Project –I.C.5. : **SURVEY OF OCEANIC TUNA AND ALLIED RESOURCES AND PERCH RESOURCES BY DIFERENT TECHNIQUES IN A & N WATERS**

Project Coordinator : Dr. Vinod Kumar Mudumala, Zonal Director

Period : April 2022 – March 2023

Project objectives:

- Estimation of abundance indices of oceanic tuna, swordfish, perches and allied resources
- Identifying spatio-temporal distribution pattern of the above resources
- Study of biological parameters in respect of important species
- Study of oceanographic and meteorological parameters influencing tuna & swordfish distribution
- Study of migration pattern of yellowfin tuna
- Experiment with modified deep longline gear for surveying stock status of Big-eye tuna resources in Andaman waters
- Imparting training in fishing techniques and demonstrations of modern equipment on board, to the fishermen, fishing industry representative and entrepreneurs

Survey and Research Team:

Project Leader	**Project Associates**	
	Scientists	**Engineer**
Dr. Vinod Kumar Mudumala, Zonal Director	Shri. Puran Singh, Sr. Scientific Assistant Shri Rahulkumar B. Tailor, Sr. Scientific Assistant	Shri Rajendra B. Dokare, Service Engineer (Mech)

Base of operation : **Port Blair**

Vessel : **MFV *Blue Marlin***

Gear :
(i) Multifilament tuna long line with 5 hooks per basket.
(ii) Modified Deep long line with 7/9 hooks per basket.
(iii) Drift longline with light sticks
(iv) Bottom set vertical long line with 30 hooks per basket.

Vessel Officers

Skipper : Shri. K. P. Vinoji, Skipper

Chief Engineer Gr. I : Vacant

Physical Target per Cruise

Days out at sea : 20

Fishing days : 16 (Andaman waters) /14 (Nicobar waters)

Hooks per set : 625

Distribution of Sampling Efforts:

Project Area	Latitude	Month	No. of sets/cruise
Andaman Waters	10° - 15° N	04#, 05#, 07♣, 11#, 1◈, 3⦿	16
Nicobar waters	05° - 10° N	6♣, 8⦿, 10#, 12◈, 2#	14

