Project –I.A.3.	:	**DEMERSAL FISHERY RESOURCES SURVEY, ASSESSMENT AND MONITORING ALONG SOUTH WEST COAST, WADGE BANK AND GULF OF MANNAR BETWEEN LAT. 07° N – 12° N**
Project Coordinator	:	Dr Sijo P. Varghese, Zonal Director
Period	:	April 2022 – March 2023

Project components:

1. Demersal fin fish resources survey in the South-West coast, Quilon Bank, Wedge Bank and Gulf of Mannar between 7° N and 12° N in 100-500 m depth.
2. Monitoring of demersal resources using fish trawl in 30-100 m depth.
3. Exploration and species inventory on slope dwelling resources in 200-500 m depth.

Project objectives:

- Preparation of species inventory of demersal fin-fish and shellfish resources
- Estimation of abundance indices of demersal resources and the major components thereof, with emphasis on scads, lizard fish, threadfin breams, squids, cuttlefish , bulls eye, crabs, carangids and horse mackerel
- Mapping spatio – temporal distribution pattern of the resources
- Study of biological aspects of selected 10 important species
- Investigation of biology of perches in Quilon Bank, Wadge Bank and Gulf of Mannar
- Imparting training in fishing techniques and demonstrations of modern equipment on board to the fishermen, fishing industry representatives and entrepreneurs.

Survey and research team

Project Leader	**Project Associates**	
	Scientists	**Engineer**
Shri. A. E Ayoob, Fishing Gear Technologist	Shri Jacob Thomas, Jr. Fisheries Scientist Dr Sujit Kumar Pattnayak, Sr. Scientific Assistant Shri Solly Solomon, Sr. Scientific Assistant	Shri. Dharamvir Singh, Mech. Marine Engineer

Base of operation	:	**Cochin**
Vessel	:	***Matsya Varshini***
Gear	:	1) Expo model fish trawl 2) 47 m shrimp trawl
Vessel Officers		
Skipper	:	Shri. K. Joseph Paul, Skipper
Chief Engineer Gr. I	:	Shri. Chelliah Murugan, Chief Engineer, Gr.I

Survey strategy:

1) Area to be divided in three sectors viz., Wadge Bank, Gulf of Mannar and South west coast (7° - 12° N). Each sector to be covered in each quarter and every voyage, 10 days should be spent for demersal trawling along with 10 days squid jigging.

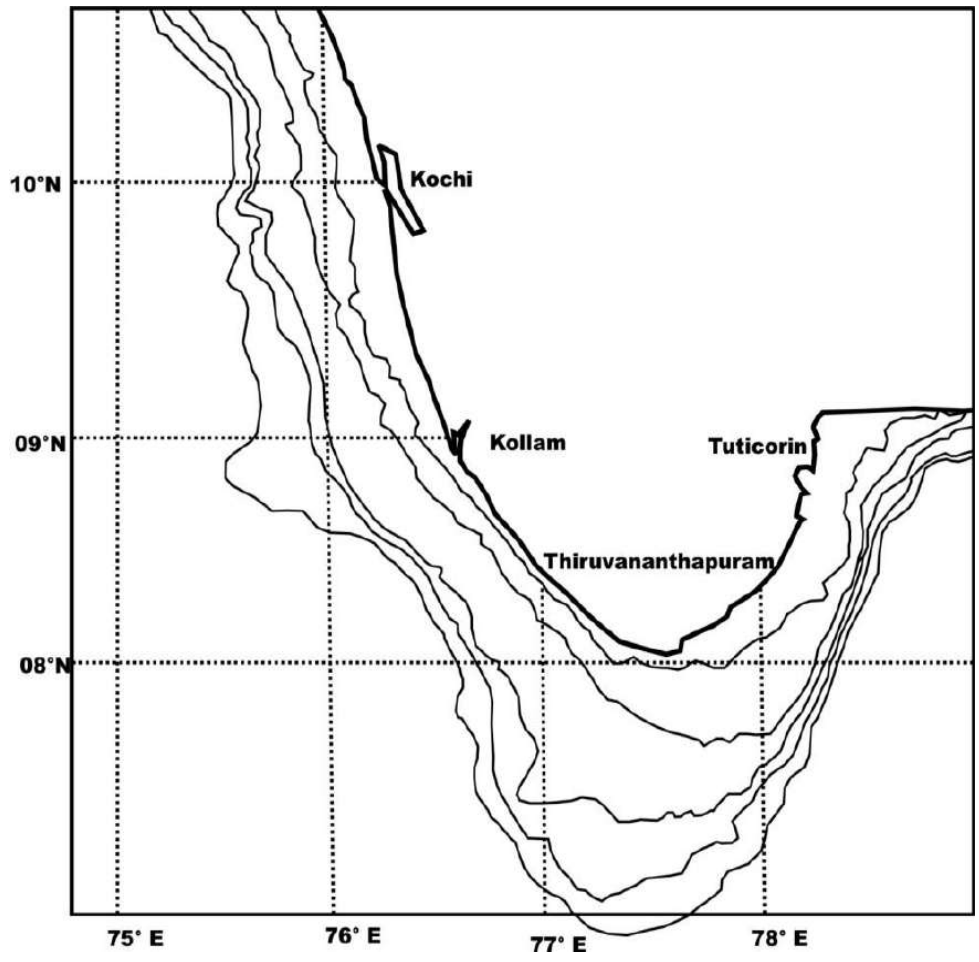
Distribution of sampling efforts:

Particulars	**Exploratory survey**				**Monitoring survey**	
Gear	**FT**		**ST**		**FT**	**ST**
Depth zone (m)	100-200	200-500	100-200	200-500	30-100	30-100
Extent of area (Sq. km)	6525	7710	6525	7710	20250	20250
No. of hauls	5	6	3	3	5	3

Operational target per cruise

Days out at sea	:	10
Fishing days	:	8
No. of hauls	:	25
Duration of haul	:	90 minutes

Survey Area (7^0 N – 12^0 N)



Result reporting: As per Annexure – II

Project –I.A.4. : **DEMERSAL FISHERY RESOURCES SURVEY, ASSESSMENT AND MONITORING ALONG SOUTH WEST COAST**

Project Coordinator : Dr Sijo P. Varghese, Zonal Director

Period : April 2022 – March 2023

Project Objectives

- Preparation of species inventory of demersal fin fish and shell fish resources.
- Estimation of abundance indices of demersal resources and the major components thereof, with emphasis on scads, lizard fish, threadfin breams, squids, cuttlefish, bulls eye, carangids.
- Identifying spatio-temporal distribution pattern of the resources.
- Study of biological parameters of important species as per Annexure – I

Survey and Research Team

Project Leader	**Project Associates**	
	Scientists	**Engineer**
Shri Jacob Thomas, Jr. Fisheries Scientist	Shri A. E Ayoob, Fishing Gear Technologist Dr Sujit Kumar Pattnayak, Sr. Scientific Assistant Shri Solly Solomon, Sr. Scientific Assistant	Shri Dharmvir Singh, Mech. Marine Engineer

