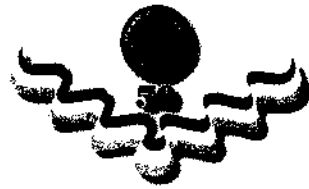


**C
O
N
S
U
L
T
A
N
C
Y**



**CONSULTANCY SERVICES
IN
MARINE FISHERIES**



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(Indian Council of Agricultural Research)
P.O. NO. 1601, COCHIN-682 011
INDIA

**CONSULTANCY SERVICES
IN
MARINE FISHERIES**

**A
Profile of technologies
and experts**

**CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE**

(Indian Council of Agricultural Research)
P. B. No. 1603, Tatapuram Post
Cochin - 682 014

INDIA

CONSULTANCY SERVICES IN MARINE FISHERIES
A profile of technologies and experts

Published by

Dr. M. Devaraj

Director

Central Marine Fisheries Research Institute

Tatapuram Post

Cochin - 682 014

Kerala

Compiled and Edited by

Dr. N. G. Menon

Dr. V. K. Pillai

Dr. P. Laxmilatha

Shri. A. Nandakumar

Shri. K. Balachandran

Smt. P. T. Mani

© 1999 Central Marine Fisheries Research Institute,
Cochin 682 014

P R E F A C E

The ICAR system currently needs very effective partnership between the researchers and the user groups. The Central Marine Fisheries Research Institute, a premier Institute under the ICAR, has taken effective steps to introduce the services and technologies in the marine fisheries sector, achieved over the last 50 years R & D activities. With a view to institutionalising transfer of technologies, the institute has constituted a Consultancy Processing Cell (CPC) in 1997 for effectively serving the needs of our clients, through the short term and long term trainings, consultancies, contract services and contract research.

This Institute has developed many technologies in the areas of marine capture fisheries, sea farming and marine environment management. The Institute's activities are carried out from its headquarters at Cochin, 12 research centres and 28 field centres located in the maritime states and Lakshadweep Islands. The technologies that have emerged from our laboratories are essentially in such critically and economically important areas as hatcheries (shrimps, crabs, lobsters, pearl oysters, mussels, edible oysters, clams, seacucumbers, squids, cuttlefish, mullets, groupers and clown fish), onshore and sea farms (shrimps, crabs, lobsters, pearls, edible bivalves, seaweeds, food and ornamental fishes), water quality management in

farming, probiotics, artificial fish habitats, fisheries resources assessment, validation of potential fishing zones, sea ranching, integrated coastal zone management and preparation of fisheries exploration and farming project plans. This book presents the details of manpower and expertise available with the Institute and the major areas of consultancy services the Institute can take up for the benefit of our client groups. Some of our important clients are NEERI, BHEL, Cochin Port Trust, SPIC, MRPL, KIOCL, CARE INDIA, HARDY Exploration & Production India etc.

We are grateful to Dr. R. S. Paroda, D G, ICAR and Secretary, DARE, Government of India and to Dr. K. Gopakumar, DDG(Fy), ICAR and Dr. R. A. Selvakumar, ADG (MF), ICAR for the encouragement they have given to build up excellent facilities in the Institute to enhance our overall capabilities.

I compliment the keen interest taken by Dr. K. K. Appukuttan, Chairman CPC, in co-ordinating and managing the consultancy activities carried out from different parts of the country. I am thankful to my colleagues Dr. N. G. Menon, Dr. V. K. Pillai, Dr. P. Laxmilatha, Mr. A. Nandakumar, Mr. K. Balachandran and Mrs. P. T. Mani for compiling and editing this publication. I hope that this publication would help a wide spectrum of our clients.

M. Devaraj,
Director.

C O N T E N T S

Preface	i
Consultancy services - objective	1
Consultancy Processing Cell (CPC)	2
Consultancy areas	3
Mariculture technology packages	6
Infrastructure facilities	8
Profile of experts	19
Consultancy services undertaken	149
Expert index	152
Subject index	154

CONSULTANCY SERVICES

OBJECTIVE

In the wake of liberalization and globalization of markets, complexities of technology generation and transfer are increasing which have to be effectively dealt with by the public as well as private sector where agricultural entrepreneurship is developing rather fast. At this juncture, the partnership role between the public and private sector is considered crucial, to be mutually beneficial. Realizing this need, ICAR constituted a Committee to develop a system of partnership, resource generation, training, consultancy, contract research, contract service and incentive and reward so that the knowledge and skill developed are fruitfully utilised.

Recently, Central Marine Fisheries Research Institute, Cochin has constituted a Consultancy Process Cell of the Institute in December 1997 for effectively taking up consultancy work from the clients.

THE CONSULTANCY PROCESSING CELL OF CMFRI

1	Dr. K. K. Appukuttan	Head, MFD	Chairman
2	Dr. N. Gopalakrishna Pillai	Head, PFD	Member
3	Dr. V. K. Pillai	Senior Scientist	Member
4	Dr. N. G. Menon	Senior Scientist	Member
5	Shri. K. G. Girijavallabhan	Senior Scientist	Member
6	Dr. A. Laxminarayana	Senior Scientist	Member
7	Shri. T. S. Velayudhan	Senior Scientist	Member
8	Shri P. S. Sudersanan	Adm. Officer	Member
9	Shri. S. Mony	Asst. Finance & Accounts Officer	Member
10	Shri A. Nandakumar	Technical Officer	Member Secretary

The functions of CPC

- ☞ Give broad guidelines for consultancy work
- ☞ Bring out consultancy information systems
- ☞ Develop and prepare project proposals in major thrust areas
- ☞ Co-ordinate work related to consultancy assignments
- ☞ Periodic review of consultancy services

CONSULTANCY AREAS

Marine Environment

- * Primary and secondary production data generation and analyses and interpretation
- * Physical, chemical data generation
- * Pollution monitoring
- * Preparation of baseline oceanographic data
- * EIA studies
- * Assessment of carrying capacity of environment
- * Biodiversity
- * Bioprospecting
- * Water and soil analyses
- * Live feed culture
- * Environment criteria for farm site selection

Fisheries

- * Planning and implementation of sample surveys
- * Coastal village/ district wise fisheries production data collection, collation and interpretation.
- * Craft/gear infrastructure data generation and analyses
- * Species wise marine living resource production data
- * Stock estimation and biological information for planning and management

- * Training on sampling methodology, fish stock assessment related computer software
- * Generation, analyses and interpretation of socio economic data on craft-gear combination and marketing
- * Taxonomy of marine organisms with special reference to pharmacological importance, commercially important and ornamental fishes, corals, sponges, molluscs, echinoderms, shrimps and their distribution, abundance and exploitation.
- * Benthos, benthic biomass and ecology
- * Pelagic and demersal resources, spatial and seasonal production potential
- * Stock characteristics, conservation and management
- * Fishing gear impact assessment on the habitat
- * Exploited resources and their food web inter relationship
- * Fishery forecasting/remote sensing, modeling
- * Marine aquarium planning, construction and management
- * Artificial reef-site selection, construction and management
- * Transmission and scanning electron microscopy

Coastal Aquaculture

- * Farm site selection; estimation and evaluation of carrying capacity of culture system/habitat
- * EIA of various aquaculture practices

- * Hatchery technology for prawns, crabs, edible oysters, mussels, clams, pearl oysters, sea cucumber and finfishes
- * Seed production and transport
- * Physiology, nutrition, pathology and genetics of cultivable organisms
- * Feed formulation
- * Sea ranching and stock enhancement

Technology packages

1. Penaeid prawn farming
2. Crabs/Lobster fattening and live transport
3. Edible oyster culture
4. Mussel culture
5. Clam culture/relaying
6. Pearl oyster farming and Pearl production
7. Finfish culture and live transport
8. Sea cucumber culture
9. Seaweed culture

Training

- * Fisheries resources, conservation and management
- * Mariculture practices
- * Underwater diving
- * Sampling methodology, fish stock assessment related computer software

MARICULTURE TECHNOLOGY PACKAGES

Crustacean Mariculture Technologies

- Eighteen species of shrimps bred in captivity
- Viable hatchery technology for *Penaeus indicus*, *P. monodon* and *P. semisulcatus*.
- Hatchery technology for potentially important shrimps *P. merguensis*, *P. latisulcatus*, *Metapenaeus monoceros* and *M. dobsoni*.
- Induced maturation of *P. indicus* and *P. semisulcatus* through environmental and feed management and without resorting to eye stalk ablation.
- Repeated spawning without affecting the quality and quantity of progeny.
- Technology for semi-intensive farming of *P. indicus*, *P. monodon* and *P. semisulcatus*.
- Farming technology for potentially important shrimps *P. merguensis*, *P. latisulcatus*, *P. japonicus*, *M. dobsoni* and *M. monoceros*.
- Sea ranching technique - post larvae of *P. semisulcatus*, 120 million seeds would have to be ranched to obtain an increase of 50 t in the trawl landings.
- Fattening of the spiny lobster *Panulirus homarus* by endocrine management.
- Mud crab fattening on a commercial scale and their live transport
- Hatchery technology for *Portunus pelagicus*, reared through F1, F2, and F3 generation.

- Farm site selection, water quality and farm management.
- Shrimp/crab larval feed - micro algal culture
- Farm feeds - pelleted artificial feeds for each species during different phase of growth; feed management.
- Disease monitoring - identification of parasites - preventive measures for parasitic infestation.

Molluscan Mariculture Technologies

- Developed and upgraded pearl production technology in the pearl oyster *Pinctada fucata*
- Induced spawning for 10 bivalve species achieved
- Hatchery technology for mass production of the seed of 2 species of pearl oyster; one species of edible oyster; 2 species of mussel and 5 species of clam have been developed.
- Technology developed for seed/spat collection from wild/nature for edible oyster and pearl oyster.
- Technologies for edible oyster (*Crassostrea madrasensis*) culture have been developed. The rack & tray method can yields 130 t/ha/year; the ren method 80 t/ha/year and the stake method 20 t/ha/year.
- Technology for, both, open sea mussel farming and culture in the estuarine waters has been developed for 2 species of mussels (*Perna indica*, *P. viridis*). Production of 12-14 kg/meter of rope/ 6 months has been established.

- Developed package of practice for clam culture
- Sea ranching of clams in natural waters for stock enhancement/conservation has been developed and standardized.
- Established the optimum levels of abiotic environment (eg. salinity and temperature) requirements for several bivalves.
- Predation, boring and parasitic infestation in the farmed bivalves have been studied and preventive regimes established.
- Tissue-specific genetic variations in edible oyster (*Crassostrea madrasensis*) has been traced and genetically similar stocks have been identified

Finfish Mariculture Technologies

- Selection of sites for finfish farming; environment monitoring and farm management.
- Technologies for live transportation of seeds of groupers, seabass, eels, mullets and marine ornamental fishes.
- Technology for fattening / farming of groupers, sea bass, mullets in different systems.
- Brood stock development and management.
- Induced spawning of groupers

Mariculture Technology for Other Marine Biota

- Farming technology for agar and algin yielding seaweeds in coastal lagoons and bays.
- Production of seaweed through vegetative and spore culture methods.

- Seaweed post harvest technology for commercial application.
- Technology for the mass culture of eleven species of micro algae including diatoms and phytoflagellates
- Technology for the mass culture of zooplankters such as rotifers, cladocerans and brine shrimp.
- The technology for breeding and induced spawning of the sea cucumber *Holothuria scabra*.
- Rearing and fattening of seacucumbers under captive conditions for commercial market.

INFRASTRUCTURE FACILITIES

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
1. Coastal/marine environment (Hydrology/oceanography/pollution)		
i) Atomic Absorption Spectrophotometer (AAS)	Headquarters, Cochin	Hydrology, oceanography data analyses; pollution, EIA, environmental monitoring; microbiological analyses etc.
ii) Flame photometer		
iii) Colorimeters	HQ, Cochin	
iv) Spectrophotometer	Mangalore R C Calicut R C Mandapam R C Madras R C	
v) pH, D. O, salinometer, laboratory facilities for plankton/benthic/DSL and micro-biological investigations	All centres	Hydrology, oceanography data analyses, pollution, EIA, environmental monitoring, biological, micro-biological analyses etc.
vi) SCUBA diving equipment/ Underwater photography	Tuticorin RC	Underwater resource survey/ observation/photography

10

Consultancy

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
2. Capture fisheries		
i) Facilities for capture fisheries investigations viz; biology & analysis of data for stock assessment	All centres	Capture fisheries - production, stock assessment conservation & management measures, policy & planning strategies
ii) Computer centre - UNIPOWER- 16 units, Pentium - 10 units, V-SAT, Internet, LAN facilities, all relevant software	HQ, Cochin	Collection, collation, analyses and dissemination of Marine fishery resources data through stratified random sampling technique.
= iii) National Marine Living Resources Data Centre (NMLRDC)	HQ, Cochin	Collection, collation, analyses and dissemination of Marine Living Resources data
iv) Marine Data Centre (MDC)	HQ, Cochin	Collection, collation, analyses and dissemination of meteorological, oceanographic and fishery data for application of remote sensing to marine fisheries.
v) Remote sensing facilities and PFZ validation	HQ, Cochin	Collection, collation, dissemination of remote sensed data to fishers & other beneficiary societies.
vi) Fish Aggregating Devices (FADs)	Vizhinjam R C	Scientific designing, fabrication, installation, maintenance & monitoring of Artificial reefs/ FADs

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
3. Basic/Applied research related to marine fisheries		
i) Electron microscope (STEM) ii) Equipments for conventional wet analyses of animal feeds	HQ, Cochin	Electron microscopy, Photography
iii) Refrigerated super speed centrifuge iv) Horizontal slab electrophoretic unit		Nutrition, Physiology, Genetics, Pathological investigations and biodiversity/biotechniques
v) Chromatography unit vi) Olympus light microscope with microphotographic attachments		
vii) Seaweed repository	HQ, Cochin	Collection/maintenance of commercially important seaweed species <i>in vitro</i>
viii) Tissue culture laboratory - seaweed	HQ, Cochin	Tissue culture for varietal improvement through somatic hybridization
- pearl oyster	Tuticorin RC	Pearl quality enhancement through hybridization at the cell/tissue level
ix) Facilities for marine resource survey, exploration, taxonomy	HQ, all centres	Survey exploration in neritic and oceanic realm; bioprospecting for organisms of bio medical, toxicological importance.

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
---------------------------	---------	-------------------

4. Culture Fisheries

Farms

i) Marine fish farms	Mandapam R C Tuticorin R C Calicut R C	Finfish farming demonstrations and action research, brood stock maintenance, induced maturation/spawning
ii) Shrimp farm	K V K Campus, Narakkal	Training in shrimp farming
iii) Shellfish (Bivalve) farms	HQ, Dalawapuram, Quilon	Edible oyster culture demonstration and seed production centre
	Calicut R C, Dharmadam, Mangalore R C, Mulky	Mussel farming in estuaries
	Tuticorin R C	Pearl culture farm, edible oyster farm and seed production centre.
iv) Seaweed farm Agar extraction unit	Mandapam R C	Seaweed culture and agar extraction demonstrations & trainings

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
<i>Hatchery</i>		
i) Onshore hatchery cum culture facility	HQ, Cochin Fisheries Harbour Laboratory, Cochin Vishakapatnam R C	Seed production & farming of finfish, bivalve & crustaceans
ii) Shellfish (Bivalve) hatchery	Madras R C Calicut Tuticorin Vizhinjam R C Mandapam R C	Bivalve seed production Bivalve seed production
iii) Shrimp hatchery	Mandapam R C	Seed production of commercially important shrimps sea ranching
5. Aquarium/Museum		
i) Marine aquarium	Vizhinjam R C Mandapam R C	Scientific designing, installation & maintenance of marine aquaria and maintenance of marine ornamental fishes/fauna
ii) Marine biodiversity museum	HQ, Cochin Mandapam R C	Identification and study of diverse marine fauna and flora including marine mammals and turtles

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
6. Research Vessels		
i) Cadalmin (13.26 m OAL) with onboard equipments for fishery/oceanography research	HQ, Cochin Madras R C Mandapam R C Tuticorin R C Vizhinjam R C	Collection of hydrographic, oceanographic, plankton/ benthic data; experimental trawling, tagging studies; wild seed collection
ii) Cadalmin (7.5 m OAL)	Mangalore RC Karwar R C	Collection of hydrographic, oceanographic, plankton/ benthic data; experimental trawling.
7. Library		
Central Library	HQ, Cochin	The central library has over 65,000 volumes of books, periodicals and reports. A total of 82 foreign and 40 Indian periodicals are subscribed, besides receiving 190 periodicals. Microfiche reprography, L & D related software and photocopying facilities.
Regional Library	Mandapam R C	Possesses some of the rare and old publications on marine sciences and fisheries, besides a large number of periodicals (both Indian (20) and foreign (15)) and text books (About 70,000 books)
	All other RCs	Major Indian journals, periodicals and books

EQUIPMENTS/ FACILITIES	CENTRES	CONSULTANCY AREAS
8. Training		
Krishi Vigyan Kendra (KVK) Trainer's Training Centre (TTC)	HQ, Narakkal HQ, Cochin	Trainings for farmers/entrepreneurs/trainers/ officials of State and Central government depart- ments in shrimp farming, crab/lobster fattening, bivalve, seaweed, finfish, live feed & ornamental fish culture, SCUBA diving, marine living resources survey, bioacoustics, marine fish stock assessment, computer applications in marine fisheries etc.
9. Human Resource Development		
M. F. Sc. (Mariculture)	HQ, Cochin (Under CIFE	Post Graduate education and research development
Ph. D. (Mariculture)	Deemed Fisheries University} programmes	

PROFILE OF EXPERTS
PROFILE OF EXPERTS
PROFILE OF EXPERTS

Name : **E. M. ABDUSSAMAD**

Date of birth : 15-01-1964

Present position : Scientist

Educational qualification : M. F. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 5 years

Brief Professional career

Scientist : 5 years

Experience : Fishery biology; stock assessment; resources surveys; bivalve seed production and culture; onshore - pearl culture consultancy

No. of research papers/books published : 3

Special Training undergone

(inside the country/abroad) : Acoustic Methods for Fish Detection and Abundance Estimation

Entrepreneurship Development Course in Marine Pearl Culture.

