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The Resources Information Series is a quarterly publication of Port Blair Base of Fishery Survey of India, Port Blair aimed to disseminate the fishery resources information collected through exploratory surveys in Andaman & Nicobar waters of Indian Exclusive Economic Zone (EEZ) to the fishing industry and other end-users.

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INTRODUCTION

The fishery survey vessel, *M.F.V. Blue Marlin*, a resource specific tuna longliner attached to Port Blair Base of Fishery Survey of India, Port Blair, adhering to the Fishery Resources Survey, Assessment and Survey Programme 2017-18 conducted the survey of oceanic tuna resources by deploying Regular Tuna Longline Gear (RTLL) and the exploratory survey of Perch and allied resources by deploying Bottom set vertical longline (BSVLL) in Andaman and Nicobar waters, during the quarter ending September 2017.

VESSEL AND GEAR

The survey vessel MFV Blue Marlin has been envisaged for the survey programme in Andaman and Nicobar waters operated by the Port Blair base of Fishery Survey of India, Port Blair during the period. The Major specifications and other details of the vessel are furnished below.

MAJOR SPECIFICATIONS OF SURVEY VESSEL (a) AND FISHING GEAR (b):

a) Survey vessel : *M.F.V. Blue Marlin*

Specification

Length Overall (M)	:	35.76
Registered Length (M)	:	32.42
Breadth (M)	:	7.60
Depth (M)	:	3.10
Endurance	:	20 days
Gross Registered Tonnage (ton)	:	310
Net Registered Tonnage (ton)	:	93
Main Engine Power (BHP)	:	800 PS
Maximum Speed	:	11.87 Knots
Fuel tank capacity	:	111.04 m ³
Fresh water tank capacity	:	61.68 m ³
Fish hold capacity	:	117.18 m ³
Freezing room capacity	:	50.60 m ³
Bait room capacity	:	5.2 m ³
Year of Built	:	1989
Type of vessel	:	Tuna long liner
Official No.	:	F-BOM-0001
Call sign	:	VTSG
Port of Registry	:	Mumbai

(b) FISHING GEAR – (TUNA LONGLINE) SPECIFICATION

Sl. No.	Component	Specification / Material	RTLL (Regular Tuna Longline) (one basket)	DLL (Deep Set longline) (One Basket)	BSVLL (Bottom set vertical long line) (one basket)
1	Main line	6.7 Ø tetron	50m x 6 pieces	50m x 8 pieces 50m x 10 pieces	50m x 6 pieces
2	Branch line	4.5 Ø tetron	12.5m x 5 pieces	12.5m x 7 pieces 12.5m x 9 pieces	15m x 6pieces
3	Float line	6.7 mm tetron	25m x 1 pieces	25m x 1 pieces	As per depth of water
4	Swivel	Box type	05 pieces	07-09 pieces	05 pieces
5	Sekiyama	30 x 4 x 3 wire served with twine	10m x 5 pieces	10m x 7 pieces 10m x 9 pieces	----
6	Leader wire	30 x 4 x 3 wire	2.5 m x 5 pieces	2.5 m x 7 pieces 2.5 m x 9 pieces	75 cm monofilament guts
7	Tuna hook/	3.6 Sun with ring /	5 pieces	07-09 pieces	33 pieces
8	Float	300 mm Ø with single eye	1 piece Tuna Longline	1 piece	1 piece
9	Perch hook	No. 4 & 5 150 mm Ø with double eye	--	--	05 pieces Bottom Set Vertical Longline
10	Weight	3 Kg. cement block	--	--	05 pieces

PART-I

Survey of Oceanic Tuna and allied Resources using Regular Tuna Longline Gear in the of North Eastern part of Andaman waters.

As a major part of the Fishery Resources Survey programme 2017-18, the survey of Oceanic Tuna and Allied Resources in the Eastern part of Andaman waters was programmed to study the availability of stocks and their migratory pattern. Therefore, the survey vessel M.F.V. Blue Marlin was deployed to conduct the survey of Oceanic Tuna and allied resources in the North Eastern part of Andaman waters during the month of July 2017 by deploying Regular Tuna longline gear (5 hooks/ Basket) covering the fishing areas of 04 squares (1°Lat × 1°Long) between Lat 10°N, 11°N and 12°N and Long. 92°E and 93°E. The vessel commenced her voyage on 18th July 2017 and concluded the voyage on 31st July 2017.

