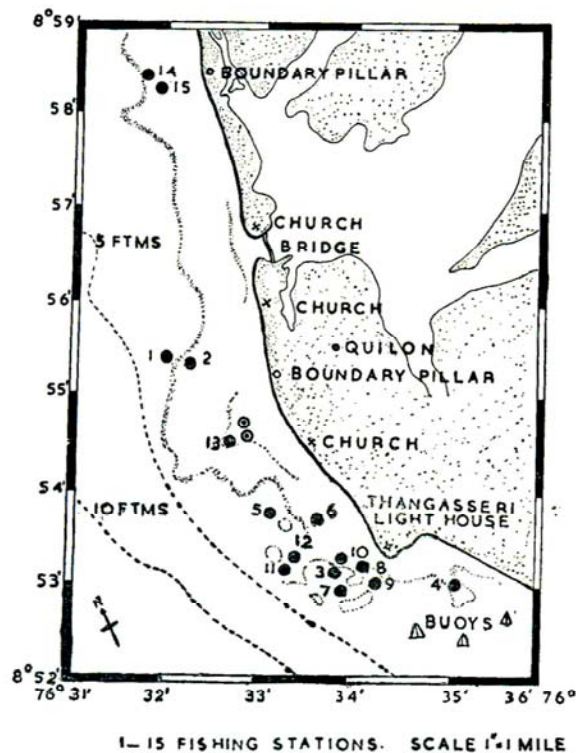


FIG. 1. Showing the fishing grounds and stations fished off Quilon.

The coast is steep and sandy as far north-westward as 'Tangasserry cove' about $2\frac{3}{4}$ cables north eastward of 'Tangasserry point'. A lighthouse is built at 'Tangasserry point' where the coast is rocky. The surf is heavy and due to rocky outcrops navigation is hazardous and landing difficult. Conical marking buoys are moored in sea lying opposite the 'Tangasserry point' and these denote the extremities of a number of detached rocky shoals. 'Tangasserry reef' consists of foul grounds and shoal water extending about a mile south-westward and $1\frac{1}{2}$ miles westward of 'Tangasserry point' and the sea breaks over the reef at all times. Quilon is connected with backwaters and canals on both south and northwards. 'Neendakara Azhi' about $3\frac{3}{4}$ miles north north-westwards of 'Tangasserry point' is the outlet of 'Astamudi Kayal' and this is traversed by a conspicuous bridge. The channel leading to the sea is very narrow and limited (*West Coast of India Pilot*, 1950).

The local fishermen have been fishing lobsters at this centre since 1958 with old hemp nets set as bottom gill nets. The fishing season here extends from September to beginning of November. However, experimental fishing for lobsters with the new gear was conducted off this centre for 8 days during December, 1959 and January, 1960 covering 15 selected Stations, at depths ranging from 4.5 to 8.5 m. within a reach of $1\frac{1}{2}$ to 2 miles (2.4-3.2 km.) from the shore. The details of the fishing Stations are given in the enclosed fishing log (Appendix I). During the period of our present investigations, the local fishermen were not engaged in lobster fishing.

2. *Varkala* (Fig. 2).—Varkala, a small town about 13 miles (20.8 km.) south of Quilon, lies at Latitude $8^{\circ} 44'$ N. and Longitude $76^{\circ} 41'$ E. The fishing village of this centre is connected by a feeder road to the trunk road. The coast is partly sandy and partly rocky, which at many a place presents precipitous formations, popularly called 'Varkala cliffs'. Generally heavy surf breaks on the coast which makes landing difficult.

Fishing could be conducted only for a day here at 2 Stations having depths of 5.0 to 8.25 metres and about a mile (1.6 km.) away from the shore. Appendix II shows the details of the Stations fished.

3. *Vizhingam* (Fig. 3).—Vizhingam (Latitude $8^{\circ} 23'$ - $24'$ N. and Longitude $76^{\circ} 59'$ - $77'$ E.), an important fishing village, is situated on the shore about 9 miles (14.4 km.) from Trivandrum, the capital city of Kerala. The coast is steep and rocky at most of the places especially on both sides of Vizhingam Bay, which itself is protected by two extensive rocky projections, on either side. The sea, though calm during fine weather, becomes rough during monsoon with heavy surf.