Base of operation : **Cochin**

Vessel : **MFV *Lavanika***

Gear : 1) 700 mesh Fish trawl
2) 28 m Shrimp trawl

Vessel officers

Skipper : Shri. A. Udayappan, Skipper

Chief Engineer Gr. I : Vacant

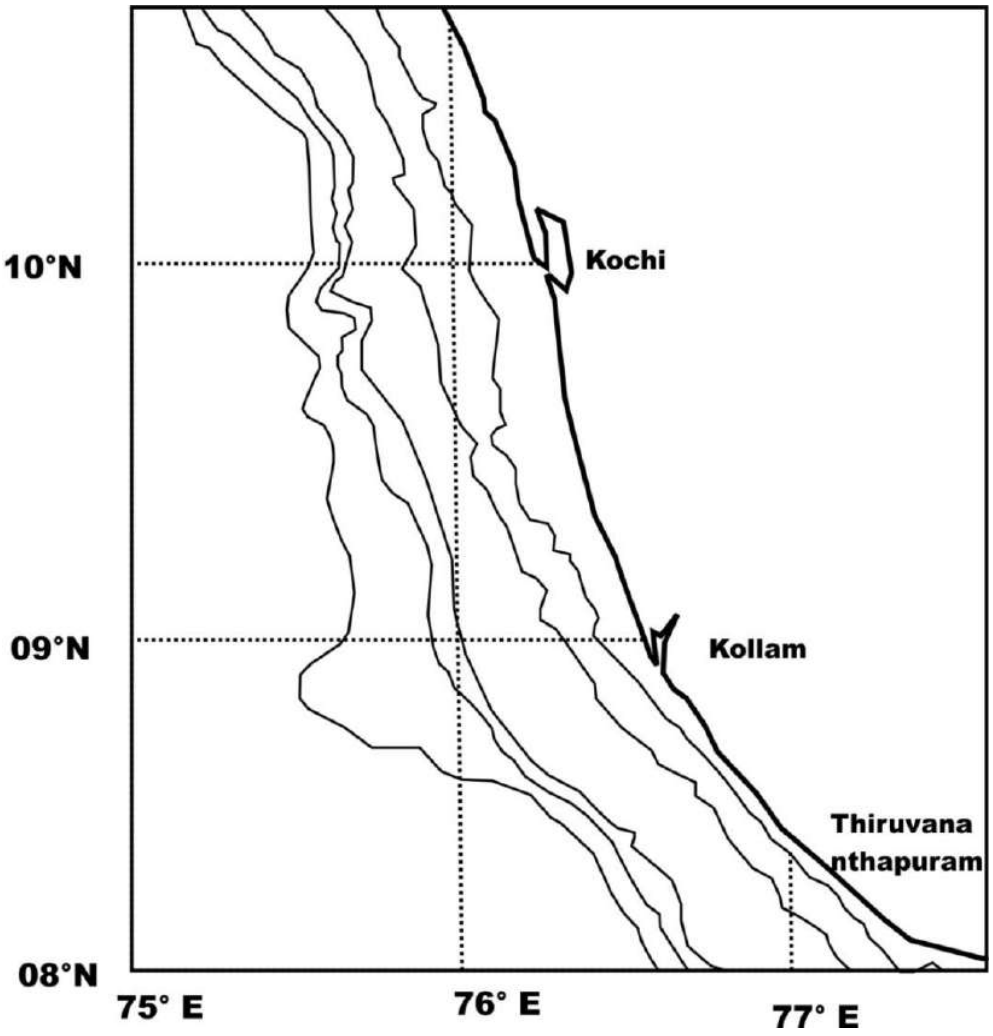
Distribution of sampling efforts:

Particulars	**Monitoring**	
Gear	**FT**	**ST**
Depth zone (m)	30-100	20-100
No. of hauls	15	10

Physical target per cruise

No. of cruise/ month	:	01
Days out at sea	:	10
Fishing days	:	08
No. of hauls	:	25
Duration of haul	:	90 minutes.

Survey Area: Lat.8^0 N-11^0 N



Result reporting: As per Annexure – II

Project –I.B.1. : **OCEANIC SQUID RESOURCES SURVEY, ASSESSMENT AND MONTORING ALONG SOUTH WEST COAST, WADGE BANK AND GULF OF MANNAR BETWEEN LAT. 07° N – 12° N**

Project Coordinator : Dr Sijo P. Varghese, Zonal Director

Period : April 2022 – March 2023

Project components:

1. Oceanic squid resources survey in the South-West coast between 7° N and 12° N.

Project objectives:

- Estimation of abundance indices of oceanic squids
- Mapping of spatio – temporal distribution pattern of the resources
- Collection of biological parameters of major oceanic squid species
- Oceanographic preferences of oceanic squids

Survey and Research Tam

Project Leader	**Project Associates**	
	Scientists	**Engineer**
Shri. A. E Ayoob, Fishing Gear Technologist	Shri Jacob Thomas, Jr. Fisheries Scientist Dr Sujit Kumar Pattnayak, Sr. Scientific Assistant Shri Solly Solomon, Sr. Scientific Assistant	Shri. Dharamvir Singh, Mech. Marine Engineer