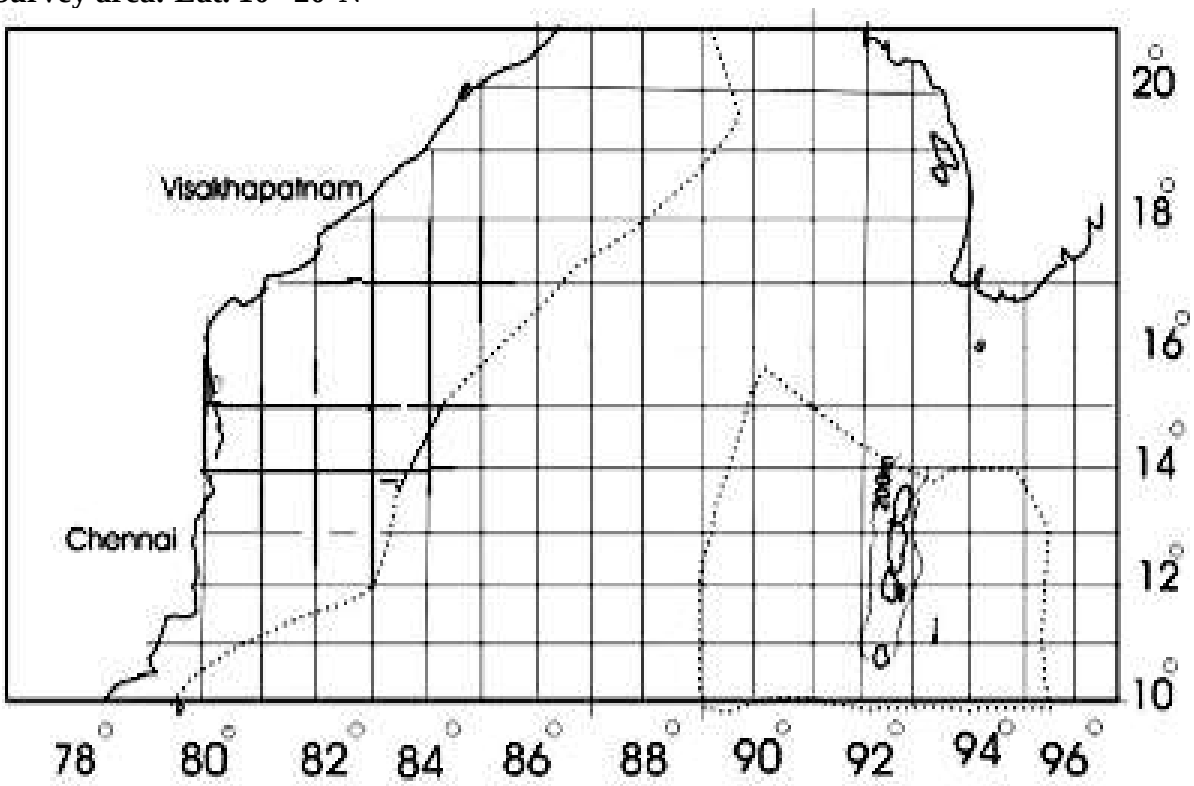
Regular tuna longline

♣ Bottom set vertical longline

⦿ Modified Deep long line

◈ Drift longline with light sticks

Survey area: Lat. 10°-20°N



Collection of Environmental Data:

Besides the catch data and biological data being collected in longline survey, data on environmental parameters will be collected as follows:

i. Salinity, Temperature and Depth (STD) data per day per set.

ii. Sea Surface Temperature (SST) data at every one hour interval from the commencement to completion of voyage.

iii. Data on current direction and speed, one observation every day (sets are to be made at specific depth).

Result reporting: As per Annexure – II

I. E. MAINTENANCE PROGRAMME 2022-23

Sl. No.	Vessel	Programme
I. E.1	MFV *Matsya Nireekshani*	Annual Planned Maintenance Programme
I. E.2	MFV *Sagarika*	Dry-docking and Annual Planned Maintenance Programme
I.E.3	MFV *Matsya Varshini*	Annual Planned Maintenance Programme
I.E.4	MFV *Lavanika*	Dry-docking and Annual Planned Maintenance Programme
I.E.5	MFV *Samudrika*	Dry-docking and Annual Planned Maintenance Programme
I.E.6	MFV *Matsya Shikari*	Dry-docking and Annual Planned Maintenance Programme
I.E.7	MFV *Matsya Darshini*	Annual Planned Maintenance Programme
I.E.8	MFV *Yellow Fin*	Annual Planned Maintenance Programme
I.E.9	MFV *Blue Marlin*	Annual Planned Maintenance Programme
I.E.10	MFV *Matsya Vrushti*	Annual Planned Maintenance Programme
I.E.11	MFV *Matsya Drushti*	Annual Planned Maintenance Programme

I.E.9. : ANNUAL PLANNED MAINTENANCE PROGRAMME FOR THE YEAR 2022-2023

Name of the Vessel : MFV *Blue Marlin*
Base of operation : Port Blair Base

	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23
Dry-docking & Afloat Repairs												
Main Engine					#			#				#
Aux. Engine(P)												
Aux. Engine(S)			#			O		#			#	
Generator(P)		#							#			
Generator(S)				#					#			
Ref. Compr – I			#					#			O	
Ref. Compr – II			#									
Bait room Compressor												
General Maintenance						GM						

O- Overhauling # -Inspection/Minor Repair /// – Dry-docking/Afloat Repairs, GM- General Maintenance.
All other machinery Repairs/minor works as and when required.