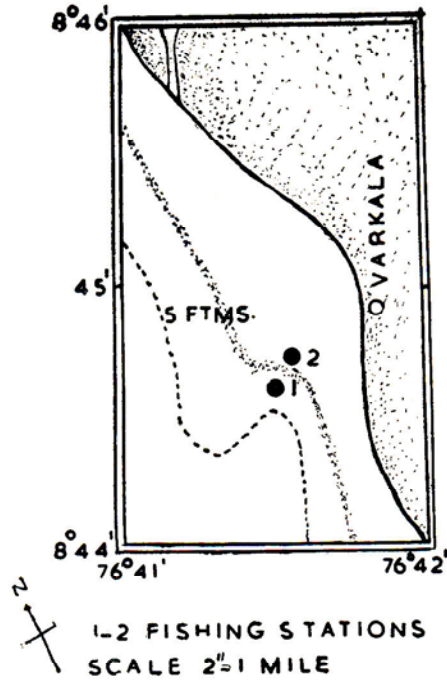


FIG. 2. Showing the fishing grounds and stations fished off Varkala.

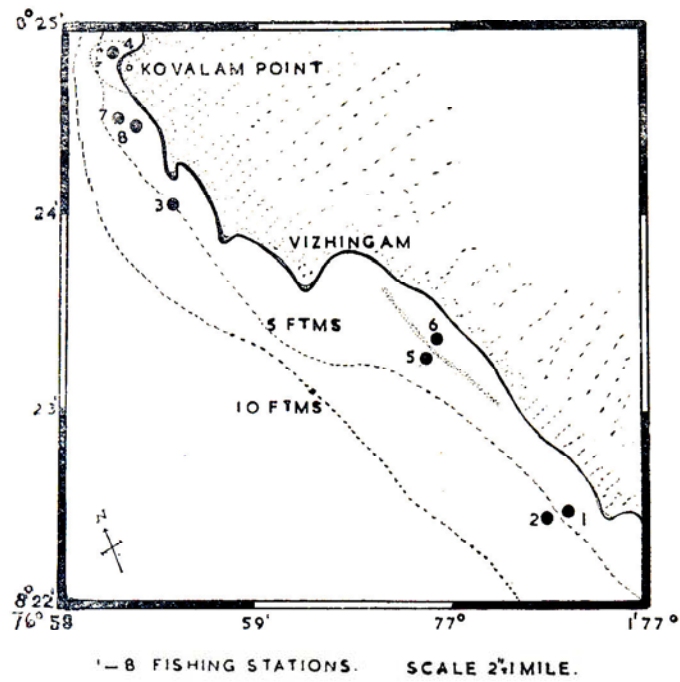


FIG. 3. Showing the fishing grounds and stations fished off Vizhingam.

At this centre fishing experiments were conducted for 5 days during December, 1959, at 8 different selected Stations having depths of 4.5 to 11.0 metres and within $\frac{1}{2}$ a mile (0.8 km.) reach from the shore. The details for each of the fishing Stations are indicated in the enclosed fishing log (Appendix III).

4. *Colachel-Muttam* (Fig. 4).—Colachel (Latitude $8^{\circ} 10'$ N. and Longitude $77^{\circ} 14'$ E.) is a small port connected by road to Nagercoil and also with a