During the month, the vessel M.F.V Blue Marlin was out at sea for 14 days and conducted fishing during 12 days expending fishing effort of 7,500 hooks.

Table I

Area-wise and species- wise hooking rates (%) recorded during July 2017.

Area (Lat- Long)	Effort (No. of Hooks)	Total catch (Nos.)	Aggregate Hooking rate (%)	YFT	SKJ	MAR	SAIL	BAR	SHK	DOL	OTH*
10°N/92°E	2500	53	2.12	0.52	--	--	--	0.12	0.44	--	1.04
11°N/92°E	1875	12	0.64	0.21	--	--	--	--	0.21	--	0.21
11°N/93°E	1875	21	1.12	0.32	0.10	--	0.10	--	0.32	--	0.26
12°N/93°E	1250	16	1.28	0.32	--	0.08	0.08	--	0.16	0.16	0.48
TOTAL	7500	102	1.36	0.36	0.02	0.01	0.01	0.04	0.30	0.02	0.54

(YFT: Yellow fin Tuna, SKJ: Skipjack Tuna, MAR: Marlin, SAIL: Sail fish, SHK: Sharks, BAR: Barracuda and OTH: Others)

*Others: Rays

Sardine (*Amblygaster sirm*) locally known as *Kappatharni* and Mackerel (*Rastrelliger kanagurta*) locally known as *Bhangdi* were used as bait during the voyage. The details of Area wise and species wise hooking rate are furnished in Table- I. During the survey period, an aggregate hooking rate of 1.36 % was obtained for all fishes.

Table: II

Percentage of Catch composition recorded (Nos. and Weight) during July 2017.

Species	Nos.	%	Wt (Kg.)	%
Yellow fin Tuna	27	26.47	637	37.87
Skipjack Tuna	02	1.96	05	0.3
Marlin	01	0.98	45	2.67
Sail fish	03	2.94	72	4.28
Barracuda	03	2.94	28	1.67
Sharks	23	22.55	740	44.0
Dolphin fish	02	1.96	04	0.23
Rays	41	40.20	151	8.98
Total	102	100	1682	100

The percentage of Catch composition by Regular Tuna Longline (by Number and Weight) is furnished in Table II. From the table it is revealed that Yellow fin tuna constituted 26.47 % of the catch by number and 37.87 % by weight respectively, followed by Sharks (22.55 % by number and 44.0 % by weight) whereas Rays represented 40.20 % by number and 8.98% by weight.

Details of distribution of sampling effort (number of hooks), area coverage, aggregate hooking rate and hooking rate for Yellowfin Tuna, Sharks and other fishes for July2017 is depicted in the Fig 1.

Salient Observations:

1. The aggregate hooking rate recorded was 1.36 % for all fishes during the month of July 2017.
2. Rays dominated the catch by 40.20 %, Yellowfin Tuna 26.47%, Sharks 22.55 %, Sailfish and Barracuda 2.94%, Dolphin fish 1.96 % and Marlin 0.98%.
3. The area 10°N/92°E, 11°N/93°E and 12°N/93°E were more productive for Yellowfin tuna.
4. A total of 102 nos. of fishes weighing about 1682 kgs were recorded during the voyage.

PART-II

Experimental Bottom Set Vertical Longlining for perch resources in Andaman Eastern part of Nicobar group of Islands.

The perches (comprising of Groupers, Snappers and Emperors) are the major fishery resources contributing more than 40% of total landings in Andaman and Nicobar Islands and fetches high value in local market as well as from exports. It is a prerequisite to estimate the perch fishery resources potential of rocky, coral bank areas of sea mounts of Andaman and Nicobar Islands. Hence, the Fishery Survey of India, Port Blair has designed a special gear called Bottom set vertical longline gear (BSVLL) and has been experimenting on the sea mounts of Andaman and Nicobar waters on board MFV Blue Marlin for the past two decades. The survey methodology consisted of deployment of Bottom set vertical longline gear (30 hooks/basket). Specification of the gear is given in Major specification of vessel and gears.