Base of operation : **Cochin**

Vessel : ***Matsya Varshini***

Gear : Automatic squid jigging machine

Vessel Officers

Skipper : Shri. K. Joseph Paul, Skipper

Chief Engineer Gr. I : Shri. Chelliah Murugan, Chief Engineer, Gr. I

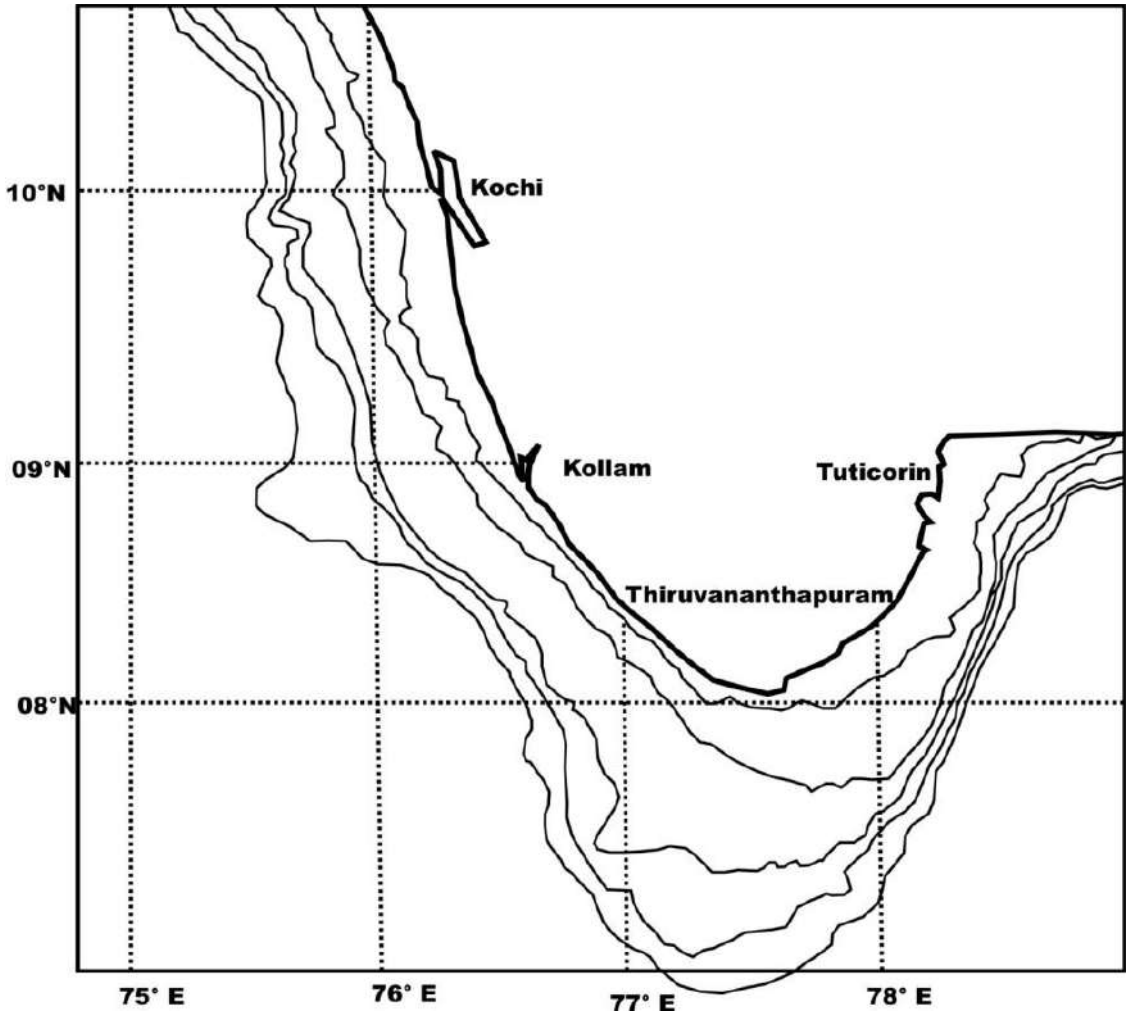
Survey strategy: South – west coast between 7° - 12° N and every voyage 10 days should be spent for squid jigging operation in the oceanic water of south-west coast.