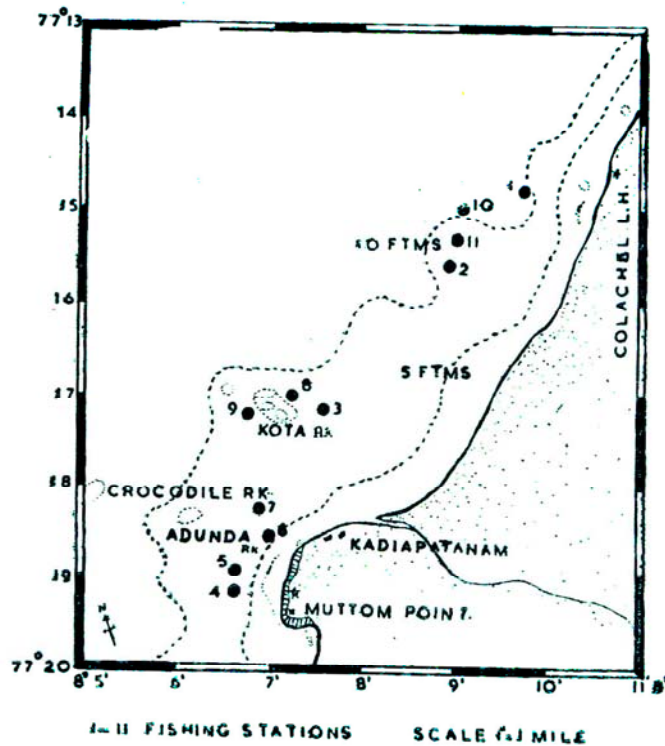


FIG. 4. Showing the fishing grounds and stations fished off Colachel-Muttam.

kutchra coastal road to Muttam. From Colachel the coast trends in a generally north-westerly direction for about 26 miles (41.6 km.) to Trivandrum. A brief description of this centre has been given by the authors in their previous communication (*op. cit.*, 1960). A number of submerged as well as exposed rocks are scattered in the sea off this coast. The situations of the most prominent rocks of this area were indicated by Miyamoto and Shariff (1958) in their earlier report. Heavy surf breaks on the coast, but these numerous rocks form a partial breakwater within which landing is comparatively safe.

In Colachel-Muttam area, the fishing investigations were carried out for 6 days during January, 1960. Fishing was conducted at 11 Stations having varying depths from 7.5 to 24.0 metres and within 3 to 3½ miles (4.8–5.6 km.) from the shore. The fishing details for each Station are given in the accompanying fishing log (Appendix IV).

FISHING OPERATIONS

The present fishing cruise, started during the beginning of December, 1959, continued up to the end of January, 1960, during which period 20 days of actual fishing was conducted at different centres, covering about 36 selected Stations in all. At each of the Stations, one unit consisting of 15 pieces of net was set. Generally the nets were set in the evening and hauled up next early morning, thus keeping them to fish overnight.

METHOD OF SETTING AND HAULING

Setting of nets was done from the stern and they were retrieved from the port or starboard side of the boat depending on the direction of wind and speed of the current. For purposes of easy and methodical way of setting, the nets were arranged on the aft deck of the boat as detailed below:

The two extreme ends of head and foot ropes of the first piece of net were further extended by attaching side ropes of sisal of $\frac{1}{4}$ " (0.63 cm.) diameter to a length of 3 fathoms (5.2 m.). The end of the side rope of the bottom line was fastened at a point on the buoy rope, where the stone sinker was tied securely and to the other free end of buoy rope were attached buoys and marking flags. The buoy rope is made of coir of $\frac{3}{4}$ " (1.88 cm.) in diameter and 10 to 15 fathoms (18–27 m.) in length. Then the end of the side rope on the head line was looped to the buoy rope at a distance equal to the depth of the net from the bottom end of buoy rope. The required number of pieces of netting were joined end to end at both the head and foot ropes, while keeping the nets across the deck in regularly arranged folds as floats and float-line to the port side and lead-line to the starboard side. After thus arranging all the 15 pieces, to the free end of the last piece of net similar side ropes were fastened for attaching stone sinker, buoy rope and buoy with flag marks as was done before for the first piece of net. At places where two pieces are joined in a set 2 to 3 cement sinkers weighing $\frac{1}{2}$ lb. (0.22 kg.) were tied. One more set of net was also got ready in a similar fashion. On reaching the prospective fishing ground, speed of the boat was reduced, necessary soundings for depth as well as the nature of bottom and current were checked and recorded. Maintaining a steady course and slow speed, shooting operations

started first with releasing of the flag mark with buoy and anchor, followed by the netting proper. Care was taken not to allow the net to foul. After releasing all the pieces, the other buoy rope with flag and anchor were thrown overboard. The opposite forces acting on the float-line and the lead-line due to the attachment of floats and sinkers respectively work in such a way as to sink the net to the desired depth besides keeping the entire fishing gear erect. After taking the necessary bearings of the fishing ground the boat returned to the base. The nets were left at the grounds to fish overnight.

Early next morning, the fishing grounds were visited and the hauling of the gear was done following the same procedure (*viz.*) picking up the flag and buoy, its ropes with anchor, followed by the net and other components. The nets were retrieved either from the port side or starboard side of the boat depending on the prevailing wind and current conditions. As the nets were hauled, catches were removed. It was also observed that on an average 11.4 and 16.5 minutes were taken for setting and hauling of one set of nets respectively with 6 men on board to assist in the operation.