The survey vessel M.F.V. Blue Marlin was deployed for survey of perch resources using BSVLL during August 2017. She commenced her voyage on 12th August 2017 and concluded her voyage on 29th August 2017. During the month, the vessel surveyed areas of Lat 07°N, 08°N, 09°N, 10°N and 11°N and Long. 92°E and 93°E for 20 days by operating Bottom set vertical longline gear for 15 days. A total of 11,000 hooks were operated in the above said area because the area is destined to emerge a good fishing ground for Perch resources. Along with Bottom set vertical longline gear, Regular Tuna longline Gear was also applied, as the target for Bottom set vertical longline gear was completed early. The details of Area wise and species wise hooking rate are furnished in Table-V.

Table III

Area-wise and species- wise hooking rates (%) recorded during August 2017

Area (Lat- Long)	Effort (No. of Hooks)	Total catch (Nos.)	Aggregate Hooking rate (%)	EMP	GRP	SNP	YFT	MAR	SHK	OTH*
07°N/93°E	300	11	3.66	1.33	02	0.33	--	--	--	--
08°N/93°E	6900	142	2.05	0.74	0.79	0.33	--	--	0.17	0.01
09°N/92°E	1800	19	1.05	0.05	0.38	--	--	--	0.5	0.11
09°N/93°E	400	--	--	--	--	--	--	--	--	--
10°N/92°E	1200	13	1.08	--	--	--	0.58	0.08	0.08	0.33
11°N/92°E	400	01	0.25	--	--	--	--	--	--	0.25
TOTAL	11,000	186	1.69	0.50	0.61	0.21	0.06	0.009	0.2	0.07

(EMP: Emperors, GRP: Groupers, SNP: Snappers, YFT: Yellowfin Tuna, MAR: Marlin, SHK: Sharks, OTH: Others)

*OTH: Rays, Trigger fish and Big scale Pomfret

Sardine (*Amblygaster sirm*) locally known as *Kappatharni* and Mackerel (*Rastrelliger kanagurta*) locally known as *Bhangdi* were used as bait during the voyage. The details of Area wise and species wise hooking rate are furnished in Table- III. During the survey period, an aggregate hooking rate of 1.69 % was obtained for all fishes.

Table: IV

Percentage of Catch composition recorded (Nos. and Weight) during August 2017

Species	Nos.	%	Wt (Kg.)	%
Emperors	56	30.11	165	28.16
Groupers	68	36.56	41.5	7.09
Snappers	24	12.91	31.7	5.42
Yellowfin Tuna	07	3.74	144	24.59
Marlin	01	0.54	65	11.09
Sharks	22	11.83	98.6	16.83
Others	08	4.31	40	6.82
Total	186	100	585.8	100

The percentage of Catch composition by Bottom set vertical longline by (Number and Weight) is furnished in Table VI. From the table it is understood that Groupers dominated the catch by number (36.56%) and weight (7.09%), followed by Emperors by number (30.11%) and weight (28.16 %) and Snappers by numbers (12.91%) and by weight (5.42%).

Details of distribution of sampling effort (hooks), area coverage and aggregate hooking rate are depicted in the Fig - III

Salient Observations:

1. The aggregate hooking rate recorded was 1.69 % for all fishes during the month of August 2017.
2. Groupers dominated the catch with a hooking rate of 0.61 % followed by Emperors with 0.50 % and Snappers 0.21 % respectively.
3. A total of 186 fishes weighing about 585.8 kgs. were recorded during the voyage.

PART-III

**Survey of Oceanic Tuna and allied Resources using Regular Tuna Longline Gear
in the of Eastern part of Nicobar waters.**

As a major part of the Fishery Resources Survey programme 2017-18, the survey of Oceanic Tuna and Allied Resources in the Eastern part of Andaman waters was programmed to understand the availability of stocks and their migratory pattern. Therefore, the survey vessel M.F.V. Blue Marlin was deployed to conduct the survey of Oceanic Tuna and allied resources in the North Eastern part of Andaman waters during the month of September 2017 by deploying Regular Tuna longline gear (5 hooks/ Basket) covering the fishing areas of 10 squares (1°Lat × 1°Long) between Lat 08°N, 09°N, 10°N and 11°N and Long. 92°E, 93°E and 94°E. The vessel commenced her voyage on 08th September 2017 and concluded the voyage on 27th September 2017.