I. F. : OPERATIONAL TARGETS FOR THE YEAR 2022-2023

Vessel	No. of Voyages	Days out at sea	Fishing Days	Bottom trawling (sampling hours)	Tuna longlining (hooks)	Experimental gear operation
Matsya Nireekshani	11	220	176	825	-	-
Sagarika	09	180	144	675	-	-
Matsya Varshini	10	200	160	750	-	-
M F V *Lavanika*	18	180	144	675	-	-
M F V *Samudrika*	09	180	144	675	-	-
Matsya Darshini	10	200	160	750	-	*Acoustic survey
Matsya Shikari	09	180	144	675	-	-
M F V *Yellow Fin*	11	220	164	-	56,250	Regular Tuna longline- 56,250 hooks Drift Gill net- 176 hrs Bottom set vertical Longline- 18,750 hooks
M F V *Blue Marlin*	11	220	166	-	66,250	Regular Tuna longline- 47,500 hooks Modified deep longline- 18,750 hooks Drift Longline- 18,750 hooks Bottom set vertical Longline- 18,750 hooks
Matsya Vrushti	10	200	146	-	91,980	-
Matsya Drushti	10	200	137	-	86,310	-
Total	**117**	**2180**	**1685**	**5385**	**3,00,790**	**RTL – 103750; DGN – 27500; DL – 18750; BSVL – 37500; MDL – 18750**

I.G. : MONTH-WISE TARGET OF OPERATIONAL DAYS: 2022-23

Year	**2022**									**2023**			**Total**
Vessel	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	
Matsya Nireekshani	GM	20	20	20	20	20	20	20	20	20	20	20	**220**
Sagarika	20	20	20	20	20	20	20	DDR		O	20	20	**180**
Matsya Varshini	20	20	20	20	GM	20	20	20	O	20	20	20	**200**
Lavanika	20	20	20	20	20	20	DDR		GM	20	20	20	**180**
Samudrika	ME O	20	20	20	20	20	DDR		20	20	20	20	**180**
Matsya Darshini	20	20	20	20	20	20	20	ME O	20	20	GM	20	**200**
Matsya Shikari	20	20	O	20	20	DDR		20	20	20	20	20	**180**
Yellow Fin	20	20	20	20	20	20	20	20	ME O	20	20	20	**220**
Blue Marlin	20	20	20	20	20	GM	20	20	20	20	20	20	**220**
Matsya Vrushti	20	20	20	GM	20	20	20	20	20	20	ME O	20	**200**
Matsya Drushti	20	20	20	20	20	O	20	20	20	20	20	ME O	**200**

O- Overhauling, ME O- Main Engine Overhauling, DDR– Dry-docking/Afloat Repairs, GM- General Maintenance.