RESULTS

The results and findings of the experimental fishing operations are presented in the attached Tables I to X.

DISCUSSION

Catches.—*Panulirus ornatus* and *P. polyphagus* are the common species of lobsters found in Bombay waters of the west coast of India (Rai, 1933). The commercial landings along the south-west coast of India are mostly made up of *P. dasypus* and *P. burgeri* (It is doubtful whether both are of the same species). During the period of the present investigations at different centres, the main species in the bulk of the catches was *P. burgeri*. It is interesting to record that at Vizhingam, a single specimen of *P. polyphagus* measuring 36 cm. in length and weighing 1.36 kg. was caught at a depth of 10 metres where the bottom was sandy. Similarly off Quilon a solitary specimen of *P. penicillatus* of length 36 cm. and weight 1.13 kg. was caught at a depth of 5 to 6 m. where the bottom was sandy with few sea-weeds scattered here and there.

The day-to-day catch details of the bottom set gill net at the different fishing centres are given separately in the attached Tables I, II, III and IV.

It will be seen from the Tables I to IV, that 549 pieces of netting in all as 244 at Quilon, 30 at Varkala, 110 at Vizhingam and 165 at Colachel-Muttam were used. During the entire period of the present experimental

TABLE I

Catch details of the bottom set gill net fishing operations at the different stations off Quilon, during December 1959 and January 1960

Dates of operation	Fishing ground		No. of pieces set	Catch details				Total weight in kg.
	Station	Depth in metres		Lobsters		Fishes		
				No.	Weight in kg.	No.	Weight in kg.	
9-10/12-59	1	6.5	15	1	1.13	3	6.58	7.71
9-10/12-59	2	4.5-6.5	15	2	1.36	1	4.08	5.44
10-11/12-59	3	5.5-6.5	15	9	5.90	15	17.69	23.59
Do.	4	6.5-7.5	15	4	2.73	5	2.49	5.22
11-12/12-59	5	5.5-6.5	15	2	0.91	2	2.49	3.40
Do.	6	4.5-6.0	15	66	34.93	9	8.84	43.77
19-20/1-60	7	5.5-6.5	15	1	1.13	7	11.8	12.93*
Do.	8	4.5-5.5	15	22	10.43	..	..	10.43
20-21/1-60	9	5.5-6.5	20	3	2.27	3	4.08	6.35
Do.	10	6.5-7.5	15	23	17.69	4	2.04	19.73
21-22/1-60	11	4.5-8.5	15	46	30.39	11	22.00	52.39*
Do.	12	4.5-7.0	20	38	19.96	15	34.47	54.43*
24-25/1-60	13	5.0-6.0	18	18	7.83	9	27.67	35.50*
25-26/1-60	14	5.5	20	..	..	2	18.60	18.60
25-26/1-60	15	4.5-5.0	16	2	1.82	3	12.24	14.06
Total	..	..	244	237	138.48	89	175.07	313.55
Catch per day in kg.	..	..	..	29.63	17.31	11.12	21.88	39.19
Catch per piece in kg.	..	..	..	0.97	0.57	0.36	0.72	1.29

Note.—Fishes mainly include sharks, perches and cat-fishes.

* Includes weight of turtles caught approximating to 33.11 kg.

TABLE II
 Catch details of bottom set gill net fishing operations at the different stations off Varkala during December 1959

Dates of operation	Fishing ground			No. of pieces set	Catch details				Total weight in kg.
	Station	Depth in metres	Lobsters		Fishes				
			No.		Weight in kg.	No.	Weight in kg.		
17-18/1-60	.. 1	5.5	15	2	1.59	22	20.86	22.45	
Do.	.. 2	5.0-8.25	15	..	..	20	7.26	7.26
Total	.. ..	..	30	2	1.59	42	28.12	29.71
Catch per day in kg.	.. ..	..	..	2	1.59	42	28.12	29.71
Catch per piece in kg.	.. ..	..	..	0.07	0.05	1.40	0.94	0.99

Note.—Fishes include small rays only.

fishing operations, 295 lobsters weighing 160.08 kg. and miscellaneous fishes weighing 484.49 kg. were caught.