Areas where consultancy services can be offered :

Fishery biology, stock assessment, resources surveys; pearl oyster and other bivalve seed production and culture.

Name : **P. M. ABOOBAKER**

Date of birth : 30-07-1949

Present position : Technical Officer (T-5)

Educational Qualification : M.Sc.

Field of specialization : Fish & Fishery Science

Total service in ICAR : 28 years

Brief professional career :

Technical Officer : 11 years

Experience : Fishery Survey, Water quality management, prawn hatchery management.

No. of research papers/books published : 7

Special training undergone (inside the country/abroad) : Larval rearing of penaeid prawns, live feed culture

Areas where consultancy services can be offered :

Water quality management, Prawn hatchery and live feed culture;
Site selection

Name : **K. K. APPUKUTTAN**
Date of birth : 20-04-1944
Present position : Head, Molluscan Fisheries Division
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years
Brief Professional career
Head, M. F. D : 2 years
Sr. Scientist : 14 years
Scientist : 7 years

Experience : Taxonomy, biology, fishery of molluscs, sharks; management and conservation; hatchery & farming of bivalve molluscs

No. of research papers/books published : 56

Special Training undergone (inside the country/abroad) : Nil

Areas where consultancy services can be offered : Taxonomy, biology, fishery of molluscs, sharks, management and conservation of molluscs; planning, organising and establishing molluscan hatcheries; aquaculture site selection; molluscan farming systems management.



Edible oyster farm - rack & ren system

Name	:	ARPITA SHARMA
Date of birth	:	10-09-1970
Present position	:	Scientist
Educational Qualification	:	M.Sc. (Home science)
Field of specialization	:	Extension
Total service in ICAR	:	2 years
Brief professional career	:	
Scientist	:	2 years

Experience : Socioeconomic studies, transfer of technology, home management, ergonomics, community development, women studies, occupational health hazards and related aspects.

No. of research papers/books published :

Special training undergone (inside the country/abroad) : Ergonomics at Industrial Design Centre, IIT, Powai, Mumbai for 1 month 1993; Agricultural Research management training including FET, at NAARM, Hyderabad.

Areas where consultancy services can be offered :

Socio economic studies, transfer of technology, home management, ergonomics, community development, occupational health and related aspects.

Name : **S. ASHALETHA**
Date of birth : 31-05-1968
Present position : Scientist
Educational Qualification : M.Sc.
Field of specialization : Agricultural Extension
Total service in ICAR : 1 year
Brief professional career :
Scientist : 1 year

Experience : Teaching extension, research on sociological aspects, training, programme planning, evaluation and implementation

No. of research papers/books published : 3

Special training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Programme planning, evaluation and implementation; training; organising seminar, melas; evaluation of social aspects of technology transfer.

Name	:	K. ASOKAKUMARAN UNNITHAN
Date of birth	:	11-06-1949
Present position	:	Technical Officer (T-9)
Educational Qualification	:	Ph.D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	27 years
Brief professional career	:	
Technical officer	:	20 years

Experience : Biology of edible oyster, cuttle fish; resource studies of chanks, farming of edible oyster, shrimp trainings and extension activities in different aspects of marine fisheries; faculty member of PG programme in Mariculture.

No. of research papers/books published : 37

Special training undergone

(inside the country/abroad) : Krishi Vigyan Kendra teacher's orientation course organized by the Trainer's Training Centre of National Dairy Research Institute, Karnal, Haryana during 6th April -7th May, 1979.

Trainers Training course jointly sponsored by ICAR and USAID during 2nd to 12th March 1992 at Coimbatore.

Trainer's Training course organized by the National Academy for Agricultural Research and Management (NAARM) Hyderabad, during 6th-17th December, 1994

Areas where consultancy services can be offered :

Shrimp farming; management of mariculture training at farmer as well as trainer level.

Name : **K. BALAN**
Date of birth : 15-04-1944
Present position : Sr. Scientist
Educational Qualification : M.Sc., P.S.C, L.L.B
Field of specialization : Agricultural Statistics
Total service in ICAR : 31 years
Brief professional career :
Sr. Scientist : 14 years
Scientist : 7 years

Experience : Marine fishery resource sampling strategies, data analyses, estimation of fish landing, stock assessment, database management and dissemination; teaching at post graduate level.

No. of research papers/books published : 17

Special training undergone (inside the country/abroad) : FAO/DANIDA Training in Bio-Economic Modelling, at FSI, Visakhapatnam

Areas where consultancy services can be offered :

Fisheries statistics; fishery resources management.

Name : V. CHANDRIKA
Date of birth : 22-11-1946
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 26 years

Brief Professional career

Sr. Scientist : 14 years
 Scientist : 9 years
 IOBC, Research : 2 years
 fellow NIO, Goa

Experience : Inshore and estuarine marine microbiology; mud bank flora; impact of man-made changes in the environment especially multiple drug resistance in marine bacteria; environmental microbial monitoring of faecal pollution in aquaculture systems.

No. of research papers/books published : 20

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered : Qualitative and quantitative marine microbiological examination; sanitary index of bacteria (the coliforms, faecal coliforms and *Escherichia coli*); isolation and identification of enterovirulent *coli* (EEC), detection of *Vibrio* etc.

Name : **A. CHELLAM**
Date of birth : 04-07-1943
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 32 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 6 years

Experience : Pearl oyster resources, farming, pearl production, hatchery, on shore pearl farming, trainings in pearl oyster hatchery/farming, diving.

No. of research papers/books published : 40

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Pearl culture, diving training.



SCUBA diving

Name : **G. S. DANIEL SELVARAJ**
Date of birth : 24-07-1943
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 31 years
Brief Professional career
Sr. Scientist : 12 years
Scientist : 11 years

Experience : Inshore and estuarine ecology; E.I.A. Studies of aquaculture farms and backwater systems; mangrove ecosystem analysis; water quality aspects of intertidal zone.

No. of research papers/books published : 36

Special Training undergone (inside the country/abroad) : ARS management course (one month in 1983 at NAARM, Hyderabad)

UNESCO Sponsored Training Programme on 'Mangrove Ecosystem' (one month in 1984 at N. I. O., Goa)

Areas where consultancy services can be offered : Water quality issues of intertidal/coastal zone; hydrographic aspects of mangrove ecosystems; Environmental Impact Assessment (EIA) studies of aquaculture farms and backwaters.

Name	:	M. DEVARAJ
Date of birth	:	04-03-1939
Present position	:	Director
Educational Qualification	:	D.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	28 years
Brief professional career	:	
Director (CMFRI)	:	4 years
Jt. Director	:	2 years
Dean, fisheries college	:	4 years
Professor (CIFE)	:	11 years
Scientist	:	7 years

Experience : Thirty-seven years of experience in marine fisheries, stock assessment, biology and management. As a member in various government committees, proposed strategies for R & D



Multipurpose hatchery developed at CMFRI HQ

programmes in marine fisheries and coastal zone management. Developed institutional infrastructure facilities for mariculture programmes and upgradation of several coastal aquaculture technologies. A new thrust has been given to sustainable fish production by integrating coastal aquaculture in the capture fisheries. This package is being transferred to end users through farmer's meet and other societal programmes. Project formulation, management, evaluation, EIA investigation; advise to state governments and other user groups on matters of marine resource conservation, management and mariculture strategies; Faculty member of CIFE and CMFRI.

No. of research papers/books published : 80

Special training undergone (inside the country/abroad) : Post-graduation from London School of Economics

Areas where consultancy services can be offered :

Fisheries resources management; mariculture development, upgradation and management; Coastal Zone Management Plan for maritime states; EIA for marine related programmes; education consultant for fisheries universities.

Name : **S. DHARMARAJ**
Date of birth : 08-01-1944
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 14 years
Scientist : 6 years

Experience : Pearl oyster hatchery, farming and pearl production, tissue culture trainings.

No. of research papers/books published : 45

Special Training undergone

(inside the country/abroad) : SCUBA diving 1982, in Tuticorin

Tissue culture under Dr. A Kira Machii, at Tuticorin

Marine invertebrate tissue culture at Nanchei - cho, Japan, 1985.

Areas where consultancy services can be offered :

Pearl oyster hatchery, farming and pearl production, tissue culture.



Hatchery produced pearl oyster spat

Name	:	D.C.V. EASTERSON
Date of birth	:	09-04-1944
Present position	:	Senior Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	31 years
Brief professional career	:	
	Sr. Scientist	: 16 years
	Scientist	: 7 years

Experience : Shrimp nutrition and energy budget; use of non-conventional and MCP diets for fish, pearl and edible oysters; live feeds in shrimp; nutritional pathology of shrimps; histopathological response to copper and zinc toxicity in edible oyster; potential maricultural sites and topographical survey; plan and layout for a marine Hatchery cum research laboratory faculty member of PGPM

No. of research papers/books published :

Special training undergone

(inside the country/abroad) : Bodega Marine Laboratory, University of California, Bodega for three months under FAO exchange programme in Nutritional Bioenergetics.

Areas where consultancy services can be offered :

Shell fish and fin fish nutrition, pathology, hatchery planning, pollution.

Name : **M. FERUZ KHAN**
Date of birth : 31.07.1961
Present position : Scientist (SS)
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 12 years

Brief Professional career

Scientist (Sr. Scale) : 4 years

Scientist : 8 years

Experience : Seafood processing, quality control and bacteriological analysis; fishery biology, population dynamics and management of demersal finfish resources; on board research experience in fishing survey, operation of acoustics instruments and studies of Deep Scattering Layer and deep sea fishes.

No. of research papers/books published : 10

Special Training undergone

(inside the country/abroad) : Seafood processing, Quality control and Bacteriology Fishery research, Development & Management - Intra Institutional training, Calibration and Operation of acoustic instruments, Acoustic methods of fish detection and abundance estimation.

Areas where consultancy services can be offered :

Deep-sea fishing, on board operation of acoustics instruments, Deep Scattering Layers; oceanic resources survey, estimation and management.

Name : **GEETHA SASIKUMAR**

Date of birth : 20 - 05 - 1969

Present position : Scientist

Educational Qualification : M. F. Sc.

Field of specialization : Fish & Fishery Science

Total service in ICAR : 2 years

Brief professional career :

Scientist : 2 years

Experience : Fishery biology; mariculture, dissemination of mussel culture techniques.

No. of research papers/books published : Nil

**Special training undergone
(inside the country/abroad)** : Nil

Areas where consultancy services can be offered :

Fishery biology; bivalve aquaculture.

Name	:	J. P. GEORGE
Date of birth	:	28-05-1944
Present position	:	Sr. Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	18 years
Brief professional career	:	
Sr. Scientist	:	12 years
Scientist	:	6 years

Experience : Limnology, freshwater fish taxonomy and biology, fish seed production and aquaculture; freshwater and marine environment impact assessment, pollution monitoring; planning, organising and conducting fish resource surveys; fishery/research vessel management; manpower development and management in fisheries education.

No. of research papers/books published : 40



Induced breeding by pituitary hormone administration.

Special training undergone

(inside the country/abroad) : Training in Limnology in Vienna University, Austria, 1975

Areas where consultancy services can be offered :

Limnology, freshwater fish taxonomy and biology, fish seed production and aquaculture; freshwater and marine environment impact assessment, pollution monitoring; planning, organising and conducting fish resource surveys; fishery/research vessel management; manpower development and management in fisheries education.

Name : **K.C. GEORGE**
Date of birth : 06-05-1946.
Present position : Sr.Scientist
Educational Qualification : Ph.D.
Field of specialization : Veterinary Pathology
Total service in ICAR : 21 years
Brief professional career :
 Sr. Scientist : 12 years
 Scientist : 5 years
 Animal pathologist : 9 years

Experience : Diagnosis of domestic animal and laboratory animal diseases, fish and shrimp diseases, diagnosis, control, treatment regimes; Faculty member of PGPM in M.Sc. and Ph.D. programmes.

No. of research papers/books published : 20

Special training undergone : Nil
(inside the country/abroad) :

Areas where consultancy services can be offered :

Control of fish diseases; diagnosis, control of shrimp diseases; treatment of fish and shrimp diseases; laboratory animal disease diagnosis, treatment and control.

Name : **K. G. GIRIJAVALLABHAN**

Date of birth : 08-07-1941

Present position : Sr. Scientist

Educational qualification : M. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 35 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Monitoring of environmental parameters; fishery resource surveys; fishery biology; marine bio-active agents; lab to land activities; planning, coordinating vessel based programmes, ocean fishery survey and fishery management

No. of research papers/books published : 23

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Environmental Impact Assessment; resources surveys, vessel management and ocean based fishery and oceanography research planning and management.

Name : **G. GOPAKUMAR**
Date of birth : 26-11-1952
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 14 years
 Scientist : 8 years

Experience : Resource investigations and stock assessment of pelagic resources (tunas, mackerel and anchovies); tuna live bait fish investigations; mass production of live feed organism especially the rotifer, *Brachionus plicatilis* for larviculture of marine and brackishwater fishes; ornamental fish breeding.

No. of research papers/books published : 30

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
 Mass production of rotifers for larviculture; tuna and tuna live bait investigation; ornamental fish breeding.

Name : N. GOPALAKRISHNA PILLAI
Date of birth : 01-04-1948
Present position : Head, Pelagic Fisheries
Division
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 20 years
Brief Professional career
Head, P. F. D : 2 years
Sr. Scientist : 12 years
Scientist : 6 years

Experience : Fishery, biology, population dynamics and stock assessment, conservation and management of finfishes; benthos and benthic ecology; systematics of polychaetes.

No. of research papers/books published : 60

Special Training undergone (inside the country/abroad) : Acoustic methods in fish detection and abundance

Areas where consultancy services can be offered : Conservation and management of pelagic resources; taxonomy of marine finfishes; benthos and benthic ecology, systematics of polychaetes.

Name : **C. P. GOPINATHAN**
Date of birth : 12-12-1943
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Systematics, biology, ecology and culture of phytoplankton; phytoplankton productivity of the estuarine, inshore and marine environments; faculty member of the PGPM for M. F. Sc., Ph. D.

No. of research papers/books published : 80

Special Training undergone

(inside the country/abroad) : Two months training in the culture of fishfood organisms (micro algae) at SEAFDEC, Philippines.

Areas where consultancy services can be offered :

Phytoplankton productivity, micro algae taxonomy, culture.

Name : GRACE MATHEW
Date of birth : 19-03-1951
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 12 years

Scientist : 10 years

Experience : Fishery, biology and stock assessment of major perches of the family Serranidae, Lutjanidae and Lethrinidae; resource characteristics of carcharinid sharks; mariculture and broodstock development of groupers; preparation of fishery atlases and calendars

No. of research papers/books published : 19

Special Training undergone (inside the country/abroad) : 3 weeks training on induced breeding of finfishes at CIFA, Bhuvanesar.

Areas where consultancy services can be offered : Fishery, biology and taxonomy of major perches, sharks; marine finfish brood stock and breeding management; induced maturation, sex reversal and spawning of groupers.

Name : GULSHAD MOHAMMED
Date of birth : 13-02-1962
Present position : Scientist
Educational qualification : M. Sc.
Field of specialisation : Economic Botany
Total service in ICAR : 5 years

Brief Professional career

Scientist : 5 years

Experience : EIA studies in thermally affected areas, hydrology, coral reef ecosystem; seaweed culture; resources and biology of mangroove and seagrass ecosystem; agroforestry.

No. of research papers/books published : Nil

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

EIA studies, hydrographical investigations; seaweed culture; survey and monitoring of coral reefs, mangroves, seaweeds and seagrass communities; agroforestry.