I.H. : PROPOSED SCIENTIST PARTICIPANTION FOR THE YEAR 2022-23

Base	Vessel	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23
Mumbai	***M. Nireekshani***	GM	H. D. Joshi	To be posted*	To be posted*	S. S. Shirke	To be posted*	H. D. Joshi	To be posted*	A. V. Tamhane	To be posted*	S. S. Shirke	A. V. Tamhane
	M. Vrushti	A. V. Tamhane	S. S. Shirke	To be posted*	GM	A. V. Tamhane	H. D. Joshi	To be posted*	S. S. Shirke	To be posted*	H. D. Joshi	ME overhauling	Women Joint participation
Mormugao	***Yellow fin***	N. Unnikrishnan	H. D. Pradeep	Nashad. M	N. Unnikrishnan	To be posted*	H. D. Pradeep	Nashad. M	Raju S Nagpure	ME overhauling	N. Unnikrishnan	To be posted*	Raju S Nagpure
	Sagarika	Raju S Nagpure	To be posted*	H. D. Pradeep	Raju S Nagpure	Nashad. M	To be posted*	N. Unnikrishnan	Dry Docking		GM	Nashad. M	H. D. Pradeep
Cochin	***M. Varshini***	Solly Solomon	S. K. Pattnayak	Jacob Thomas	A. E. Ayoob	GM	Solly Solomon	S. K. Pattnayak	Jacob Thomas	ME overhauling	A. E. Ayoob	S. K. Pattnayak	Jacob Thomas
Chennai	***M. Drushti***	A.J. Chembian	J. C. Dhas	K. Silambarasan	To be posted*	Y. Tharumar	AE overhauling	A.J. Chembian	J. C. Dhas	K. Silambarasan	Women Joint participation	Y. Tharumar	ME overhauling
	Samudrika	ME overhauling	Y. Tharumar	To be posted*	A.J. Chembian	J. C. Dhas	K. Silambarasan	Dry Docking		Y. Tharumar	A.J. Chembian	J. C. Dhas	K. Silambarasan
Visakha-patnam	***M. Shikari***	G.V.A. Prasad	A.B. Kar	ME overhauling	Pratyush Das	G.V.A. Prasad	Dry Docking		A.B. Kar	To be posted*	Pratyush Das	To be posted*	G.V.A. Prasad
	M. Darshini	Pratyush Das	To be posted*	To be posted*	Ref. comp. overhauling	A.B. Kar	To be posted*	Pratyush Das	ME overhauling	G.V.A. Prasad	A.B. Kar	GM	To be posted*
Port Blair	***Blue Marlin***	Rahulkumar Tailor	To be posted*	Puran Singh	Rahulkumar Tailor	Puran Singh	GM	To be posted*	Rahulkumar Tailor	Puran Singh	To be posted*	Rahulkumar Tailor	Puran Singh

*****Keeping in view of acute shortage of scientific manpower, the deputation of Scientist participant may be arranged based on mutual consent of Bases as well as HQ.
GM- General Maintenance.

I.I. : TARGETS FOR SCIENTIST PARTICIPATION ONBOARD SURVEY VESSEL FOR THE YEAR 2022-23

Bases/ Headquarters	Designation	No. of voyages	No. of days
Bases	Sr. Fisheries Scientist	3	60
	Fisheries Scientist/ Fishing Gear Technologist/ Jr. Fisheries Scientist	4	80
	Sr. Scientific Assistant/ Jr. Fishing gear Technologist	4	80
Headquarters	Sr. Fisheries Scientist/ Fisheries Scientist	1	20
	Jr. Fisheries Scientist/ Sr. Scientific Assistant	2	40

I.J. : INTER-INSTITUTIONAL PROJECTS

I.J.1. : STOCK STRUCTURE INVESTIGATION ON YELLOW FIN TUNA, FROM THE EEZ OF INDIA AND THE ADJACENT HIGH SEAS USING GENOMIC TOOLS

Government of India has conveyed the administrative approval for the project namely "*Stock Structure Investigation on yellow fin tuna, from the EEZ of India and the adjacent high seas using genomic tools*" jointly conducted by Fishery Survey of India (FSI) and ICAR-CMFRI under the Central Sector Schemes Component of 'Pradhan Mantri Matsya Sampada Yojana' (PMMSY): A scheme to bring about Blue Revolution through sustainable and responsible development of fisheries sector in India during the financial year 2021-22. Further, 1st installment of ` 10,47,250/- (` Ten Lakhs Forty Seven Thousand Two Hundred and Fifty only) has already been released and credited to the designated account of ICAR-CMFRI. Total sanctioned grant for the project is ` 49.61 lakhs.

The major objectives of the project are;

- To detect sub-population structuring in Yellowfin tuna in the India's EEZ and adjacent high seas.
- To identify highly differentiated SNP's so as to develop a tool for detection of catch provenance.
- To disseminate findings to the Department of Fisheries, Govt. of India as reports and publications in peer reviewed journals.
- Suggest management and conservation measures to prevent over-exploitation of Yellowfin tuna fishery in the Indian EEZ.