At Quilon, maximum number of lobsters (*viz.*) 237 weighing 138.48 kg. were obtained for 8 days fishing in addition to fishes weighing 175.07 kg. (Table I). It was found that at this centre the catch per day worked out to be 29.63 lobsters, while the weight of lobsters per piece was 0.59 kg., which were the highest, compared to other centres, in spite of a lean season for lobsters. Fishermen of this area had suspended lobster fishing operations a month ago presuming that the season was over.

For a day's operation off Varkala only 2 lobsters (1.59 kg.) and fishes (28.12 kg.) were caught (Table II). Further fishing could not be continued due to unavoidable reasons.

The five days' fishing at Vizhingam, yielded a total of 18 lobsters of weight 12.70 kg. and fishes of weight 117.79 kg. (Table III). On an average 3.6 lobsters per day and 0.12 kg. per piece were obtained at this centre while the rate of catch per day was 3.8 lobsters for the set nets of hemp operated by the local fishermen during the same period. The fishing grounds here are

TABLE III

Catch details of bottom set gill net fishing operations at different stations off Vizhingam during December 1959

Dates of operation	Fishing ground		No. of pieces set	Catch details				Total weight in kg.
	Station	Depth in metres		Lobsters		Fishes		
				No.	Weight in kg.	No.	Weight in kg.	
16-17/12-59	.. 1	10.0-11.0	15	1	1.36	9	17.24	18.60
17-18/12-59	.. 2	9.0-10.0	15	..	..	78	47.61	47.61
18-19/12-59	.. 3	10.0	15	2	0.91	21	21.77	22.68
Do.	.. 4	6.5-7.5	15	..	..	11	6.80	6.80
19-20/12-59	.. 5	5.5-8.5	15	8	6.35	2	1.82	8.17
Do.	.. 6	4.5-5.0	15	7	4.08	3	5.67	9.75
22-23/12-59	.. 7	5.5-7.5	10	..	..	2	2.27	2.27
Do.	.. 8	8.5-9.0	10	..	..	15	14.61	14.61
Total	.. ..	..	110	18	12.70	141	117.79	130.49
Catch per day in kg.	.. ..	..	..	3.6	2.54	28.2	23.56	26.10
Catch per piece in kg.	.. ..	..	..	0.16	0.12	1.28	1.07	1.19

Note.—Fishes include rays, sharks, Jew fish, perches and cat-fish.

very limited and are restricted to the few rocky areas. Only these limited resources are intensely fished by the local fishermen. Off Colachel-Muttam area, a total of 38 lobsters weighing 15.31 kg. and 163.51 kg. of fish were caught for a period of 6 days' fishing (Table IV). The catch per day worked out to be 6.33 lobsters while the average weight of lobsters per piece was 0.09 kg. which is more or less similar to last year's observations (*op. cit.*, 1960). Further, it has been observed that during the same period catch of lobsters by the local fishermen using traps and anchor hooks was comparatively poor.

TABLE IV
Catch details of bottom set gill net fishing operations at different stations off Colachel-Muttam during January 1960

Dates of operation	Fishing ground		No. of pieces set	Catch details				Total weight in kg.	
	Station	Depth in metres		Lobsters		Fishes			
				No.	Weight in kg.	No.	Weight in kg.		
7-8/1-60	..	1	10.0-12.0	15	5	1.59	36	40.60	42.19
Do.	..	2	11.0-14.0	15	6	1.82	3	2.38	4.20
8-9/1-60	..	3	17.5-18.5	15	..	..	10	13.95	13.95
9-10/1-60	..	4	9.0	15	9	4.76	14	14.08	18.84
Do.	..	5	9.5-13.0	15	16	6.46	38	58.52	64.98
10-12/1-60	..	6	7.5-10.0	15	2	0.68	5	10.66	11.34
Do.	..	7	11.0-14.0	15	..	..	3	2.72	2.72
12-13/1-60	..	8	15.5-24.0	15	..	..	4	7.45	7.45
Do.	..	9	15.0-20.0	15	..	..	4	4.08	4.08
15-16/1-60	..	10	13.0-15.0	15	..	..	10	9.07	9.07
Do.	..	11	13.0-14.0	15	..	..	..	..	..
Total	165	38	15.31	127	163.51	178.82
Catch per day in kg.	6.33	2.55	21.17	27.25	29.80
Catch per piece in kg.	0.23	0.09	0.77	0.99	1.08

Note.—Fishes include sharks, rays, perches, cat-fish and moon-fish.