Longline cultured seaweed

Name : **I.JAGADIS**
Date of birth : 27-11-1958
Present position : Scientist
Educational Qualification : M.Sc.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 14 years
Brief professional career :
Scientist : 4 years

Experience : Monitoring of capture fisheries; water quality management in relation to culture practices; culture of green, brown mussels and pearl oysters; hatchery seed production, farming and pearl production; monitoring of benthic fauna, dislocation due to bottom trawling.

No. of research papers/books published : 4

Special training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Cultivation of marine mussels; Hatchery seed production, farming and pearl production.

Name : **D. B. JAMES**
Date of birth : 24-01-1940
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 35 years

Brief Professional career

Sr. Scientist : 16 years
Scientist : 7 years

Experience : Taxonomy of echinoderms, seed production and culture of sea cucumbers

No. of research papers/books published : 150

Special Training undergone :

(inside the country/abroad) : Basic course in Animal tissue culture at the National Centre for Cell Science, Pune, Maharashtra.

Areas where consultancy services can be offered :

Identification of echinoderms; resources survey for sea cucumbers and sea urchins; hatchery and culture of sea cucumbers.

Name : **A. A. JAYAPRAKASH**
Date of birth : 01-11-1945
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 28 years
Brief Professional career
Sr. Scientist : 14 years
Scientist : 7 years

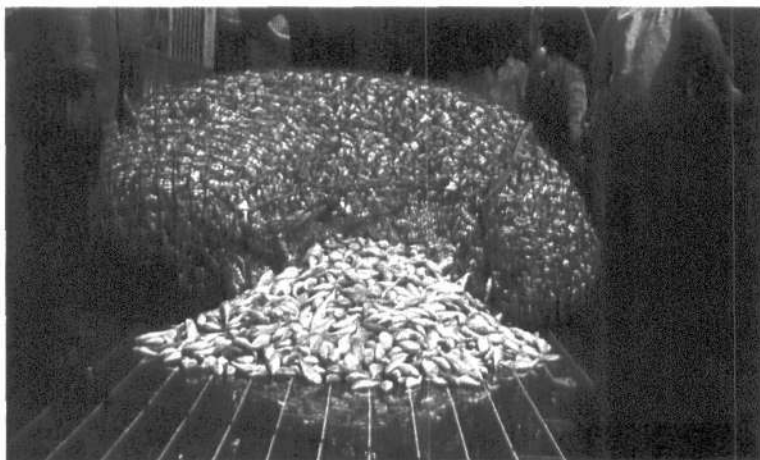
Experience : Fishery, biology, population dynamics of nemipterids, sciaenids, tunas, seerfishes, mackerel; conventional and nonconventional resources in Indian EEZ; exploratory survey; marine and freshwater ornamental fishes maintenance; forecasting models for oilsardine, mackerel and flat fishes.

No. of research papers/books published : 48

Special Training undergone (inside the country/abroad) : Acoustic methods in fish detection and abundance

Areas where consultancy services can be offered :

Conservation and management of pelagic resources of Indian EEZ; taxonomy of marine teleosts; rhythms in Malabar upwelling ecosystem, long term forecasting of oil sardine, mackerel; ornamental fishes and aquarium maintenance; resource surveys.



Bottom trawl catch from exploratory fishing by FORV Sagar Sampada

Name : P. JAYASANKAR
Date of birth : 08-10-1959
Present position : Scientist (Sr. Scale)
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 12 years
Brief Professional career

Scientist (SS) : 7 years

Scientist : 5 years

Experience : Bio toxicity; finfish reproduction, fishery biology, stock assessment; bottom trawling effect on benthic biota; ornamental fish culture; fish molecular genetics.

No. of research papers/books published : 35

Special Training undergone (inside the country/abroad) 'Stock discrimination in Indian mackerel *Rastrelliger kanagurta* (Cuv.) using DNA-level polymorphisms' at the School of Biotechnology, Madurai Kamaraj University, Madurai, 1995.

Areas where consultancy services can be offered : Ornamental fish culture; taxonomic/stock discrimination/biodiversity studies using DNA-level genetic markers.

Name : JIJU P. ALEX
Date of birth : 31.05.1969
Present position : Scientist
Educational qualification : M. Sc
Field of specialisation : Agricultural Extension
Total service in ICAR : 2 years

Brief Professional career

Scientist : 2 years

Experience : Formulation, implementation of extension programmes, research on socio-economic aspects of the marine fisheries sector; editing of Newsletter.

No. of research papers/books published : 6

Special Training undergone (inside the country/abroad) : Nil

Areas where consultancy services can be offered :

Formulation, implementation of extension programmes, research on socio-economic aspects of the marine fisheries sector; editing of Newsletter.

Name : **JOE K. KIZHAKUDAN**

Date of birth : 06-07-1970

Present position : Scientist

Educational qualification : M. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 2 years

Brief Professional career

Scientist : 2 years

Experience : Prawn and shrimp hatchery, farming, lobster farming, ornamental fish (freshwater and marine) rearing, breeding; freshwater and brackish water fish hatchery and farming; molluscan farming.

No. of research papers/books published : 9

Special Training undergone

(inside the country/abroad) : Penaeid hatchery/brackish water fish culture at Mandapam/Tuticorin, CMFRI; Fish processing technology/microbiology. Ornamental fish culture, at KAU, Trichur

Areas where consultancy services can be offered :

Prawn and shrimp hatchery, farming, lobster farming, ornamental fish breeding and rearing; aquaria setting; finfish hatchery, cage culture, finfish feed formulation, molluscan farming.

Name : **JOSEPH ANDREWS**
Date of birth : 17-07-1947
Present position : Technical Officer (T-5)
Educational Qualification : M.Sc.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 29 years
Brief professional career :
Technical officer : 3 years

Experience : Fishery survey; marine pearl and mussel farming.

No. of research papers/books published : 14

Special training undergone (inside the country/abroad) : Application of computer in Agricultural statistics at IASRI, New Delhi

Training course in Pearl culture and hatchery technology.

Areas where consultancy services can be offered :

Stratified multistage random sampling technique; seed production and farming of pearl oysters and mussels; multicrop farming of marine organisms in shallow seas.

Name : K. K. JOSHI
Date of birth : 30-01-1960
Present position : Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 8 years

Brief Professional career

Scientist : 8 years

Experience : Fish reproductive biology, stock assessment; taxonomy, biology of Nemipterids, Elasmobranchs and Silverbellies.

No. of research papers/books published : 4

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Fish reproductive biology, stock assessment, biodiversity, taxonomy, resource survey.

- Name** : **V. S. KAKATI**
- Date of birth** : 28-06-1949
- Present position** : Sr. Scientist
- Educational qualification** : Ph. D.
- Field of specialisation** : Fish & Fishery Science
- Total service in ICAR** : 22 years
- Brief Professional career**
- Sr. Scientist : 15 years
- Scientist : 7 years
- Experience** : Crustacean biology, larval development and farming technologies, larval rearing of crab; crustacean physiology; teaching/guidance at P G levels.
- No. of research papers/books published** : 22
- Special Training undergone (inside the country/abroad)** : Crustacean physiology at Station Marime D' endoume, Marseille, France.
- Areas where consultancy services can be offered** : Crustacean hatchery, farming.

Name : **P. KALADHARAN**
Date of birth : 17-08-1959
Present position : Scientist (SS)
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 15 years
Brief Professional career
Scientist (Sr. Scale) : 9 years
Scientist : 5 years

Experience : Mariculture and Tissue culture of Seaweeds and Marine algae; Soil and water quality assessment and management in aquaculture systems; Marine pollution.

No. of research papers/books published : 28

**Special Training undergone
(inside the country/abroad)**

Biotechnological utilization of marine Cyanobacteria for 15 days at the National Facility for marine Cyanobacteria, Bharathidasan University, Trichy. Application of Remote Sensing techniques on coastal management at IIRS., Dehradun; Acoustics in detecting fish aggregates and abundance on board FORV Sagar Sampada. Polyculture of *Laminaria japonica* with scallops for 45 days at Qingdao, CHINA sponsored by UNDP/FAO.

Areas where consultancy services can be offered :
Aquaculture, biological filters-bio purification; mariculture of agar yielding seaweeds; soil-water quality assessment, Bioremediation.

Name : **N. KALIAPERUMAL**

Date of birth : 02-04-1944

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 26 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Taxonomy, ecology, biology, chemistry, culture and utilisation of seaweeds.

No. of research papers/books published : 82/3

Special Training undergone

(inside the country/abroad) : Seaweed culture at the Marine Science Center, University of Philippines, Manila from January to March, 1984.

Areas where consultancy services can be offered :

Seaweed taxonomy, culture.

Name	:	D. KANDASAMI
Date of birth	:	15-06-1947
Present position	:	Senior Scientist
Educational Qualification	:	Ph.D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	28 years
Brief professional career	:	
	Sr. Scientist	: 12 years
	Scientist	: 8 years

Experience : Induced maturation, seed production and larval rearing of fishes; fish and shell fish nutritional requirement; micro particulate and micro encapsulate diet preparation for fish and shell fish larvae; live feed culture; pearl culture; hatchery seed production, pearl oyster farming in both in onshore and offshore; water quality management; industrial pollution studies; faculty member of PGPM for M.Sc., Ph.D.

No. of research papers/books published : 18

Special training undergone

(inside the country/abroad) : Fish and shellfish nutrition, FAO fellowship, 3 months, Kagoshima, Japan

Areas where consultancy services can be offered :

Fish breeding, seed production, larval rearing and farming of clown fish; shell and finfish nutrition, formulation of diets for grow out system, micro particulate and micro encapsulate diets preparation for larval rearing; live feed culture and enrichment (with polyunsaturated fatty acids); water quality management studies; industrial pollution managements; pearl culture, hatchery, seed production pearl oyster farming (onshore and offshore).

Name	:	V. KRIPA
Date of birth	:	21-02-1962
Present position	:	Scientist (SS)
Educational Qualification	:	Ph.D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	4 years
Scientist	:	8 years

Experience : Site selection for bivalve farming; fabrication/erection of grow out structures; harvesting and marketing of farmed bivalves; identification and mapping of bivalve resources in coastal areas; experimental breeding and rearing of clams and gastropods; population ecology and hydrography of bivalve beds; population dynamics of cephalopods; research guidance in Mariculture.

No. of research papers/books published : 21

Special training undergone (inside the country/abroad) : Breeding and Culture of Scallop and Sea cucumber at Yellow Sea Fisheries Research Institute, Qingdao, P.R. of China during May-June 1991 under the NACA/UNDP/FAO Project on Seafarming.

Areas where consultancy services can be offered :

Site selection and project formulation for bivalve farming; seed production and farming of bivalves; live feed culture; identification, estimation and mapping of molluscan resources in estuaries/marine ecosystems through planned surveys; environment/ecosystem monitoring, organising educational programmes in Mariculture/Fisheries.

Name : **S. KRISHNA PILLAI**

Date of birth : 30-11-1942

Present position : Sr. Scientist

Educational qualification : M. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 29 years

Brief Professional career

Sr. Scientist : 12 years

Scientist : 10 years

Experience : Fishery biology of crustaceans, pelagic and demersal fishes; hydrography of coastal water; conservation of endangered marine mammals; breeding of cephalopod.

No. of research papers/books published : 67

Special Training undergone: Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Zooplankton; conservation of marine mammals and turtles.

Name	:	P.K. KRISHNAKUMAR
Date of birth	:	18-01-1959
Present position	:	Scientist (SS)
Educational Qualification	:	Ph.D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	7 years
Scientist	:	5 years

Experience : Marine pollution monitoring; Environmental Impact Assessment, chemical analysis of refinery effluent; mussel watch; image analysis; cytochemical studies; oil and heavy metal pollution monitoring; coastal hydrography, primary and secondary production.

No. of research papers/books published : 15



EIA monitoring

Special training undergone

(inside the country/abroad) : Coastal Zone Management as a Sustainable Process, organised by the International Ocean Institute, Operational Centre (India), Indian Institute of Technology, Madras for 5 weeks; Post Doctoral study on biomarkers of environmental contaminants in the marine environment, at the Environmental Conservation Division, Northwest Fisheries Science Centre, National Marine Fisheries Service, NOAA, Seattle, USA, for 1 year under the Overseas Associateship programme of Dept. of Biotechnology, Government of India.

Advanced training on effects of oil pollution on marine animals, one year.

Areas where consultancy services can be offered :

Marine pollution monitoring; environmental Impact Assessment; coastal zone management study, chemical analysis of effluent quality, Oil & heavy metal pollution, bio-effect monitoring, mussel watch.

Name : **V. S. KRISHNAMURTHY
CHENNUBHOTLA**

Date of birth : 29-06-1940

Present position : Principal Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 31 years

Brief Professional career

Principal Scientist : 14 years

Sr. Scientist : 8 years

Scientist : 1 year

Experience : Seaweed resources and culture technology

No. of research papers/books published : 51

Special Training undergone

(inside the country/abroad) : Advanced training in seaweed farming (marine algal culture) of *Euचेuma*, *Caulerpa* and *Gracilaria* under FAO/UNDP training and demonstration programme at the Marine Science Centre, University of Philippines.

Areas where consultancy services can be offered :

Seaweed resource survey, culture of *Euचेuma*, *Gracilaria*, *Gelidiella*, *Caulerpa* etc.

Name : **L. KRISHNAN**
Date of birth : 26.05.46
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years
Brief Professional career
Sr. Scientist : 12 years
Scientist : 10 years

Experience : Induced breeding of brackish water fishes; Monoculture/Polyculture of fishes; larval rearing of brackishwater fishes, livefeed culture, integrated farming of fish with poultry, reproductive physiology of fishes.

No. of research papers/books published : 18/2

Special Training undergone

(inside the country/abroad) : FAO training in Hawaii on breeding of mullets, Nov 1983 - Mar 1984; training on transgenics in fish at Indian Institute of Immunology, New Delhi, 1990.

Areas where consultancy services can be offered :

Breeding/larval rearing of brackishwater/marine fishes; livefeed culture; integrated farming; monoculture/polyculture of fishes and prawns.



Larval rearing and live feed culture in progress

Name	:	S.R. KRUPESHA SHARMA
Date of birth	:	27-12-1966
Present position	:	Scientist
Educational Qualification	:	M.V.Sc.
Field of specialization	:	Veterinary Pathology
Total service in ICAR	:	2 years
Brief professional career	:	
Scientist	:	2 years

Experience : Fish and shell fish pathology.

No. of research papers/books published : 5

Special training undergone

(inside the country/abroad) : Foundation course for agricultural research scientists at NAARM, Hyderabad for 4 months

Immunopathology - Modern trends in disease diagnosis at G.B. Pant Agriculture University, Pantnagar

Areas where consultancy services can be offered :

Fish and shell fish disease investigation, diagnosis, treatment, disease prevention programmes.

Name : G. P. KUMARASWAMY ACHARY
Date of birth : 30-06-1940
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 34 years
Brief Professional career
Sr. Scientist : 14 years
Scientist : 8 years

Experience : Mussel culture technology; new design of spat collection, hapa system, pearl oyster cages; two - in one cage for multiple farming and collection of bivalve seeds, edible/ornamental fishes; clam resources conservation and management; transfer of technology.

No. of research papers/books published : 42

Special Training undergone (inside the country/abroad) : Nil

Areas where consultancy services can be offered :

Pearl, mussel & clam farming, aquaculture management; environmental management, biodiversity.



Sea bottom farming in two-in-one cage

Name	:	P.S. KURIAKOSE
Date of birth	:	17-05-1939
Present position	:	Principal Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	27 years
Brief professional career	:	
Principal Scientist	:	12 years
Sr. Scientist	:	6 years
Scientist	:	4 years

Experience : Fishery, biology of molluscs (bivalves, gastropods); open sea and estuarine farming of mussels and oysters; hatchery technology for mussels, transfer of technology to farmers; faculty in PGPM for M.Sc & Ph.D programmes.

No. of research papers/books published : 25

Special training undergone :

(inside the country/abroad) : Mussel culture in Spain from 16-10-1985 to 15-02-1986 under FAO/UNDP Programme.

Areas where consultancy services can be offered :

Commercial mussel Farming; hatchery production of mussel seed; purification of mussels.



Cultured mussel ready for harvest

Name : P. LAXMILATHA
Date of birth : 07-06-1962
Present position : Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 5 years

Brief Professional career

Scientist : 5 years

Aquaculture specialist (AFPRO) : 4 years

Experience : Site selection for aquaculture; project preparation, implementation; trainings for skill development and project evaluation; cephalopod, bivalve and gastropod fishery, biology, management & conservation; oyster, clam, and mussel culture; shrimp culture and physiology; teaching at P G levels.

No. of research papers/books published : 6

Special Training undergone

(inside the country/abroad) : Application of Remote Sensing in Fisheries, NRSA, Hyderabad, February, 1993; Aquatic microbiology, Selective breeding of Rohu, Magur breeding, 1994, CIFA, Bhuvanesar.