Distribution of sampling efforts:

Operational target per cruise

Days out at sea: 10
Fishing days : 8

Survey Area (7^0 N – 12^0 N)



Result reporting: As per Annexure – II

Project –I.B.2. : **PELAGIC FISHERY RESOURCES SURVEY, ASSESSMENT AND MONITORING ALONG SOUTH WEST COAST**

Project Coordinator : Dr Sijo P. Varghese, Zonal Director

Period : April 2022 – March 2023

Project objectives

- Preparation of species inventory of pelagic fin fish and shell fish resources
- Estimation of abundance indices of pelagic resources
- Identifying spatio-temporal distribution pattern of the resources
- Study of biological parameters of important species

Survey and Research Team

Project Leader	**Project Associates**	
	Scientists	**Engineer**
Shri Jacob Thomas, Jr. Fisheries Scientist	Shri A. E Ayoob, Fishing Gear Technologist Dr. Sujit Kumar Pattnayak, Sr. Scientific Assistant Shri Solly Solomon, Sr. Scientific Assistant	Shri. Dharamvir Singh, Mech. Marine Engineer

Base of operation : **Cochin**

Vessel : MFV ***Lavanika***

Gear : Drift gillnet with 20 m depth

Vessel officers

Skipper : Shri. A. Udayappan, Skipper

Chief Engineer Gr. I : Vacant

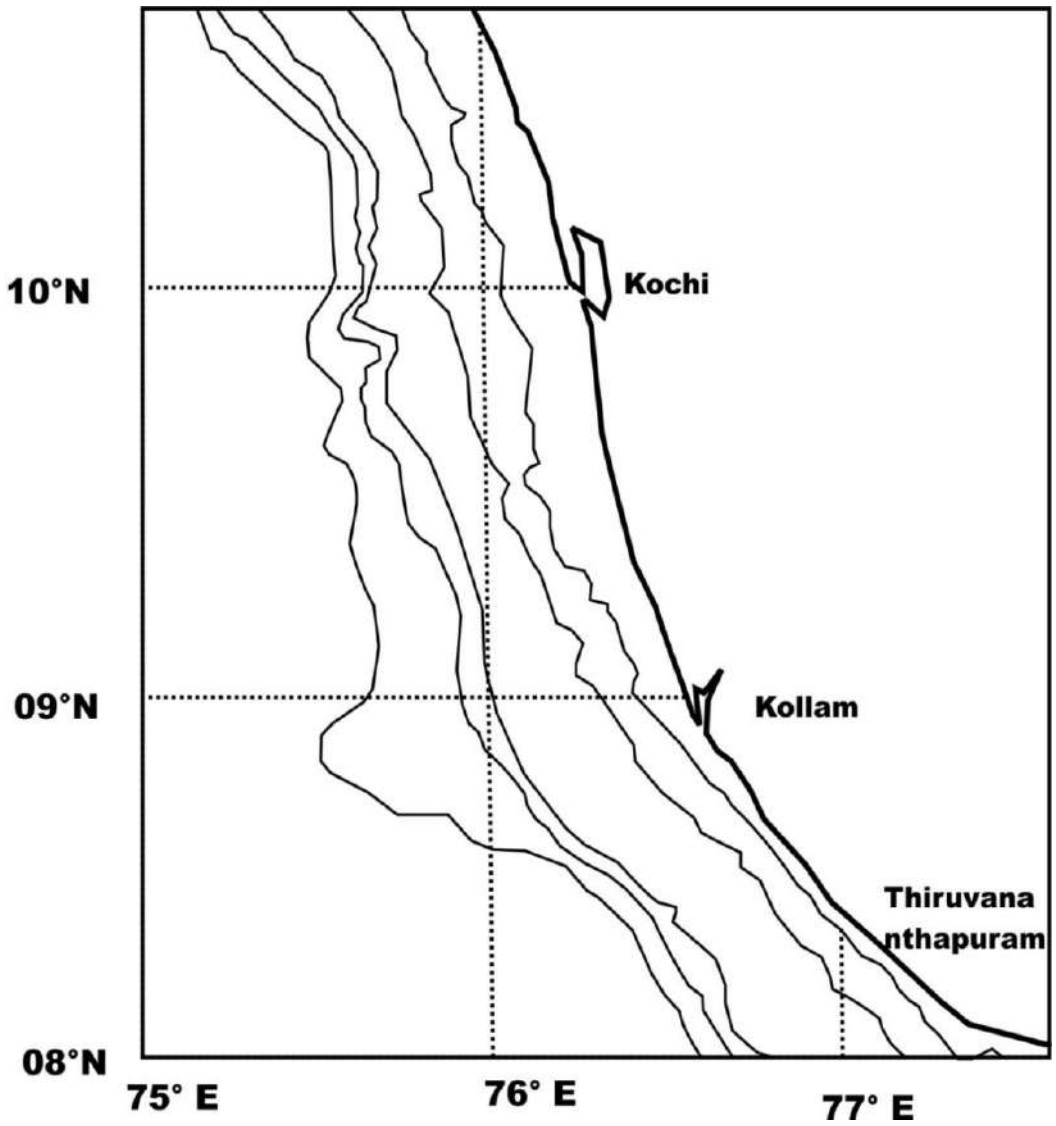
Distribution of sampling efforts:

Particulars	**Monitoring**	
Gear	**FT**	**ST**
Depth zone (m)	30-100	20-100
No. of hauls	15	10

Physical target per cruise

No. of cruise/ month	:	01
Days out at sea	:	10
Fishing days	:	08
No. of hauls	:	08
Duration of haul	:	5 hrs immersion time

Survey Area: Lat. 8^0 N-11^0 N



Result reporting: As per Annexure – II

I.E.3. : ANNUAL PLANNED MAINTENANCE PROGRAMME FOR THE YEAR 2022-2023

Name of the Vessel : MFV *Matsya Varshini*
Base of operation : Cochin 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					#				O			
Aux. Engine(P)					#					#		
Aux. Engine(S)					#					#		
Generator(P)					#					#		
Generator(S)					#					#		
Ref. Compr – I					#							
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.E.4. : DRY-DOCKING & ANNUAL PLANNED MAINTENANCE PROGRAMME FOR THE YEAR 2022-2023

Name of the Vessel : MFV *Lavanika*
Base of operation : Cochin 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							///DDR					
Main Engine		#			#				#			
Aux. Engine(P)	O				#				#			
Aux. Engine(S)					#				#			
Generator(P)								O				
Generator(S)								O				
Ref. Compr – I								O				
Ref. Compr – II								O				
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.

SPECIES SELECTED FOR BIOLOGICAL STUDIES

ANNEXURE-I

Sl. No	Name of the Base	Project Leader	Project Associates	Name of Species
1	**Cochin**	Dr. Sijo P. Varghese, Zonal Director	Shri A.E. Ayoob, Jr. Fishing Gear Technologist Shri Jacob Thomas Jr. Fisheries Scientist Dr. S. K. Pattnayak Sr. Scientific Assistant Shri Solly Solomon Sr. Scientific Assistant	*Nemipterus japonicus* *Nemipterus randalli* *Epinephelus diacanthus* *Decapterus russelli* *Saurida undosquamis*
		Dr. Sijo P. Varghese, Zonal Director	Shri A.E. Ayoob, Jr. Fishing Gear Technologist Shri Jacob Thomas Jr. Fisheries Scientist Dr. S. K. Pattnayak Sr. Scientific Assistant Shri Solly Solomon Sr. Scientific Assistant	*Priacanthus hamrur* *Sphyraena jello* *Selar crumenophthalmus* *Alepes djedaba* *Saurida tumbil*

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.