Table V indicates the catch of lobsters as well as fishes per unit area of webbing, the unit area being taken as 9.281 sq. m. (100 sq. ft.). The catch per unit area of webbing was worked out using the formula presented in our previous communication (1960, *op. cit.*). In the last column of Table V, the number of lobsters obtained per piece of netting at each of the centres are given for easy comparison. It is evident that the catch of lobsters at

TABLE V
Catch in kilograms per unit area of the bottom set gill
 net at different centres*

Fishing centre	Catch per 9·281 sq.m. (100 sq.ft.) of webbing			Catch in number of lobsters per piece of netting
	Lobsters in kg.	Fishes in kg.	Total in kg.	
Quilon ..	0·2014	0·2546	0·4560	0·97
Varkala ..	0·0188	0·3367	0·3555	0·07
Vizhingam ..	0·0432	0·4112	0·4544	0·16
Colachal-Muttam ..	0·0329	0·3517	0·3846	0·23

* Unit Area = 9·281 sq.m. (100 sq. ft.) of webbing.

Quilon was the highest when compared to other centres, being 0·97 kg. per piece and 0·2014 kg. per unit area of netting. This may probably be due to the fact that lobster fishery in these areas has started only a couple of years back and the rich and extensive grounds for lobsters are exploited by few fishermen only at present. Contrary to this the catch of fish for similar unit of webbing at this centre is the lowest indicating the possible effect of this new gear for the exclusive capture of lobsters. Lowest catch was noticed at Varkala. The catch per unit area was more or less identical with the other two centres, which were nearly one-fifth and one-sixth of Quilon. In the case of fish catch, Vizhingam recorded the highest per unit area of webbing. At Colachel-Muttam area it has been observed that the number of lobsters captured per piece during the present season was 0·23 as against 0·28 during 1958-59 (*op. cit.*, 1960), but catch of lobsters in terms of weight per unit area of webbing was 0·0329 as against 0·0250 kg. This may possibly be due to the fact that the sizes of lobsters caught in the gear were large and the grounds fished are different from that exploited by the local fishermen.

EXTENT OF FISHING GROUNDS

From the attempts so far made to assess the probable extent of lobster fishing grounds of the four centres fished, it has been observed that the area off Quilon and Colachel-Muttam were comparatively extensive whereas the grounds off Varkala and Vizhingam were very restricted and narrow.

The extent in the case of these latter two centres was limited and within $\frac{1}{4}$ mile from the shore. The present evidences indicate the probable existence of lobster fishing grounds to an extent of about 6 sq. miles off Quilon, 1 sq. mile each both at Varkala and Vizhingam and 11 sq. miles off Colachel-Muttam centres.

SIZE AND WEIGHT OF LOBSTERS

The total length and weight of all lobsters caught were measured. The length frequency and weight frequency distribution of these measurements are given in Tables VI and VII. It can be seen from Table VI that majority

TABLE VI

Length frequency table for lobsters caught at different centres

Size in cm.	Name of centre				Total	Average weight of each in gm. in this size-group
	Quilon	Varkala	Vizhingam	Colachel-Muttam		
12-17	5	..	..	3	8	225
17-22	34	1	4	11	50	382
22-27	114	1	8	21	144	515
27-32	73	..	5	3	81	790
32-37	11	..	1	..	12	1,042

TABLE VII

Weight frequency table for lobsters caught at different centres

Weight in kg.	Name of the centre				Total
	Quilon	Varkala	Vizhingam	Colachel-Muttam	
0-0.4	50	..	3	10	63
0.4-0.8	138	1	9	25	173
0.8-1.2	48	1	5	3	57
1.2-1.6	1	..	1	..	2

of lobsters (about 49%) in the total catch fall under the size range of 22–27 cm. About 93% of the catch have their lengths confined within the range of 17–32 cm. It is evident that the gear used during the present investigations caught only lobsters of fairly large size letting the small ones to escape.