Blue-green Algae at NFBGA, IARI, New Delhi, March, 1996.

The Regional training course in "Fishing Technology & Resource Conservation", 16 June to 15 December, 1997 at SEAFDEC, THAILAND.

Areas where consultancy services can be offered :

Fishery, biology and resource conservation of cephalopods, bivalves and gastropods; mariculture of shrimps; clam, oyster, mussel; shrimp physiology; trainings; project formulation and evaluation.

Name : A. LAXMINARAYANA
Date of birth : 02-01-1947
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years
Brief Professional career
 Sr. Scientist : 12 years
 Scientist : 10 years

Experience : Shrimp/Prawn hatchery and farming, mud crab farming and fattening, polyculture, Crustacean physiology; technologies for induced maturation of shrimps, low cost shrimp hatchery, backyard hatchery for shrimp seed production, shrimp seed production by artificial insemination and *in vitro* fertilization. Served as consultant to several Government and private agencies in Indian and abroad in shrimp hatchery/farming and crab farming/fattening. Trained Vietnam Fishery officials under FAO Programme. Recipient of Sukumar Basu Memorial Award for the year 1980-1981.

No. of research papers/books published : 52

Special Training undergone (inside the country/abroad) : Advanced Training in Reproductive physiology of penaeid shrimps at University of California, USA.

Areas where consultancy services can be offered : Shrimp/prawn hatchery, shrimp/prawn farming, mudcrab farming, fattening; polyculture; reproductive physiology.

Name : **A. P. LIPTON**
Date of birth : 24-02-1953
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 12 years
 Scientist : 10 years

Experience : Fish pathology, identification, isolation and characterizations of pathogens and toxic exo-endocellular products; *in vitro* and *in vivo* effects; aetiology of bacterial/protozoan diseases in marine finfish/shellfish/ ornamental fish; biological control of fish pathogens; tissue culture and recombinant DNA techniques.

No. of research papers/books published : 40

Special Training undergone

(inside the country/abroad) : Biotechnology National Associateship on fish disease management aspects, Madurai Kamaraj University for 1 year; Biotechnology Associateship in fish virology, fish tissue culture, recombinant DNA vaccine, at the Department of Microbiology, Oregon State University, Oregon, USA, for 3 months.

Areas where consultancy services can be offered :

Total bacterial load in aquatic system; isolation and identification of bacterial/fungal/protozoan pathogens/parasites; general disease prophylactic measures; treatment protocols for bacterial and protozoan diseases.

Name	:	G. MAHESWARUDU
Date of birth	:	09-09-1957
Present position	:	Scientist (SS)
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	7 years
Scientist	:	5 years

Experience : Hatchery management, seed production, grow-out farming; broodstock development and management of penaeid shrimps; penaeid shrimp and crab resource exploitation

No. of research papers/books published : 24

Special training undergone

(inside the country/abroad) : Overseas Associateship of DBT on Aquaculture and Marine-Biotechnology during 95-96 at Tulane University, Louisiana, USA.

Areas where consultancy services can be offered :

Shrimp Culture; broodstock development and management; seed production and growout farming.

Name : **K. R. MANMADHAN NAIR**

Date of birth : 15-10-1949

Present position : Sr. Scientist

Educational qualification : M. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 13 years

Scientist : 9 years

Experience : Crustacean biology & fishery; shrimp hatchery; crab farming.

No. of research papers/books published : 8

Special Training undergone

(inside the country/abroad) : Shrimp hatchery technology, Mandapam Research Centre, CMFRI.

Areas where consultancy services can be offered :

Mud crab fattening/farming; shrimp hatchery training.



Farm fattened mud crabs

Name	:	P.P. MANOJKUMAR
Date of birth	:	10-05-1964
Present position	:	Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	6 years
Brief professional career	:	
Scientist	:	6 years

Experience : Fishery, biology, stock assessment, management and conservation of demersal finfishes; culture of groupers.

No. of research papers/books published : 6

Special training undergone (inside the country/abroad) : Bioproduction and environmental Management in semi-enclosed Sea in Japan, for three months.

Areas where consultancy services can be offered :

Fishery, biology, stock assessment, management and conservation of demersal fishes

Name	:	MANPAL SRIDHAR
Date of birth	:	18-08-1957
Present position	:	Scientist (SS)
Educational Qualification	:	Ph. D.
Field of specialization	:	Home Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	7 years
Scientist	:	5 years

Experience : Finfish and shellfish nutrition; Mahima feed development, nutritional strategies with regard to environmental friendly feed production; development of alternative non-conventional feeds through solid state fermentation technologies; nutrition in probiotics.

No. of research papers/books published : 16

Special training undergone

(inside the country/abroad) : National overseas Associateship awarded by Department of Biotechnology, New Delhi, on Solid state fermentation for producing non conventional feeds at the Department of Biotechnology, Cochin University of Science and Technology, Cochin, 1995-96.

Overseas programme of DBT, New Delhi on Probiotics Nutrition at the Department of Biological Sciences, Heriet - Watt University, Edinburgh, U.K., August - November, 1998.

Areas where consultancy services can be offered :

Feed production; proximate composition analyses of feeds; setting up of small scale feed production units for farmers with regard to shrimp nutrition.

Name	:	MARY K. MANISSERI
Date of birth	:	11-12-1949
Present position	:	Sr. Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery science
Total service in ICAR	:	21 years
Brief professional career	:	
Sr. Scientist	:	16 years
Scientist	:	5 years

Asst. Professor (C of F, Mangalore) : 4 years

Experience : Fishery, biology, stock assessment and management of shrimp, crab, lobster resources; shrimp hatchery technology development and farming; histopathology and energetics of prawns exposed to heavy metal toxicity; faculty member of PGPM in M.Sc. & Ph.D. programmes.

No. of research papers/books published : 26

Special training undergone (inside the country/abroad) : Shrimp pathology at the University of Queensland, Brisbane, Australia from January to August 1995.

Summer Institute in Fish Processing Technology

Workshop in Crustacean Physiology, Fish Nutrition, Fish pathology.

Areas where consultancy services can be offered :

Crustacean Biology and Fisheries.

Name : **K. J. MATHEW**
Date of birth : 13-12-1940
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 33 years

Brief Professional career

Sr. Scientist : 16 years
Scientist : 7 years

Experience : Zooplankton and secondary production of the EEZ of India; distribution, ecology and biology of Euphuaisacea of the Indian seas; Mud banks of Kerala coast

No. of research papers/books published : 101/1

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Marine zooplankton.

Name : **M. M. MEIYAPPAN**
Date of birth : 22-09-1943
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 31 years

Brief Professional career

Sr. Scientist : 13 years
Scientist : 9 years

Experience : Survey of cephalopod resources in the EEZ and coastal areas, stock assessment and management, cephalopod taxonomy and biology; molluscan resources survey in coastal areas and estuaries; pearl culture.

No. of research papers/books published : 30

Special Training undergone (inside the country/abroad) : Fish stock assessment under the auspices of FAO/DANIDA/ICAR in India

Areas where consultancy services can be offered : Cephalopod resource management, assessment of molluscan resources; pearl culture.

Name : **N. G. MENON**
Date of birth : 13-06-1945
Present position : Senior Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 27 years
Brief Professional career
Sr. Scientist : 14 years
Scientist : 8 years

Experience : Fishery biology; stock assessment; EIA studies for shallow water mining; preparation of fishery atlas; biodiversity; bottom trawling effect on the coastal living resources; coastal zone management studies, mesopelagic resources survey; assessment of DSL resources; faculty member of PGPM for M. F. Sc. and Ph. D.

No. of research papers/books published : 50/2

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Fishery biology, stock assessment, DSL investigation; Deepsea survey and mesopelagics; EIA studies; impact of trawling, biodiversity.



Benthic biota destroyed by bottom trawlers

Name	:	MIRIAM PAUL
Date of birth	:	28-02-1967
Present position	:	Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	2 years
Brief professional career	:	
Scientist	:	2 years

Experience : Development of live feed technology for crab, shrimp and grouper larvae; development of sustainable and environmentally compatible low cost culture systems for carabs; development of hatchery and culture systems for *Metapenaeus monoceros*; monitoring of environmental parameters in grouper culture systems; taxonomy of decapod.

No. of research papers/books published : Nil

Special training undergone

(inside the country/abroad) : Foundation course in Agriculture Research Management, at NAARM, Hyderabad.

Live Feed Culture Technology at Fisheries Harbour Laboratory of CMFRI, Thoppumpady, for 10 days.

Areas where consultancy services can be offered :

Crab culture; live Feed Culture; biodiversity and conservation issues; decapod taxonomy.

Name : **H. MOHAMAD KASIM**

Date of birth : 07-02-1948

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 21 years

Brief Professional career

Sr. Scientist : 14 years

Scientist : 7 years

Experience : Fishery biology, stock assessment of demersal and pelagic fishery resources; fin fish culture; ecophysiology with special reference to effect of environmental factors on the survival and respiratory physiology of marine organisms; Effect of aquatic pollution on living organisms; studies on marine mammals and ornamental fish.

No. of research papers/books published : 52

Special Training undergone

(inside the country/abroad) : Ornamental fish culture, Cochin

Areas where consultancy services can be offered :

Coastal aquaculture; fishery biology, stock assessment, fishery management; aquatic pollution on living organisms; aquarium and ornamental fish keeping.

Name	:	MOHAMMAD ZAFAR KHAN
Date of birth	:	11-04-1946
Present position	:	Sr. Scientist
Educational qualification	:	M. Sc.
Field of specialisation	:	Fish & Fishery Science
Total service in ICAR	:	29 years
Brief Professional career		
Sr. Scientist	:	14 years
Scientist	:	7 years

Experience : Fishery, biology, population dynamics, conservation and management of bombay duck, pomfret, golden anchovy, tuna, ribbon fish; exploratory surveys.

No. of research papers/books published : 25

Special Training undergone (inside the country/abroad) : Orientation course on Agriculture Research Management 20th January - 19th February, 1987; work shop on Statistical methods for Ecologists sponsored by Department of Science and Technology, 2-14 December, 1991 at University of Poona.

Areas where consultancy services can be offered : Exploratory survey and fishery resource management; fish biology and stock assessment; coastal zone management.

Name : G. MOHANRAJ
Date of birth : 30-12-1948
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 21 years

Brief Professional career

Sr. Scientist : 15 years
Scientist : 6 years

Experience : Fishery biology, stock assessment of demersal finfish resources; mariculture of finfishes, breeding and seed production of finfishes,

No. of research papers/books published : 25

Special Training undergone

(inside the country/abroad) : "The principles of fishery science and co-operation" at the Staff Training Institute, TNFD, Madras during August '75-'76

The capture, transport, domestication and breeding and seed production of milkfish at SEAFDEC, Philippines during March-April, 1977.

Areas where consultancy services can be offered :

Fishery, biology, stock assessment; finfish culture, brook stock management.

Name	:	MOLLY VARGHESE
Date of birth	:	25-05-1960
Present position	:	Scientist (SS)
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	4 years
Scientist	:	8 years

Experience : Monitoring of environmental parameters of estuarine/inshore/marine water bodies; identification of zooplankton - copepod, decapod larvae, mysids, chaetognaths, fish eggs/larvae, brachionids, amphipods, isopods, ctenophores, salps, doliolids; culture of live feed organisms - zooplankton (rotifers/cladocerans); organoleptic and bacteriological evaluation of shell fish for export.

No. of research papers/books published : 5

Special training undergone

(inside the country/abroad) : NAARM training at Hyderabad
Freshwater ornamental fish breeding and rearing, KAU, Panagad.

Areas where consultancy services can be offered :

Zooplankton identification; environmental monitoring of water bodies/culture sites; live feed culture; organoleptical and bacteriological evaluation of shell fish.

Name : **C. MUTHIAH**
Date of birth : 25-02-1946
Present position : Sr. Scientist
Educational Qualification : Ph.D.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 27 years
Brief professional career :
 Sr. Scientist : 12 years
 Scientist : 10 years

Experience : Fishery biology, stock assessment of pelagic fishes;
 industrial fishery resources survey; mariculture.

No. of research papers/books published : 23

**Special training undergone
(inside the country/abroad)** : Nil

Areas where consultancy services can be offered :

Fishery biology, stock assessment, management; identification of pelagic fishes; mariculture.

Name : P. MUTHIAH
Date of birth : 01-02-1949
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 21 years

Brief Professional career

Sr. Scientist : 15 years

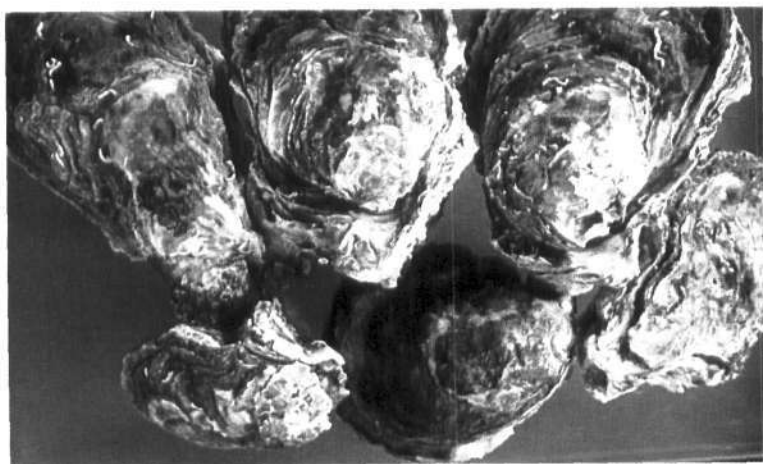
Scientist : 7 years

Experience : Edible oyster spat collection, nursery and farming systems; transfer of technology; clam seed hatchery

No. of research papers/books published : 17

Special Training undergone (inside the country/abroad) : FAO training on Oyster culture and hatchery, in France, September - October, 1985.

Areas where consultancy services can be offered : Edible Oyster culture and clam hatchery.



Cultured edible oyster

Name : **P. NAMMALWAR**
Date of birth : 26-06-1943
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Coastal fisheries assessment and management; finfish aquaculture and farm management; marine pollution monitoring; conservation and management of marine mammals; biodiversity and conservation management plan for mangroves.

No. of research papers/books published : 78

Special Training undergone

(inside the country/abroad) : Workshop on Water Quality management in Aquaculture; Workshop Training on Netcage culture of marine finfishes in Marine Aquaculture Centre, Singapore under FAO/UNDP/NACA/IDRC sponsored program. Summer Institute on application of Innovative Instructional Technology for Optimising, learning teaching in Indian Agriculture University System; Workshop on Conservation and assessment and Management plan for Indian mangrove ecosystem.

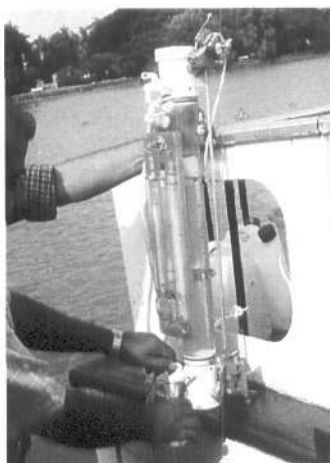
Areas where consultancy services can be offered :

Resource characteristics and stock assessment of pelagic and demersal finfishes; marine finfish culture, production, farm management and seed production technology, marine pollution monitoring, biodiversity conservation and biosphere reserves management.

Name	:	A. NANDAKUMAR
Date of birth	:	25-09-1950
Present position	:	Technical Officer (T-6)
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	19 years
Brief professional career	:	
Technical Officer	:	4 years
Field Assistant/ Research Assistant (UNDP/FAO, PFP)	:	7 years

Experience : Fishery oceanography; environmental monitoring; EIA studies; pollution studies related to estuarine and marine environment; remote sensing studies in marine fisheries

No. of research papers/books published : 18



Sea water sampling for EIA studies

Special training undergone

(inside the country/abroad) : On the job training Programme in 'Remote Sensing' at Space Application Centre, Ahmedabad, for 3 months; Orientation course on 'Sea truth data collection for National Ocean Remote Sensing Programme' at National Institute of Oceanography, Goa, for one week; Advanced level summer institute in 'Analytical Techniques in Biochemistry' at Madurai Kamaraj University, Madurai, for 3 weeks.

Areas where consultancy services can be offered :

Environmental monitoring; EIA studies; pollution studies.

Name : **G. NANDAKUMAR**
Date of birth : 13-09-1946
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 29 years

Brief Professional career

Sr. Scientist : 16 years
Scientist : 8 years

Experience : Fishery, biology, stock assessment, population dynamics, conservation and management of crustaceans, EIA studies, and trainings.

No. of research papers/books published : 30

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :
Crustacean resource survey, stock assessment, biology and management; identification of marine prawns, lobsters and crabs, prawn culture.