During the month, the vessel M.F.V Blue Marlin was out at sea for 20 days and conducted fishing on 14 days expending an effort of 8750 hooks.

Table V
Area-wise and species- wise hooking rates (%) recorded during September 2017

Area (Lat- Long)	Effort (No. of Hooks)	Total catch (Nos.)	Aggregate Hooking rate (%)	YFT	SHK	MAR	SAIL	DOL	OTH*
08°N/93°E	1250	14	1.12	0.4	0.24	--	0.08	--	0.4
08°N/94°E	1250	36	2.88	0.56	0.56	0.08	--	--	1.68
09°N/92°E	625	04	0.64	0.16	0.32	--	--	--	0.16
09°N/93°E	1250	14	1.12	0.16	0.4	--	--	--	0.56
09°N/94°E	625	16	2.56	--	0.64	--	--	--	1.92
10°N/92°E	1250	03	0.24	0.08	--	--	--	0.08	0.08
10°N/93°E	625	11	1.76	0.8	0.48	--	--	--	0.48
10°N/94°E	625	--	--	--	--	--	--	--	--
11°N/92°E	625	--	--	--	--	--	--	--	--
11°N/93°E	625	06	0.96	0.64	0.16	--	--	--	0.16
TOTAL	8750	104	1.18	0.28	0.28	0.01	0.01	0.01	0.58

(YFT: Yellow fin Tuna, MAR: Marlin, SAIL: Sail fish, SHK: Sharks, and OTH: Others)

*OTH: Only Rays

Sardine (*Amblygaster sirm*) locally known as *Kappatharni* and Mackerel (*Rastrelliger kanagurta*) locally known as *Bhangdi* were used as bait during the voyage. The details of Area wise and species wise hooking rate are furnished in Table- I. During the survey period, an aggregate hooking rate of 1.18 % was obtained for all fishes.

Table: VI

Percentage of Catch composition recorded (Nos. and Weight) during September 2017.				
Species	Nos.	%	Wt (Kg.)	%
Yellow fin Tuna	25	24.03	902	42.77
Sharks	25	24.03	1021	48.41
Marlin	01	0.97	54	2.56
Sail fish	01	0.97	25	1.19
Dolphin fish	01	0.97	03	0.14
Rays	51	49.03	104	4.93
Total	104	100	2109	100

The percentage of Catch composition by Regular Tuna Longline (by Number and Weight) is furnished in Table II. From the table it is revealed that Yellow fin tuna and Sharks shared same catch by number and varying in their weight (24.03 % and 42.77 and 48.41 %) respectively followed by Marlin and Sailfish (0.97 % by number and 2.56 and 1.19 % by weight) whereas Rays represented 49.03 %. by number and 4.93% by weight.

Details of distribution of sampling effort (number of hooks), area coverage, aggregate hooking rate and hooking rate for Yellowfin Tuna, Sharks and other fishes for September 2017 is depicted in the Fig III.

Salient Observations:

1. The aggregate hooking rate recorded was 1.18 % for all fishes during the month of September 2017.
2. Rays dominated the catch by 49.03 %, Yellowfin Tuna and Sharks 24.03 %, Marlin and Sailfish 0.97 % and Dolphin fish 0.97 %.
3. The area 08°N/94°E, 09°N/94°E, 08°N/93°E, 09°N/93°E and 10°N/93°E were more productive for Yellowfin tuna.
4. A total of 104 nos. of fishes weighing about 2109 kgs were recorded during the voyage.