As can be seen from Table VII about 58.5% of the lobsters in the entire catch fall under the weight group of 0.4–0.8 kg. The average weight of lobster in each of the size-groups was shown in the last column of Table VI and it is found that each individual in the majority size weigh on an average 515 gm. The modal size and weight of lobsters at all the four centres were 25 cm. and 0.6 kg. respectively.

CATCH IN RELATION TO DEPTH AND NATURE OF BOTTOM

The number of lobsters caught at different depth limits at the fishing grounds has been shown in Table VIII. Regarding the availability of lobsters with respect to depth, majority (about 86%) were caught from depths ranging from 3 to 7 m. At Quilon and Vizhingam centres they were found

TABLE VIII

Number of lobsters caught at different depths at different centres

Depth in metres	Number of lobsters caught at				Total
	Quilon	Varkala	Vizhingam	Colachel- Muttam	
3–5	92	†	15	†	107
5–7	145	2	*	†	147
7–9	*	*	*	2	2
9–11	*	†	3	9	12
11–13	†	†	*	27	27
13–15	†	†	†	*	*
15–18	†	†	†	*	*
18–21	†	†	†	*	*
21–24	†	†	†	*	*

* Fished. No catch.

† Not fished.

to inhabit the shallower regions as evidenced by data presented in Table VIII. Off Colachel–Muttam area, though the majority came from 9 to 13 m. depth range, the gear was not purposely tried in inshore waters to avoid interference with the local fishing. However, when the gear was operated at deeper waters up to 24 m. depth no lobsters were caught in the nets. To some extent these observations indicate their availability in shallow regions along the coast rather than the deeper waters beyond 15 m. However, this fact requires further confirmation by large-scale experiments.

Table IX shows the number of lobsters caught on various types of bottom, *viz.*, rocky, rock and sand combination and sandy. Regarding the preferential habits shown by lobsters to environmental conditions especially towards the nature of bottom where they generally prowl, it has been observed that they prefer rocky nature of bottom rather than the other types mentioned (*vide* Table IX). Two isolated specimens belonging to two different species were caught on sandy bottom and this has only to be considered as casual straying individuals.

TABLE IX
Number of lobsters caught in relation to the number of pieces of netting set on different types of bottom

Nature of bottom	Rocky	Combination of rock and sand	Sandy
Number of pieces of netting set in each	373	126	50
Number of lobsters caught	279	14	2

CATCH IN RELATION TO THE POSITION OF NETS SET

With a view to observing the relative efficiency of the working of the nets set at different angles to the shore-line, an attempt was made by setting the nets parallel and as well as perpendicular to the shore-line at all the four centres. As seen in Table X, it is strikingly interesting to note that nets set parallel to the shore-line yielded more number of lobsters than the nets set perpendicular to the shore (about 46% as against 16%). It may be said that in all probability there exists a pattern in the normal movements of the lobsters towards the shore-line particularly during the period of the present

TABLE X
*Number of lobsters caught in relation to the position
of the nets set*

Fishing centre	Number of pieces set parallel to the shore-line	Number of lobsters caught	Number of pieces set perpendicular to the shore-line	Number of lobsters caught
Quilon ..	229	235	15	2
Varkala ..	30	2	..	..
Vizhingam ..	95	17	15	1
Colachal-Muttam	30	14	135	24
Total ..	384	268	165	27

investigations. However, this observation has to be supported by further evidences.

SUMMARY

In continuation of the preliminary lobster fishing experiments with newly designed bottom set gill nets conducted during 1958-59, further fishing experiments were undertaken during the season of 1959-60 covering different fishing grounds off Quilon, Varkala, Vizhingam and Muttam-Colachel centres along the South-West Coast of India. The complete data collected and observations made during the current investigations are presented exhaustively in this paper.

ACKNOWLEDGEMENTS

Thanks are due to Dr. H. Miyamoto, FAO/ETAP Fishing Gear Technologist in India, under whose direct guidance the present cruise and investigations were undertaken and we are thankful for his useful criticisms in the preparation of this paper. Thanks are due to Shri M. Krishna Menon, Research Officer, Central Marine Fisheries Research Substation, Ernakulam, for his help to the identification of samples of lobsters caught during the present fishing operations. The authors are also grateful to Shri G. K. Kuriyan, Assistant Director (Gear), Central Fisheries Technological Research Station, Cochin, for going through the manuscript and offering suggestions.

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