Name	:	K. NARAYANA KURUP
Date of birth	:	25-06-1944
Present position	:	Sr. Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Agricultural Statistics
Total service in ICAR	:	31 years
Brief professional career	:	
Sr. Scientist	:	16 years
Scientist	:	10 years

Experience : Planning, designing and execution of sample survey for assessment of exploited marine fishery resources; fish stock assessment studies; research management; faculty member of PGPM in M.Sc and Ph.D programmes.

No. of research papers/books published : 26

Special training undergone (inside the country/abroad) : Professional Statisticians Certificate, IASRI, New Delhi

Areas where consultancy services can be offered :
Design of Sample Survey including market survey, design of field laboratory experiments; fish stock assessment.

Name : **A.K.V. NASSER**
Date of birth : 12-06-1963
Present position : Scientist
Educational Qualification : Ph. D.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 8 years
Brief professional career :
Scientist : 8 years

Experience : Fishery biology; primary and secondary production; hydrology, ecology of coral reefs, mangroves, seaweeds and seagrasses; economics of fishery and culture operations.

No. of research papers/books published : 9

Special training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Fishery biology; hydrographical investigations; primary and secondary productivity studies; surveying and monitoring of coral reefs, mangroves, seaweeds and seagrass communities.

Name : **N. NEELAKANTA PILLAI**

Date of birth : 19-01-1940

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 36 years

Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Biology, fishery of marine crustaceans, larval history and development of marine and brackish water shrimps, hatchery technology for penaeid shrimps and crustacean aquaculture.

No. of research papers/books published : 51



Shrimp hatchery

Special Training undergone :

(inside the country/abroad) : Breeding and culture of *Penaeus monodon*, SEAFDEC, Philippines, for 3 months; FAO fellowship training in Hawaii, in *Macrobrachium* culture, for 3 months; Summer Institute on advanced cytogenetics and other application in live-stock improvement & Production, NDRI, Karnal, India for 3 months.

Areas where consultancy services can be offered :

Hatchery design, construction; production of seed of *Penaeus monodon*, *P. indicus* and *P. semisulcatus*.

Name	:	T.S. NAOMI
Date of birth	:	26 - 01 - 1950
Present position	:	Scientist (SS)
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	26 years
Brief professional career	:	
Scientist (Sr. Scale)	:	8 years
Scientist	:	15 years

Experience : Investigations on the secondary producers in relation to environmental parameters and fisheries; comprehensive studies on certain selected components of the zooplankton in the inshore and oceanic areas around India; EIA studies on the shallow water mining.

No. of research papers/books published : 42

Special training undergone (inside the country/abroad) : Nil

Areas where consultancy services can be offered :

Zooplankton identification, biomass estimation and secondary production; taxonomy of marine copepoda, cladocera and mysids; marine and brackishwater ichthyoplankton.

Name	:	D. NOBLE
Date of birth	:	13-04-1946
Present position	:	Sr. Scientist
Educational Qualification	:	Ph.D.
Field of specialization	:	Livestock Production & Management
Total service in ICAR	:	25 years
Brief professional career	:	
	:	Sr. Scientist : 10 years
	:	Scientist : 12 years
	:	Demonstrator : 3 years

Experience : Training, management of live stock farm, laboratory animal production, farm extension, integrated farming, transfer of technology; farmers training.

No. of research papers/books published : 5

Special training undergone (inside the country/abroad) : Research Management Training, Central Staff College, Hyderabad.

Rural training, Operation Research Project, Rithora, Bareilly, UP

Animal Production under Arid Conditions, CAZRI, Jodhpur. Rajasthan Trainer's training. NAARM, Hyderabad

Principles and Practices for Dairy Farming and Transferable Technologies, TTC of NDRI, Karnal, Haryana

Manpower Planning in Agriculture, NAARM, Hyderabad

Areas where consultancy services can be offered :

Live stock production and management; manpower training for intergrated farming.

Name : **P. PARAMESWARAN PILLAI**

Date of birth : 10-11-1942

Present position : Principal Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 34 years

Brief Professional career

Principal Scientist : 13 years

Sr. Scientist : 6 years

Scientist : 3 years

Experience : Systematics, biology, population characteristics, stock assessment, conservation and management of tunas of the Indian seas.

No. of research papers/books published : 82

Special Training undergone

(inside the country/abroad) : Fish stock assessment;

Biology and population dynamics of tunas in Japan.

Areas where consultancy services can be offered :

Biology, stock assessment, conservation and management of tunas in the Indian seas.

Name	: R. PAUL RAJ
Date of birth	: 02-06-1949
Present position	: Sr. Scientist
Educational qualification	: Ph. D.
Field of specialisation	: Fish & Fishery Science
Total service in ICAR	: 22 years
Brief Professional career	
Sr. Scientist	: 13 years
Scientist	: 9 years

Experience : Fish and crustacean nutrition; feed Technology; Environment Impact Assessment; nutritional pathology; teaching/research Guidance at P G level course in fish and shellfish nutrition, feed technology, research techniques; curriculum design; aquaculture, mariculture, trainings; setting up of laboratories in nutrition and feed technology; consultancy/technical advice; sustainable shrimp culture, EIA of coastal aquaculture projects, fish and shrimp feed management.

No. of research papers/books published : 54

Special Training undergone (inside the country/abroad) : Coastal Aquaculture - 1 month, CMFRI

Inland Fisheries and Aquaculture - 8 months, CIFRI

Research Management - 3 months, NAARM

Fish Nutrition and Feed Technology - 3 months, CIFRI.

Areas where consultancy services can be offered :

Fish and crustacean nutrition and feed technology; quality assessment of feeds and raw materials; training in fish and crustacean nutrition, feed technology; design and development of curriculum for aquaculture, mariculture nutrition and feed technology course; Environment Impact Assessment studies; sustainable shrimp culture.

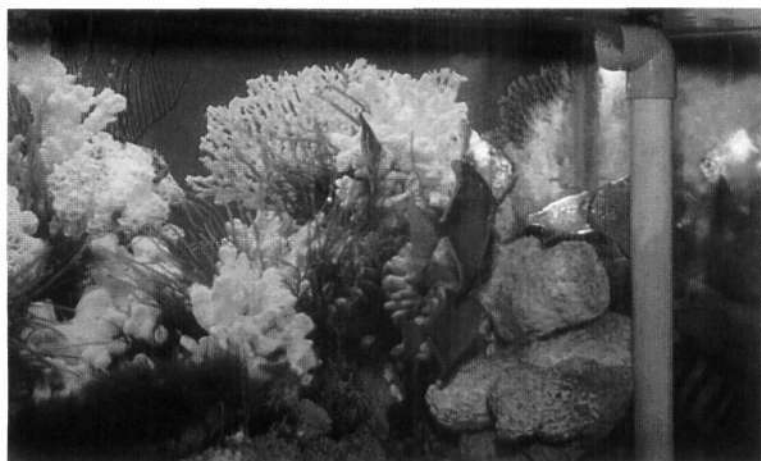
Name : K. K. PHILIPSE
Date of birth : 23-09-1955
Present position : Scientist (SS)
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 12 years
Brief Professional career
Scientist (Sr. Scale) : 4 years
Scientist : 8 years

Experience : Marine ornamental fish culture and aquarium development; artificial reefs; lobster culture.

No. of research papers/books published : 10

Special Training undergone (inside the country/abroad) : Workshop on the problems and prospects of export of ornamental fishes held at Chennai, organised by MPEDA.

Areas where consultancy services can be offered : Ornamental fish resources; planning designing and setting up of marine aquarium, artificial reefs; lobster culture.



Marine aquarium

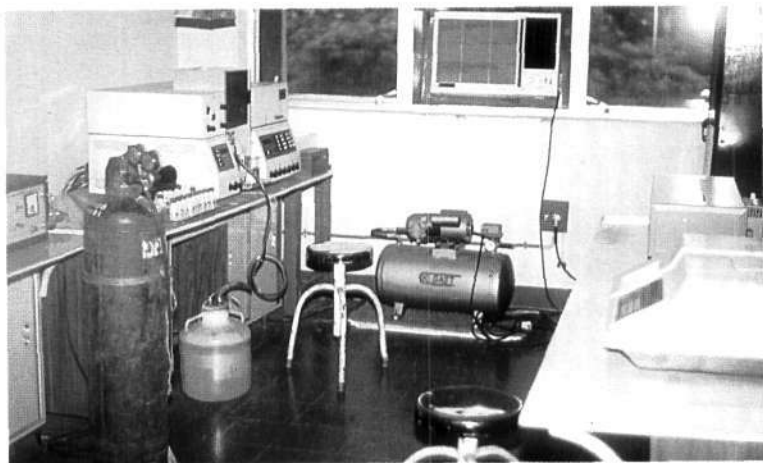
Name : V. K. PILLAI
Date of birth : 21-08-1940
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 34 years
Brief Professional career

Sr. Scientist : 16 years

Scientist : 7 years

Experience : Inshore and estuarine hydrobiology; benthos of the fishing grounds, impacts on environment; marine pollution; application of remote sensing in marine fisheries; faculty member of PGPM; organising TTC training courses in various technologies developed by CMFRI.

No. of research papers/books published : 58



Pollution monitoring laboratory

Special Training undergone

(inside the country/abroad) : Advanced training in Marine pollution Chemistry at the Department of Oceanography, University of Southampton, U. K. (1978-79), British council Fellowship; Six months training in Aquaculture and Water Quality Management in the Department of Fisheries, Auburn University, Alabama, U. S. A. (1984), FAO Fellowship. "Mussel Watch" Workshop, Plymouth Marine Laboratory, U. K. 27 February - 3 March, 1989; Application of Bio-indicators in the conservation of Biodiversity, May 4-21, 1992, M. S. Swaminathan Research Foundation, Madras

Areas where consultancy services can be offered :

Coastal hydrobiology; EIA; marine pollution; application of remote sensing in marine fisheries

Name : **V. N. PILLAI**
Date of birth : 01-09-1940
Present position : Head, Fishery Environment
Management Division
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 13 years

Brief Professional career

Principal Scientist : 13 years
Chief Instructor, CIFNET : 6 years
Deputy Director, IFP : 6 years
Sr. Oceanographer,
FAO/UNDP, PFP : 2 years
Chief Instructor, CIFNET : 7 years

Experience : Fisheries oceanography; application of remote sensing in marine fisheries; teaching at PG level.

No. of research papers/books published : 64

Special Training undergone

(inside the country/abroad) : Acoustic methods of estimation of fish abundance FAO training programme, Cochin - 1971; Application of oceanographic and meteorological data for fisheries forecasting and management; FAO study tour fellowship, MAFF Fisheries Laboratory, Lowestoft, England (2 months during 1979); Management training for Senior Administrators - 1 month, IIM, Calcutta, 1981; Management training for senior scientists, NAARM, Hyderabad, 10 days, 1991; Training for Senior Managers/ Scientists in the application of Remote sensing techniques in Agriculture/Fisheries, IIRS, Dehradun, 10 days, 1996.

Areas where consultancy services can be offered :

Fisheries oceanography; application of remote sensing techniques in marine fisheries.

Name : **K. PRABHAKARAN NAIR**
Date of birth : 23-12-1940
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 14 years
Scientist : 9 years

Experience : Fishery resources assessment; trawl fishery survey, fisheries biology, taxonomy, stock assessment and fishery characteristics of cephalopods; survey of fish and shellfish seed resources; exploratory survey onboard Fishery and Oceanographic Research Vessels; teaching in Mariculture at P G level.

No. of research papers/books published : 40

Special Training undergone (inside the country/abroad) : Acoustic methods in Fish Detection and Abundance Estimation, CMFRI, September, 1984
Fishery Resource Assessment, CMFRI, January - March, 1987

Areas where consultancy services can be offered : Taxonomy, biology and fishery of cephalopods.

Name	:	PRATHIBA ROHIT
Date of birth	:	18-11-1961
Present position	:	Scientist (SS)
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	4 years
Scientist	:	8 years

Experience : Fishery biology, stock assessment of marine pelagic fishes; preparation of Marine Fishery Resources Atlas; biochemical genetics; mariculture of crustaceans and molluscs.

No. of research papers/books published : 15

Special training undergone (inside the country/abroad) : Workshop on Stock assessment of tropical marine fishes.

Areas where consultancy services can be offered :

Fishery biology, stock assessment, mariculture; fish identification.

Name	:	D.PREMA
Date of birth	:	21.07.1963
Present position	:	Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Soil Science and Agricultural Chemistry
Total service in ICAR	:	5 years
Brief professional career	:	
Scientist	:	5 years
Agricultural Officer, (Govt. of Kerala)	:	5 years

Experience : Soil chemistry and soil fertility studies in relation to agriculture with special reference to horticultural crops and plantation crops; soil and water analysis for chemical parameters, soil physical analysis.

No. of research papers/books published : 9

Special training undergone (inside the country/abroad) : Organic farming for sustainable Agriculture

Areas where consultancy services can be offered :

Soil and sediment analysis; aquachemistry and water analysis; environmental monitoring.

Name	:	E.V. RADHAKRISHNAN
Date of birth	:	01-02-1950
Present position	:	Sr. Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	22 years
Brief professional career	:	
		Sr. Scientist : 16 years
		Scientist : 6 years

Experience : Fishery, biology, stock assessment, management of lobster resources; captive maturation of shrimps by environmental manipulation and feed management; hatchery production and farming; captive breeding of spiny lobsters; eyestalk extirpation experiments to promote growth in *Panulirus homarus*; transportation of live lobsters; faculty of PGPM in M.Sc and Ph. D programmes.

No. of research papers/books published : 32

Special training undergone

(inside the country/abroad) : Foundation course for agricultural research scientist at NAARM, Hyderabad for 3 months.

Advanced training in Lobster Culture at Tulane University, New Orleans, USA, under FAO/UNDP programme from 10-01-1985 to 09-07-1985.

Visiting Fellow to Research Institute for Marine Biological Science, Science University of Tokyo, Japan from 04-8-97 to 04-11-97 to conduct collaborative research on spiny lobster breeding and hatchery development.

Areas where consultancy services can be offered :

Shrimp, lobster and crab management; lobster farming/fattening; hatchery development and farming technology for shrimps.

Name : P. N. RADHAKRISHNAN NAIR

Date of birth : 02-05-1947

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 29 years

Brief Professional career

Sr. Scientist : 14 years

Scientist : 8 years

Experience : Systematics, biology, population characteristics, stock assessment, conservation and management of pelagic finfishes; conventional and non- conventional pelagic finfish identification.

No. of research papers/books published : 28

Special Training undergone

(inside the country/abroad) : Training in fish stock assessment

Areas where consultancy services can be offered :

Stock assessment, conservation and management of pelagic finfish resources of the seas around India.

Name : **M. RAJAGOPALAN**

Date of birth : 06-09-1946

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 14 years

Scientist : 9 years

Experience : Fishery biology; EIA studies of coastal waters; biodiversity; coastal zone management studies; conservation and management of endangered marine turtles and mammals.

No. of research papers/books published : 35

**Special Training undergone
(inside the country/abroad)** : Nil

Areas where consultancy services can be offered :
Fish biology (deep water fishery resources); EIA studies of aquaculture systems and coastal waters; biodiversity; coastal zone management; conservation and management of marine turtles and mammals.

Name : M. RAJAMANI
Date of birth : 08-05-1948
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 12 years

Scientist : 10 years

Experience : Brine shrimp, *Artemia* - biology, ecology and culture; Artificial reefs and coastal zone improvement.

No. of research papers/books published :

Special Training undergone :
(inside the country/abroad) : Culture of live feed organisms with special reference to *Artemia* culture at CAS in Mariculture, CMFRI.

Marine Ranch (marine farm) system at Usa Marine Biological station, Kochi University, Kochi, Japan from 31-8-97 to 10-12-97, under the Colombo Plan.

Areas where consultancy services can be offered :

Artemia culture, artificial reef for coastal zone improvement.

Name	:	K.N. RAJAN
Date of birth	:	13-05-1941
Present position	:	Sr. Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	35 years
Brief professional career	:	
Sr. Scientist	:	12 years
Scientist	:	9 years

Experience : Fishery biology, stock assessment, conservation and management of penaeid prawn resources; monsoon prawn fishery, experimental trawling, artisanal prawn fishery, deep sea crustacean resources.

No. of research papers/books published : 25

Special training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Prawn biology and fishery; identification of marine prawns

Name : **K. RAMASOMAYAJULU**
Date of birth : 14-08-1944
Present position : Technical officer (T-5)
Educational Qualification : M.Sc.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 28 years
Brief professional career :
Technical officer : 3 years

Experience : Stock assessment of bivalves and gastropods of Kakinada Bay; open sea pearl culture; onshore pearl culture and edible oyster and green mussel culture.

No. of research papers/books published : 9

Special training undergone (inside the country/abroad) : Post graduate Diploma in Co-operation and Rural Studies

Entrepreneurship Development course in Marine pearl culture at Tuticorin conducted by TTC.