Diversity of Perch resources of Eastern Nicobar waters as revealed by Exploratory Bottom set vertical longlining

As a part of Fishery resources survey assessment and research programme 2017-18 of Fishery Survey of India, the vessel MFV Blue Marlin, longliner attached with the Port Blair Base of Fishery Survey of India, was deployed for survey of perch resources of Eastern Nicobar waters during the month of August 2017. Under the programme, the vessel operated 8,400 Bottom set vertical longline hooks in the waters below 100 m off the Islands: Car Nicobar and Nancowry group of Islands. A total of 151 fishes including Groupers, Emperors, Snappers and Trigger fishes were caught in the survey. The Groupers were dominating the catch both by number as well as by weight. The analysis of diversity of perch resources revealed that 16 species belonging to 09 genera and 04 families were recorded. A comparison of the perch diversity with that recorded in the Andaman waters indicated reduced diversity in the Nicobar waters. A list of the species recorded are furnished in the table below.

Diversity of fish caught by Bottom set vertical longline gear

Sl. No.	Family	Scientific Name	Common Name
01	Lethrinidae	<i>Lethrinus rubrioperculatus</i>	Spot cheek Emperor
02	Lethrinidae	<i>Lethrinus xanthochilus</i>	Yellowlip Emperor
03	Lethrinidae	<i>Lethrinus olivaceus</i>	Large face Emperor
04	Lutjanidae	<i>Aprion virescens</i>	Green Job fish
05	Lutjanidae	<i>Lutjanus gibbus</i>	Humpback Red Snapper
06	Lutjanidae	<i>Lutjanus decussates</i>	Chek Red Snapper
07	Serranidae	<i>Cephalopholis miniata</i>	Coral Hind
08	Lutjanidae	<i>Lutjanus argentimaculatus</i>	Mangrove Red Snapper
09	Serranidae	<i>Epinephelus undulosus</i>	Wavylined Grouper
10	Serranidae	<i>Epinephelus areolatus</i>	Areolate Grouper
11	Serranidae	<i>Epinephelus longispinnis</i>	Long spine Grouper
12	Serranidae	<i>Variola albimarginata</i>	Lyretail Grouper
13	Serranidae	<i>Epinephelus fasciatus</i>	Blacktip Grouper
14	Serranidae	<i>Etelis carbunculus</i>	Ruby Snapper
15	Lutjanidae	<i>Cephalopholis microprion</i>	Dothead Hind
16	Lutjanidae	<i>Aphareus rutilans</i>	Rusty Job fish
17	Charcharhinidae	<i>Arothron nigropunctatus</i>	Blackspotted puffer
18	Charcharhinidae	<i>Charchahinus macloti</i>	Maclot's Shark
19	Charcharhinidae	<i>Charcharhinus melanopterus</i>	Blacktip Reef Shark
20	Charcharhinidae	<i>Trienodon nigricans</i>	Whitetip Reef Shark



Oceanic Pomfrets caught by exploratory longlining conducted in the Andaman waters.

During the exploratory regular tuna longlining conducted onboard MFV Blue Marlin, attached to Port Blair Base of Fishery Survey of India in the month of August 2017, 04 numbers of Oceanic pomfrets (Family: Bramidae) were caught from 11° 24.5'N/92 °47.2'E, 10° 49.5'N/92 ° 57.2'E and 10 °37.0'N/92 °59.8'E at a depth range of 720 m to 1343 m. Taxonomic analysis revealed that the specimens belongs to the species *Taractes rubescens* (Jordan and Evermann, 1887) and *Taractichthys steindachneri* (Döderlein, 1883). The Sickle pomfret (*Taractichthys steindachneri*) caught were in the Total Length (TL) of 73, 68 and 45.9 cm, weighing 5.300, 5.150, 1.835 Kg respectively, whereas single specimen of Keeltail Pomfret (*Taractes rubescens*) had a TL of 77 cm, weighing 5.956 Kg. Biological studies undertaken revealed that the sex ratio of Sickle pomfret was 2:1 (M:F). The female was in advanced stage of maturity. Diet studies revealed that the preferred food were Teleosts (Barracuda, Eel) and Cephalopods (*Sthenoteuthis oualaniensis*, *Onychoteuthis banksii*). The single specimen of *Taractes rubescens* was a female which was also in advanced stage of maturity. Since the stomach of the specimen was empty, detailed studies on diet of the species couldn't be undertaken during this month. Both the species had already been documented in the Andaman and Nicobar waters by FSI Scientists.



Taractichthys steindachneri

Taractes rubescens