I.J.2. : MARINE MAMMAL STOCK ASSESSMENTS IN INDIA

Government of India has conveyed the administrative approval to the FSI for the project namely "*Marine Mammal Stock Assessments in India*" in collaboration with ICAR-CIFT (Central Institute of Fisheries Technology) and MPEDA-NETFISH at a total cost of ` 7,10,93,940/- (` Seven Crore Ten Lakh Ninety Three Thousand Nine Hundred and Forty Only) under the Central Sector Scheme Component of the 'Pradhan Mantri Matsya Sampada Yojana' (PMMSY): A scheme to bring about Blue Revolution through sustainable and responsible development of fisheries sector in India during the financial year 2021-22 as 100% Central Assistance.

The major objectives of the project are;

- Document on marine mammal abundance, bycatch and mortalities.
- Document on suggestions on reducing incidental capture and mortality of marine mammals.
- Characterization of marine mammals (cetacean) in the Indian EEZ at different season.
- Examine relationship between marine mammal spatial distribution and oceanic features.
- A series of data on the abundance, distribution and habitat of marine mammals off the coast of India and to answer the following questions;
  How does abundance and diversity change with distance from the coast?
  What are the species that occur coastal and off shore of India?
  How does the species partition the available habitat?
- Submission of annual marine mammal stock assessment report to NOAA USA.

ANNEXURE-I

SPECIES SELECTED FOR BIOLOGICAL STUDIES

Sl. No	Name of the Base	Project Leader	Project Associates	Name of Species
1.	**Port Blair**	Dr. M. Vinodkumar Zonal Director	Shri Puran Singh Sr. Scientific Assistant Shri Rahulkumar Tailor Sr. Scientific Assistant	*Thunnus albacares* *Katsuwonus pelamis* *Makaira mazara* *Makaira indica* *Tetrapturus audax* *Istiophorus platypterus* *Xiphias gladius* *Thunnus obesus* *Rastrelliger kanagurta* *Amblygaster sirm*

ANNEXURE - II

RESULT REPORTING REQUIREMENT

Marine

(i) Weekly and monthly reports on physical achievements by e-mail/fax.

(ii) Cruise reports, catch data, length frequency data, biological data and environmental data every month.

(iii) Instantaneous reporting of significant findings of survey.

(iv) Annual assessment of fish stocks.

Inter-disciplinary projects

Quarterly, half-yearly and annual progress reports of the projects

ANNEXURE – III

STRATUM AREA FOR DEMERSAL TRAWL SURVEY

(Area in sq. km)

Latitude(° N)	Depth Zone(m)			
	30-50	**50-100**	**100-200**	**200-500**
West Coast				
7-8*	2430	3930	4090	2510
8-9	1700**	3870	870	2650
9-10	1685	2350	850	2135
10-11	1730	2555	715	415
11-12	2580	4820	1070	985
12-13	1710	4250	1835	825
13-14	3715	65+75	1875	1450
14-15	2345	6125	1835	825
15-16	1825	5065	2420	1040
16-17	1930	8010	1725	1140
17-18	3400	13905	2575	645
18-19	3885	22570	1235	600
19-20	7935	23080	1760	1355
20-21	8385	12950	1115	950
21-22	3625	9115	2515	1115
22-23	3220	2970	3100	845
East Coast				
8-9	500***	600	1540	825
9-10	--	--	--	--
10-11	440	1280	1510	450
11-12	810	875	260	255
12-13	1020	2100	725	345
13-14	375	785	415	565
14-15	455	525	395	150
15-16	630	625	470	275
16-17	520	690	1030	695
17-18	1535	1400	1255	925
18-19	810	3120	1485	510
19-20	1910	1975	1680	410
20-21	4220	7530	9860	1060

*-Wadge Bank

***- East of long. 77°30’ E

Note: Area of strata for trawl survey, bounded by latitudes and depth contours, is given above. Un-trawlable grounds are not excluded.