Areas where consultancy services can be offered :

Pearl culture, edible oyster, mussel, clam culture and environmental data monitoring.

Name : RANI MARY GEORGE
Date of birth : 13-05-1953
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 21 years
Brief Professional career
Sr. Scientist : 16 years
Scientist : 5 years

Experience : Planktonology with special reference to cladocerans, ichthyoplankters and chaetognaths; culture of microalgae and microinvertebrates (rotifers, cladocerans and copepods); taxonomy of gorgonids and ornamental fishes

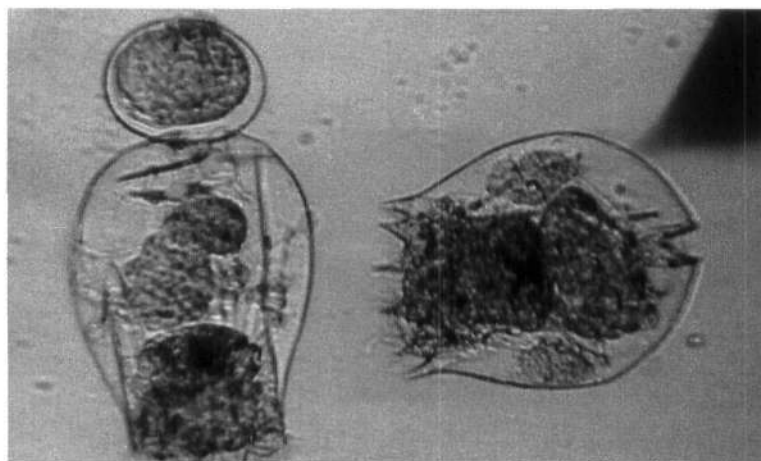
No. of research papers/books published : 20

Special Training undergone

(inside the country/abroad) : Fishery Science at Split, Yugoslavia

Areas where consultancy services can be offered :

Planktonology with emphasis on cladocerans and ichthyoplankters; live feed culture (rotifer, cladocerans and copepods); taxonomy of gorgonids (sea fans).



Live feed - rotifer culture

Name : REETA JAYASANKAR

Date of birth : 23-06-1960

Present position : Scientist (SS)

Educational qualification : Ph. D.

Field of specialisation : Plant Physiology

Total service in ICAR : 12 years

Brief Professional career

Scientist (Sr. Scale) : 5 years

Scientist : 7 years

Experience : Seaweed culture by vegetative and reproductive method, seaweed physiology, phytoplankton culture, rotifer culture.

No. of research papers/books published : 15

Special Training undergone

(inside the country/abroad) : National Academy of Agricultural Research and Management, for 5 months, Hyderabad.

Tissue culture of plants at Sugarcane Breeding Institute, Coimbatore

Phytoplankton culture at Tuticorion Research Centre of CMFRI

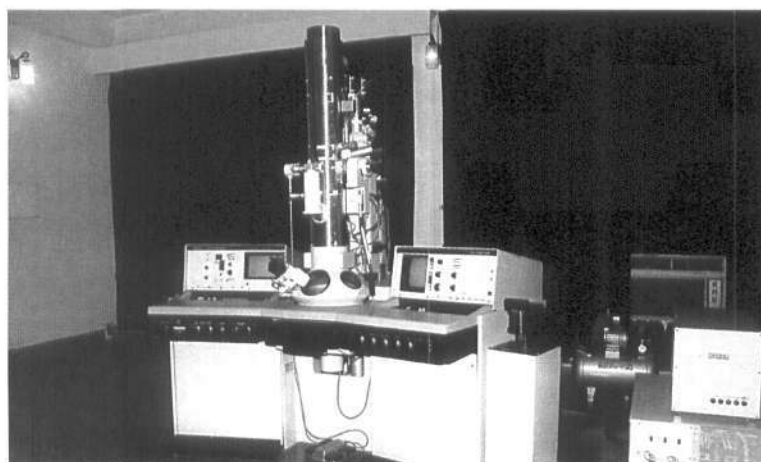
Areas where consultancy services can be offered :

Vegetative and reproductive method of seaweed culture, phytoplankton culture, rotifer culture and seaweed physiology.

Name : **K. RENGARAJAN**
Date of birth : 20-02-1940
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 34 years
Brief Professional career
Sr. Scientist : 16 years
Scientist : 7 years

Experience : Quantitative assessment of marine plankton, secondary production; Siphonophore taxonomy; fish seed resources surveys, seed transportation; Transmission and Scanning Electron Microscopy; editing of scientific publications.

No. of research papers/books published : 25



Electron microscope

Special Training undergone :

(inside the country/abroad) : Operation and maintenance of Electron Microscope (TEM, SEM and STEM) and specimen preparation techniques in Electron Microscopy in Japan.

Specialised specimen preparation techniques in Electron Microscopy at AllMS, New Delhi.

Areas where consultancy services can be offered :

Siphonophore taxonomy, identification and quantitative estimation of marine zooplankton; TEM, SEM and STEM, teaching and training Electron Microscopy; editing of scientific publications.

Name	:	K.P. SAID KOYA
Date of birth	:	25-09-1958
Present position	:	Scientist (SS)
Educational Qualification	:	M.Sc. (Industrial Fisheries)
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	12 years
Brief professional career	:	
Scientist (Sr. Scale)	:	4 years
Scientist	:	8 years

Experience : Fishery, biology and stock assessment of pelagic finfishes (tunas, seerfishes, billfish, sardines, mackerals, ribbon-fish, bombay duck, pomfrets); marine mammals; survey, exploitation and management of marine ornamental fishes; craft and gear development; extension - transfer of technology, trainings, broodstock development of finfishes, ornamental fish; crab fattening, brackishwater finfishes and prawns culture.

No. of research papers/books published : 16

Special training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Fishery, biology, stock assessment of finfishes, conservation/management of marine mammals, ornamental fish, craft gear development; extension; culture of brackish water finfish, prawns and crabs.

Name : **K. N. SALEELA**
Date of birth : 21-04-1966
Present position : Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 6 years

Brief Professional career

Scientist : 6 years

Experience : Fishery biology, crustacean hatchery and farming.

No. of research papers/books published : 3

Special Training undergone: Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Crustacean fishery biology; shrimp and crab culture; shrimp seed production.

Name	:	P.E. SAMPSON MANICKAM
Date of birth	:	02 - 03 - 1943
Present position	:	Sr. Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	33 years
Brief professional career	:	
Sr. Scientist	:	12 years
Scientist	:	9 years

Experience : Shrimp stock assessment and biology, shrimp maturation, hatchery culture, shrimp nauplii production and their high density and long distance transfer; live feed culture.

No. of research papers/books published : 25

**Special training undergone
(inside the country/abroad)** : Nil

Areas where consultancy services can be offered :

Shrimp hatchery and seed production; maturation and hatchery for *P. monodon*; site selection for hatchery and farms.

Name : **N.K. SANIL**
Date of birth : 21-12-1962
Present position : Scientist
Educational Qualification : M.Sc.
Field of specialization : Veterinary Parasitology
Total service in ICAR : 6 years
Brief professional career :
Scientist : 6 years

Experience : Fish pathology, parasite disease of animals; faculty member of PGPM in M.Sc and Ph.D programmes.

No. of research papers/books published : 2

Special training undergone (inside the country/abroad) : One month training on Electron Microscopy at AllMS, Delhi.

Areas where consultancy services can be offered :

Fish pathology, parasite diseases in fishes and shell fishes.

Name : **P. T. SARADA**
Date of birth : 20-05-1961
Present position : Scientist (SS)
Educational Qualification : M.Sc.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 12 years
Brief professional career :
 Scientist (Sr. Scale) : 4 years
 Scientist : 8 years

Experience : Fishery biology, stock assessment; environment monitoring, primary and secondary production.

No. of research papers/books published : 3

Special training undergone : Nil

Areas where consultancy services can be offered :

Fishery biology, stock assessment and fishery environment monitoring.

Name : **R. SARVESAN**
Date of birth : 14-12-1943
Present position : Sr. Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 31 years

Brief Professional career

Sr. Scientist : 16 years
Scientist : 7 years

Experience : Survey of molluscan resources in the EEZ and coastal areas; taxonomic studies of the cephalopods, gastropods and bivalves of Indian seas; stock assessment and management of cephalopod resources in the coastal seas; studies on spat production and settlement of spats of edible oyster and green mussels; rearing and larval development of cephalopods.

No. of research papers/books published : 30

Special Training undergone

(inside the country/abroad) : Sampling survey of Fishery resources. Fisheries statistics and population Dynamics conducted by ICAR/CMFRI; Experimental cephalopod fishing along South West Coast using Japanese Squid jigging equipments (ICAR/CIFT)

Areas where consultancy services can be offered :

Stock assessment and management of cephalopod resources; culture of edible oyster and green mussels; identification of squids, octopuses and cuttlefishes and ornamental gastropods and bivalves.

Name	:	T.V. SATHIANANDAN
Date of birth	:	20-05-1960
Present position	:	Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Agricultural Statistics
Total service in ICAR	:	11 years
Brief professional career	:	
Scientist	:	9 years
Computer (NRCC)	:	2 years

Experience : Fishery statistics, fish stock assessment, statistical design and analysis of research experiments; time series modelling; development of computer softwares in C and FORTRAN; faculty member for teaching statistics and computer programming for M.Sc. and Ph.D.

No. of research papers/books published : 14

Special training undergone

(inside the country/abroad) : Foundation Course on Research Project management for five months at National Academy for Agricultural Research Management, Hyderabad.

Advanced statistical methods for 6 months at Indian Agricultural Statistics Research Institute, New Delhi.

Data Base Management Systems conducted by the National Remote Sensing Agency at Hyderabad.

Optimality and robustness of designs conducted by Indian Agricultural Statistics Research Institute, New Delhi.

Areas where consultancy services can be offered :

Fishery statistics, fish stock assessment, univariate and multivariate time series modelling; design and analysis of experiments, sample surveys; computer software development.

Name : **K. S. SCARIAH**
Date of birth : 20-08-1939
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Agricultural Statistics
Total service in ICAR : 34 years
Brief Professional career
Sr. Scientist : 14 years
Scientist : 8 years

Experience : Evaluation of relative breeding of cattle, cost of production of poultry, egg and pigs; least cost combination of feeds; estimation of marine fish landings, stock assessment; teaching and guidance of M. Sc, Ph. D and MCA; management of computer centre.

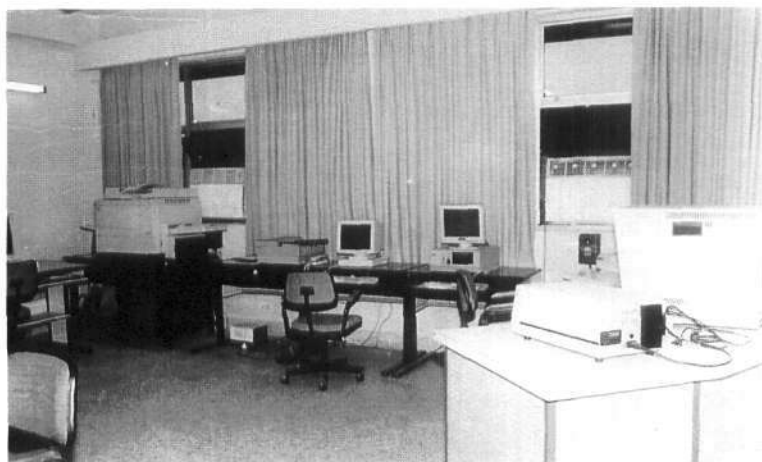
No. of research papers/books published : 15

Special Training undergone

(inside the country/abroad) : Agricultural Statistics, Fishery Statistics, Computer programming, Computer application and management

Areas where consultancy services can be offered :

Fishery survey; fish stock assessment; planning and execution of sample survey; training in fish stock assessment and computer application in fishery research.



Computer centre

Name	:	SHEELA IMMANUEL
Date of birth	:	25-12-1965
Present position	:	Scientist
Educational Qualification	:	M.Sc.
Field of specialization	:	Agricultural Extension
Total service in ICAR	:	7 years
Brief professional career	:	
Scientist	:	7 years

Experience : Fishery extension, Social research methodologies, transfer of technology, Research studies in Extension, group implementation of Rural Development programmes.

No. of research papers/books published : 11

Special training undergone :
(inside the country/abroad)

Areas where consultancy services can be offered :

Social research, methodology, various extension methods to be applied in T O T programmes; communicational behaviour aspects; administration and management.

Name	:	M. SIVADAS
Date of birth	:	28-10-1957
Present position	:	Scientist (SS)
Educational Qualification	:	M.Sc.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	16 years
Brief professional career	:	
Scientist (Sr. Scale)	:	8 years
Scientist	:	8 years

Experience : Fishery biology, pelagic fish stock assessment; fishery environment monitoring and biodiversity.

No. of research papers/books published : 13

Special training undergone : Nil

Areas where consultancy services can be offered :

Fishery biology, stock assessment and biodiversity.

Name : **S. SIVAKAMI**
Date of birth : 07-01-1946
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 16 years
Scientist : 6 years

Experience : Reservoir fisheries, cage/pen culture of major carps; fishery, biology, stock assessment, population dynamics of carangids; lizard fishes, sciaenids, bulls eye; faculty member for PG courses under CIFE, Mumbai.

No. of research papers/books published : 38

Special Training undergone (inside the country/abroad) : Workshop on Water Quality Management organised at CMFRI, Cochin by Dr. C. E. Boyd of Auburn University, Alabama, U. S. A. during December 1984. Summer Institute on Stock Assessment of Marine Fisheries at CMFRI, Cochin during June-July 1995.

Areas where consultancy services can be offered : Fishery and biology of marine fishes; cage/pen culture of marine, brackishwater and freshwater fishes.

Name : **K.S. SOBHANA**
Date of birth : 25-05-1966
Present position : Scientist
Educational Qualification : Ph. D.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 4 years
Brief professional career :
Scientist : 4 years

Experience : Fish pathology and immunology; training and extension activities in marine fisheries; faculty member of PG Programme in mariculture.

No. of research papers/books published : 1

Special training undergone (inside the country/abroad) : Participated in the training programme on Hybridoma Technology for Aquaculture Health Management, sponsored by the Department of Biotechnology, Govt. of India, College of Fisheries, Mangalore, 2nd to 22nd may 1998.

Areas where consultancy services can be offered :

Fish and shellfish pathology and immunology.

Name : K. V. SOMASEKHARAN NAIR
Date of birth : 18-02-1945
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 32 years

Brief Professional career

Sr. Scientist : 14 years

Scientist : 9 years

Experience : Taxonomy, fishery, biology, population dynamics and management and conservation of demersal finfish such as threadfin breams, lizard fishes and sciaenids; fattening of groupers; abundance and availability of finfish seed resources.

No. of research papers/books published : 27

Special Training undergone

(inside the country/abroad) : Summer Institute in coastal aquaculture conducted by CMFRI, Cochin.

Training in finfish breeding in CIFA, Bhubhaneswar.

Areas where consultancy services can be offered :

Identification of commercial fin fishes in the EEZ of India; demersal finfish management; survey for spatial and temporal distribution and abundance of fish seed resources.

Name	:	N. SRIDHAR
Date of birth	:	18-07-1957
Present position	:	Scientist (SS)
Educational Qualification	:	Ph. D.
Field of specialization	:	Animal Biochemistry
Total service in ICAR	:	13 years
Brief professional career	:	
Scientist (Sr. Scale)	:	8 years
Scientist	:	5 years

Experience : Biochemistry and endocrinology of finfish and shellfish; enzymes in shrimp digestion, metabolism; factors inducing maturation in shrimp; tissue culture of crustacean neuroendocrine centres; instrumentation methodologies; maturation and sex reversal in groupers.

No. of research papers/books published : 14

Special training undergone (inside the country/abroad) : Tissue culture training at National centre for Cell Science, Pune.

Biotechnology in Aquaculture at CIFA, Bhubaneswar.

Department of Biotechnology Overseas Associateship at the Department of Ecology Evolution and Ornamental Biology, Tulane University, New Orleans, USA for 6 months, February to August, 1997 on Thoracic ganglion involvement in protein synthesis in the ovary of *Procambarus clarkii*.

Areas where consultancy services can be offered :

Analysis of biochemical constituents; protein separation and purification procedures; isolation of enzymes and bioactive compounds; Purification of enzymes.

Name	:	M. SRINATH
Date of birth	:	01-06-1948
Present position	:	Senior Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Agricultural Statistics
Total service in ICAR	:	20 years
Brief professional career	:	
Sr. Scientist	:	15 years
Scientist	:	5 years

Experience : Fishery Statistics, fish population dynamics including fish stock assessment, resources data management and computer software.

No. of research papers/books published : 32

Special training undergone

(inside the country/abroad) : Fish stock assessment conducted by the ICAR/FAO/DANIDA held at CMFRI, Cochin; National Follow up training course in Fish Stock Assessment conducted by DANIDA/ICAR/FAO at CMFRI.

"UNIX" and "C" course conducted by the C.M.C. Ltd held at Cochin.

Data communications and networking conducted by the C.M.C. Ltd. held at New Delhi.

"SOLARIS UNIX Server Configuration" conducted by the FUJITSU/ICIM held at Sugar Cane Breeding Institute, Coimbatore.

Areas where consultancy services can be offered :

Fishery statistics, mathematical/statistical modelling applied to fisheries, sample surveys, computer software, resource data management.

Name : P. V. SREENIVASAN
Date of birth : 08-05-1944
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 14 years
 Scientist : 9 years

Experience : Fishery biology and taxonomy of carangids; resources survey of molluscs of coastal waters; culture of pearl oysters, edible oysters, mussels and clams; hatchery production of bivalve seeds.

No. of research papers/books published : 51

Special Training undergone (inside the country/abroad) : Polyculture of *Laminaria* with molluscs at Qing Dao, People's Republic of China conducted by NACA/FAO

Areas where consultancy services can be offered : Culture of bivalves (Pearl oysters, edible oysters, mussels and clams) and hatchery production of bivalve seeds.

Name : V. SRIRAMACHANDRA MURTY
Date of birth : 19-01-1943
Present position : Head, Demersal Fisheries Division
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years
Brief Professional career
Head, DFD : 2 years
Sr. Scientist : 14 years
Scientist : 7 years

Experience : Fishery, biology, taxonomy, population dynamics of demersal and ornamental fishes; resources survey, assessment; marine biodiversity; research management and teaching.

No. of research papers/books published : 60

Special Training undergone (inside the country/abroad) : Fish stock assessment training in U. K. in 1988.

Areas where consultancy services can be offered :

Taxonomy, biology and stock assessment of marine finfish; teaching and guiding postgraduate and doctoral students in marine fisheries; marine ornamental fishes of India; evaluation of research and development projects in marine fisheries.



Resources survey, catch analysis on board FORV Sagar Sampada

Name : **G. SUDHAKARA RAO**
Date of birth : 01-07-1940
Present position : Head, Crustacean Fisheries Division
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 35 years

Brief Professional career

Head, C F D : 2 years
Sr. Scientist : 14 years
Scientist : 7 years

Experience : Marine capture fisheries; shrimps crabs lobster, taxonomy, biology, population dynamics, stock assessment, management and conservation; crustacean culture fisheries research and management

No. of research papers/books published : 40

Special Training undergone :
(inside the country/abroad) : Orientation course in agricultural Research management in the NAARM, Hyderabad; Marine prawn culture at CMFRI.

Areas where consultancy services can be offered :
Biology and stock assessment of crustacean and demersal fishery resources; shrimp and crab farming

Name : **SUJITHA THOMAS**
Date of birth : 28-10-1968
Present position : Scientist
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 2 years
Brief Professional career
Scientist : 2 years

Experience : Small scale hatchery operation, development of homestead ponds, training farmers, cage culture.

No. of research papers/books published : Nil

Special Training undergone (inside the country/abroad) : Training in aquaculture in Auburn University, Alabama, USA.

Areas where consultancy services can be offered : Fish culture, cage culture; molluscan aquaculture.

Name : K. SUNILKUMAR MOHAMED
Date of birth : 02-04-1958
Present position : Scientist (SS)
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 12 years

Brief Professional career

Scientist (Sr. Scale) : 7 years

Scientist : 5 years

Experience : Fishery, biology, population dynamics, stock assessment of cephalopods; ecosystem based fisheries; production modelling; molluscan aquaculture - mussels and clams; shrimp endocrine control of reproduction, larval probiotics.

No. of research papers/books published : 30

Special Training undergone

(inside the country/abroad) : Biotechnology National Associateship at the Centre for Biotechnology, Anna University, 1 year, 1992-93; Biotechnology Associateship at the IFREMER, Centre de Brest, FRANCE on larval probiotics, 3 months, 1994.

Areas where consultancy services can be offered :

Larval probiotics, molluscan aquaculture, analysis of fisheries data & modelling.

Name : C. SUSEELAN
Date of birth : 07-01-1940
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 34 years
Brief Professional career
 Sr. Scientist : 16 years
 Scientist : 7 years

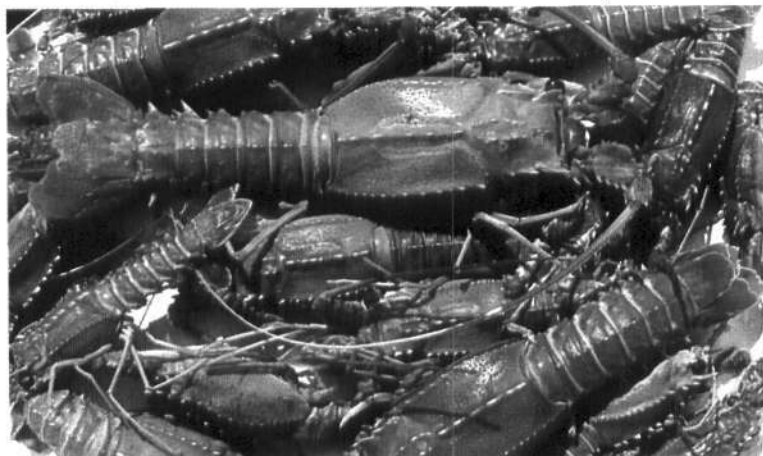
Experience : Systematics, biology, fishery, stock assessment, management and conservation of crustacean and demersal resources; shrimp and crab farming; teaching - guiding research at M. F. Sc./ Ph. D. levels

No. of research papers/books published : 60

Special Training undergone : Nil
(inside the country/abroad)

Areas where consultancy services can be offered :

Biology, fishery, biodiversity, stock assessment, management and conservation of coastal, offshore and deepsea crustaceans; training on above aspects; preparation of research and development projects on crustacea; planning / guiding academic programmes in mariculture/ coastal aquaculture/marine fisheries and related disciplines.



Deep Sea lobster - a prospective resource from SW and SE coast

Name : P. S. SWATHI LAKSHMI
Date of birth : 30-05-1971
Present position : Scientist
Educational qualification : M. Sc.
Field of specialisation : Agricultural Extension
Total service in ICAR : 1 year
Brief Professional career :
Scientist : 1 year

Experience : Transfer of technology in crop development programmes, implementation of agricultural schemes, their monitoring and evaluation; the socio-economic status of the agricultural scenario in rural areas; transfer of technology in mariculture.

No. of research papers/books published : 5

Special Training undergone (inside the country/abroad) : Video production for farm programmes

Mixed farming (as agril. officer)

Four months training for ARS probabtioners at NAARM, Hyderabad

Computer course in office automation

Areas where consultancy services can be offered :

Transfer of technology in agriculture; extension research in agricultural science.

Name : G. SYDA RAO
Date of birth : 01-08-1951
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 21 years

Brief Professional career

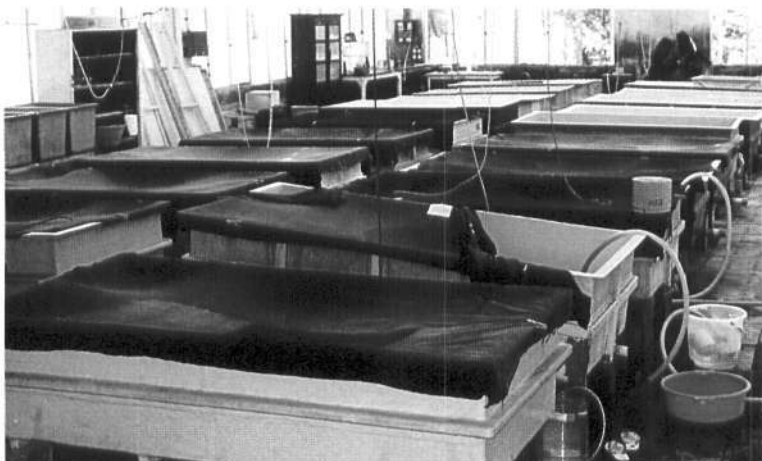
Sr. Scientist : 15 years
Scientist : 4 years

Experience : Fishery, biology, stock assessment of bivalves and cephalopods; molluscan culture : clam, oyster, mussel, pearl oysters; on-shore pearl culture technology

No. of research papers/books published : 35

Special Training undergone (inside the country/abroad) : Fisheries training in Yugoslavia & Italy; Pearl culture training in CMFRI.

Areas where consultancy services can be offered :
On-shore pearl culture.



Pearl oyster hatchery

Name : **V. THANGARAJ
SUBRAMANIAN**
Date of birth : 11-01-1941
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 27 years

Brief Professional career

Sr. Scientist : 12 years

Scientist : 10 years

Experience : Crustacean biology, stock assessment; Prawn culture.

No. of research papers/books published : 20

Special Training undergone (inside the country/abroad) : Nil

Areas where consultancy services can be offered :
Culture of prawns and crabs; assessment of shrimp stock.

Name : **R. THIAGARAJAN**

Date of birth : 15-04-1943

Present position : Sr. Scientist

Educational qualification : M. Sc.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 30 years

Brief Professional career

Sr. Scientist : 14 years

Scientist : 10 years

Experience : Fishery survey, fishery biology, stock-assessment and fishery management.

No. of research papers/books published : 30

Special Training undergone (inside the country/abroad) : FAO/DANIDA/Fish Stock Assessment training.

Areas where consultancy services can be offered : Fish biology, stock assessment and management

Name : **P. C. THOMAS**
Date of birth : 02-03-1952
Present position : Sr. Scientist
Educational qualification : Ph. D.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 12 years

Scientist : 10 years

Experience : Biotechnology, fish genetics, animal genetics and breeding; teaching/guiding : genetic engineering, quantitative genetics, cytogenetics, biological genetics and immunology

No. of research papers/books published : 42

Special Training undergone

(inside the country/abroad) : Techniques in Molecular biology, Cell biology and Immunology at ICMR Institute for Research in Reproduction, Bombay; Molecular methods for rapid detection of sea food associated pathogens at UNESCO - MIRCEN Centre for Marine Biotechnology at UAS, Fisheries college, Mangalore; Application of Tissue culture in genetic studies at NDRI, Karnal. FAO/UNEP International training in Animal Genetic Resources Conservation and Management at the University of Veterinary Sciences, Budapest.

Areas where consultancy services can be offered :

Biotechnology, fish genetics, animal genetics, breeding, immunology.

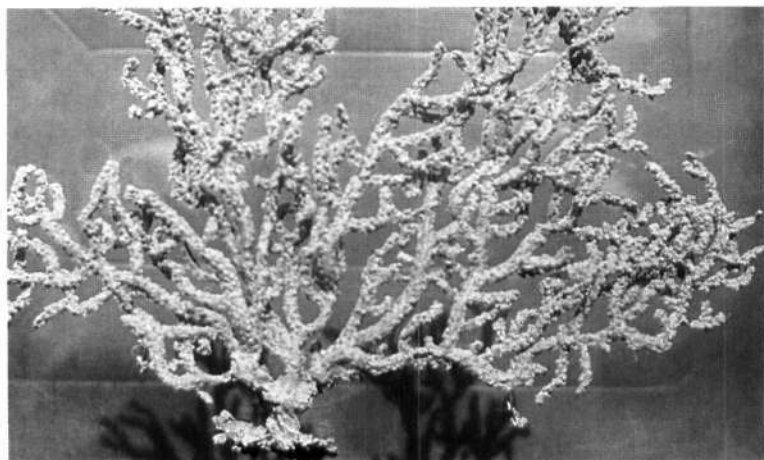
Name : **P. A. THOMAS**
Date of birth : 05-10-1945
Present position : Sr. Scientist
Educational qualification : D. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 30 years
Brief Professional career
Sr. Scientist : 16 years
Scientist : 7 years

Experience : Fishery survey; fishery biology; taxonomy of sponges/gorgonids; bioprospecting; bioactivity, bioerosion, ecology of boring/fouling sponges; crustacean biology.

No. of research papers/books published : 70

Special Training undergone (inside the country/abroad) : National Academy for Agricultural Research & Management, Hyderabad.

Areas where consultancy services can be offered : Taxonomy; bioprospecting for sponges and gorgonids; biodiversity.



Bioactive compound producing gorgonid & sponge (2)

Name : **VEERENDRA VEER SINGH**

Date of birth : 10-09-1956

Present position : Scientist (SS)

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 12 years

Brief Professional career

Scientist (Sr. scale) : 7 Years

Scientist : 5 years

Experience : Fishery environment, oceanography, fisheries hydrography, fisheries education and Integrated Coastal Zone Management (ICZM); mariculture

No. of research papers/books published : 16/1

Special Training undergone

(inside the country/abroad) : Intra Institutional training at CMFRI for 39 weeks in 1986; National Academy of Agricultural Research Management, Hyderabad, 1986-87; Acoustic Methods for Fish Detection and Abundance Estimation, CMFRI, Cochin, August, 1995; Integrated Coastal Zone Management at P. S. University, THAILAND, April, 1994.

Areas where consultancy services can be offered :

Fishery environment, oceanography, fisheries hydrography; Fisheries education and Integrated Coastal Zone Management (ICZM) including Environmental Impact Assessment and Social Impact Assessment; mariculture.

Name : T. S. VELAYUDHAN
Date of birth : 02-11-1949
Present position : Sr. Scientist
Educational qualification : M. Sc.; B.Ed.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 20 years
Brief Professional career
 Sr. Scientist : 13 years
 Scientist : 7 years

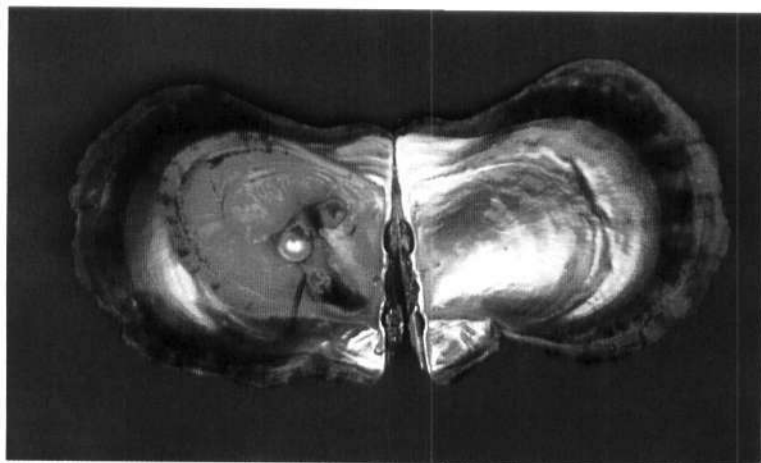
Experience : Taxonomy, histology of pearl oyster; bivalve resources, biology, fishery, conservation and management; pearl oyster farming, induced maturation, breeding, spawning, pearl oyster surgery; bivalve farming; transfer of technology; selective breeding of bivalves; teaching aquaculture/genetics at P G level; training SCUBA diving, pearl culture. Recipient of ICAR team Award (1985-86) for pearl oyster hatchery technology.

No. of research papers/books published : 48

Special Training undergone (inside the country/abroad) : SCUBA diving;

Molluscan genetics, Dalhousie University, Canada in 1985.

Areas where consultancy services can be offered :
 Pearl oyster hatchery, farming, pearl production; SCUBA diving and pearl culture training



Cultured pearl - *Pinctada fucata*

Name : **R. VENUGOPALAN**

Date of birth : 01-06-1971

Present position : Scientist

Educational qualification : Ph. D.

Field of specialisation : Agricultural Statistics

Total service in ICAR : 1 year

Brief Professional career

Scientist : 1 year

Experience : Constructed statistical/markovian/non-linear growth models for fish production, marine products export, biometrics and fish stock assessment; working experience with statistical packages like SAS and SPSS under DOS, WINDOWS and UNIX platforms.

No. of research papers/books published : 9

Special Training undergone

(inside the country/abroad) : Four months training for ARS probationers at NAARM, Hyderabad; Ten days training for ARIS cell personel at UAS, Bangalore.

Summer school on Recent advances in statistical design for agricultural research at IASRI, New Delhi

Areas where consultancy services can be offered :

Fish stock assessment through yield models; fishery forecasting through emperical modelling; statistical modelling; statistical packages for fisheries research

Name	:	A.C.C. VICTOR
Date of birth	:	23-02-1944
Present position	:	Senior Scientist
Educational Qualification	:	Ph. D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	31 years
Brief professional career	:	
Sr. Scientist	:	16 years
Scientist	:	7 years

Experience : Pearl oyster seed production, farming, pearl production; pearl oyster breeding, larval rearing, larval food production; chemical analysis and water quality control; sea ranching of pearl oyster seed, resources survey and extension; reproductive biology of *Donax sp*; SCUBA diving.

No. of research papers/books published : 38

Special training undergone (inside the country/abroad) : SCUBA diving

Areas where consultancy services can be offered :

Pearl oyster seed production, farming and pearl production; training in SCUBA diving.



Pearl oyster farm

Name : **P. VIJAYAGOPAL**

Date of birth : 23-07-1959

Present position : Scientist

Educational qualification : M. Sc

Field of specialisation : Animal nutrition

Total service in ICAR : 9 years

Brief Professional career

Scientist : 9 years

Dairy Extension Officer : 5 years

Experience : Nutrition of fishes and shrimps; feed formulations for shrimps, fishes, cattle, buffaloes and goats; teaching aquaculture nutrition and animal nutrition; technical evaluation of research projects, research papers and dairy development projects.

No. of research papers/books published : 3

Special Training undergone

(inside the country/abroad) : Shrimp hatchery management

Areas where consultancy services can be offered :

Fish and shrimp feed production; feed formulations for fishes, shrimps, cattle, buffaloes and goats; animal and aquatic nutrition; feed analysis; curriculum development in aquaculture nutrition; evaluation and critical appraisal of research projects in aquaculture nutrition

Name : **K. VIJAYAKUMARAN**
Date of birth : 14-10-1956
Present position : Scientist (SS)
Educational qualification : M. Sc.
Field of specialisation : Fish & Fishery Science
Total service in ICAR : 13 years

Brief Professional career

Scientist (Sr. Scale) : 5 years

Scientist : 8 years

Experience : Fishery biology, coastal hydrography; studies on benthos; upwelling and fisheries; environmental monitoring; biodiversity conservation; coastal zone management; artificial sea water, live feed organisms; environmental analysis; economic analysis

No. of research papers/books published : 18

Special Training undergone (inside the country/abroad) : P G Training in Applied Statistics, Operations Research and Management

Areas where consultancy services can be offered : Fisheries management; environmental monitoring; coastal hydrography; EIA studies; micro algal feed; social and environmental audit; economic analysis and feasibility studies; biodiversity.

Name : **K. VIJAYALEKSHMI**

Date of birth : 25-04-1946

Present position : Scientist (SS)

Educational qualification : M. Sc

Field of specialisation : Agricultural Statistics

Total service in ICAR : 29 years

Brief Professional career

Scientist (Sr. Scale) : 8 years

Scientist : 15 years

Experience : Scrutiny, analysis, compilation of marine fisheries statistical data, consolidation of reports

No. of research papers/books published : 2

Special Training undergone

(inside the country/abroad) : Agricultural statistics, IASRI, Delhi

Areas where consultancy services can be offered :

Statistical analysis of marine fish landing data

Name : **E. VIVEKANANDAN**

Date of birth : 05-04-1950

Present position : Sr. Scientist

Educational qualification : Ph. D.

Field of specialisation : Fish & Fishery Science

Total service in ICAR : 22 years

Brief Professional career

Sr. Scientist : 15 years

Scientist : 7 years

Experience : Fishery, biology and finfish taxonomy; fish stock assessment; coastal fisheries management, EIA studies in coastal areas.

No. of research papers/books published : 62

Special Training undergone

(inside the country/abroad) : DANIDA/FSI training on fish stock assessment

Acoustic methods for fish biomass estimation

Areas where consultancy services can be offered :

Fish identification and taxonomy; methodology of fisheries data collection; spatial and temporal fish abundance; potential fishing areas; coastal fisheries management; EIA in coastal and offshore areas.

Name	:	T. M. YOHANNAN
Date of birth	:	24-09-1942
Present position	:	Sr. Scientist
Educational Qualification	:	Ph.D.
Field of specialization	:	Fish & Fishery Science
Total service in ICAR	:	31 years
Brief professional career	:	
	Sr. Scientist	: 16 years
	Scientist	: 7 years

Experience : Biology and population dynamics of pelagic fishes, influence of environment on pelagic fisheries and the management options; changing fishing patterns and the monsoon trawl ban in Kerala

No. of research papers/books published : 23

Special training undergone

(inside the country/abroad) : Fishery statistics, conducted by CMFRI, Cochin, from 12-11-79 to 22-12-79

National Training Course in Fish Stock Assessment conducted by FAO/DANIDA/ICAR at Cochin from 7-11-83 to 10-12-83

Acoustic Methods for Fish Detection and Abundance Estimation conducted by CMFRI, Cochin, from 12th to 25th September, 1984.

Appraisal course on 'Remote Sensing Applications' conducted by NRSA at Hyderabad from 7th to 11th September, 1987

Areas where consultancy services can be offered :

Pelagic resources, stock assessment and status studies of marine fisheries for management strategies.

Name : P.U. ZACHARIA
Date of birth : 21-02-1960
Present position : Scientist (SS)
Educational Qualification : M.Sc.
Field of specialization : Fish & Fishery Science
Total service in ICAR : 12 years
Brief professional career :
 Scientist (Sr. Scale) : 4 years
 Scientist : 8 years

Experience : Taxonomy, biology, stock assessment of marine demersal finfishes; impact of trawling on benthic biota; exploratory surveys; use of fisheries softwares.

No. of research papers/books published : 27

Special training undergone

(inside the country/abroad) : ICAR Summer Institute on Stock assessment of tropical marine fishes.

Workshop on acoustic methods for marine fish stock assessment.

Areas where consultancy services can be offered :

Fishery biology, stock assessment, fish identification; impact of fishing on benthic biota; ecopath modelling, exploratory surveys for marine fish stock estimation.



Fishery biology investigations & computer analysis

CONSULTANCY/CONTRACT SERVICE PROJECTS UNDERTAKEN BY CMFRI

Sl. No	Name of client	Status	Title	Period	Amount in Rs.	Remarks
1	Mangalore Refinery & Petrochemicals Ltd., Mangalore	Public sector	Inspection of the sub-marine portion of treated effluent pipeline	Feb '98- Mar '98	89,000	Contract service
2	Mangalore Refinery & Petrochemicals Ltd., Mangalore	Public sector	Environmental monitoring in the Arabian sea off Chithrapur and effluent analysis	Nov '97- Oct '98	3,60,000	Consultancy service
3	Mangalore Refinery & Petrochemicals Ltd., Mangalore	Public sector	Environmental monitoring in the Arabian sea off Chithrapur and effluent analysis	Nov '98- Oct '99	4,00,000	Consultancy service (2nd year continuing)
4	SPIC Electric Power Corporation, Tuticorin	Public sector	Cooling water system design parameters	Feb '97- Jul '97	36,000	Contract service
5	Kudremukh Iron Ore Co. Ltd., Mangalore	Public sector	Chemical parameters of the effluent and hydrobiological conditions in the effluent receiving water off Thannirbavi, Mangalore	Aug '97- Jul '98	3,80,000	Consultancy service

Sl. No	Name of client	Status	Title	Period	Amount in	Remarks
6	Kudremukh Iron Ore Co. Ltd., Mangalore	Public sector	-do-	Aug. '98- Jul. '99	3,80,000	Consultancy service (2nd year continuing)
7	Care India, Mumbai	International Agency	Preliminary investigation on the fishery and allied activities of some villages of Guhagar Taluk, Ratnagiri District.	Mar. '98- Dec. '98	3,30,000	Consultancy
8	Hardy Exploration & Production India (Inc), Chennai	-do-	Marine impact study around the oil & gas field at Cauvery basin off Tamilnadu.	Apr. '98- Sept. '98	9,60,800	Consultancy
9	National Environmental Engineering Research Institute, Nagpur	Govt. Agency	Initial Environmental Examination of Sethusamudhram ship canal project	Apr. '98- Jul. '98	4,59,000	Contract service
10	Cochin Port Trust, Cochin	Public Sector	Monitoring the impact of reclamation of south end W. Island, Cochin	Jul. '98- Jun. '99	4,01,370	Consultancy
11	Indian Tropical Agro Products Ltd., Tuticorin	Private sector	Pearl oyster farming and pearl production	Mar. 98- Feb. 99	1,50,000	Consultancy

Sl. No	Name of client	Status	Title	Period	Amount in	Remarks
12	Rajiv Gandhi Centre of Aquaculture, Myladuthurai	Govt. Agency	Farming and fattening of spiny lobsters	Nov. '98- Oct. 2000	5,88,280	Consultancy
13	Bharat Heavy Electricals Ltd., Tiruchirappally	Public sector	Inspection of GRP/HDPE pipeline laid into the sea for the desalination plant at Nariyapur, Ramnad District.	Nov.'98- Dec. '98	1,00,000	Contract service
14	Lakshadweep Shiipi Aquaculture Limited, Cochin	Private Sector	Marine environment study in and around fish hatchery and cage culture sites off Port Blair	Mar.'99- Apr. '99	2,56,000	Consultancy
15	Suganthi Devadason Marine Research Institute (SDMRI), Tuticorin	Private sector	Marine cultured pearl production - perfection of existing technology to increase the incidence of pearl and to improve their quality	Mar. '99- Feb. 2000	15,000	Contract Research
16	Master Pearls Limited, Hyderabad	Private sector	Onshore Marine pearl production	Apr. '99- Mar. 2000	2,77,250	Consultancy

EXPERT INDEX

Abdussamad. E.M.	19	Joseph Andrews	50
Aboobaker.P.M.	20	Joshi. K.K.	51
Appukkuttan K.K.	21	Kakati. V.S.	52
Arpita Sharma	22	Kaladharan. P.	53
Ashaletha. S.	23	Kilaperumal. N.	54
Asokakumaran Unnithan.K.	24	Kandasami. D.	55
Balan.K.	25	Kripa. V.	56
Chandrika.V.	26	Krishna Pillai. S.	57
Chellam.A.	27	Krishnakumar. P.K.	58
Daniel Selvaraj.G.S	28	Krishnamurty Chennubhotla V.S.	60
Devaraj.M.	29	Krishnan. L.	61
Dharmaraj.S.	31	Krupesha Shorma. S.R.	62
Easterson.D.C.V	32	Kumarswamy Achary G.P.	63
Ferozhan.M.	33	Kuriakose. P.S.	64
Geetha Sasikumar	34	Laxmilatha P.	65
George J.P.	35	Laxminarayana A.	66
George.K.C.	37	Lipton. A.P.	67
Girijavallabhan.K.G.	38	Maheswarudu. G.	68
Gopakumar.G.	39	Manmadhan Nair. K.R	69
Gopalakrishna Pillai.N.	40	Manojkumar. P.P.	70
Gopinathan C.P.	41	Manpal Sridhar	71
Grace Mathew	42	Mary K. Manisseri	72
Gulshad Mohammed	43	Mathew. K.J.	73
Jagadis.I.	44	Meiyappan. M.M.	74
James. D.B.	45	Menon. N.G.	75
Jayaprakash A.A.	46	Miriam Paul	76
Jayasankar. P.	47	Mohamad Kasim. H.	77
Jiju P. Alex	48	Mohammad Zafar Khan.	78
Joe K. Kizhakudan	49	Mohanraj. G.	79

Molly Varghese	80	Sarada. P.T.	116
Muthiah. C.	81	Sarvesan R.	117
Muthiah. P.	82	Sathianandan. T.V	118
Nammalwar. P	83	Scariah. K.S.	119
Nandakumar. A.	84	Sheela Immanuel	120
Nandakumar. G.	86	Sivadas. M.	121
Narayana Kurup. K.	87	Sivakami. S.	122
Nasser. A.K.V.	88	Sobhana.K.S.	123
Neelakanta Pillai N.	89	Somasekharan Nair.K.V.	124
Naomi. T.S.	91	Srihar.N.	125
Noble. D.	92	Srinath.M.	126
Parameswaran Pillai. P.	93	Srinivasan.P.V	127
Paulraj. R.	94	Sriramachandra Murty V.	128
Phillipose. K.K.	95	Sudhakara Rao.G.	129
Pillai. V.K.	96	Sujitha Thomas	130
Pillai. V.N.	98	Sunil Kumar Mohamed.K.	131
Prabhakaran Nair. K.	99	Suseelan.C.	132
Prathiba Rohit	100	Swathilakshmi.P.S.	133
Prema D.	101	Syda Rao.G.	134
Radhakrishnan. E.V.	102	Thangaraj Subramanian.V.	135
Radhakrishnan Nair P.N.	103	Thiagarajan.R.	136
Rajagopalan. M.	104	Thomas.P.C.	137
Rajamani. M	105	Thomas. P.A.	138
Rajan.K.N	106	Veerendra veer singh	139
Ramasamayajulu. K.	107	Velayudhan. T.S.	140
Rani Mary George	108	Venugopalan.R.	141
Reeta Jayasankar	109	Victor.A.C.C.	142
Rengarajan. K.	110	Vijayagopal.P.	143
Said Koya. K.P.	112	Vijayakumaran.K.	144
Saleela. K.N.	113	Vijayalekshmi.K.	145
Sampson Manickam. P.E.	114	Vivekanandan.E.	146
Sanil. N.K.	115	Yohannan.T.M.	147
		Zacharia. P.U.	148

SUBJECT INDEX

Subject	Page No.
I. Coastal/Marine environment	
Physical and chemical oceanography	: 28, 38, 43, 58, 84, 88, 98, 139, 144
Biological oceanography	: 26, 28, 41, 57, 73, 80, 88, 90, 96, 108, 109, 111
Pollution	: 32, 53, 58, 77, 84, 96
EIA	: 28, 29, 35, 38, 43, 58, 75, 80, 84, 94, 96, 104, 139, 144, 146
Water and soil analysis	: 20, 53, 84, 101
Biodiversity and bioprospecting	: 40, 43, 45, 47, 51, 63, 75, 76, 83, 88, 104, 121, 132, 138, 144
Ecology of marine life supporting systems	: 40, 46, 101, 115
Remote sensing	: 84, 96, 98
II. Fisheries	
Taxonomy	: 21, 35, 40, 41, 43, 45, 46, 47, 51, 54, 76, 81, 86, 90, 93, 99, 100, 103, 106, 108, 117, 124, 127, 128, 129, 132, 138, 140, 146, 148
Fishery biology	
Finfishes	: 19, 29, 33, 34, 39, 42, 46, 51, 70, 75, 77, 78, 79, 81, 83, 88, 93, 100, 103, 104, 112, 115, 121, 122, 124, 127, 128, 136, 146, 147, 148
Crustacean	: 52, 69, 72, 86, 89, 106, 113, 114, 129, 132, 135
Molluscan	: 21, 64, 65, 74, 99, 117, 127, 130, 131, 134, 140

Stock assessment, modelling and forecasting	: 19, 25, 42, 47, 51, 70, 75, 77, 79, 81, 87, 93, 100, 103, 112, 115, 118, 119, 121, 124, 126, 128, 129, 131, 132, 134, 135, 136, 141, 145, 146, 147, 148
Conservation & Management	: 21, 25, 29, 33, 40, 46, 57, 65, 70, 72, 75, 77, 78, 81, 83, 86, 87, 93, 99, 103, 104, 117, 122, 126, 128, 129, 132, 134, 136, 140, 146, 147, 148

III. Mariculture

Farm site selection	: 20, 21, 56
Live feed culture	: 20, 39, 41, 61, 76, 80, 105, 108, 109, 144
Pathology	: 32, 37, 62, 67, 109, 115, 123
Nutrition	: 32, 55, 71, 94, 143
Genetics	: 137, 140
Physiology	: 65, 66, 125, 142

IV. Mariculture practices

Crustaceans

Prawns	: 24, 49, 52, 66, 68, 69, 86, 89, 94, 102, 113, 114, 135
Crabs	: 52, 66, 69, 76, 89, 100, 102, 113, 114, 135
Lobster	: 49, 95, 102

Molluscs

Pearl oyster	: 19, 21, 27, 31, 44, 50, 55, 63, 74, 107, 117, 127, 134, 140, 142
Edible oyster	: 21, 56, 65, 82, 107, 127, 131, 140
Mussel	: 21, 34, 44, 50, 56, 63, 64, 65, 81, 107, 127, 131, 140
Clam	: 21, 56, 63, 65, 82, 107, 127, 140

		<i>Consultancy</i>
Finfishes	:	29, 35, 42, 49, 55, 61, 79, 83, 112, 122, 130
Ornamental fishes	:	39, 47, 49, 77, 95, 112, 128
Sea weeds	:	43, 53, 54, 60, 109
Sea cucumbers	:	45
V. Education, Training/ Extension	:	24, 29, 35, 65, 92, 112, 120, 132, 133
VI. Others		
STUBA diving	:	27, 140, 142
Electron microscope	:	111
Artificial reefs	:	95, 105

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

P.B. No. 1603, Tatapuram P.O.,
Ernakulam, Cochin - 682 014,
Kerala, INDIA

Telephone : (0484) 394867, 394357, 393192, 394794
 Telegram : CADALMIN, ERNAKULAM
 Telex : 885-6435 MFRI IN
 Fax : 0091 - 0484 - 394909
 E-mail : mdcmfri@md2.vsnl.net.in

